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Foreword

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

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1 Scope

The present document specifies the 5G radio network layer signalling protocol for the F1 interface. The F1 interface provides means for interconnecting a gNB-CU and a gNB-DU of a gNB within an NG-RAN, or for interconnecting a gNB-CU and a gNB-DU of an en-gNB within an E-UTRAN. The F1 Application Protocol (F1AP) supports the functions of F1 interface by signalling procedures defined in the present document. F1AP is developed in accordance to the general principles stated in TS 38.401 [4] and TS 38.470 [2].

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 38.470: "NG-RAN; F1 general aspects and principles".
- [3] 3GPP TS 38.413: "NG-RAN; NG Application Protocol (NGAP)".
- [4] 3GPP TS 38.401: "NG-RAN; Architecture Description".
- [5] ITU-T Recommendation X.691 (2002-07): "Information technology - ASN.1 encoding rules - Specification of Packed Encoding Rules (PER)".
- [6] 3GPP TS 38.300: "NR; Overall description; Stage-2".
- [7] 3GPP TS 37.340: "NR; Multi-connectivity; Overall description; Stage-2".
- [8] 3GPP TS 38.331: "NR; Radio Resource Control (RRC); Protocol specification".
- [9] 3GPP TS 36.423: "Evolved Universal Terrestrial Radio Access Network (E-UTRAN); X2 Application Protocol (X2AP)".
- [10] 3GPP TS 23.401: "General Packet Radio Service (GPRS) enhancements for Evolved Universal Terrestrial Radio Access Network (E-UTRAN) access".
- [11] 3GPP TS 23.203: "Policy and charging control architecture".
- [12] ITU-T Recommendation X.680 (07/2002): "Information technology – Abstract Syntax Notation One (ASN.1): Specification of basic notation".
- [13] ITU-T Recommendation X.681 (07/2002): "Information technology – Abstract Syntax Notation One (ASN.1): Information object specification".
- [14] 3GPP TR 25.921: (version.7.0.0): "Guidelines and principles for protocol description and error".
- [15] 3GPP TS 36.413: "Evolved Universal Terrestrial Radio Access Network (E-UTRAN); S1 Application Protocol (S1AP)".
- [16] 3GPP TS 38.321: "NR; Medium Access Control (MAC) protocol specification".
- [17] 3GPP TS 38.104: "NR; Base Station (BS) radio transmission and reception".

- [18] 3GPP TS 29.281: "General Packet Radio System (GPRS); Tunnelling Protocol User Plane (GTPv1-U) ".
- [19] 3GPP TS 38.414: "NG-RAN; NG data transport".
- [20] 3GPP TS 36.300: "Evolved Universal Terrestrial Radio Access (E-UTRA) and Evolved Universal Terrestrial Radio Access Network (E-UTRAN); Overall description; Stage 2".
- [21] 3GPP TS 23.501: "System Architecture for the 5G System".
- [22] 3GPP TS 38.472: "NG-RAN; F1 signalling transport".
- [23] 3GPP TS 23.003: "Numbering, addressing and identification".
- [24] 3GPP TS 38.304: "NR; User Equipment (UE) procedures in Idle mode and RRC Inactive state ".
- [25] 3GPP TS 36.104: "Base Station (BS) radio transmission and reception".
- [26] 3GPP TS 38.101-1: "NR; User Equipment (UE) radio transmission and reception; Part 1: Range 1 Standalone".
- [27] 3GPP TS 36.211: "Evolved Universal Terrestrial Radio Access (E-UTRA); Physical channels and modulation".
- [28] 3GPP TS 38.423: "NG-RAN; Xn application protocol (XnAP)".
- [29] 3GPP TS 32.422: "Trace control and configuration management".
- [30] 3GPP TS 38.340: "NR; Backhaul Adaptation Protocol (BAP) specification".
- [31] 3GPP TS 38.213: "NR; Physical layer procedures for control".
- [32] 3GPP TS 38.314: " NR; Layer 2 measurements".
- [33] 3GPP TS 38.211: "NR; Physical channels and modulation".
- [34] 3GPP TS 38.214: "NR; Physical layer procedures for data".
- [35] 3GPP TS 37.320: "Radio measurement collection for Minimization of Drive Tests (MDT)".
- [36] 3GPP TS 23.032: "Technical Specification Group Services and System Aspects; Universal Geographical Area Description (GAD)".
- [37] 3GPP TS 38.455: "NG-RAN; NR Positioning protocol A (NRPPa)".
- [38] 3GPP TS 38.133: "NR; Requirements for support of radio resource management".
- [39] 3GPP TS 37.355: "LTE Positioning Protocol (LPP)".
- [40] 3GPP TS 23.287: "Architecture enhancements for 5G System (5GS) to support Vehicle-to-Everything (V2X) services".
- [41] 3GPP TS 36.331: "Evolved Universal Terrestrial Radio Access (E-UTRA); Radio Resource Control (RRC); Protocol specification".
- [42] 3GPP TS 38.305: "NG Radio Access Network (NG-RAN); Stage 2 functional specification of User Equipment (UE) positioning in NG-RAN".
- [43] 3GPP TS 38.215: "NR; Physical layer (PHY); Measurements".
- [44] 3GPP TS 23.304: "Proximity based Services (ProSe) in the 5G System (5GS)".
- [45] Void
- [46] 3GPP TS 37.213: "NR; Physical layer procedures for shared spectrum channel access".
- [47] 3GPP TS 37.483: "E1 Application Protocol (E1AP)".

3 Definitions and abbreviations

3.1 Definitions

elementary procedure: F1AP consists of Elementary Procedures (EPs). An Elementary Procedure is a unit of interaction between gNB-CU and gNB-DU. 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 F1AP EPs together is specified in stage 2 specifications (e.g., TS 38.470 [2]).

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.

BH RLC channel: as defined in TS 38.300 [6].

Conditional handover: as defined in TS 38.300 [6].

Conditional PSCell Addition: as defined in TS 37.340 [7].

Conditional PSCell Change: as defined in TS 37.340 [7].

DAPS Handover: as defined in TS 38.300 [6].

EN-DC operation: Used in this specification when the F1AP is applied for gNB-CU and gNB-DU in E-UTRAN.

gNB: as defined in TS 38.300 [6].

gNB-CU: as defined in TS 38.401 [4].

gNB-CU UE F1AP ID: as defined in TS 38.401 [4].

gNB-DU: as defined in TS 38.401 [4].

gNB-DU UE F1AP ID: as defined in TS 38.401 [4].

en-gNB: as defined in TS 37.340 [7].

IAB-MT: as defined in TS 38.300 [6].

IAB-DU: as defined in TS 38.300 [6].

IAB-node: as defined in TS 38.300 [6].

IAB-donor: as defined in TS 38.300 [6].

IAB-donor-CU: as defined in TS 38.401 [4].

IAB-donor-DU: as defined in TS 38.401 [4].

MBS session resource: as defined in TS 38.401 [4].

MBS-associated signalling: When F1AP messages associated to one MBS session uses the MBS-associated logical F1-connection for association of the message to the MBS session in gNB-DU and gNB-CU.

MBS-associated logical F1-connection: The MBS-associated logical F1-connection uses the identities *GNB-CU MBS F1AP ID* and *GNB-DU MBS F1AP ID* according to the definition in TS 38.401 [4]. For a received MBS-associated F1AP message the gNB-CU identifies the associated MBS session based on the *GNB-CU MBS F1AP ID* IE and the gNB-DU identifies the associated MBS session based on the *GNB-DU MBS F1AP ID* IE.

MBS Session context in a gNB-DU: as defined in TS 38.401 [4].

Multicast F1-U Context: as defined in TS 38.401 [4].

Other SI: as defined in TS 38.300 [6].

Public network integrated NPN: as defined in TS 23.501 [21].

Stand-alone Non-Public Network: as defined in TS 23.501 [21].

UE-associated signalling: When F1AP messages associated to one UE uses the UE-associated logical F1-connection for association of the message to the UE in gNB-DU and gNB-CU.

UE-associated logical F1-connection: The UE-associated logical F1-connection uses the identities *GNB-CU UE F1AP ID* and *GNB-DU UE F1AP ID* according to the definition in TS 38.401 [4]. For a received UE associated F1AP message the gNB-CU identifies the associated UE based on the *GNB-CU UE F1AP ID* IE and the gNB-DU identifies the associated UE based on the *GNB-DU UE F1AP ID* IE. The UE-associated logical F1-connection may exist before the F1 UE context is setup in gNB-DU.

U2N Relay UE: a UE that provides functionality to support connectivity to the network for U2N Remote UE(s).

U2N Remote UE: a UE that communicates with the network via a U2N Relay UE.

Uu Relay RLC channel: as defined in TS 38.300 [6].

PC5 Relay RLC channel: as defined in TS 38.300 [6].

SRAP: Sidelink relay adaptation protocol, as defined in TS 38.300 [6].

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
AMF	Access and Mobility Management Function
ARP	Antenna Reference Point
ARPI	Additional RRM Policy Index
BH	Backhaul
CAG	Closed Access Group
CN	Core Network
CG	Cell Group
CG-SDT	Configured Grant-Small Data Transmission

CGI	Cell Global Identifier
CHO	Conditional Handover
CP	Control Plane
CPA	Conditional PSCell Addition
CPC	Conditional PSCell Change
DAPS	Dual Active Protocol Stack
DL	Downlink
DL-PRS	Downlink Positioning Reference Signal
EN-DC	E-UTRA-NR Dual Connectivity
EPC	Evolved Packet Core
FSA ID	MBS Frequency Selection Area (FSA) ID
IAB	Integrated Access and Backhaul
IMEISV	International Mobile station Equipment Identity and Software Version number
LMF	Location Management Function
MBS	Multicast/Broadcast Service
NID	Network Identifier
NPN	Non-Public Network
NSAG	Network Slice AS Group
NSSAI	Network Slice Selection Assistance Information
PDC	Propagation Delay Compensation
PEIPS	Paging Early Indication with Paging Subgrouping
posSIB	Positioning SIB
PNI-NPN	Public Network Integrated NPN
PTP	Point to Point
PTM	Point to Multipoint
QMC	QoE Measurement Collection
QoE	Quality of Experience
RANAC	RAN Area Code
RedCap	Reduced Capability
RIM	Remote Interference Management
RIM-RS	RIM Reference Signal
RRC	Radio Resource Control
RSRP	Reference Signal Received Power
SDT	Small Data Transmission
SNPN	Stand-alone Non-Public Network
S-NSSAI	Single Network Slice Selection Assistance Information
SUL	Supplementary Uplink
TAC	Tracking Area Code
TAI	Tracking Area Identity
TEG	Timing Error Group
TRP	Transmission-Reception Point
U2N	UE-to-Network
UL-AoA	Uplink Angle of Arrival
UL-RTOA	Uplink Relative Time of Arrival
UL-SRS	Uplink Sounding Reference Signal
Z-AoA	Zenith Angles of Arrival

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 <i>Information Element Name</i> 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. <i>E-RAB ID</i> 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 F1AP services

F1AP provides the signalling service between gNB-DU and the gNB-CU that is required to fulfil the F1AP functions described in clause 7. F1AP services are divided into two groups:

Non UE-associated services:	They are related to the whole F1 interface instance between the gNB-DU and gNB-CU utilising a non UE-associated signalling connection.
UE-associated services:	They are related to one UE. F1AP 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 service. F1AP functions that provide these services are associated with a MBS-associated signalling connection that is maintained for the MBS service in question.

Unless explicitly indicated in the procedure specification, at any instance in time one protocol endpoint shall have a maximum of one ongoing F1AP 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 F1AP procedure related to a certain MBS session.

All considerations of gNB-DU in this specification also apply to the IAB-DU and IAB-donor-DU, unless stated otherwise. All considerations of gNB-CU in this specification apply to the IAB-donor-CU as well, unless stated otherwise.

6 Services expected from signalling transport

The signalling connection shall provide in sequence delivery of F1AP messages. F1AP shall be notified if the signalling connection breaks.

7 Functions of F1AP

The functions of F1AP are described in TS 38.470 [2].

8 F1AP procedures

8.1 List of F1AP 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	
F1 Setup	F1 SETUP REQUEST	F1 SETUP RESPONSE	F1 SETUP FAILURE
gNB-DU Configuration Update	GNB-DU CONFIGURATION UPDATE	GNB-DU CONFIGURATION UPDATE ACKNOWLEDGE	GNB-DU CONFIGURATION UPDATE FAILURE
gNB-CU Configuration Update	GNB-CU CONFIGURATION UPDATE	GNB-CU CONFIGURATION UPDATE ACKNOWLEDGE	GNB-CU CONFIGURATION UPDATE FAILURE
UE Context Setup	UE CONTEXT SETUP REQUEST	UE CONTEXT SETUP RESPONSE	UE CONTEXT SETUP FAILURE
UE Context Release (gNB-CU initiated)	UE CONTEXT RELEASE COMMAND	UE CONTEXT RELEASE COMPLETE	
UE Context Modification (gNB-CU initiated)	UE CONTEXT MODIFICATION REQUEST	UE CONTEXT MODIFICATION RESPONSE	UE CONTEXT MODIFICATION FAILURE
UE Context Modification Required (gNB-DU initiated)	UE CONTEXT MODIFICATION REQUIRED	UE CONTEXT MODIFICATION CONFIRM	UE CONTEXT MODIFICATION REFUSE
Write-Replace Warning	WRITE-REPLACE WARNING REQUEST	WRITE-REPLACE WARNING RESPONSE	
PWS Cancel	PWS CANCEL REQUEST	PWS CANCEL RESPONSE	
gNB-DU Resource Coordination	GNB-DU RESOURCE COORDINATION REQUEST	GNB-DU RESOURCE COORDINATION RESPONSE	
F1 Removal	F1 REMOVAL REQUEST	F1 REMOVAL RESPONSE	F1 REMOVAL FAILURE
BAP Mapping Configuration	BAP MAPPING CONFIGURATION	BAP MAPPING CONFIGURATION	BAP MAPPING CONFIGURATION FAILURE

		ACKNOWLEDGE	
GNB-DU Resource Configuration	GNB-DU RESOURCE CONFIGURATION	GNB-DU RESOURCE CONFIGURATION ACKNOWLEDGE	GNB-DU RESOURCE CONFIGURATION FAILURE
IAB TNL Address Allocation	IAB TNL ADDRESS REQUEST	IAB TNL ADDRESS RESPONSE	IAB TNL ADDRESS FAILURE
IAB UP Configuration Update	IAB UP CONFIGURATION UPDATE REQUEST	IAB UP CONFIGURATION UPDATE RESPONSE	IAB UP CONFIGURATION UPDATE FAILURE
Resource Status Reporting Initiation	RESOURCE STATUS REQUEST	RESOURCE STATUS RESPONSE	RESOURCE STATUS FAILURE
Positioning Measurement	POSITIONING MEASUREMENT REQUEST	POSITIONING MEASUREMENT RESPONSE	POSITIONING MEASUREMENT FAILURE
Positioning Information Exchange	POSITIONING INFORMATION REQUEST	POSITIONING INFORMATION RESPONSE	POSITIONING INFORMATION FAILURE
TRP Information Exchange	TRP INFORMATION REQUEST	TRP INFORMATION RESPONSE	TRP INFORMATION FAILURE
Positioning Activation	POSITIONING ACTIVATION REQUEST	POSITIONING ACTIVATION RESPONSE	POSITIONING ACTIVATION FAILURE
E-CID Measurement Initiation	E-CID MEASUREMENT INITIATION REQUEST	E-CID MEASUREMENT INITIATION RESPONSE	E-CID MEASUREMENT INITIATION FAILURE
Broadcast Context Setup	BROADCAST CONTEXT SETUP REQUEST	BROADCAST CONTEXT SETUP RESPONSE	BROADCAST CONTEXT SETUP FAILURE
Broadcast Context Release	BROADCAST CONTEXT RELEASE COMMAND	BROADCAST CONTEXT RELEASE COMPLETE	
Broadcast Context Modification	BROADCAST CONTEXT MODIFICATION REQUEST	BROADCAST CONTEXT MODIFICATION RESPONSE	BROADCAST CONTEXT MODIFICATION FAILURE
Multicast Context Setup	MULTICAST CONTEXT SETUP REQUEST	MULTICAST CONTEXT SETUP RESPONSE	MULTICAST CONTEXT SETUP FAILURE
Multicast Context Release	MULTICAST CONTEXT RELEASE COMMAND	MULTICAST CONTEXT RELEASE COMPLETE	
Multicast Context Modification	MULTICAST CONTEXT MODIFICATION REQUEST	MULTICAST CONTEXT MODIFICATION RESPONSE	MULTICAST CONTEXT MODIFICATION FAILURE
Multicast Distribution Setup	MULTICAST DISTRIBUTION SETUP REQUEST	MULTICAST DISTRIBUTION SETUP RESPONSE	MULTICAST DISTRIBUTION SETUP FAILURE
Multicast Distribution Release	MULTICAST DISTRIBUTION RELEASE COMMAND	MULTICAST DISTRIBUTION RELEASE COMPLETE	
PDC Measurement Initiation	PDC MEASUREMENT INITIATION REQUEST	PDC MEASUREMENT INITIATION RESPONSE	PDC MEASUREMENT INITIATION FAILURE
PRS Configuration Exchange	PRS CONFIGURATION REQUEST	PRS CONFIGURATION RESPONSE	PRS CONFIGURATION FAILURE
Measurement Preconfiguration	MEASUREMENT PRECONFIGURATION REQUIRED	MEASUREMENT PRECONFIGURATION CONFIRM	MEASUREMENT PRECONFIGURATION REFUSE

Table 2: Class 2 procedures

Elementary Procedure	Message
Error Indication	ERROR INDICATION
UE Context Release Request (gNB-DU initiated)	UE CONTEXT RELEASE REQUEST

Elementary Procedure	Message
Initial UL RRC Message Transfer	INITIAL UL RRC MESSAGE TRANSFER
DL RRC Message Transfer	DL RRC MESSAGE TRANSFER
UL RRC Message Transfer	UL RRC MESSAGE TRANSFER
UE Inactivity Notification	UE INACTIVITY NOTIFICATION
System Information Delivery	SYSTEM INFORMATION DELIVERY COMMAND
Paging	PAGING
Notify	NOTIFY
PWS Restart Indication	PWS RESTART INDICATION
PWS Failure Indication	PWS FAILURE INDICATION
gNB-DU Status Indication	GNB-DU STATUS INDICATION
RRC Delivery Report	RRC DELIVERY REPORT
Network Access Rate Reduction	NETWORK ACCESS RATE REDUCTION
Trace Start	TRACE START
Deactivate Trace	DEACTIVATE TRACE
DU-CU Radio Information Transfer	DU-CU RADIO INFORMATION TRANSFER
CU-DU Radio Information Transfer	CU-DU RADIO INFORMATION TRANSFER
Resource Status Reporting	RESOURCE STATUS UPDATE
Access And Mobility Indication	ACCESS AND MOBILITY INDICATION
Reference Time Information Reporting Control	REFERENCE TIME INFORMATION REPORTING CONTROL
Reference Time Information Report	REFERENCE TIME INFORMATION REPORT
Access Success	ACCESS SUCCESS
Cell Traffic Trace	CELL TRAFFIC TRACE
Positioning Assistance Information Control	POSITIONING ASSISTANCE INFORMATION CONTROL
Positioning Assistance Information Feedback	POSITIONING ASSISTANCE INFORMATION FEEDBACK
Positioning Measurement Report	POSITIONING MEASUREMENT REPORT
Positioning Measurement Abort	POSITIONING MEASUREMENT ABORT
Positioning Measurement Failure Indication	POSITIONING MEASUREMENT FAILURE INDICATION
Positioning Measurement Update	POSITIONING MEASUREMENT UPDATE
Positioning Deactivation	POSITIONING DEACTIVATION
E-CID Measurement Failure Indication	E-CID MEASUREMENT FAILURE INDICATION
E-CID Measurement Report	E-CID MEASUREMENT REPORT
E-CID Measurement Termination	E-CID MEASUREMENT TERMINATION COMMAND
Positioning Information Update	POSITIONING INFORMATION UPDATE
Multicast Group Paging	MULTICAST GROUP PAGING
Broadcast Context Release Request	BROADCAST CONTEXT RELEASE REQUEST
Multicast Context Release Request	MULTICAST CONTEXT RELEASE REQUEST
PDC Measurement Report	PDC MEASUREMENT REPORT
PDC Measurement Termination	PDC MEASUREMENT TERMINATION COMMAND
PDC Measurement Failure Indication	PDC MEASUREMENT FAILURE INDICATION
PDC Measurement Termination	PDC MEASUREMENT TERMINATION COMMAND
Measurement Activation	MEASUREMENT ACTIVATION
QoE Information Transfer	QOE INFORMATION TRANSFER

Elementary Procedure	Message
Positioning System Information Delivery	POSITIONING SYSTEM INFORMATION DELIVERY COMMAND

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 F1AP UE-related contexts, in the event of a failure in the gNB-CU or gNB-DU. This procedure does not affect the application level configuration data exchanged during, e.g., the F1 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

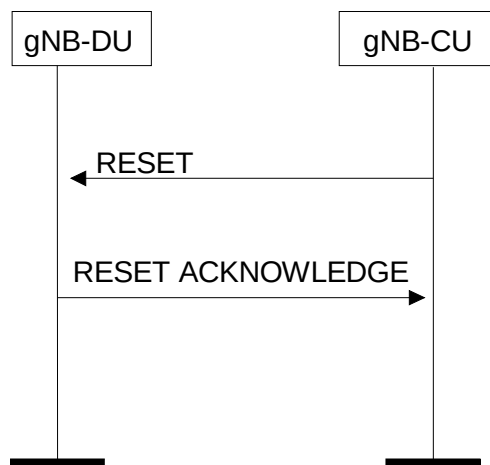


Figure 8.2.1.2.1-1: Reset procedure initiated from the gNB-CU. Successful operation

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

At reception of the RESET message the gNB-DU shall release all allocated resources on F1 and radio resources related to the UE association(s) indicated explicitly or implicitly in the RESET message and remove the indicated UE contexts including F1AP ID.

After the gNB-DU has released all assigned F1 resources and the UE F1AP IDs for all indicated UE associations which can be used for new UE-associated logical F1-connections over the F1 interface, the gNB-DU shall respond with the RESET ACKNOWLEDGE message. The gNB-DU does not need to wait for the release of radio resources to be completed before returning the RESET ACKNOWLEDGE message.

If the RESET message contains the *UE-associated logical F1-connection list* IE, then:

- The gNB-DU shall use the *gNB-CU UE F1AP ID* IE and/or the *gNB-DU UE F1AP ID* IE to explicitly identify the UE association(s) to be reset.
- The gNB-DU shall include in the RESET ACKNOWLEDGE message, for each UE association to be reset, the *UE-associated logical F1-connection Item* IE in the *UE-associated logical F1-connection list* IE. The *UE-associated logical F1-connection Item* IEs shall be in the same order as received in the RESET message and

shall include also unknown UE-associated logical F1-connections. Empty *UE-associated logical F1-connection Item* IEs, received in the RESET message, may be omitted in the RESET ACKNOWLEDGE message.

- If the *gNB-CU UE F1AP ID* IE is included in the *UE-associated logical F1-connection Item* IE for a UE association, the gNB-DU shall include the *gNB-CU UE F1AP ID* IE in the corresponding *UE-associated logical F1-connection Item* IE in the RESET ACKNOWLEDGE message.
- If the *gNB-DU UE F1AP ID* IE is included in the *UE-associated logical F1-connection Item* IE for a UE association, the gNB-DU shall include the *gNB-DU UE F1AP ID* IE in the corresponding *UE-associated logical F1-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 F1 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-DU

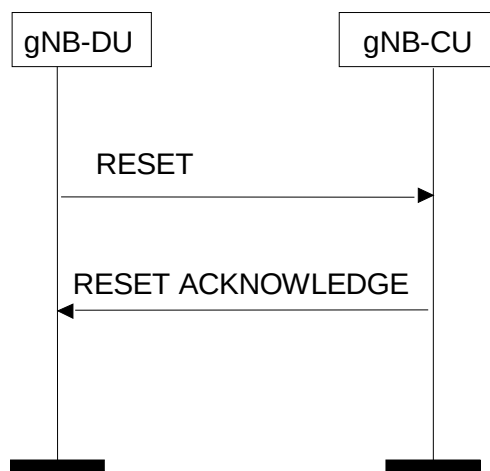


Figure 8.2.1.2.2-1: Reset procedure initiated from the gNB-DU. Successful operation

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

At reception of the RESET message the gNB-CU shall release all allocated resources on F1 related to the UE association(s) indicated explicitly or implicitly in the RESET message and remove the F1AP ID for the indicated UE associations.

After the gNB-CU has released all assigned F1 resources and the UE F1AP IDs for all indicated UE associations which can be used for new UE-associated logical F1-connections over the F1 interface, the gNB-CU shall respond with the RESET ACKNOWLEDGE message.

If the RESET message contains the *UE-associated logical F1-connection list* IE, then:

- The gNB-CU shall use the *gNB-CU UE F1AP ID* IE and/or the *gNB-DU UE F1AP ID* IE to explicitly identify the UE association(s) to be reset.
- The gNB-CU shall in the RESET ACKNOWLEDGE message include, for each UE association to be reset, the *UE-associated logical F1-connection Item* IE in the *UE-associated logical F1-connection list* IE. The *UE-associated logical F1-connection Item* IEs shall be in the same order as received in the RESET message and shall include also unknown UE-associated logical F1-connections. Empty *UE-associated logical F1-connection Item* IEs, received in the RESET message, may be omitted in the RESET ACKNOWLEDGE message.
- If the *gNB-CU UE F1AP ID* IE is included in the *UE-associated logical F1-connection Item* IE for a UE association, the gNB-CU shall include the *gNB-CU UE F1AP ID* IE in the corresponding *UE-associated logical F1-connection Item* IE in the RESET ACKNOWLEDGE message.

- If the *gNB-DU UE F1AP ID* IE is included in a *UE-associated logical F1-connection Item* IE for a UE association, the gNB-CU shall include the *gNB-DU UE F1AP ID* IE in the corresponding *UE-associated logical F1-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 F1 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

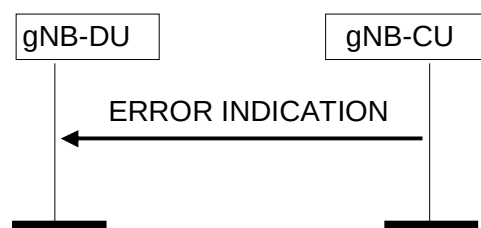


Figure 8.2.2.2-1: Error Indication procedure, gNB-CU originated. Successful operation

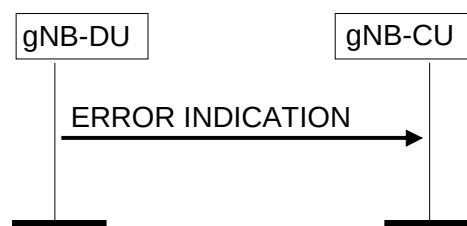


Figure 8.2.2.2-2: Error Indication procedure, gNB-DU originated. Successful operation

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 UE F1AP ID* IE and *gNB-DU UE F1AP ID* IE shall be included in the ERROR INDICATION message. If one or both of the *gNB-CU UE F1AP ID* IE and the *gNB-DU UE F1AP ID* IE are not correct, the cause shall be set to appropriate value, e.g., "Unknown or already allocated gNB-CU UE F1AP ID", "Unknown or already allocated gNB-DU UE F1AP ID" or "Unknown or inconsistent pair of UE F1AP ID".

8.2.2.3 Abnormal Conditions

Not applicable.

8.2.3 F1 Setup

8.2.3.1 General

The purpose of the F1 Setup procedure is to exchange application level data needed for the gNB-DU and the gNB-CU to correctly interoperate on the F1 interface. This procedure shall be the first F1AP procedure triggered for the F1-C interface instance after a TNL association has become operational.

NOTE: If F1-C signalling transport is shared among multiple F1-C interface instances, one F1 Setup procedure is issued per F1-C interface instance to be setup, i.e. several F1 Setup procedures may be issued via the same TNL association after that TNL association has become operational.

NOTE: Exchange of application level configuration data also applies between the gNB-DU and the gNB-CU in case the DU does not broadcast system information other than for radio frame timing and SFN, as specified in the TS 37.340 [7]. How to use this information when this option is used is not explicitly specified.

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 F1AP 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

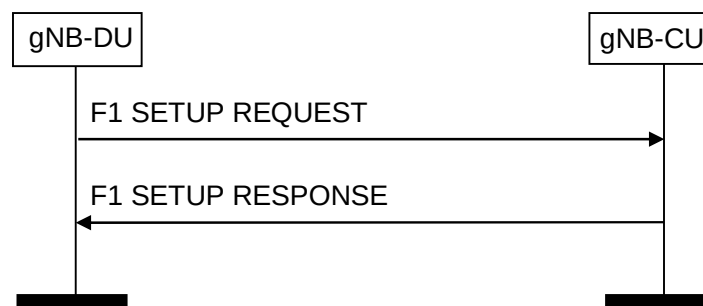


Figure 8.2.3.2-1: F1 Setup procedure: Successful Operation

The gNB-DU initiates the procedure by sending a F1 SETUP REQUEST message including the appropriate data to the gNB-CU. The gNB-CU responds with a F1 SETUP RESPONSE message including the appropriate data.

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 F1 interface is operational and other F1 messages may be exchanged.

If the F1 SETUP REQUEST message contains the *gNB-DU Name* IE, the gNB-CU may use this IE as a human readable name of the gNB-DU. If the F1 SETUP REQUEST message contains the *Extended gNB-DU Name* IE, the gNB-CU may use this IE as a human readable name of the gNB-DU and shall ignore the *gNB-DU Name* IE if included.

If the F1 SETUP RESPONSE message contains the *gNB-CU Name* IE, the gNB-DU may use this IE as a human readable name of the gNB-CU. If the F1 SETUP RESPONSE message contains the *Extended gNB-CU Name* IE, the gNB-DU may use this IE as a human readable name of the gNB-CU and shall ignore the *gNB-CU Name* IE if included.

If the F1 SETUP REQUEST message contains the *gNB-DU Served Cells List* IE, the gNB-CU shall take into account as specified in TS 38.401 [4].

For NG-RAN, the gNB-DU shall include the *gNB-DU System Information* IE and the *TAI Slice Support List* IE in the F1 SETUP REQUEST message.

The gNB-CU may include the *Cells to be Activated List* IE in the F1 SETUP RESPONSE message. The *Cells to be Activated List* IE includes a list of cells that the gNB-CU requests the gNB-DU to activate. The gNB-DU shall activate the cells included in the *Cells to be Activated List* IE and reconfigure the physical cell identity for cells for which the *NR PCI* IE is included.

If *Cells to be Activated List Item* IE is included in the F1 SETUP RESPONSE message, and the information for the cell indicated by the *NR CGI* IE includes the *IAB Info IAB-donor-CU* IE, the gNB-DU shall, if supported, apply the *IAB STC Info* IE therein to the indicated cell.

For NG-RAN, the gNB-CU shall include the *gNB-CU System Information* IE in the F1 SETUP RESPONSE message.

For NG-RAN, the gNB-DU may include the *RAN Area Code* IE in the F1 SETUP REQUEST message. The gNB-CU may use it according to TS 38.300 [6].

For NG-RAN, the gNB-DU may include *Supported MBS FSA ID List* IE in the *Served Cell Information* IE in the F1 SETUP REQUEST message. The gNB-CU may use it according to TS 38.300 [6].

For NG-RAN, the gNB-CU may include *Available PLMN List* IE, and optionally also *Extended Available PLMN List* IE in the F1 SETUP RESPONSE message, if the available PLMN(s) are different from what gNB-DU has provided in F1 SETUP REQUEST message, gNB-DU shall take this into account and only broadcast the PLMN(s) included in the received Available PLMN list(s).

For NG-RAN, the gNB-CU may include *Available SNPN ID List* IE in the F1 SETUP RESPONSE message. If the available SNPN(s) are different from what gNB-DU has provided in F1 SETUP REQUEST message, gNB-DU shall take this into account and only broadcast the SNPN(s) included in the received Available SNPN ID list.

The *Latest RRC Version Enhanced* IE shall be included in the F1 SETUP REQUEST message and in the F1 SETUP RESPONSE message.

If in F1 SETUP REQUEST message, the *Cell Direction* IE is present, the gNB-CU should use it to understand whether the cell is for UL or DL only. If in F1 SETUP REQUEST message, the *Cell Direction* IE is omitted in the *Served Cell Information* IE it shall be interpreted as that the Cell Direction is Bi-directional.

If the *Intended TDD DL-UL Configuration* IE is present in the F1 SETUP REQUEST message, the receiving gNB-CU shall use the received information for Cross Link Interference management and/or NR-DC power coordination. The gNB-CU may merge the Intended TDD DL-UL Configuration information received from two or more gNB-DUs. The gNB-CU shall consider the received *Intended TDD DL-UL Configuration* content valid until reception of an update of the IE for the same cell(s).

If the *Aggressor gNB Set ID* IE is included in the *Served Cell Information* IE in the F1 SETUP REQUEST message, the gNB-CU shall, if supported, take it into account.

If the *Victim gNB Set ID* IE is included in the *Served Cell Information* IE in the F1 SETUP REQUEST message, the gNB-CU shall, if supported, take it into account.

If the F1 SETUP REQUEST message contains the Transport Layer Address Info IE, the gNB-CU shall, if supported, take into account for IPsec tunnel establishment.

If the *SFN Offset* IE is contained in the *Served Cell Information* IE in the F1 SETUP REQUEST message, the gNB-CU shall, if supported, use this information to deduce the SFN0 offset of the reported cell.

If the F1 SETUP RESPONSE message contains the *Transport Layer Address Info* IE, the gNB-DU shall, if supported, take into account for IPsec tunnel establishment.

If the F1 SETUP RESPONSE message contains the *Uplink BH Non-UP Traffic Mapping* IE, the gNB-DU shall, if supported, consider the information therein for mapping of non-UP uplink traffic.

If the *BAP Address* IE is included in the F1 SETUP REQUEST, the receiving gNB-CU shall, if supported, consider the information therein for discovering the collocation of an IAB-DU and an IAB-MT.

If the F1 SETUP REQUEST message is received from an IAB-donor-DU, the gNB-CU shall, if supported, include the *BAP Address* IE in the F1 SETUP RESPONSE message.

NOTE: How to identify the IAB-donor-DU is up to gNB-CU implementation.

If the F1 SETUP RESPONSE message contains the *BAP Address* IE, the gNB-DU shall, if supported, store the received BAP address and use it as specified in TS 38.340 [30].

If the *NR PRACH Configuration List* IE is included in the *Served Cell Information* IE contained in the F1 SETUP REQUEST message, the gNB-CU may store the information, and forward it to other RAN nodes for RACH

optimisation. If the *L139 Info* IE included in the *NR PRACH Configuration List* IE is present, it shall contain the *Root Sequence Index* IE.

If the *RedCap Broadcast Information* IE is included in the *Served Cell Information* IE in the F1 SETUP REQUEST message, the gNB-CU may use this information to determine a suitable target in case of subsequent outgoing mobility involving RedCap UEs.

If the *TAI NSAG Support List* IE is included in the *Served Cell Information* IE in the F1 SETUP REQUEST message, the gNB-CU shall, if supported, use this information as specified in TS 23.501 [21].

8.2.3.3 Unsuccessful Operation

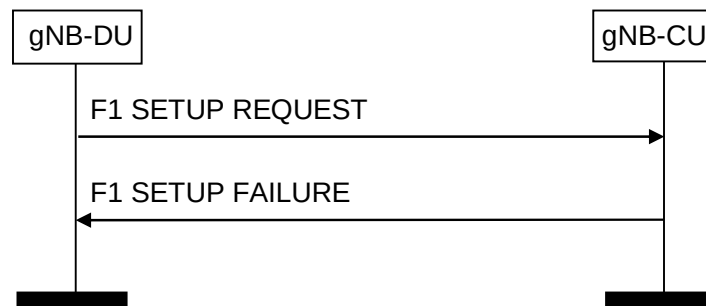


Figure 8.2.3.3-1: F1 Setup procedure: Unsuccessful Operation

If the gNB-CU cannot accept the setup, it should respond with a F1 SETUP FAILURE and appropriate cause value.

If the F1 SETUP FAILURE message includes the *Time To Wait* IE, the gNB-DU shall wait at least for the indicated time before reinitiating the F1 setup towards the same gNB-CU.

8.2.3.4 Abnormal Conditions

Not applicable.

8.2.4 gNB-DU Configuration Update

8.2.4.1 General

The purpose of the gNB-DU Configuration Update procedure is to update application level configuration data needed for the gNB-DU and the gNB-CU to interoperate correctly on the F1 interface. This procedure does not affect existing UE-related contexts, if any. The procedure uses non-UE associated signalling.

NOTE: Update of application level configuration data also applies between the gNB-DU and the gNB-CU in case the DU does not broadcast system information other than for radio frame timing and SFN, as specified in the TS 37.340 [7]. How to use this information when this option is used is not explicitly specified.

8.2.4.2 Successful Operation

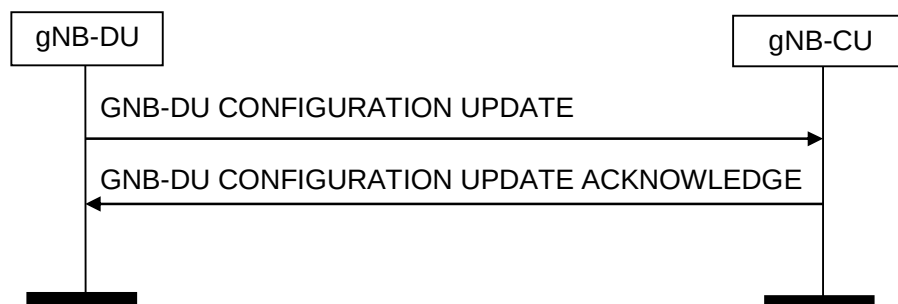


Figure 8.2.4.2-1: gNB-DU Configuration Update procedure: Successful Operation

The gNB-DU initiates the procedure by sending a GNB-DU CONFIGURATION UPDATE message to the gNB-CU including an appropriate set of updated configuration data that it has just taken into operational use. The gNB-CU responds with GNB-DU CONFIGURATION UPDATE ACKNOWLEDGE message to acknowledge that it successfully updated the configuration data. If an information element is not included in the GNB-DU CONFIGURATION UPDATE message, the gNB-CU shall interpret that the corresponding configuration data is not changed and shall continue to operate the F1-C interface 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 *gNB-DU ID* IE is contained in the GNB-DU CONFIGURATION UPDATE message for a newly established SCTP association, the gNB-CU will associate this association with the related gNB-DU.

If *Served Cells To Add Item* IE is contained in the GNB-DU CONFIGURATION UPDATE message, the gNB-CU shall add cell information according to the information in the *Served Cell Information* IE. For NG-RAN, the gNB-DU shall include the *gNB-DU System Information* IE.

If *Served Cells To Modify Item* IE is contained in the GNB-DU CONFIGURATION UPDATE message, the gNB-CU shall modify information of cell indicated by *Old NR CGI* IE according to the information in the *Served Cell Information* IE and overwrite the served cell information for the affected served cell. Further, if the *gNB-DU System Information* IE is present the gNB-CU shall store and replace any previous information received.

If *Served Cells To Delete Item* IE is contained in the GNB-DU CONFIGURATION UPDATE message, the gNB-CU shall delete information of cell indicated by *Old NR CGI* IE.

If *Cells Status Item* IE is contained in the GNB-DU CONFIGURATION UPDATE message, the gNB-CU shall update the information about the cells, as described in TS 38.401 [4]. If if the *Switching Off Ongoing* IE is present in the *Cells Status Item* IE, contained in the GNB-DU CONFIGURATION UPDATE message, and the corresponding *Service State IE* is set to "Out-of-Service", the gNB-CU shall ignore the *Switching Off Ongoing* IE.

If *Cells to be Activated List Item* IE is contained in the GNB-DU CONFIGURATION UPDATE ACKNOWLEDGE message, the gNB-DU shall activate the cell indicated by *NR CGI* IE and reconfigure the physical cell identity for cells for which the *NR PCI* IE is included.

If *Cells to be Activated List Item* IE is contained in the GNB-DU CONFIGURATION UPDATE ACKNOWLEDGE message and the indicated cells are already activated, the gNB-DU shall update the cell information received in *Cells to be Activated List Item* IE.

If *Cells to be Activated List Item* IE is included in the GNB-DU CONFIGURATION UPDATE ACKNOWLEDGE message, and the information for the cell indicated by the *NR CGI* IE includes the *IAB Info IAB-donor-CU* IE, the gNB-DU shall, if supported, apply the *IAB STC Info* IE therein to the indicated cell.

If *Cells to be Deactivated List Item* IE is contained in the GNB-DU CONFIGURATION UPDATE ACKNOWLEDGE message, the gNB-DU shall deactivate all the cells with *NR CGI* listed in the IE.

If *Dedicated SI Delivery Needed UE List* IE is contained in the GNB-DU CONFIGURATION UPDATE message, the gNB-CU should take it into account when informing the UE of the updated system information via the dedicated RRC message.

For NG-RAN, the gNB-CU shall include the *gNB-CU System Information* IE in the GNB-DU CONFIGURATION UPDATE ACKNOWLEDGE message. The *SIB type to Be Updated List* IE shall contain the full list of SIBs to be broadcast.

For NG-RAN, the gNB-DU may include the *RAN Area Code* IE in the GNB-DU CONFIGURATION UPDATE message. The gNB-CU shall store and replace any previously provided *RAN Area Code* IE by the received *RAN Area Code* IE.

For NG-RAN, the gNB-DU may include the *Supported MBS FSA ID List* IE in the *Served Cell Information* IE in the GNB-DU CONFIGURATION UPDATE message. The gNB-CU shall store and replace any previously provided *MBS FSA ID list* IE by the received *MBS FSA ID list* IE.

If *Available PLMN List* IE, and optionally also *Extended Available PLMN List* IE, is contained in GNB-DU CONFIGURATION UPDATE ACKNOWLEDGE message, the gNB-DU shall overwrite the whole available PLMN list and update the corresponding system information.

If *Available SNPN ID List* IE is contained in GNB-DU CONFIGURATION UPDATE ACKNOWLEDGE message, the gNB-DU shall overwrite the whole available SNPN ID list and update the corresponding system information.

If in GNB-DU CONFIGURATION UPDATE message, the *Cell Direction* IE is present, the gNB-CU should use it to understand whether the cell is for UL or DL only. If in GNB-DU CONFIGURATION UPDATE message, the *Cell Direction* IE is omitted in the *Served Cell Information* IE it shall be interpreted as that the Cell Direction is Bi-directional.

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

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

If the *Intended TDD DL-UL Configuration* IE is present in the GNB-DU CONFIGURATION UPDATE message, the receiving gNB-CU shall use the received information for Cross Link Interference management and/or NR-DC power coordination. The gNB-CU may merge the *Intended TDD DL-UL Configuration* information received from two or more gNB-DUs. The gNB-CU shall consider the received *Intended TDD DL-UL Configuration* IE content valid until reception of an update of the IE for the same cell(s).

If the *Aggressor gNB Set ID* IE is included in the *Served Cell Information* IE in the GNB-DU CONFIGURATION UPDATE message, the gNB-CU shall, if supported, take it into account.

If the *Victim gNB Set ID* IE is included in the *Served Cell Information* IE in the GNB-DU CONFIGURATION UPDATE message, the gNB-CU shall, if supported, take it into account.

If the GNB-DU CONFIGURATION UPDATE message includes *Transport Layer Address Info* IE, the gNB-CU shall, if supported, take into account for IPsec tunnel establishment.

If the GNB-DU CONFIGURATION UPDATE ACKNOWLEDGE message includes *Transport Layer Address Info* IE, the gNB-DU shall, if supported, take into account for IPsec tunnel establishment.

If the GNB-DU CONFIGURATION UPDATE ACKNOWLEDGE message contains the *Uplink BH Non-UP Traffic Mapping* IE, the gNB-DU shall, if supported, consider the information therein for mapping of non-UP uplink traffic.

If the *SFN Offset* IE is contained in the *Served Cell Information* IE in GNB-DU CONFIGURATION UPDATE message, the gNB-CU shall, if supported, use this information to deduce the SFN0 offset of the reported cell.

If the *NR PRACH Configuration List* IE is included in the *Served Cell Information* IE contained in the GNB-DU CONFIGURATION UPDATE message, the gNB-CU may store the information, and forward it to other RAN nodes for RACH optimisation. If the *L139 Info* IE included in the *NR PRACH Configuration List* IE is present, it shall contain the *Root Sequence Index* IE.

If the GNB-DU CONFIGURATION UPDATE ACKNOWLEDGE message contains the *BAP Address* IE, the gNB-DU shall, if supported, store the received BAP address and use it as specified in TS 38.340 [30].

If the *Coverage Modification Notification* IE is contained in the GNB-DU CONFIGURATION UPDATE message, the gNB-CU shall, if supported, take it into account for Coverage and Capacity Optimization.

If the *Cells for SON* IE is present in the GNB-DU CONFIGURATION UPDATE ACKNOWLEDGE message, the gNB-DU may store or update this information and behaves as follows:

- For each served cell indicated by the *NR CGI* IE included within the *Cells for SON Item* IE, the gNB-DU may adjust the PRACH configuration of this served cell.

- If the *Neighbour NR Cells for SON List* IE is present in the *Cells for SON Item* IE, the gNB-DU may take the PRACH configuration of neighbour cells included in the *Neighbour NR Cells for SON List* IE into consideration when adjusting the PRACH configuration of the served cell.

If the *RedCap Broadcast Information* IE is contained in the *Served Cell Information* IE in the GNB-DU CONFIGURATION UPDATE message, the gNB-CU may use this information to determine a suitable target in case of subsequent outgoing mobility involving RedCap UEs.

If the *TAI NSAG Support List* IE is included in the *Served Cell Information* IE in the GNB-DU CONFIGURATION UPDATE message, the gNB-CU shall, if supported, use this information as specified in TS 23.501 [21].

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

8.2.4.3 Unsuccessful Operation

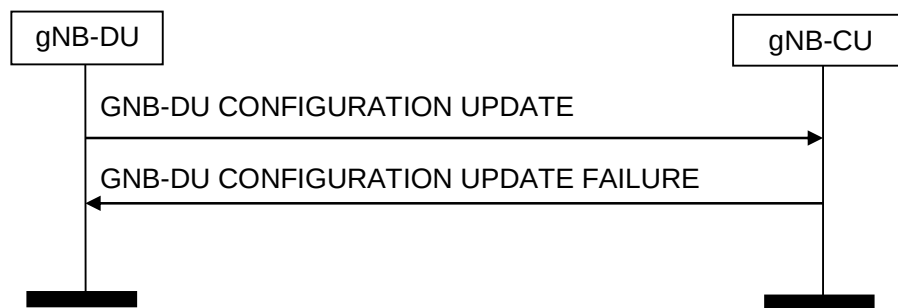


Figure 8.2.4.3-1: gNB-DU Configuration Update procedure: Unsuccessful Operation

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

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

8.2.4.4 Abnormal Conditions

Not applicable.

8.2.5 gNB-CU Configuration Update

8.2.5.1 General

The purpose of the gNB-CU Configuration Update procedure is to update application level configuration data needed for the gNB-DU and gNB-CU to interoperate correctly on the F1 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

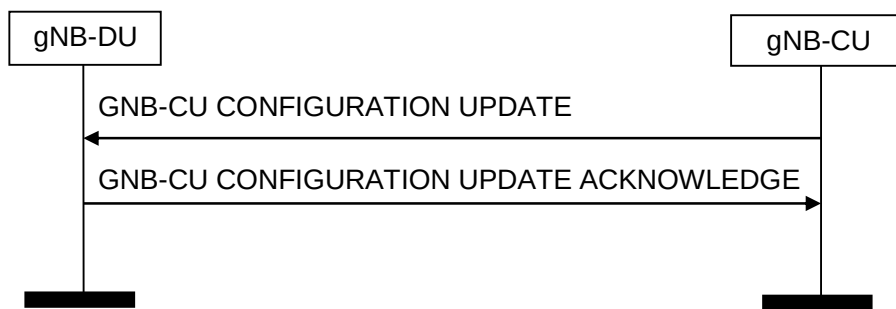


Figure 8.2.5.2-1: gNB-CU Configuration Update procedure: Successful Operation

The gNB-CU initiates the procedure by sending a GNB-CU CONFIGURATION UPDATE message including the appropriate updated configuration data to the gNB-DU. The gNB-DU responds with a GNB-CU CONFIGURATION UPDATE ACKNOWLEDGE message to acknowledge that it successfully updated the configuration data. If an information element is not included in the GNB-CU CONFIGURATION UPDATE message, the gNB-DU shall interpret that the corresponding configuration data is not changed and shall continue to operate the F1-C interface with the existing related configuration data.

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

If *Cells to be Activated List Item* IE is contained in the GNB-CU CONFIGURATION UPDATE message, the gNB-DU shall activate the cell indicated by *NR CGI* IE and reconfigure the physical cell identity for which the *NR PCI* IE is included.

If *Cells to be Deactivated List Item* IE is contained in the GNB-CU CONFIGURATION UPDATE message, the gNB-DU shall deactivate the cell indicated by *NR CGI* IE.

If *Cells to be Activated List Item* IE is contained in the GNB-CU CONFIGURATION UPDATE message and the indicated cells are already activated, the gNB-DU shall update the cell information received in *Cells to be Activated List Item* IE.

If *Cells to be Activated List Item* IE is included in the GNB-CU CONFIGURATION UPDATE message, and the information for the cell indicated by the *NR CGI* IE includes the *IAB Info IAB-donor-CU* IE, the gNB-DU shall, if supported, apply the *IAB STC Info* IE therein to the indicated cell.

If the *gNB-CU System Information* IE is contained in the GNB-CU CONFIGURATION UPDATE message, the gNB-DU shall include the *Dedicated SI Delivery Needed UE List* IE in the GNB-CU CONFIGURATION UPDATE ACKNOWLEDGE message for UEs that are unable to receive system information from broadcast.

If *Dedicated SI Delivery Needed UE List* IE is contained in the GNB-CU CONFIGURATION UPDATE ACKNOWLEDGE message, the gNB-CU should take it into account when informing the UE of the updated system information via the dedicated RRC message.

If the *gNB-CU TNL Association To Add List* IE is contained in the GNB-CU CONFIGURATION UPDATE message, the gNB-DU shall, if supported, use it to establish the TNL association(s) with the gNB-CU. If the *gNB-CU TNL Association To Add List* is included in the GNB-CU CONFIGURATION UPDATE message, and if the *TNL Association Transport Layer Information* IE does not include the *Port Number* IE, the gNB-DU shall assume that port number value 38472 is used for the endpoint. The gNB-DU shall report to the gNB-CU, in the GNB-CU CONFIGURATION UPDATE ACKNOWLEDGE message, the successful establishment of the TNL association(s) with the gNB-CU as follows:

- A list of TNL address(es) with which the gNB-DU successfully established the TNL association shall be included in the *gNB-CU TNL Association Setup List* IE;
- A list of TNL address(es) with which the gNB-DU failed to establish the TNL association shall be included in the *gNB-CU TNL Association Failed To Setup List* IE.

If the GNB-CU CONFIGURATION UPDATE message includes *gNB-CU TNL Association To Remove List* IE, the gNB-DU shall, if supported, initiate removal of the TNL association(s) indicated by gNB-CU TNL endpoint(s) and

gNB-DU TNL endpoint(s) if the *TNL Association Transport Layer Address gNB-DU* IE is present, or the TNL association(s) indicated by gNB-CU TNL endpoint(s) if the *TNL Association Transport Layer Address gNB-DU* IE is absent:

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

If the *gNB-CU TNL Association To Update List* IE is contained in the gNB-CU CONFIGURATION UPDATE message the gNB-DU shall, if supported, overwrite the previously stored information for the related TNL Association(s).

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

If in the gNB-CU CONFIGURATION UPDATE message the *TNL Association usage* IE is included in the *gNB-CU TNL Association To Add List* IE or the *gNB-CU TNL Association To Update List* IE, the gNB-DU node shall, if supported, use it as described in TS 38.472 [22].

For NG-RAN, the gNB-CU shall include the *gNB-CU System Information* IE in the GNB-CU CONFIGURATION UPDATE message. The *SIB type to Be Updated List* IE shall contain the full list of SIBs to be broadcast.

If *Protected E-UTRA Resources List* IE is contained in the GNB-CU CONFIGURATION UPDATE message, the gNB-DU shall protect the corresponding resource of the cells indicated by *E-UTRA Cells List* IE for spectrum sharing between E-UTRA and NR.

If the GNB-CU CONFIGURATION UPDATE message contains the *Protected E-UTRA Resource Indication* IE, the receiving gNB-DU should forward it to lower layers and use it for cell-level resource coordination. The gNB-DU shall consider the received *Protected E-UTRA Resource Indication* IE when expressing its desired resource allocation during gNB-DU Resource Coordination procedure. The gNB-DU shall consider the received *Protected E-UTRA Resource Indication* IE content valid until reception of a new update of the IE for the same gNB-DU.

If *Available PLMN List* IE, and optionally also *Extended Available PLMN List* IE, is contained in GNB-CU CONFIGURATION UPDATE message, the gNB-DU shall overwrite the whole available PLMN list and update the corresponding system information.

If *Available SNPN ID List* IE is contained in GNB-CU CONFIGURATION UPDATE message, the gNB-DU shall overwrite the whole available SNPN ID list and update the corresponding system information.

If *Cells Failed to be Activated Item* IE is contained in the GNB-CU CONFIGURATION UPDATE ACKNOWLEDGE message, the gNB-CU shall consider that the indicated cells are out-of-service as defined in TS 38.401 [4].

If the *Neighbour Cell Information List* IE is present in the GNB-CU CONFIGURATION UPDATE message, the receiving gNB-DU shall use the received information for Cross Link Interference management and/or NR-DC power coordination. The gNB-DU shall consider the received *Neighbour Cell Information List* IE content valid until reception of an update of the IE for the same cell(s). If the *Intended TDD DL-UL Configuration NR* IE is absent from the *Neighbour Cell Information List* IE, whereas the corresponding *NR CGI* IE is present, the receiving gNB-DU shall remove the previously stored *Neighbour Cell Information* IE corresponding to the NR CGI.

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

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

If the GNB-CU CONFIGURATION UPDATE message contains the *Uplink BH Non-UP Traffic Mapping* IE, the gNB-DU shall, if supported, consider the information therein for mapping of non-UP uplink traffic.

If the *IAB Barred* IE is included in the GNB-CU CONFIGURATION UPDATE message, the gNB-DU shall, if supported, consider it as an indication of whether the cell allows IAB-node access or not.

If the *BAP Address* IE is included in the GNB-CU CONFIGURATION UPDATE message, the gNB-DU shall, if supported, store the received BAP address and use it as specified in TS 38.340 [30].

If the *CCO Assistance Information* IE is contained in the GNB-CU CONFIGURATION UPDATE message, and the *NR CGI* IE contained in the *Affected Cells and Beams* IE is served by the gNB-DU, the gNB-DU may use it to determine a new cell and/or beam configuration.

If the *CCO Assistance Information* IE is contained in the GNB-CU CONFIGURATION UPDATE message and the *NR CGI* IE contained in the *Affected Cells and Beams* IE is not served by the gNB-DU, the gNB-DU may use it to adjust coverage of its cells.

If the *Cells for SON* IE is present in the GNB-CU CONFIGURATION UPDATE message, the gNB-DU may store or update this information and it behaves as follows:

- For each served cell indicated by the *NR CGI* IE included within the *Cells for SON Item* IE, the gNB-DU may adjust the PRACH configuration of this served cell.
- If the *Neighbour NR Cells for SON List* IE is present in the *Cells for SON Item* IE, the gNB-DU may take the PRACH configuration of neighbour cells included in the *Neighbour NR Cells for SON List* IE into consideration when adjusting the PRACH configuration of the served cell.

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

8.2.5.3 Unsuccessful Operation

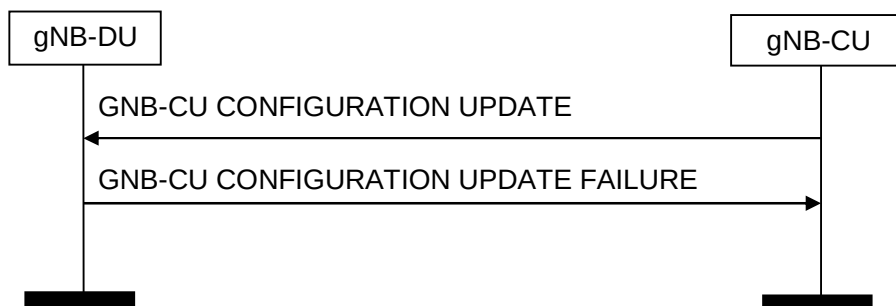


Figure 8.2.5.3-1: gNB-CU Configuration Update: Unsuccessful Operation

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

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

8.2.5.4 Abnormal Conditions

Not applicable.

8.2.6 gNB-DU Resource Coordination

8.2.6.1 General

The purpose of the gNB-DU Resource Coordination procedure is to enable coordination of radio resource allocation between a gNB-CU and a gNB-DU for the purpose of spectrum sharing between E-UTRA and NR. This procedure is to be used only for the purpose of spectrum sharing between E-UTRA and NR.

The procedure uses non-UE-associated signalling.

8.2.6.2 Successful Operation

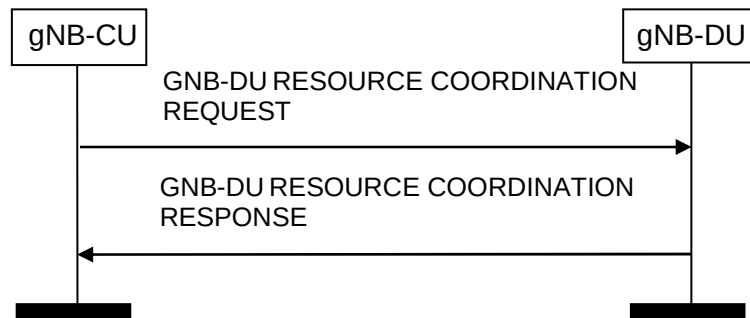


Figure 8.2.6.2-1: gNB-DU Resource Coordination, successful operation

A gNB-CU initiates the procedure by sending the GNB-DU RESOURCE COORDINATION REQUEST message to a gNB-DU over the F1 interface.

The gNB-DU extracts the *E-UTRA – NR Cell Resource Coordination Request Container* IE and it replies by sending the GNB-DU RESOURCE COORDINATION RESPONSE message.

In case of NR-initiated gNB-DU Resource Coordination procedure, the *Ignore Coordination Request Container* IE shall be present and set to "yes" and the *E-UTRA – NR Cell Resource Coordination Request Container* IE in the GNB-DU RESOURCE COORDINATION REQUEST message shall be ignored.

8.2.7 gNB-DU Status Indication

8.2.7.1 General

The purpose of the gNB-DU Status Indication procedure is informing the gNB-CU that the gNB-DU is overloaded so that overload reduction actions can be applied. This procedure is also used to inform the IAB-donor-CU about a downlink congestion at an IAB-DU or an IAB-donor-DU. The procedure uses non-UE associated signalling.

8.2.7.2 Successful Operation

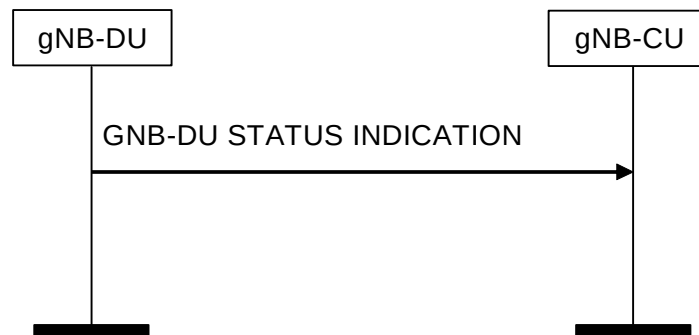


Figure 8.2.7.2-1: gNB-DU Status Indication procedure

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

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

If the gNB-DU is an IAB-DU or an IAB-donor-DU, and if the *IAB Congestion Indication* IE is present in the GNB-DU STATUS INDICATION message and only includes the *Child Node Identifier* IE, the gNB-CU shall, if supported, consider that the backhaul link between the gNB-DU and the node identified by the *Child Node Identifier* IE is congested. If the *IAB Congestion Indication* IE is present in the GNB-DU STATUS INDICATION message and includes both the *Child Node Identifier* IE and the *BH RLC CH ID* IE, the gNB-CU shall, if supported, consider that congestion occurs on the corresponding BH RLC channel(s) over the link towards the node identified by the *Child Node Identifier* IE.

8.2.7.3 Abnormal Conditions

Void.

8.2.8 F1 Removal

8.2.8.1 General

The purpose of the F1 Removal procedure is to remove the interface instance and all related resources between the gNB-DU and the gNB-CU in a controlled manner. If successful, this procedure erases any existing application level configuration data in the two nodes.

NOTE: In case the signalling transport is shared among several F1-C interface instances, and the TNL association is still used by one or several F1-C interface instances, the initiating node should not initiate the removal of the TNL association.

The procedure uses non-UE-associated signaling.

8.2.8.2 Successful Operation

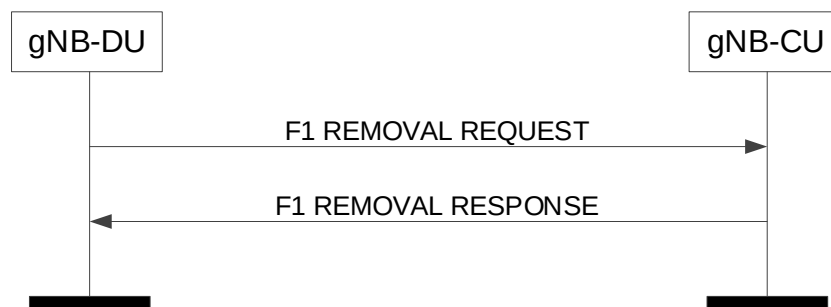


Figure 8.2.8-1: F1 Removal, gNB-DU initiated, successful operation

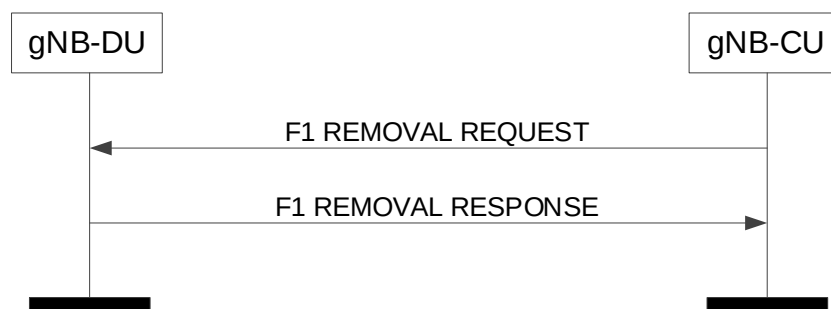


Figure 8.2.8.2-2: F1 Removal, gNB-CU initiated, successful operation

Successful F1 Removal, gNB-DU initiated

The gNB-DU initiates the procedure by sending the F1 REMOVAL REQUEST message to the gNB-CU. Upon reception of the F1 REMOVAL REQUEST message the gNB-CU shall reply with the F1 REMOVAL RESPONSE message. After receiving the F1 REMOVAL RESPONSE message, the gNB-DU may initiate removal of the TNL association towards the gNB-CU, if applicable, and may remove all resources associated with that interface instance. The gNB-CU may then remove all resources associated with that interface instance.

Successful F1 Removal, gNB-CU initiated

The gNB-CU initiates the procedure by sending the F1 REMOVAL REQUEST message to the gNB-DU. Upon reception of the F1 REMOVAL REQUEST message the gNB-DU shall reply with the F1 REMOVAL RESPONSE message. After receiving the F1 REMOVAL RESPONSE message, the gNB-CU may initiate removal of the TNL association towards the gNB-DU, if applicable, and may remove all resources associated with that interface instance. The gNB-DU may then remove all resources associated with that interface instance.

8.2.8.3 Unsuccessful Operation

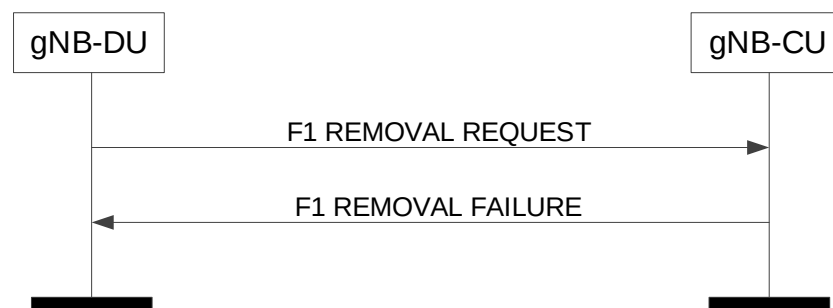


Figure 8.2.8.3-1: F1 Removal, gNB-DU initiated, unsuccessful operation

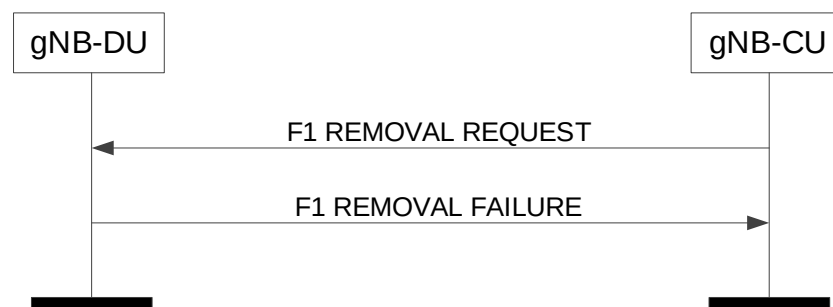


Figure 8.2.8.3-2: F1 Removal, gNB-CU initiated, unsuccessful operation

Unsuccessful F1 Removal, gNB-DU initiated

If the gNB-CU cannot accept to remove the interface instance with the gNB-DU it shall respond with an F1 REMOVAL FAILURE message with an appropriate cause value.

Unsuccessful F1 Removal, gNB-CU initiated

If the gNB-DU cannot accept to remove the interface instance with the gNB-CU it shall respond with an F1 REMOVAL FAILURE message with an appropriate cause value.

8.2.8.4 Abnormal Conditions

Not applicable.

8.2.9 Network Access Rate Reduction

8.2.9.1 General

The purpose of the Network Access Rate Reduction procedure is to indicate to the gNB-DU that the rate at which UEs are accessing the network need to be reduced from its current level.

The procedure uses non-UE associated signalling.

8.2.9.2 Successful operation

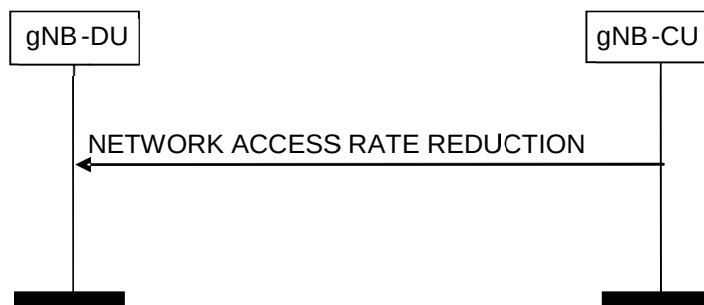


Figure 8.2.9.2-1: Network Access Rate Reduction, Successful operation

The gNB-CU initiates the procedure by sending a NETWORK ACCESS RATE REDUCTION message to the gNB-DU. When receiving the NETWORK ACCESS RATE REDUCTION message the gNB-DU should take into account the information contained in the *UAC assistance information* to set the parameters for Unified Access Barring.

If the *NID* IE is contained in the NETWORK ACCESS RATE REDUCTION message, the gNB-DU should take it into account and combine the *NID* IE with the *PLMN Identity* IE to identify the SNPN.

8.2.9.3 Abnormal Conditions

Not applicable

8.2.10 Resource Status Reporting Initiation

8.2.10.1 General

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

The procedure uses non UE-associated signalling.

8.2.10.2 Successful Operation

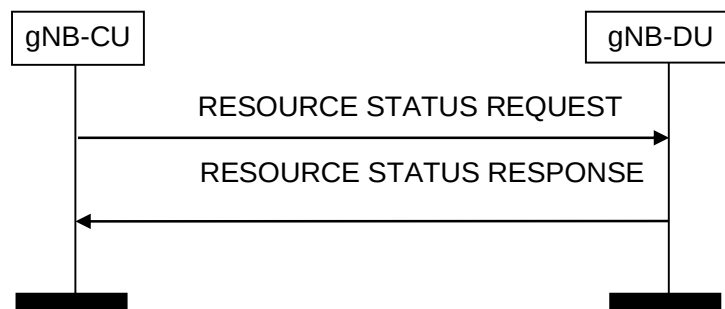


Figure 8.2.10.2-1: Resource Status Reporting Initiation, successful operation

gNB-CU initiates the procedure by sending the RESOURCE STATUS REQUEST message to gNB-DU to start a measurement, stop a measurement, or add cells to report for a measurement. Upon receipt, gNB-DU:

- shall initiate the requested measurement according to the parameters given in the request in case the *Registration Request* IE set to "start"; or
- shall stop all cells measurements and terminate the reporting in case the *Registration Request* IE is set to "stop"; or
- shall add cells indicated in the *Cell To Report List* IE to the measurements initiated before for the given measurement IDs, in case the *Registration Request* IE is set to "add". If measurements are already initiated for a cell indicated in the *Cell To Report List* IE, this information shall be ignored.

If the *Registration Request* IE is set to "start" in the RESOURCE STATUS REQUEST message and the *Report Characteristics* IE indicates cell specific measurements, the *Cell To Report List* IE shall be included.

If *Registration Request* IE is set to "add" in the RESOURCE STATUS REQUEST message, the *Cell To Report List* IE shall be included.

If gNB-DU is capable to provide all requested resource status information, it shall initiate the measurement as requested by gNB-CU, 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-DU shall perform measurements on. For each cell, gNB-DU shall include in the RESOURCE STATUS UPDATE message:

- the *Radio Resource Status* IE, if the first bit, "PRB Periodic" of the *Report Characteristics* IE included in the RESOURCE STATUS REQUEST message is set to 1. If the cell for which *Radio Resource Status* IE is requested to be reported supports more than one SSB, the *Radio Resource Status* IE for such cell shall include the *SSB Area Radio Resource Status Item* IE for all SSB areas supported by the cell. If the *SSB To Report List* IE is included for a cell, the *Radio Resource Status* IE for such cell shall only include the *SSB Area Radio Resource Status List* IE; If the cell for which *Radio Resource Status* IE is requested to be reported supports more than one slice, and if the *Slice To Report List* IE is included for a cell, the *Radio Resource Status* IE for such cell shall, if supported, include the requested *Slice Radio Resource Status Item* IE if the cell for which *Radio Resource Status* IE is requested to be reported supports MIMO the *Radio Resource Status* IE for such cell shall include the *MIMO PRB usage Information* IE;
- the *TNL Capacity Indicator* IE, if the second bit, "TNL Capacity Ind Periodic" of the *Report Characteristics* IE included in the RESOURCE STATUS REQUEST message is set to 1;
- the *Composite Available Capacity Group* IE, if the third bit, "Composite Available Capacity Periodic" of the *Report Characteristics* IE included in the RESOURCE STATUS REQUEST message is set to 1. If *Cell Capacity Class Value* IE is included within the *Composite Available Capacity Group* IE, this IE is used to assign weights to the available capacity indicated in the *Capacity Value* IE. If the cell for which *Composite Available Capacity Group* IE is requested to be reported supports more than one SSB the *Composite Available Capacity Group* IE for such cell shall include the *SSB Area Capacity Value List* IE for all SSB areas supported by the cell, providing the SSB area capacity with respect to the *Cell Capacity Class Value* IE. If the *SSB To Report List* IE is

included for a cell, the *Composite Available Capacity Group* IE for such cell shall include the requested *SSB Area Capacity Value List* IE providing the SSB area capacity with respect to the Cell Capacity Class Value. If the cell for which *Composite Available Capacity Group* IE is requested to be reported supports more than one slice, and if the *Slice To Report List* IE is included for a cell, the *Slice Available Capacity* IE for such cell shall include the requested *Slice Available Capacity Value Downlink* IE and *Slice Available Capacity Value Uplink* IE, providing the slice capacity with respect to the Cell Capacity Class Value.

- the *Hardware Load Indicator* IE, if the fourth bit, "HW LoadInd Periodic" of the *Report Characteristics* IE included in the RESOURCE STATUS REQUEST message is set to 1;
- the *Number of Active UEs* IE, if the fifth bit, "Number of Active UEs Periodic" of the *Report Characteristics* IE included in the RESOURCE STATUS REQUEST message is set to 1;
- the *NR-U Channel List* IE, if the sixth bit, "NR-U Channel List Periodic" of the *Report Characteristics* IE included in the RESOURCE STATUS REQUEST message is set to "1".

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

8.2.10.3 Unsuccessful Operation

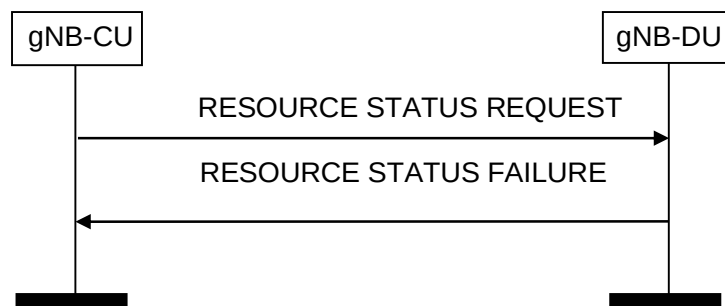


Figure 8.2.10.3-1: Resource Status Reporting Initiation, unsuccessful operation

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

8.2.10.4 Abnormal Conditions

If the initiating gNB-CU does not receive either RESOURCE STATUS RESPONSE message or RESOURCE STATUS FAILURE message, the gNB-CU may reinitiate the Resource Status Reporting Initiation procedure towards the same gNB-DU, 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-DU shall initiate a RESOURCE STATUS FAILURE message with an appropriate cause value.

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

8.2.11 Resource Status Reporting

8.2.11.1 General

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

The procedure uses non UE-associated signalling.

8.2.11.2 Successful Operation



Figure 8.2.11.2-1: Resource Status Reporting, successful operation

The gNB-DU 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.

If some results of the admitted measurements in RESOURCE STATUS UPDATE message are missing, the gNB-CU shall consider that these results were not available at the gNB-DU.

8.2.11.3 Unsuccessful Operation

Not applicable.

8.2.11.4 Abnormal Conditions

Void.

8.3 UE Context Management procedures

8.3.1 UE Context Setup

8.3.1.1 General

The purpose of the UE Context Setup procedure is to establish the UE Context including, among others, SRB, DRB, BH RLC channel, Uu Relay RLC channel, PC5 Relay RLC channel, and SL DRB configuration. The procedure uses UE-associated signalling.

8.3.1.2 Successful Operation

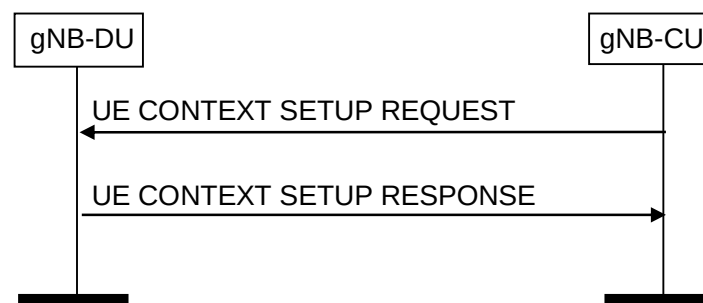


Figure 8.3.1.2-1: UE Context Setup Request procedure: Successful Operation

The gNB-CU initiates the procedure by sending UE CONTEXT SETUP REQUEST message to the gNB-DU. If the gNB-DU succeeds to establish the UE context, it replies to the gNB-CU with UE CONTEXT SETUP RESPONSE. If no UE-associated logical F1-connection exists, the UE-associated logical F1-connection shall be established as part of the procedure. Except for RACH based SDT and UE configured with BWP specific ServingCellMO, the gNB-CU shall

perform RRC Reconfiguration or RRC connection resume to send UE to the RRC_CONNECTED state as described in TS 38.331 [8], and in this case, the *CellGroupConfig* IE shall transparently be signaled to the UE as specified in TS 38.331 [8]. In the cases of RACH based SDT procedure and UE configured with BWP specific ServingCellMO, the *CellGroupConfig* IE shall be ignored by the gNB-CU.

If the *UE-CapabilityRAT-ContainerList* IE is included in the UE CONTEXT SETUP REQUEST, the gNB-DU shall take this information into account for UE specific configurations.

If the *servingCellMO* IE is included in the UE CONTEXT SETUP REQUEST message, the gNB-DU shall configure *servingCellMO* for the indicated SpCell accordingly.

If the *servingCellMO List* IE is included in the UE CONTEXT SETUP REQUEST message, the gNB-DU shall, if supported, select *servingCellMO* after determining the list of BWPs for the UE and include the list of *servingCellMO*s that have been encoded in *CellGroupConfig* IE as *ServingCellMO-encoded-in-CGC List* IE in the UE CONTEXT SETUP RESPONSE message.

If the *Configured BWP List* IE is included in the UE CONTEXT SETUP RESPONSE message, the gNB-CU shall, if supported, take it into account when requesting the gNB-DU for generating preconfigured measurement GAP for the indicated BWPs.

If the *SpCell UL Configured* IE is included in the UE CONTEXT SETUP REQUEST message, the gNB-DU shall configure UL for the indicated SpCell accordingly.

If the *SCell To Be Setup List* IE is included in the UE CONTEXT SETUP REQUEST message, the gNB-DU shall consider it as a list of candidate SCells to be set up. If the *SCell UL Configured* IE is included in the UE CONTEXT SETUP REQUEST message, the gNB-DU shall configure UL for the indicated SCell accordingly. If the *servingCellMO* IE is included in the UE CONTEXT SETUP REQUEST message, the gNB-DU shall configure *servingCellMO* for the indicated SCell accordingly.

If the *DRX Cycle* IE is contained in the UE CONTEXT SETUP REQUEST message, the gNB-DU shall use the provided value from the gNB-CU.

If the *UL Configuration* IE in *DRB To Be Setup Item* IE is contained in the UE CONTEXT SETUP REQUEST message, the gNB-DU shall take it into account for UL scheduling.

If the *SRB To Be Setup List* IE is contained in the UE CONTEXT SETUP REQUEST message, the gNB-DU shall act as specified in TS 38.401 [4]. If *Duplication Indication* IE is contained in the *SRB To Be Setup List* IE, the gNB-DU shall, if supported, setup two RLC entities for the indicated SRB. If the *Additional Duplication Indication* IE is contained in the *SRB To Be Setup List* IE, the gNB-DU shall, if supported, setup the indicated RLC entities for the indicated SRB. If the *SDT RLC Bearer Configuration* IE is contained in the *SRB To Be Setup List* IE, the gNB-DU shall, if supported, use it for packet transmission belonging to the SDT SRB indicated by the *SRB ID* IE. If the *SRB Mapping Info* IE is contained in the *SRB To Be Setup List* IE, the gNB-DU shall, if supported, store the mapping information indicated in the *SRB Mapping Info* IE for the SRB identified by the *SRB ID* IE and the Uu Relay RLC channel identified by the *SRB Mapping Info* IE. The gNB-DU shall use the mapping information stored for the mapping of SRB data to Uu Relay RLC channel.

If the *DRB To Be Setup List* IE is contained in the UE CONTEXT SETUP REQUEST message, the gNB-DU shall act as specified in TS 38.401 [4]. If the *QoS Flow Mapping Indication* IE is included in the *DRB To Be Setup List* IE for a QoS flow, the gNB-DU may take it into account that only the uplink or downlink QoS flow is mapped to the indicated DRB. If the *SDT RLC Bearer Configuration* IE is contained in the *DRB To Be Setup List* IE, the gNB-DU shall, if supported, use it for packet transmission belonging to the SDT DRB indicated by the *DRB ID* IE. If the *DRB Mapping Info* IE is contained in the *DRB To Be Setup List* IE, the gNB-DU shall, if supported, store the mapping information indicated in the *DRB Mapping Info* IE for the DRB identified by the *DRB ID* IE and the Uu Relay RLC channel identified by the *DRB Mapping Info* IE. The gNB-DU shall use the mapping information stored for the mapping of DRB data to Uu Relay RLC channel.

For each GBR DRB, if the *Alternative QoS Parameters Sets* IE is included in the *GBR QoS Flow Information* IE in the UE CONTEXT SETUP REQUEST message, gNB-DU shall, if supported, behave the same as the NG-RAN node in the PDU Session Resource Setup procedure, specified in TS 38.413 [3].

If the *BH Information* IE is included in the *UL UP TNL Information to be setup List* IE or the *Additional PDCP Duplication TNL List* IE for a DRB, the gNB-DU shall, if supported, use the indicated BAP Routing ID and BH RLC channel for transmission of the corresponding GTP-U packets to the IAB-donor, as specified in TS 38.340 [30].

If the *BH RLC Channel To Be Setup List* IE is included in the UE CONTEXT SETUP REQUEST message, the gNB-DU shall act as specified in TS 38.401 [4]. If the *Traffic Mapping Information* IE is included in the *BH RLC Channel To Be Setup Item IEs* IE for a BH RLC Channel, the gNB-DU shall, if supported, process the *Traffic Mapping Information* IE as follows:

- if the *IP to layer2 Traffic Mapping Info* IE is included, the gNB-DU shall store the mapping information contained in the *IP to layer2 Traffic Mapping Info To Add* IE, if present, for the egress BH RLC channel identified by the *BH RLC CH ID* IE, and shall remove the previously stored mapping information as indicated by the *IP to layer2 Mapping Traffic Info To Remove* IE, if present. The gNB-DU shall use the mapping information stored for the mapping of IP traffic to layer 2, as specified in TS 38.340 [30].
- if the *BAP layer BH RLC channel Mapping Info* IE is included, the gNB-DU shall store the mapping information contained in the *BAP layer BH RLC channel Mapping Info To Add* IE, if present, for the egress or ingress BH RLC channel identified by the *BH RLC CH ID* IE, and shall remove the previously stored mapping information as indicated by the *BAP layer BH RLC channel Mapping Info To Remove* IE, if present. The gNB-DU shall use the mapping information stored when forwarding traffic on BAP sublayer, as specified in TS 38.340 [30].

If two *UL UP TNL Information* IEs are included in UE CONTEXT SETUP REQUEST message for a DRB, gNB-DU shall include two *DL UP TNL Information* IEs in UE CONTEXT SETUP RESPONSE message and setup two RLC entities for the indicated DRB. gNB-CU and gNB-DU use the *UL UP TNL Information* IEs and *DL UP TNL Information* IEs to support packet duplication for intra-gNB-DU CA as defined in TS 38.470 [2]. The first *UP TNL Information* IE of the two *UP TNL Information* IEs is for the primary path.

If one or two *Additional PDCP Duplication UP TNL Information* IEs are included in the UE CONTEXT SETUP REQUEST message for a DRB, the gNB-DU shall, if supported, include one or two *Additional PDCP Duplication UP TNL Information* IEs in the UE CONTEXT SETUP RESPONSE message and setup one or two additional RLC entities for the indicated DRB. The gNB-CU and the gNB-DU use the *Additional PDCP Duplication UP TNL Information* IEs to support packet duplication for intra-gNB-DU CA as defined in TS 38.470 [2].

If *Duplication Activation IE* is included in the UE CONTEXT SETUP REQUEST message for a DRB, gNB-DU should take it into account when activating/deactivating CA based PDCP duplication for the DRB. If the *RLC Duplication State List* IE is included in the *RLC Duplication Information* IE contained in the UE CONTEXT SETUP REQUEST message, the gNB-DU shall, if supported, take it into account when activating/deactivating CA based PDCP duplication for the DRB with more than two RLC entities.

If *DC Based Duplication Configured* IE is included in the UE CONTEXT SETUP REQUEST message for a DRB, gNB-DU shall regard that DC based PDCP duplication is configured for this DRB if the value is set to be "true" and it should take the responsibility of PDCP duplication activation/deactivation. If *DC Based Duplication Activation* IE is included in the UE CONTEXT SETUP REQUEST message for a DRB, gNB-DU should take it into account when activating/deactivating DC based PDCP duplication for this DRB. If the *RLC Duplication State List* IE is included in the *RLC Duplication Information* IE contained in the UE CONTEXT SETUP REQUEST message for a DRB, the gNB-DU shall, if supported, take it into account when activating/deactivating DC based PDCP duplication for the DRB with more than two RLC entities. If the *Primary Path Indication* IE is included in the *RLC Duplication Information* IE, the gNB-DU shall, if supported, take it into account when performing DC based PDCP duplication for the DRB with more than two RLC entities.

If *UL PDCP SN length* IE is included in the UE CONTEXT SETUP REQUEST message for a DRB, gNB-DU shall, if supported, store this information and use it for lower layer configuration.

For EN-DC operation, and if the *Subscriber Profile ID for RAT/Frequency priority* IE is received from an MeNB, the UE CONTEXT SETUP REQUEST message shall contain the *Subscriber Profile ID for RAT/Frequency priority* IE. If the *Additional RRM Policy Index* IE is received from an MeNB, the UE CONTEXT SETUP REQUEST message shall, if supported, contain the *Additional RRM Policy Index* IE. The gNB-DU shall store the received Subscriber Profile ID for RAT/Frequency priority in the UE context and use it as defined in TS 36.300 [20]. The gNB-DU shall, if supported, store the received Additional RRM Policy Index in the UE context and use it as defined in TS 36.300 [20].

If the *Index to RAT/Frequency Selection Priority* IE is available at the gNB-CU, the *Index to RAT/Frequency Selection Priority* IE shall be included in the UE CONTEXT SETUP REQUEST. The gNB-DU may use it for RRM purposes.

The gNB-DU shall report to the gNB-CU, in the UE CONTEXT SETUP RESPONSE message, the result for all the requested DRBs, SRBs, BH RLC channels, Uu RLC channels, PC5 Relay RLC channels, and SL DRBs in the following way:

- 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 to Setup List IE*;
- A list of SRBs which failed to be established shall be included in the *SRB Failed to Setup List IE*.
- A list of successfully established SRBs with logical channel identities for primary path shall be included in the *SRB Setup List IE* only if CA based PDCP duplication is initiated for the concerned SRBs.
- A list of BH RLC channels which are successfully established shall be included in the *BH RLC Channel Setup List IE*;
- A list of BH RLC channels which failed to be established shall be included in the *BH RLC Channel Failed to be Setup List IE*;
- A list of SL DRBs which are successfully established shall be included in the *SL DRB Setup List IE*;
- A list of SL DRBs which failed to be established shall be included in the *SL DRB Failed to Setup List IE*.
- A list of Uu Relay RLC channels which are successfully established shall be included in the *Uu RLC Channel Setup List IE*;
- A list of Uu Relay RLC channels which failed to be established shall be included in the *Uu RLC Channel Failed to be Setup List IE*;
- A list of PC5 Relay RLC channels which are successfully established shall be included in the *PC5 RLC Channel Setup List IE*;
- A list of PC5 Relay RLC channels which failed to be established shall be included in the *PC5 RLC Channel Failed to be Setup List IE*;

When the gNB-DU reports the unsuccessful establishment of a DRB or SRB or SL DRB or a BH RLC channel or a Uu RLC channel or a PC5 Relay RLC channel, the cause value should be precise enough to enable the gNB-CU to know the reason for the unsuccessful establishment.

For EN-DC operation, the gNB-CU shall include in the UE CONTEXT SETUP REQUEST the *E-UTRAN QoS IE*. The allocation of resources according to the values of the *Allocation and Retention Priority IE* included in the *E-UTRAN QoS IE* shall follow the principles described for the E-RAB Setup procedure in TS 36.413 [15].

For NG-RAN operation, the gNB-CU shall include in the UE CONTEXT SETUP REQUEST the *DRB Information IE*.

For DC operation, the *CG-ConfigInfo IE* shall be included in the *CU to DU RRC Information IE* at the gNB acting as secondary node. If the *CG-ConfigInfo IE* is included in the UE CONTEXT SETUP REQUEST message, the gNB-DU shall regard it as a reconfiguration with sync as defined in TS 38.331 [8].

For sidelink operation, the *CG-ConfigInfo IE* shall be included in the *CU to DU RRC Information IE* if the gNB-CU receives sidelink related UE information from UE. If the *CG-ConfigInfo IE* is included in the UE CONTEXT SETUP REQUEST message, the gNB-DU shall regard it as an indication of V2X sidelink information or NR sidelink information as defined in TS 38.331 [8].

If the *HandoverPreparationInformation IE* is included in the *CU to DU RRC Information IE* in the UE CONTEXT SETUP REQUEST message, the gNB-DU of the gNB acting as master node shall regard it as a reconfiguration with sync as defined in TS 38.331 [8]. The gNB-CU shall only initiate the UE Context Setup procedure for handover or secondary node addition when at least one DRB is setup for the UE, or at least one BH RLC channel is set up for IAB-MT. If the *HandoverPreparationInformation IE* containing the sidelink related UE information is included in the UE CONTEXT SETUP REQUEST message, the gNB-DU shall regard it as an indication of V2X sidelink information or NR sidelink information as defined in TS 38.331 [8].

If the received *CU to DU RRC Information IE* does not include source cell group configuration, the gNB-DU shall generate the cell group configuration using full configuration. Otherwise, delta configuration is allowed.

If the gNB-CU includes the SMTC information of the measured frequency(ies) in the *MeasurementTimingConfiguration IE* of the *CU to DU RRC Information IE* that is included in the UE CONTEXT SETUP REQUEST message, the gNB-DU shall generate the measurement gaps based on the received SMTC information. Then the gNB-DU shall send the measurement gaps information to the gNB-CU in the *MeasGapConfig IE* of the *DU to CU RRC Information IE* that is included in the UE CONTEXT SETUP RESPONSE message.

If the *MeasConfig* IE is included in the *CU to DU RRC Information* IE in the UE CONTEXT SETUP REQUEST message, the gNB-DU shall deduce that changes to the measurements configuration need to be applied. If the *measObjectToAddModList* IE is included in the *MeasConfig* IE, then the frequencies added in such IE are to be activated. Then the gNB-DU shall decide if measurement gaps are needed or not and, if needed, the gNB-DU shall send the measurement gaps information to the gNB-CU in the *MeasGapConfig* IE of the *DU to CU RRC Information* IE that is included in the UE CONTEXT SETUP RESPONSE message. If the *measObjectToRemoveList* IE is included in the *MeasConfig* IE, the gNB-DU shall ignore it.

If the *NeedForGapsInfoNR* IE is included in the *CU to DU RRC Information* IE in the UE CONTEXT SETUP REQUEST message, the gNB-DU shall, if supported, use it as described in TS 38.331 [8]. If the *NeedForGapNCSCG-InfoNR* IE is included in the *CU to DU RRC Information* IE in the UE CONTEXT SETUP REQUEST message, the gNB-DU shall, if supported, use it as described in TS 38.331 [8]. If the *NeedForGapNCSCG-InfoEUTRA* IE is included in the *CU to DU RRC Information* IE in the UE CONTEXT SETUP REQUEST message, the gNB-DU shall, if supported, use it as described in TS 38.331 [8].

For EN-DC operation, if the gNB-CU includes the *Resource Coordination Transfer Information* IE in the UE CONTEXT SETUP REQUEST message, the gNB-DU shall, if supported, use it for the purpose of resource coordination. If the *Ignore PRACH Configuration* IE is present and set to "true" the *E-UTRA PRACH Configuration* IE in the UE CONTEXT SETUP REQUEST message shall be ignored. If the gNB-CU received the MeNB Resource Coordination Information as defined in TS 36.423 [9], it shall transparently transfer it to the gNB-DU via the *Resource Coordination Transfer Container* IE in the UE CONTEXT SETUP REQUEST message. The gNB-DU shall use the information received in the *Resource Coordination Transfer Container* IE for reception of MeNB Resource Coordination Information at the gNB acting as secondary node as described in TS 36.423 [9]. If the *Resource Coordination E-UTRA Cell Information* IE is included in the *Resource Coordination Transfer Information* IE, the gNB-DU shall store the information replacing previously received information for the same E-UTRA cell, and use the stored information for the purpose of resource coordination.

For NGEN-DC or NE-DC operation, if the gNB-CU includes the *Resource Coordination Transfer Information* IE in the UE CONTEXT SETUP REQUEST message, the gNB-DU shall, if supported, use it for the purpose of resource coordination. If the gNB-CU received the MR-DC Resource Coordination Information as defined in TS 38.423 [28], it shall transparently transfer it to the gNB-DU via the *Resource Coordination Transfer Container* IE in the UE CONTEXT SETUP REQUEST message. The gNB-DU shall use the information received in the *Resource Coordination Transfer Container* IE for reception of MR-DC Resource Coordination Information at the gNB as described in TS 38.423 [28].

The *UEAssistanceInformation* IE shall be included in *CU to DU RRC Information* IE in the UE CONTEXT SETUP REQUEST message if the gNB-CU received this IE from the UE; if the *UEAssistanceInformation* IE is included in the *CU to DU RRC Information* IE in the UE CONTEXT SETUP REQUEST message, the gNB-DU shall, if supported, take it into account when configuring resources for the UE.

The *UEAssistanceInformationEUTRA* IE shall be included in *CU to DU RRC Information* IE in the UE CONTEXT SETUP REQUEST message if the gNB-CU received this IE from the UE; if the *UEAssistanceInformationEUTRA* IE is included in the *CU to DU RRC Information* IE in the UE CONTEXT SETUP REQUEST message, the gNB-DU shall, if supported, take it into account when configuring LTE sidelink resources for the UE.

If the *Resource Coordination Transfer Container* IE is included in the UE CONTEXT SETUP RESPONSE, the gNB-CU shall transparently transfer this information for the purpose of resource coordination as described in TS 36.423 [9], TS 38.423 [28].

If the *Masked IMEISV* IE is contained in the UE CONTEXT SETUP REQUEST message the gNB-DU shall, if supported, use it to determine the characteristics of the UE for subsequent handling.

If the *SCell Failed To Setup List* IE is contained in the UE CONTEXT SETUP RESPONSE message, the gNB-CU shall regard the corresponding SCell(s) failed to be set up with an appropriate cause value for each SCell failed to setup.

If the *Inactivity Monitoring Request* IE is contained in the UE CONTEXT SETUP REQUEST message, gNB-DU may consider that the gNB-CU has requested the gNB-DU to perform UE inactivity monitoring. If the *Inactivity Monitoring Response* IE is contained in the UE CONTEXT SETUP RESPONSE message and set to "Not-supported", the gNB-CU shall consider that the gNB-DU does not support UE inactivity monitoring for the UE.

If the *ServCellInfoList* IE is included in the *DU to CU RRC Information* IE contained in the UE CONTEXT SETUP RESPONSE message, the gNB-CU shall take it into account to generate the content of inter-node RRC message, i.e., *CG-Config* or *CG-ConfigInfo*, as described in TS 38.331 [8].

If the *Full Configuration* IE is contained in the UE CONTEXT SETUP RESPONSE message, the gNB-CU shall consider that the gNB-DU has generated the *CellGroupConfig* IE using full configuration.

If the *C-RNTI* IE is included in the UE CONTEXT SETUP RESPONSE, the gNB-CU shall consider that the C-RNTI has been allocated by the gNB-DU for this UE context.

The UE Context Setup Procedure is not used to configure SRB0.

If the UE CONTEXT SETUP REQUEST message contains the *RRC-Container* IE, the gNB-DU shall send the corresponding RRC message to the UE via SRB1.

If the *Notification Control* IE is included in the *DRB to Be Setup List* IE contained in the UE CONTEXT SETUP REQUEST message and it is set to active, the gNB-DU shall, if supported, monitor the QoS of the DRB and notify the gNB-CU if the QoS cannot be fulfilled any longer or if the QoS can be fulfilled again. The *Notification Control* IE can only be applied to GBR bearers.

If the *UL PDU Session Aggregate Maximum Bit Rate* IE is included in the *QoS Flow Level QoS Parameters* IE contained in the UE CONTEXT SETUP REQUEST message, the gNB-DU shall store the received UL PDU Session Aggregate Maximum Bit Rate and use it when enforcing uplink traffic policing for non-GBR Bearers for the concerned UE as specified in TS 23.501 [21].

The gNB-DU shall store the received gNB-DU UE Aggregate Maximum Bit Rate Uplink and use it for non-GBR Bearers for the concerned UE.

If the UE CONTEXT SETUP REQUEST message contains the *QoS Flow Mapping Indication* IE, the gNB-DU may take it into account that only the uplink or downlink QoS flow is mapped to the DRB.

If the UE CONTEXT SETUP REQUEST message contains the *New gNB-CU UE F1AP ID* IE, the gNB-DU shall, if supported, replace the value received in the *gNB-CU UE F1AP ID* IE by the value of the *New gNB-CU UE F1AP ID* and use it for further signalling.

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

If the *Trace Activation* IE is included in the UE CONTEXT SETUP REQUEST message the gNB-DU shall, if supported, initiate the requested trace function as described in TS 32.422 [29].

In particular, the gNB-DU shall, if supported:

- if the *Trace Activation* IE includes the *MDT Activation* IE set to "Immediate MDT and Trace", initiate the requested trace session and MDT session as described in TS 32.422 [29];
- if the *Trace Activation* IE includes the *MDT Activation* IE set to "Immediate MDT Only", initiate the requested MDT session as described in TS 32.422 [29] and the gNB-DU shall ignore Interfaces To Trace IE, and Trace Depth IE. If the *Management Based MDT PLMN List* IE is contained in the UE CONTEXT SETUP REQUEST message, the gNB-DU shall, if supported, store the received information in the UE context, and use this information to allow subsequent selection of the UE for management based MDT defined in TS 32.422 [29].

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 UE CONTEXT SETUP REQUEST message, the gNB-DU shall store this information, and, if supported, perform delay measurement and QoS monitoring, as specified in TS 23.501 [21].

If the UE CONTEXT SETUP REQUEST message contains the *Configured BAP Address* IE, the gNB-DU shall, if supported, store this BAP address configured for the corresponding child IAB-node and use it as specified in TS 38.340 [30].

If the *BAP Control PDU Channel* IE is included in the *BH RLC Channel to be Setup List* IE, the gNB-DU shall, if supported, consider that the configured BH RLC channel can be used to transmit BAP Control PDUs, and use this BH RLC channel as specified in TS 38.340 [30].

If the *F1-C Transfer Path* IE is included in UE CONTEXT SETUP REQUEST message, the gNB-DU shall, if supported, take it into account.

If the *NR V2X Services Authorized* IE is contained in the UE CONTEXT SETUP REQUEST message and it contains one or more IEs set to "authorized", the gNB-DU node shall, if supported, consider that the UE is authorized for the relevant service(s).

If the *LTE V2X Services Authorized* IE is contained in the UE CONTEXT SETUP REQUEST message and it contains one or more IEs set to "authorized", the gNB-DU node shall, if supported, consider that the UE is authorized for the relevant service(s).

If the *NR UE Sidelink Aggregate Maximum Bit Rate* IE is contained in the UE CONTEXT SETUP REQUEST message, the gNB-DU shall, if supported, use it for the concerned UE's sidelink communication in network scheduled mode for NR V2X services.

If the *LTE UE Sidelink Aggregate Maximum Bit Rate* IE is contained in the UE CONTEXT SETUP REQUEST message, the gNB-DU shall, if supported, use it for the concerned UE's sidelink communication in network scheduled mode for LTE V2X services.

If the *PC5 Link Aggregate Bit Rate* IE is contained in the UE CONTEXT SETUP REQUEST message, the gNB-DU shall, if supported, use it for the concerned UE's sidelink communication in network scheduled mode for NR V2X services as defined in TS 23.287 [40].

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

If the *Conditional Inter-DU Mobility Information* IE is included in the UE CONTEXT SETUP REQUEST message, the gNB-DU shall consider that the request concerns a conditional handover or conditional PSCell addition or conditional PSCell change for the included *SpCell ID* IE and shall include it as the *Requested Target Cell ID* IE in the UE CONTEXT SETUP RESPONSE message. The gNB-DU shall regard it as a reconfiguration with sync as defined in TS 38.331 [8].

If the *Target gNB-DU UE F1AP ID* IE is contained in the *Conditional Inter-DU Mobility Information* IE included in the UE CONTEXT SETUP REQUEST message, then the gNB-DU shall replace the existing prepared conditional handover or conditional PSCell addition or conditional PSCell change identified by the *Target gNB-DU UE F1AP ID* IE and the *SpCell ID* IE.

If the *Serving NID* IE is contained in the UE CONTEXT SETUP REQUEST message, the gNB-DU shall combine the *Serving NID* IE with the *Serving PLMN* IE to identify the serving NPN, and may take it into account for UE context establishment.

If the *Estimated Arrival Probability* IE is contained in the *Conditional Inter-DU Mobility Information* IE included in the UE CONTEXT SETUP REQUEST message, then the gNB-DU may use the information to allocate necessary resources for the UE.

If for a given E-RAB for EN-DC operation the *ENB DL Transport Layer Address* IE is included in the UE CONTEXT SETUP REQUEST message, the gNB-DU shall, if supported, use it as part of its ACL functionality configuration actions, if such ACL functionality is deployed.

If for a given Qos flow for NG-RAN operation the *PDCP Terminating Node DL Transport Layer Address* IE is included in the UE CONTEXT SETUP REQUEST message, then the gNB-DU shall, if supported, use it as part of its ACL functionality configuration actions, if such ACL functionality is deployed.

If the *F1-C Transfer Path NRDC* IE is included in UE CONTEXT SETUP REQUEST message, the gNB-DU shall, if supported, take it into account.

If the *MDT Polluted Measurement Indicator* IE is included in the UE CONTEXT SETUP REQUEST, the gNB-DU shall take this information into account as specified in TS 38.401 [4].

If the *SCG Activation Request* IE is included in the UE CONTEXT SETUP REQUEST message, the gNB-DU may use it to configure SCG resources as specified in TS 37.340 [7], and if supported, shall include the *SCG Activation Status* IE in the UE CONTEXT SETUP RESPONSE message. If the *SCG Activation Request* IE in the UE CONTEXT SETUP REQUEST message is set to "Activate SCG", the gNB-DU shall activate the SCG resources and set the *SCG Activation Status* IE in the UE CONTEXT SETUP RESPONSE message to "SCG Activated".

If the *Old CG-SDT Session Info* IE is included in the UE CONTEXT SETUP REQUEST message, the gNB-DU shall, if supported, retrieve the old CG-SDT resource configuration and old UE context based on the indicated gNB-CU F1AP UE ID and gNB-DU F1AP UE ID.

If the *5G ProSe Authorized* IE is contained in the UE CONTEXT SETUP REQUEST message and it contains one or more IEs set to "authorized", the gNB-DU node shall, if supported, consider that the UE is authorized for the relevant service(s).

If the *5G ProSe UE PC5 Aggregate Maximum Bit Rate* IE is contained in the UE CONTEXT SETUP REQUEST message, the gNB-DU shall, if supported, use it for the concerned UE's sidelink communication in network scheduled mode for 5G ProSe services.

If the *5G ProSe PC5 Link Aggregate Bit Rate* IE is contained in the UE CONTEXT SETUP REQUEST message, the gNB-DU shall, if supported, use it for the concerned UE's sidelink communication in network scheduled mode for 5G ProSe services as defined in TS 23.304 [44].

If the *Uu RLC Channel To Be Setup List* IE is contained in the UE CONTEXT SETUP REQUEST message, the gNB-DU shall, if supported, act as specified in TS 38.401 [4]. gNB-DU generates the Uu Relay RLC channel configurations for a L2 U2N Relay UE.

If the *PC5 RLC Channel To Be Setup List* IE is contained in the UE CONTEXT SETUP REQUEST message, the gNB-DU shall, if supported, act as specified in TS 38.401 [4]. gNB-DU generates the PC5 Relay RLC channel configurations for a L2 U2N Remote UE.

If the *Path Switch Configuration* IE is contained in the UE CONTEXT SETUP REQUEST message, the gNB-DU shall, if supported, use it to configure the path switch from direct path to indirect path as specified in TS 38.401 [4].

If the *MUSIM-GapConfig* IE is contained in the *CU to DU RRC Information* IE included in the UE CONTEXT SETUP REQUEST message, the gNB-DU shall, if supported, decide to use this IE for MUSIM gap configuration or select another one based on the received *UEAssistanceInformation* IE. If gNB-DU selects a different MUSIM gap configuration from received *UEAssistanceInformation* IE, then it shall include the selected MUSIM gap information to the gNB-CU in the *MUSIM-GapConfig* IE of the *DU to CU RRC Information* IE that is included in the UE CONTEXT SETUP RESPONSE message.

If *MUSIM-GapConfig* IE is not contained in the *CU to DU RRC Information* IE, then gNB-DU shall, if supported, send the selected MUSIM gap configuration based on the received *UEAssistanceInformation* IE, to the gNB-CU in the *MUSIM-GapConfig* IE of the *DU to CU RRC Information* IE that is included in the UE CONTEXT SETUP RESPONSE message. When *MUSIM-GapConfig* IE is received, the gNB-CU should use this value.

If the *gNB-DU UE Slice Maximum Bit Rate List* IE is included in the UE CONTEXT SETUP REQUEST message, the gNB-DU shall, if supported, store and use the information for the uplink traffic policing for each concerned slice as specified in TS 23.501 [21].

If the *Multicast MBS Session Setup List* IE is contained in the UE CONTEXT SETUP REQUEST message the gNB-DU shall, if supported, store and use the information for configuring MBS Session Resources, if applicable.

If the *UE Multicast MRB To Be Setup List* IE is contained in the UE CONTEXT SETUP REQUEST message, the gNB-DU shall, if supported, take it into account for configuring MBS Session Resources, if applicable. And if the *MBS PTP Retransmission Tunnel Required* IE is included in the *UE Multicast MRB to Be Setup Item IEs* IE, the gNB-DU shall, if supported trigger the establishment of the MBS PTP Retransmission F1-U tunnel. If the *MBS PTP Forwarding Tunnel Required Information* IE is included in the *UE Multicast MRB to Be Setup Item IEs* IE, the gNB-DU shall, if supported trigger the establishment of the MBS PTP Forwarding F1-U tunnel. If the *Source MRB ID* IE is included in the *UE Multicast MRB to Be Setup Item IEs* IE, the DU shall, if supported, use it to identify the MRB configuration as provided to the UE in the source cell and take it into account for configuring MBS Session Resources.

If the *Dedicated SI Delivery Indication* IE is included in the UE CONTEXT SETUP RESPONSE message, the gNB-CU shall, if supported, take it into account for the system information delivery to the UE as described in TS 38.331 [8].

If the *InterFrequencyConfig-NoGap* IE is included in the *DU to CU RRC Information* IE contained in the UE CONTEXT SETUP RESPONSE message, the gNB-CU shall, if supported, use it as described in TS 38.331 [8].

If the *ul-GapFR2-Config* IE is contained in the *DU to CU RRC Information* IE that is included in the UE CONTEXT SETUP RESPONSE message, the gNB-CU shall, if supported, use it as described in TS 38.331 [8].

If the *TwoPHRModeMCG* IE or the *TwoPHRModeSCG* IE is contained in the *DU to CU RRC Information* IE that is included in the UE CONTEXT SETUP RESPONSE message, the gNB-CU shall, if supported, use this value as described in TS 38.331 [8].

If the *MBSInterestIndication* IE is included in the *CU to DU RRC Information* IE in the UE CONTEXT SETUP REQUEST message, the gNB-DU shall, if supported, take it into account when configuring resources for the UE.

If the *ncd-SSB-RedCapInitialBWP-SDT* IE is contained in the *DU to CU RRC Information* IE that is included in the UE CONTEXT SETUP RESPONSE message, the gNB-CU shall, if supported, use it as described in TS 38.331 [8].

8.3.1.3 Unsuccessful Operation

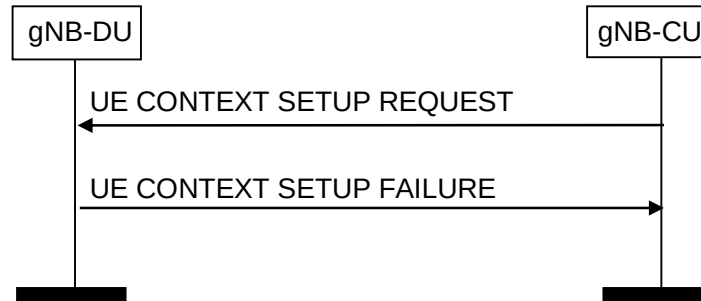


Figure 8.3.1.3-1: UE Context Setup Request procedure: unsuccessful Operation

If the gNB-DU is not able to establish an F1 UE context, or cannot even establish one bearer it shall consider the procedure as failed and reply with the UE CONTEXT SETUP FAILURE message. If the *Conditional Inter-DU Mobility Information* IE was included in the UE CONTEXT SETUP REQUEST message, the gNB-DU shall include the received *SpCell ID* IE as the *Requested Target Cell ID* IE in the UE CONTEXT SETUP FAILURE message.

If the gNB-DU is not able to accept the *SpCell ID* IE in UE CONTEXT SETUP REQUEST message, it shall reply with the UE CONTEXT SETUP FAILURE message with an appropriate cause value. Further, if the *Candidate SpCell List* IE is included in the UE CONTEXT SETUP REQUEST message and the gNB-DU is not able to accept the *SpCell ID* IE, the gNB-DU shall, if supported, include the *Potential SpCell List* IE in the UE CONTEXT SETUP FAILURE message and the gNB-CU should take this into account for selection of an opportune SpCell. The gNB-DU shall include the cells in the *Potential SpCell List* IE in a priority order, where the first cell in the list is the one most desired and the last one is the one least desired (e.g., based on load conditions). If the *Potential SpCell List* IE is present but no *Potential SpCell Item* IE is present, the gNB-CU should assume that none of the cells in the *Candidate SpCell List* IE are acceptable for the gNB-DU.

8.3.1.4 Abnormal Conditions

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

If the *Delay Critical* IE is included in the *Dynamic 5QI Descriptor* IE within the *DRB QoS* IE in the UE CONTEXT SETUP REQUEST message and is set to the value "delay critical" but the *Maximum Data Burst Volume* IE is not present, the gNB-DU shall report the establishment of the corresponding DRB as failed in the *DRB Failed to Setup List* IE of the UE CONTEXT SETUP RESPONSE message with an appropriate cause value.

In case of "CHO-replace" when the *Target gNB-DU UE F1AP ID* IE is included, if the candidate cell in the *SpCell ID* IE included in the UE CONTEXT SETUP REQUEST message was not prepared using the same UE-associated signaling connection, the gNB-DU shall ignore this candidate cell.

8.3.2 UE Context Release Request (gNB-DU initiated)

8.3.2.1 General

The purpose of the UE Context Release Request procedure is to enable the gNB-DU to request the gNB-CU to release the UE-associated logical F1-connection or candidate cells in conditional handover or conditional PSCell addition or conditional PSCell change. The procedure uses UE-associated signalling.

8.3.2.2 Successful Operation

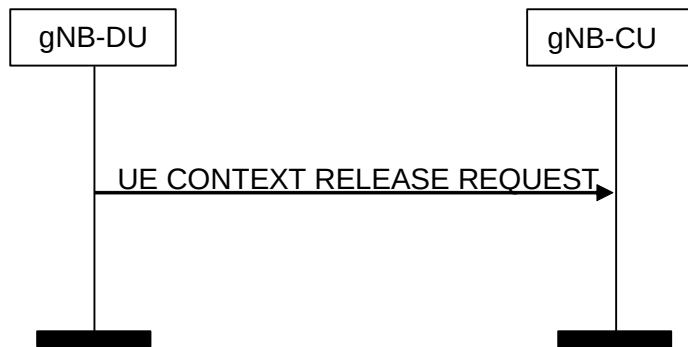


Figure 8.3.2.2-1: UE Context Release (gNB-DU initiated) procedure. Successful operation

The gNB-DU controlling a UE-associated logical F1-connection initiates the procedure by generating a UE CONTEXT RELEASE REQUEST message towards the affected gNB-CU node.

The UE CONTEXT RELEASE REQUEST message shall indicate the appropriate cause value.

If the *Candidate Cells To Be Cancelled List* IE is included in the UE CONTEXT RELEASE REQUEST message, the gNB-CU shall consider that the only the resources reserved for the candidate cells identified by the included NR CGIs and associated to the UE-associated signaling identified by the *gNB-CU UE F1AP ID* IE and the *gNB-DU UE F1AP ID* IE are about to be released by the gNB-DU.

Interactions with UE Context Release procedure:

The UE Context Release procedure may be initiated upon reception of a UE CONTEXT RELEASE REQUEST message.

Interactions with UE Context Setup procedure:

The UE Context Release Request procedure may be performed before the UE Context Setup procedure to request the release of an existing UE-associated logical F1-connection and related resources in the gNB-DU.

8.3.2.3 Abnormal Conditions

If one or more candidate cells in the *Candidate Cells To Be Cancelled List* IE included in the UE CONTEXT RELEASE REQUEST message were not prepared using the same UE-associated signaling connection, the gNB-CU shall ignore those non-associated candidate cells.

8.3.3 UE Context Release (gNB-CU initiated)

8.3.3.1 General

The purpose of the UE Context Release procedure is to enable the gNB-CU to order the release of the UE-associated logical connection or candidate cells in conditional handover or conditional PSCell addition or conditional PSCell change. The procedure uses UE-associated signalling.

8.3.3.2 Successful Operation

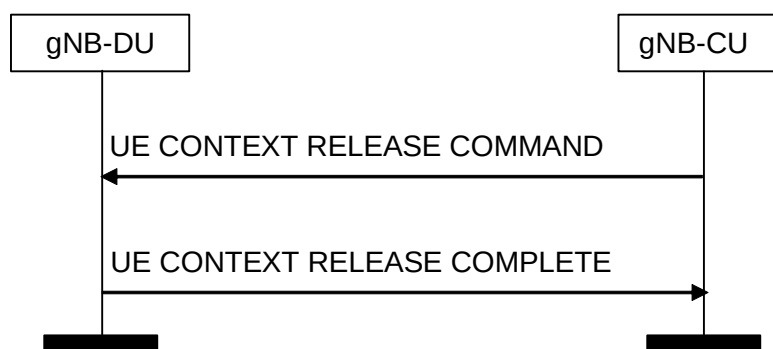


Figure 8.3.3.2-1: UE Context Release (gNB-CU initiated) procedure. Successful operation

The gNB-CU initiates the procedure by sending the UE CONTEXT RELEASE COMMAND message to the gNB-DU.

Upon reception of the UE CONTEXT RELEASE COMMAND message, the gNB-DU shall release all related signalling and user data transport resources and reply with the UE CONTEXT RELEASE COMPLETE message. If the *CG-SDT Kept Indicator* IE is contained in the UE CONTEXT RELEASE COMMAND message and set to "true", the gNB-DU shall, if supported, consider that the UE is sent to RRC_INACTIVE state with CG-SDT configuration and store the configured CG-SDT resources, C-RNTI, CS-RNTI, the CG-SDT related RLC configurations and F1-U connections associated with the SDT bearers while releasing the UE context.

If the *old gNB-DU UE F1AP ID* IE is included in the UE CONTEXT RELEASE COMMAND message, the gNB-DU shall additionally release the UE context associated with the old gNB-DU UE F1AP ID.

If the UE CONTEXT RELEASE COMMAND message contains the *RRC-Container IE*, the gNB-DU shall send the RRC container to the UE via the SRB indicated by the *SRB ID* IE.

If the UE CONTEXT RELEASE COMMAND message includes the *Execute Duplication* IE, the gNB-DU shall perform CA based duplication, if configured, for the SRB for the included *RRC-Container* IE.

If the *Candidate Cells To Be Cancelled List* IE is included in the UE CONTEXT RELEASE COMMAND message, the gNB-DU shall consider that the gNB-CU is cancelling only the conditional handover or conditional PSCell addition or conditional PSCell change associated to the cells identified by the included NR CGIs and associated to the UE-associated signaling identified by the *gNB-CU UE F1AP ID* IE and the *gNB-DU UE F1AP ID* IE.

If the *Positioning Context Reservation Indication* IE is included in the UE CONTEXT RELEASE COMMAND message, the gNB-DU shall not release the positioning context including the SRS configuration for the UE.

Interactions with UE Context Setup procedure:

The UE Context Release procedure may be performed before the UE Context Setup procedure to release an existing UE-associated logical F1-connection and related resources in the gNB-DU, e.g. when gNB-CU rejects UE access it shall trigger UE Context Release procedure with the cause value of UE rejection.

8.3.3.4 Abnormal Conditions

If one or more candidate cells in the *Candidate Cells To Be Cancelled List* IE included in the UE CONTEXT RELEASE COMMAND message were not prepared using the same UE-associated signalling connection, the gNB-DU shall ignore those non-associated candidate cells.

8.3.4 UE Context Modification (gNB-CU initiated)

8.3.4.1 General

The purpose of the UE Context Modification procedure is to modify the established UE Context, e.g., establishing, modifying and releasing radio resources or sidelink resources. This procedure is also used to command the gNB-DU to stop data transmission for the UE for mobility (see TS 38.401 [4]). The procedure uses UE-associated signalling.

8.3.4.2 Successful Operation

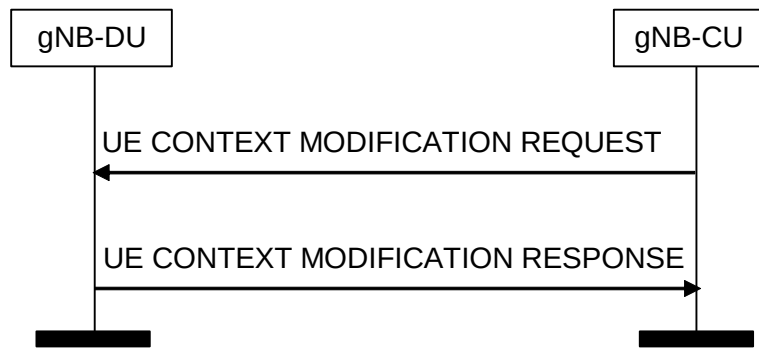


Figure 8.3.4.2-1: UE Context Modification procedure. Successful operation

The UE CONTEXT MODIFICATION REQUEST message is initiated by the gNB-CU.

Upon reception of the UE CONTEXT MODIFICATION REQUEST message, the gNB-DU shall perform the modifications, and if successful reports the update in the UE CONTEXT MODIFICATION RESPONSE message.

If the *SpCell ID* IE is included in the UE CONTEXT MODIFICATION REQUEST message and the *Conditional Intra-DU Mobility Information* IE is not present, the gNB-DU shall replace any previously received value and regard it as a reconfiguration with sync as defined in TS 38.331 [8]. If the *ServCellIndex* IE is included in the UE CONTEXT MODIFICATION REQUEST message, the gNB-DU shall take this into account for the indicated SpCell. If the *SpCell UL Configured* IE is included in the UE CONTEXT MODIFICATION REQUEST message, the gNB-DU shall configure UL for the indicated SpCell accordingly. If the *servingCellMO* IE is included in the UE CONTEXT MODIFICATION REQUEST message, the gNB-DU shall configure servingCellMO for the indicated SpCell accordingly. If the *servingCellMO List* IE is included in the UE CONTEXT MODIFICATION REQUEST message, the gNB-DU shall, if supported, configure servingCellMO after determining the list of BWPs for the UE and include the list of servingCellMOs that have been encoded in *CellGroupConfig* IE as *ServingCellMO-encoded-in-CGC List* IE in the UE CONTEXT MODIFICATION RESPONSE message.

If the *Configured BWP List* IE is included in the UE CONTEXT MODIFICATION RESPONSE message the gNB-CU shall, if supported, take it into account when requesting the gNB-DU for generating preconfigured measurement GAP for the indicated BWPs.

If the *Preconfigured Measurement GAP Request* IE is present in the *CU to DU RRC Information* IE in the UE CONTEXT MODIFICATION REQUEST message, the gNB-DU shall, if supported, consider that the content of the previous *CellGroupConfig* IE was not sent to the UE and generate the pre-configured measurement GAP for the indicated BWPs in the *MeasConfig* IE. If the gNB-DU successfully generates pre-configured measurement GAP for the indicated BWPs, the gNB-DU shall update the *CellGroupConfig* IE with the content of the previous *CellGroupConfig* IE and the preconfigured measurement GAP configuration in the UE CONTEXT MODIFICATION RESPONSE message.

If the *SCell To Be Setup List* IE is included in the UE CONTEXT MODIFICATION REQUEST message, the gNB-DU shall consider it as a list of candidate SCells to be set up. If the *SCell To Be Setup List* IE is included in the UE CONTEXT MODIFICATION REQUEST message and the indicated SCell(s) are already setup, the gNB-DU shall replace any previously received value. If the *SCell UL Configured* IE is included in the UE CONTEXT MODIFICATION REQUEST message, the gNB-DU shall configure UL for the indicated SCell accordingly. If the *servingCellMO* IE is included in the UE CONTEXT MODIFICATION REQUEST message, the gNB-DU shall configure servingCellMO for the indicated SCell accordingly.

If the *SCell To Be Removed List* IE is included in the UE CONTEXT MODIFICATION REQUEST message, the gNB-DU shall consider it as a list of SCells to be removed.

If the *DRX Cycle* IE is contained in the UE CONTEXT MODIFICATION REQUEST message, the gNB-DU shall use the provided value from the gNB-CU. If the *DRX configuration indicator* IE is contained in the UE CONTEXT MODIFICATION REQUEST message and set to "release", the gNB-DU shall release DRX configuration.

If the *SL DRX Cycle list* IE is contained in the UE CONTEXT MODIFICATION REQUEST message, the gNB-DU shall, if supported, use the provided value from the gNB-CU for the indicated RX UE of this UE. If the *SL DRX*

configuration indicator IE is contained in the UE CONTEXT MODIFICATION REQUEST message and set to "release", the gNB-DU shall, if supported, release SL DRX configuration for the indicated RX UE of this UE.

If the *SRB To Be Setup List* IE is contained in the UE CONTEXT MODIFICATION REQUEST message, the gNB-DU shall act as specified in the TS 38.401 [4], and replace any previously received value. If *Duplication Indication* IE is contained in the *SRB To Be Setup List* IE, the gNB-DU shall, if supported, setup two RLC entities for the indicated SRB if the value is set to be "true", or delete the RLC entity of secondary path if the value is set to be "false". If the *Additional Duplication Indication* IE is contained in the *SRB To Be Setup List* IE, the gNB-DU shall, if supported, setup the indicated RLC entities for the indicated SRB. If the *SRB Mapping Info* IE is contained in the *SRB To Be Setup List* IE, the gNB-DU shall, if supported, store the mapping information indicated in the *SRB Mapping Info* IE for the SRB identified by the *SRB ID* IE and the Uu Relay RLC channel identified by the *SRB Mapping Info*. The gNB-DU shall use the mapping information stored for the mapping of SRB data to Uu Relay RLC channel.

If the *DRB To Be Setup List* IE is contained in the UE CONTEXT MODIFICATION REQUEST message, the gNB-DU shall act as specified in the TS 38.401 [4]. If the *DRB Mapping Info* IE is contained in the *DRB To Be Setup List* IE, the gNB-DU shall, if supported, store the mapping information indicated in the *DRB Mapping Info* IE, if present, for the DRB identified by the *DRB ID* IE and the Uu Relay RLC channel identified by the *DRB Mapping Info*. The gNB-DU shall use the mapping information stored for the mapping of DRB data to Uu Relay RLC channel.

If the *BH Information* IE is included in the *UL UP TNL Information to be setup List* IE or the *Additional PDCP Duplication TNL List* IE for a DRB, the gNB-DU shall, if supported, use the indicated BAP Routing ID and BH RLC channel for transmission of the corresponding GTP-U packets to the IAB-donor, as specified in TS 38.340 [30].

If the *BH RLC Channel To Be Setup List* IE is included in the UE CONTEXT MODIFICATION REQUEST message, the gNB-DU shall act as specified in TS 38.401 [4]. If the *Traffic Mapping Information* IE is included in the *BH RLC Channel To Be Setup Item IEs* IE for a BH RLC Channel, the gNB-DU shall, if supported, process the *Traffic Mapping Information* IE following the behaviour described for the UE Context Setup procedure.

If the *BH RLC Channel To Be Modified List* IE is included in the UE CONTEXT MODIFICATION REQUEST message, the gNB-DU shall act as specified in TS 38.401 [4]. If the *Traffic Mapping Information* IE is included in the *BH RLC Channel To Be Modified Item IEs* IE for a BH RLC Channel, the gNB-DU shall, if supported, process the *Traffic Mapping Information* IE following the behaviour described for the UE Context Setup procedure.

If the *BH RLC Channel To Be Released List* IE is included in the UE CONTEXT MODIFICATION REQUEST message, the gNB-DU shall release the BH RLC channels in the list.

If two *UL UP TNL Information* IEs are included in UE CONTEXT MODIFICATION REQUEST message for a DRB, the gNB-DU shall include two *DL UP TNL Information* IEs in UE CONTEXT MODIFICATION RESPONSE message and setup two RLC entities for the indicated DRB. gNB-CU and gNB-DU use the *UL UP TNL Information* IEs and *DL UP TNL Information* IEs to support packet duplication for intra-gNB-DU CA as defined in TS 38.470 [2]. The first *UP TNL Information* IE of the two *UP TNL Information* IEs is for the primary path.

If one or two *Additional PDCP Duplication UP TNL Information* IEs are included in the UE CONTEXT MODIFICATION REQUEST message for a DRB, the gNB-DU shall, if supported, include one or two *Additional PDCP Duplication UP TNL Information* IEs in the UE CONTEXT MODIFICATION RESPONSE message and setup one or two additional RLC entities for the indicated DRB. The gNB-CU and the gNB-DU use the *Additional PDCP Duplication UP TNL Information* IEs to support packet duplication for intra-gNB-DU CA as defined in TS 38.470 [2].

If *Duplication Activation* IE is included in the UE CONTEXT MODIFICATION REQUEST message for a DRB, the gNB-DU should take it into account when activating/deactivating CA based PDCP duplication for the DRB. If the *RLC Duplication State List* IE is included in the *RLC Duplication Information* IE contained in the UE CONTEXT MODIFICATION REQUEST message, the gNB-DU shall, if supported, take it into account for the DRB with more than two RLC entities.

If *DC Based Duplication Configured* IE is included in the UE CONTEXT MODIFICATION REQUEST message for a DRB, the gNB-DU shall regard that DC based PDCP duplication is configured for this DRB if the value is set to be "true" and it should take the responsibility of PDCP duplication activation/deactivation. Otherwise, the gNB-DU shall regard that DC based PDCP duplication is de-configured for this DRB if the value is set to be "false", and it should stop PDCP duplication activation/deactivation by MAC CE. If *DC Based Duplication Activation* IE is included in the UE CONTEXT MODIFICATION REQUEST message for a DRB, the gNB-DU should take it into account when activating/deactivating DC based PDCP duplication for this DRB. If the *RLC Duplication State List* IE is included in the *RLC Duplication Information* IE contained in the UE CONTEXT MODIFICATION REQUEST message for a DRB, the gNB-DU shall, if supported, take it into account when activating/deactivating DC based PDCP duplication for the DRB with more than two RLC entities. If the *Primary Path Indication* IE is included in the *RLC Duplication*

Information IE, the gNB-DU shall, if supported, take it into account when performing DC based PDCP duplication for the DRB with more than two RLC entities.

For a certain DRB which was allocated with two GTP-U tunnels, if such DRB is modified and given one GTP-U tunnel via the UE Context Modification procedure, the gNB-DU shall consider that the CA based PDCP duplication for the concerned DRB is de-configured. If such UE Context Modification procedure occurs, the *Duplication Activation* IE shall not be included for the concerned DRB.

If the *UL Configuration* IE in *DRB to Be Setup Item* IE or *DRB to Be Modified Item* IE is contained in the UE CONTEXT MODIFICATION REQUEST message, the gNB-DU shall take it into account for UL scheduling.

If the *RRC Reconfiguration Complete Indicator* IE is included in the UE CONTEXT MODIFICATION REQUEST message, the gNB-DU shall consider the ongoing reconfiguration procedure involving changes of the L1/L2 configuration at the gNB-DU signalled to the gNB-CU via the *CellGroupConfig* IE for MR-DC operation or standalone operation has been successfully performed when such IE is set to 'true'; otherwise (when such IE is set to 'failure'), the gNB-DU shall consider the ongoing reconfiguration procedure has been failed and it shall continue to use the old L1/L2 configuration.

If *DL PDCP SN length* IE is included in the UE CONTEXT MODIFICATION REQUEST message for a DRB, gNB-DU shall, if supported, store this information and use it for lower layer configuration.

If *UL PDCP SN length* IE is included in the UE CONTEXT MODIFICATION REQUEST message for a DRB, gNB-DU shall, if supported, store this information and use it for lower layer configuration.

If the *RLC Failure Indication* IE is included in UE CONTEXT MODIFICATION REQUEST message, the gNB-DU should consider that the RLC entity indicated by such IE needs to be re-established when the CA-based packet duplication is active, and the gNB-DU may include the *Associated SCell List* IE in UE CONTEXT MODIFICATION RESPONSE by containing a list of SCell(s) associated with the RLC entity indicated by the *RLC Failure Indication* IE.

If the UE CONTEXT MODIFICATION REQUEST message contains the *RRC-Container* IE, the gNB-DU shall send the corresponding RRC message to the UE. If the UE CONTEXT MODIFICATION REQUEST message includes the *Execute Duplication* IE, the gNB-DU shall perform CA based duplication, if configured, for the SRB for the included *RRC-Container* IE.

If the UE CONTEXT MODIFICATION REQUEST message contains the *Transmission Action Indicator* IE, the gNB-DU shall stop or restart (if already stopped) data transmission for the UE, according to the value of this IE. It is up to gNB-DU implementation when to stop or restart the UE scheduling.

For EN-DC operation, if the *DRB to Be Setup List* IE is present in the UE CONTEXT MODIFICATION REQUEST message the gNB-CU shall include the *E-UTRAN QoS* IE. The allocation of resources according to the values of the *Allocation and Retention Priority* IE included in the *E-UTRAN QoS* IE shall follow the principles described for the E-RAB Setup procedure in TS 36.413 [15]. For NG-RAN operation, the gNB-CU shall include the *DRB Information* IE in the UE CONTEXT MODIFICATION REQUEST message.

If the gNB-CU includes the SMTC information of the measured frequency(ies) in the *MeasurementTimingConfiguration* IE of the *CU to DU RRC Information* IE that is included in the UE CONTEXT MODIFICATION REQUEST message, the gNB-DU shall generate the measurement gaps based on the received SMTC information. Then the gNB-DU shall send the measurement gaps information to the gNB-CU in the *MeasGapConfig* IE of the *DU to CU RRC Information* IE that is included in the UE CONTEXT MODIFICATION RESPONSE message.

If the *MeasConfig* IE is included in the *CU to DU RRC Information* IE in the UE CONTEXT MODIFICATION REQUEST message, the gNB-DU shall deduce that changes to the measurements' configuration need to be applied. The gNB-DU shall take the received info, e.g. the *measObjectToAddModList* IE, and/or the *measObjectToRemoveList* IE into account, when generating measurement gap and when deciding if a measurement gap is needed or not.

If the *NeedForGapsInfoNR* IE is included in the *CU to DU RRC Information* IE in the UE CONTEXT MODIFICATION REQUEST message, the gNB-DU shall, if supported, use it as described in TS 38.331 [8]. If the *NeedForGapNCSCG-InfoNR* IE is included in the *CU to DU RRC Information* IE in the UE CONTEXT MODIFICATION REQUEST message, the gNB-DU shall, if supported, use it as described in TS 38.331 [8]. If the *NeedForGapNCSCG-InfoEUTRA* IE is included in the *CU to DU RRC Information* IE in the UE CONTEXT MODIFICATION REQUEST message, the gNB-DU shall, if supported, use it as described in TS 38.331 [8].

For DC operation, if the gNB-CU includes the *CG-Config* IE in the *CU to DU RRC Information* IE that is included in the UE CONTEXT MODIFICATION REQUEST message, the gNB-DU may initiate low layer parameters coordination taking this information into account.

For sidelink operation, the *CG-ConfigInfo* IE shall be included in the *CU to DU RRC Information* IE if the gNB-CU receives sidelink related UE information from UE. If the *CG-ConfigInfo* IE is included in the UE CONTEXT MODIFICATION REQUEST message, the gNB-DU shall regard it as an indication of V2X sidelink information or NR sidelink information as defined in TS 38.331 [8].

For EN-DC operation, if the gNB-CU includes the *Resource Coordination Transfer Information* IE in the UE CONTEXT MODIFICATION REQUEST message, the gNB-DU shall, if supported, use it for the purpose of resource coordination. If the gNB-CU received the MeNB Resource Coordination Information as defined in TS 36.423 [9], after completion of UE Context Setup procedures, the gNB-CU shall transparently transfer it to the gNB-DU via the *Resource Coordination Transfer Container* IE in the UE CONTEXT MODIFICATION REQUEST message. The gNB-DU shall use the information received in the *Resource Coordination Transfer Container* IE for reception of MeNB Resource Coordination Information at the gNB acting as secondary node as described in TS 36.423 [9]. If the *Resource Coordination E-UTRA Cell Information* IE is included in the *Resource Coordination Transfer Information* IE, the gNB-DU shall store the information replacing previously received information for the same E-UTRA cell, and use the stored information for the purpose of resource coordination. If the *Ignore PRACH Configuration* IE is present and set to "true" the *E-UTRA PRACH Configuration* IE in the UE CONTEXT MODIFICATION REQUEST message shall be ignored.

For NGEN-DC or NE-DC operation, if the gNB-CU includes the *Resource Coordination Transfer Information* IE in the UE CONTEXT MODIFICATION REQUEST message, the gNB-DU shall, if supported, use it for the purpose of resource coordination. If the gNB-CU received the MR-DC Resource Coordination Information as defined in TS 38.423 [28], after completion of UE Context Setup procedures, the gNB-CU shall transparently transfer it to the gNB-DU via the *Resource Coordination Transfer Container* IE in the UE CONTEXT MODIFICATION REQUEST message. The gNB-DU shall use the information received in the *Resource Coordination Transfer Container* IE for reception of MR-DC Resource Coordination Information at the gNB as described in TS 38.423 [28].

For EN-DC operation, and if the *Subscriber Profile ID for RAT/Frequency priority* IE is received from an MeNB, the UE CONTEXT MODIFICATION REQUEST message shall contain the *Subscriber Profile ID for RAT/Frequency priority* IE. If the *Additional RRM Policy Index* IE is received from an MeNB, the UE CONTEXT MODIFICATION REQUEST message shall, if supported, contain the *Additional RRM Policy Index* IE. The gNB-DU shall store the received Subscriber Profile ID for RAT/Frequency priority in the UE context and use it as defined in TS 36.300 [20]. The gNB-DU shall, if supported, store the received Additional RRM Policy Index in the UE context and use it as defined in TS 36.300 [20].

If the *Index to RAT/Frequency Selection Priority* IE is modified at the gNB-CU, the *Index to RAT/Frequency Selection Priority* IE shall be included in the UE CONTEXT MODIFICATION REQUEST. The gNB-DU may use it for RRM purposes.

Only one of the following IEs shall be contained in the UE CONTEXT MODIFICATION REQUEST message: the *Uplink TxDirectCurrentList Information* IE or the *Uplink TxDirectCurrentTwoCarrierList Information* IE or the *Uplink TxDirectCurrentMoreCarrierList Information* IE. If the UE CONTEXT MODIFICATION REQUEST message contains one of the *Uplink TxDirectCurrentList Information* IE or the *Uplink TxDirectCurrentTwoCarrierList Information* IE or the *Uplink TxDirectCurrentMoreCarrierList Information* IE, the gNB-DU may take that into account when selecting L1 configuration.

The *UEAssistanceInformation* IE shall be included in *CU to DU RRC Information* IE in the UE CONTEXT MODIFICATION REQUEST message if the gNB-CU received this IE from the UE; if the *UEAssistanceInformation* IE is included in the *CU to DU RRC Information* IE in the UE CONTEXT MODIFICATION REQUEST message, the gNB-DU shall, if supported, take it into account when configuring resources for the UE.

The *UEAssistanceInformationEUTRA* IE shall be included in *CU to DU RRC Information* IE in the UE CONTEXT MODIFICATION REQUEST message if the gNB-CU received this IE from the UE; if the *UEAssistanceInformationEUTRA* IE is included in the *CU to DU RRC Information* IE in the UE CONTEXT MODIFICATION REQUEST message, the gNB-DU shall, if supported, take it into account when configuring LTE sidelink resources for the UE.

The gNB-DU shall report to the gNB-CU, in the UE CONTEXT MODIFICATION RESPONSE message, the result for all the requested or modified DRBs, SRBs, BH RLC Channels, Uu Relay RLC channels, PC5 Relay RLC channels, and SL DRBs in the following way:

- 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 to be Setup 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 be Modified List IE*;
- A list of SRBs which failed to be established shall be included in the *SRB Failed to be Setup List IE*.
- A list of successfully established SRBs with logical channel identities for primary path shall be included in the *SRB Setup List IE* only if CA based PDCP duplication is initiated for the concerned SRBs.
- A list of successfully modified SRBs with logical channel identities for primary path shall be included in the *SRB Modified List IE* only if CA based PDCP duplication is initiated for the concerned SRBs.
- A list of BH RLC channels which are successfully established shall be included in the *BH RLC Channel Setup List IE*;
- A list of BH RLC channels which failed to be established shall be included in the *BH RLC Channel Failed to be Setup List IE*;
- A list of BH RLC channels which are successfully modified shall be included in the *BH RLC Channel Modified List IE*;
- A list of BH RLC channels which failed to be modified shall be included in the *BH RLC Channel Failed to be Modified List IE*;
- A list of Uu Relay RLC channels which are successfully established shall be included in the *Uu RLC Channel Setup List IE*;
- A list of Uu Relay RLC channels which failed to be established shall be included in the *Uu RLC Channel Failed to be Setup List IE*;
- A list of Uu Relay RLC channels which are successfully modified shall be included in the *Uu RLC Channel Modified List IE*;
- A list of Uu Relay RLC channels which are failed to be modified shall be included in the *Uu RLC Channel Failed to be Modified List IE*;
- A list of PC5 Relay RLC channels which are successfully established shall be included in the *PC5 RLC Channel Setup List IE*;
- A list of PC5 Relay RLC channels which failed to be established shall be included in the *PC5 RLC Channel Failed to be Setup List IE*;
- A list of PC5 Relay RLC channels which are successfully modified shall be included in the *PC5 RLC Channel Modified List IE*;
- A list of PC5 Relay RLC channels which failed to be modified shall be included in the *PC5 RLC Channel Failed to be Modified List IE*;
- A list of SL DRBs which are successfully established shall be included in the *SL DRB Setup List IE*;
- A list of SL DRBs which failed to be established shall be included in the *SL DRB Failed to be Setup List IE*;
- A list of SL DRBs which are successfully modified shall be included in the *SL DRB Modified List IE*;
- A list of SL DRBs which failed to be modified shall be included in the *SL DRB Failed to be Modified List IE*.

For each GBR DRB, if the *Alternative QoS Parameters Sets IE* is included in the *GBR QoS Flow Information IE* in the UE CONTEXT MODIFICATION REQUEST message, gNB-DU shall, if supported, behave the same as the NG-RAN node in the PDU Session Resource Setup procedure, specified in TS 38.413 [3].

If the *BAP Control PDU Channel IE* is included in the *BH RLC Channel to be Setup List IE*, the gNB-DU shall, if supported, consider that the configured BH RLC channel can be used to transmit BAP Control PDUs, and use this BH RLC channel as specified in TS 38.340 [30].

If the *BAP Control PDU Channel* IE is included in the *BH RLC Channel to be Modified List* IE, the gNB-DU shall, if supported, consider that the configured BH RLC channel can be used to transmit BAP Control PDUs, and use this BH RLC channel as specified in TS 38.340 [30]. Otherwise, if the *BAP Control PDU Channel* IE is not present for any BH RLC channel, any available BH RLC channel can be used to transmit BAP Control PDUs as specified in TS 38.340 [30].

If the *F1-C Transfer Path* IE is included in UE CONTEXT MODIFICATION REQUEST message, the gNB-DU shall, if supported, take it into account.

When the gNB-DU reports the unsuccessful establishment of a DRB or SRB or SL DRB or a BH RLC channel or a Uu Relay RLC channel or a PC5 Relay RLC channel, the cause value should be precise enough to enable the gNB-CU to know the reason for the unsuccessful establishment.

If the *Resource Coordination Transfer Container* IE is included in the UE CONTEXT MODIFICATION RESPONSE, the gNB-CU shall transparently transfer this information for the purpose of resource coordination as described in TS 36.423 [9], TS 38.423 [28].

If the *DU to CU RRC Information* IE is included in the UE CONTEXT MODIFICATION RESPONSE message, except for the CG-SDT procedure and UE configured with BWP specific ServingCellMO, the gNB-CU shall perform RRC Reconfiguration as described in TS 38.331 [8]. The *CellGroupConfig* IE shall transparently be signaled to the UE as specified in TS 38.331 [8]. In the cases of CG-SDT, and UE configured with BWP specific ServingCellMO, the *CellGroupConfig* IE shall be ignored by the gNB-CU.

If the *ServCellInfoList* IE is included in the *DU to CU RRC Information* IE contained in the UE CONTEXT MODIFICATION RESPONSE message, the gNB-CU shall take it into account to generate the content of inter-node message, i.e., *CG-Config* or *CG-ConfigInfo*, as described in TS 38.331 [8].

If the *UE-CapabilityRAT-ContainerList* IE is included in the UE CONTEXT SETUP MODIFICATION REQUEST, the gNB-DU shall take this information into account for UE specific configurations.

If the *SCell Failed To Setup List* IE is contained in the UE CONTEXT MODIFICATION RESPONSE message, the gNB-CU shall regard the corresponding SCell(s) failed to be set up with an appropriate cause value for each SCell failed to setup.

If the *C-RNTI* IE is included in the UE CONTEXT MODIFICATION RESPONSE, the gNB-CU shall consider that the C-RNTI has been allocated by the gNB-DU for this UE context.

If the *Inactivity Monitoring Request* IE is contained in the UE CONTEXT MODIFICATION REQUEST message, gNB-DU may consider that the gNB-CU has requested the gNB-DU to perform UE inactivity monitoring. If the *Inactivity Monitoring Response* IE is contained in the UE CONTEXT MODIFICATION RESPONSE message and set to "Not-supported", the gNB-CU shall consider that the gNB-DU does not support UE inactivity monitoring for the UE.

The UE Context Modify Procedure is not used to configure SRB0.

If in the UE CONTEXT MODIFICATION REQUEST, the *Notification Control* IE is included in the *DRB to Be Setup List* IE or the *DRB to Be Modified List* IE and it is set to active, the gNB-DU shall, if supported, monitor the QoS of the DRB and notify the gNB-CU if the QoS cannot be fulfilled any longer or if the QoS can be fulfilled again. The *Notification Control* IE can only be applied to GBR bearers.

If the *UL PDU Session Aggregate Maximum Bit Rate* IE is included in the *QoS Flow Level QoS Parameters* IE contained in the UE CONTEXT MODIFICATION REQUEST message, the gNB-DU shall replace the received UL PDU Session Aggregate Maximum Bit Rate and use it as specified in TS 23.501 [21].

If the *gNB-DU UE Aggregate Maximum Bit Rate Uplink* IE is included in the UE CONTEXT MODIFICATION REQUEST message, the gNB-DU shall:

- replace the previously provided gNB-DU UE Aggregate Maximum Bit Rate Uplink with the new received gNB-DU UE Aggregate Maximum Bit Rate Uplink;
- use the received gNB-DU UE Aggregate Maximum Bit Rate Uplink for non-GBR Bearers for the concerned UE.

The *gNB-DU UE Aggregate Maximum Bit Rate Uplink* IE shall be sent in the UE CONTEXT MODIFICATION REQUEST if *DRB to Be Setup List* IE is included and the gNB-CU has not previously sent it. The gNB-DU shall store and use the received *gNB-DU UE Aggregate Maximum Bit Rate Uplink* IE.

If the *RLC Status IE* is included in the UE CONTEXT MODIFICATION RESPONSE message, the gNB-CU shall assume that RLC has been reestablished at the gNB-DU and may trigger PDCP data recovery.

If the *GNB-DU Configuration Query IE* is contained in the UE CONTEXT MODIFICATION REQUEST message, gNB-DU shall include the *DU To CU RRC Information IE* in the UE CONTEXT MODIFICATION RESPONSE message.

If the *Bearer Type Change IE* is included in *DRB to Be Modified List IE* in the UE CONTEXT MODIFICATION REQUEST message, the gNB-DU shall either reset the lower layers or generate a new LCID for the affected bearer as specified in TS 37.340 [7].

For NE-DC operation, if *NeedforGap IE* is included in the UE CONTEXT MODIFICATION REQUEST message, the gNB-DU shall generate measurement gap for the SeNB.

If the *QoS Flow Mapping Indication IE* is included in the UE CONTEXT MODIFICATION REQUEST message, the gNB-DU 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 *Lower Layer presence status change IE* set to "suspend lower layers" is included in the UE CONTEXT MODIFICATION REQUEST, the gNB-DU shall keep all lower layer configuration for UEs, and not transmit or receive data from UE.

If the *Lower Layer presence status change IE* set to "resume lower layers" is included in the UE CONTEXT MODIFICATION REQUEST message, the gNB-DU shall use the previously stored lower layer configuration for the UE.

If the *Full Configuration IE* is contained in the UE CONTEXT MODIFICATION REQUEST message, the gNB-DU shall generate a *CellGroupConfig IE* using full configuration and include it in the UE CONTEXT MODIFICATION RESPONSE.

If the *Full Configuration IE* is contained in the UE CONTEXT MODIFICATION RESPONSE message, the gNB-CU shall consider that the gNB-DU has generated the *CellGroupConfig IE* using full configuration.

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 UE CONTEXT MODIFICATION REQUEST message, the gNB-DU shall store this information, and, if supported, perform delay measurement and QoS monitoring, as specified in TS 23.501 [21].

If the *NR V2X Services Authorized IE* is contained in the UE CONTEXT MODIFICATION REQUEST message, the gNB-DU shall, if supported, update its V2X services authorization information for the UE accordingly. If the *NR V2X Services Authorized IE* includes one or more IEs set to "not authorized", the gNB-DU shall, if supported, initiate actions to ensure that the UE is no longer accessing the relevant service(s).

If the *LTE V2X Services Authorized IE* is contained in the UE CONTEXT MODIFICATION REQUEST message, the gNB-DU shall, if supported, update its V2X services authorization information for the UE accordingly. If the *LTE V2X Services Authorized IE* includes one or more IEs set to "not authorized", the gNB-DU shall, if supported, initiate actions to ensure that the UE is no longer accessing the relevant service(s).

If the *LTE UE Sidelink Aggregate Maximum Bit Rate IE* is included in the UE CONTEXT MODIFICATION REQUEST message, the gNB-DU shall, if supported:

- replace the previously provided UE LTE Sidelink Aggregate Maximum Bit Rate, if available in the UE context, with the received value;
- use the received value for the concerned UE's sidelink communication in network scheduled mode for LTE V2X services.

If the *NR UE Sidelink Aggregate Maximum Bit Rate IE* is included in the UE CONTEXT MODIFICATION REQUEST message, the gNB-DU shall, if supported:

- replace the previously provided UE NR Sidelink Aggregate Maximum Bit Rate, if available in the UE context, with the received value;
- use the received value for the concerned UE's sidelink communication in network scheduled mode for NR V2X services.

If the *PC5 Link Aggregate Maximum Bit Rate* IE is included in the UE CONTEXT MODIFICATION REQUEST message, the gNB-DU shall, if supported:

- replace the previously provided UE PC5 Link Aggregate Bit Rate, if available in the UE context, with the received value;
- use the received value for the concerned UE's sidelink communication in network scheduled mode for NR V2X services as defined in TS 23.287 [40].

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

If the *CPAC MCG Information* IE is included in the UE CONTEXT MODIFICATION REQUEST message and the CPAC Trigger is set to:

- "CPAC-preparation": the gNB-DU shall, if supported, consider that the request concerns a conditional PSCell addition or conditional PSCell change. The gNB-DU takes the included *CG-Config* and/or *CG-ConfigInfo* IE into account, and may provide a corresponding *CellGroupConfig* IE for MCG configuration preparation in the UE CONTEXT MODIFICATION RESPONSE message. The UE CONTEXT MODIFICATION RESPONSE message also includes a *Requested Target Cell ID* IE corresponding to the *PSCell ID* IE in the UE CONTEXT MODIFICATION REQUEST message.
- "CPAC-executed": the gNB-DU shall, if supported, consider that, for the included *PSCell ID* IE corresponding to the selected PSCell, the UE has successfully executed the CPAC preparation. The gNB-DU shall apply the corresponding *CellGroupConfig* IE for MCG configuration.
- "CPAC-cancel": the gNB-DU shall, if supported, consider that the gNB-CU is about to release the prepared MCG configuration(s) corresponding to the PSCell(s) identified by the included NR CGI(s) in the *Candidate PSCells To Be Cancelled List* IE.

If the *Conditional Intra-DU Mobility Information* IE is included in the UE CONTEXT MODIFICATION REQUEST message and the CHO Trigger is set to "CHO-initiation", the gNB-DU shall consider that the request concerns a conditional handover or conditional PSCell addition or conditional PSCell change for the included *SpCell ID* IE and shall include it as the *Requested Target Cell ID* IE in the UE CONTEXT MODIFICATION RESPONSE message. The gNB-DU shall regard it as a reconfiguration with sync as defined in TS 38.331 [8].

If the *Conditional Intra-DU Mobility Information* IE is included in the UE CONTEXT MODIFICATION REQUEST message and the CHO Trigger is set to "CHO-replace", the gNB-DU shall replace the existing prepared conditional mobility identified by the *gNB-DU UE F1AP ID* IE and the *SpCell ID* IE.

If the *Conditional Intra-DU Mobility Information* IE is included in the UE CONTEXT MODIFICATION REQUEST message and the CHO Trigger is set to "CHO-cancel", the gNB-DU shall consider that the gNB-CU is about to remove any reference to, and release any resources previously reserved for the candidate cells associated to the UE-associated signalling identified by the *gNB-CU UE F1AP ID* IE and the *gNB-DU UE F1AP ID* IE. If the *Candidate Cells To Be Cancelled List* IE is also included in the UE CONTEXT MODIFICATION REQUEST message, the gNB-DU shall consider that only the resources reserved for the cells identified by the included NR CGIs are about to be released by the gNB-CU.

If the *Transmission Stop Indicator* IE is included within the *DRB to Be Modified Item* IE in the UE CONTEXT MODIFICATION REQUEST message and set to "true", the gNB-DU shall, if supported, stop the data transmission for the DRB. It is up to gNB-DU implementation when to stop the UE scheduling for that DRB.

If the *SCG Indicator* IE is contained in the UE CONTEXT MODIFICATION REQUEST message and it is set to "released", the gNB-DU shall, if supported, deduce that an SCG is removed.

If the *Estimated Arrival Probability* IE is contained in the *Conditional Intra-DU Mobility Information* IE included in the UE CONTEXT MODIFICATION REQUEST message, then the gNB-DU may use the information to allocate necessary resources for the UE.

If the *Location Measurement Information* IE is included in the *CU to DU RRC Information* IE in the UE CONTEXT MODIFICATION REQUEST message, the gNB-DU shall, if supported, take it into account when configuring measurement gaps for the UE.

If the *F1-C Transfer Path NRDC* IE is included in UE CONTEXT MODIFICATION REQUEST message, the gNB-DU shall, if supported, take it into account.

If for a given E-RAB for EN-DC operation the *ENB DL Transport Layer Address* IE is included in the UE CONTEXT MODIFICATION REQUEST message, the gNB-DU shall, if supported, use it as part of its ACL functionality configuration actions, if such ACL functionality is deployed.

If for a given Qos flow for NG-RAN operation the *PDCP Terminating Node DL Transport Layer Address* IE is included in the UE CONTEXT MODIFICATION REQUEST message, then the gNB-DU shall, if supported, use it as part of its ACL functionality configuration actions, if such ACL functionality is deployed.

If the gNB-DU is an IAB-DU, and if the *IAB Conditional RRC Message Delivery Indication* IE is included in the UE CONTEXT MODIFICATION REQUEST message together with the *RRC-Container* IE, and if its value is set to "true", and if the *RRC-Container* IE is for a child IAB-MT of the gNB-DU, the gNB-DU shall, if supported, withhold the RRC message until one of the following conditions is met:

If the gNB-DU belongs to a migrating IAB-node, whose co-located IAB-MT has successfully performed the random-access procedure to the target parent node, and if the migrating IAB-node has one or more routing entries for the target path.

The gNB-DU receives a subsequent F1AP message including an *RRC-Container IE* for the same child node.

If the gNB-DU belongs to a descendant node of the migrating IAB-node, whose co-located IAB-MT has received an *RRCReconfiguration* message including the intra-donor migration configurations, e.g., new TNL address(es) and the new default UL BAP routing ID.

If the gNB-DU belongs to a migrating IAB-node, whose co-located IAB-MT has successfully performed RLF recovery after handover failure, and if the migrating IAB-node has one or more routing entries for the target path.

If the *MDT Polluted Measurement Indicator* IE is included in the UE CONTEXT MODIFICATION REQUEST, the gNB-DU shall take this information into account as specified in TS 38.401 [4].

If the *SCG Activation Request* IE is included in the UE CONTEXT MODIFICATION REQUEST message, the gNB-DU may use it to configure SCG resources as specified in TS 37.340 [7], and if supported, shall include the *SCG Activation Status* IE in the UE CONTEXT MODIFICATION RESPONSE message.

If the *CG-SDT Query Indication* IE is included in the UE CONTEXT MODIFICATION REQUEST message and set to 'true', the gNB-DU shall, if supported, provide the CG-SDT related resource configuration for the bearers indicated as SDT bearers in the *SDT-MAC-PHY-CG-Config* IE within the *DU to CU RRC Information* IE contained in the UE CONTEXT MODIFICATION RESPONSE message to the gNB-CU. If the *SDT-MAC-PHY-CG-Config* IE is also included in the UE CONTEXT MODIFICATION REQUEST message within the *CU to DU RRC Information* IE, the gNB-DU may provide the delta signalling version of the *SDT-MAC-PHY-CG-Config* IE within the *DU to CU RRC Information* IE contained in the UE CONTEXT MODIFICATION RESPONSE message to the gNB-CU.

If the *5G ProSe Authorized* IE is contained in the UE CONTEXT MODIFICATION REQUEST message, the gNB-DU shall, if supported, update its 5G ProSe services authorization information for the UE accordingly. If the *5G ProSe Authorized* IE includes one or more IEs set to "not authorized", the gNB-DU shall, if supported, initiate actions to ensure that the UE is no longer accessing the relevant service(s).

If the *SDT Bearer Configuration Query Indication* IE is contained in the UE CONTEXT MODIFICATION REQUEST message, the gNB-DU shall, if supported, provide the RLC bearer configuration in the *SDT Bearer Configuration Info* IE in the UE CONTEXT MODIFICATION RESPONSE message for each bearer indicated as SDT bearer.

If the *5G ProSe UE PC5 Aggregate Maximum Bit Rate* IE is included in the UE CONTEXT MODIFICATION REQUEST message, the gNB-DU shall, if supported:

- replace the previously provided 5G ProSe UE PC5 Aggregate Maximum Bit Rate, if available in the UE context, with the received value;
- use the received value for the concerned UE's sidelink communication in network scheduled mode for 5G ProSe services.

If the *5G ProSe PC5 Link Aggregate Bit Rate* IE is included in the UE CONTEXT MODIFICATION REQUEST message, the gNB-DU shall, if supported:

- replace the previously provided 5G ProSe PC5 Link Aggregate Bit Rate, if available in the UE context, with the received value;
- use the received value for the concerned UE's sidelink communication in network scheduled mode for 5G ProSe services as defined in TS 23.304 [44].

If the *Updated Remote UE Local ID* IE is contained in the UE CONTEXT MODIFICATION REQUEST message, the gNB-DU shall, if supported, replace the previously provided Remote UE Local ID, if available in the UE context, with the received value.

If the *Uu RLC Channel To Be Setup List* IE is contained in the UE CONTEXT MODIFICATION REQUEST message, the gNB-DU shall, if supported, act as specified in TS 38.401 [4].

If the *Uu RLC Channel To Be Modified List* IE is contained in the UE CONTEXT MODIFICATION REQUEST message, the gNB-DU shall, if supported, act as specified in TS 38.401 [4].

If the *Uu RLC Channel To Be Release List* IE is included in the UE CONTEXT MODIFICATION REQUEST message, the gNB-DU shall, if supported, release the Uu Relay RLC channels in the list.

If the *PC5 RLC Channel To Be Setup List* IE is contained in the UE CONTEXT MODIFICATION REQUEST message, the gNB-DU shall, if supported, act as specified in TS 38.401 [4]. gNB-DU generates the PC5 Relay RLC channel configurations for a L2 U2N Remote UE or U2N Relay UE. If the F1AP-IDs are associated with a U2N Relay UE, the *PC5 RLC Channel to be Setup Item IEs* IE shall include the *Remote UE Local ID* and correspondingly, the *PC5 RLC Channel Setup Item IEs* IE and the *PC5 RLC Channel Failed to be Setup Item* IE in the UE CONTEXT MODIFICATION RESPONSE message shall include the *Remote UE Local ID* IE.

If the *PC5 RLC Channel To Be Modified List* IE is contained in the UE CONTEXT MODIFICATION REQUEST message, the gNB-DU shall, if supported, act as specified in TS 38.401 [4]. gNB-DU generates the PC5 Relay RLC channel configurations for a L2 U2N Remote UE or U2N Relay UE. If the F1AP-IDs are associated with a U2N Relay UE, the *PC5 RLC Channel to be Modified Item IEs* IE shall include the *Remote UE Local ID* IE and correspondingly, the *PC5 RLC Channel Modified Item IEs* IE and the *PC5 RLC Channel Failed to be Modified Item IEs* IE in the UE CONTEXT MODIFICATION RESPONSE message shall include the *Remote UE Local ID* IE.

If the *PC5 RLC Channel To Be Release List* IE is included in the UE CONTEXT MODIFICATION REQUEST message, the gNB-DU shall, if supported, release the PC5 Relay RLC channels in the list. If the F1AP-IDs are associated with a U2N Relay UE, the *PC5 RLC Channel to be Released Item IEs* IE shall include the *Remote UE Local ID* IE.

If the *Path Switch Configuration* IE is contained in the UE CONTEXT MODIFICATION REQUEST message, the gNB-DU shall, if supported, use it to configure the path switch from direct path to indirect path as specified in TS 38.401 [4].

If the *MUSIM-GapConfig* IE is contained in the *CU to DU RRC Information* IE included in the UE CONTEXT MODIFICATION REQUEST message, the gNB-DU shall, if supported, decide to use this IE for MUSIM gap configuration or select another one based on the received *UEAssistanceInformation* IE. If gNB-DU selects a different MUSIM gap configuration from received *UEAssistanceInformation* IE, then it shall include the selected MUSIM gap information to the gNB-CU in the *MUSIM-GapConfig* IE of the *DU to CU RRC Information* IE that is included in the UE CONTEXT MODIFICATION RESPONSE message.

If *MUSIM-GapConfig* IE is not contained in the *CU to DU RRC Information* IE, then gNB-DU shall, if supported, send the selected MUSIM gap configuration based on the received *UEAssistanceInformation* IE, to the gNB-CU in the *MUSIM-GapConfig* IE of the *DU to CU RRC Information* IE that is included in the UE CONTEXT MODIFICATION RESPONSE message. When *MUSIM-GapConfig* IE is received, the gNB-CU should use this value.

If the *gNB-DU UE Slice Maximum Bit Rate List* IE is included in the UE CONTEXT MODIFICATION REQUEST message, the gNB-DU shall, if supported,

- store and replace the previously provided gNB-DU UE Slice Maximum Bit Rate List, if any, with the new received *gNB-DU UE Slice Maximum Bit Rate List*;
- use the received *gNB-DU UE Slice Maximum Bit Rate List* for the uplink traffic policing for each concerned slice as specified in TS 23.501 [21].

If the *Multicast MBS Session Setup List IE* or the *Multicast MBS Session Remove List IE* or both IEs are contained in the *UE CONTEXT MODIFICATION REQUEST* message the gNB-DU shall, if supported, store and use the information for configuring MBS Session Resources, if applicable.

If the *UE Multicast MRB To Be Setup at Modify List IE* is contained in the *UE CONTEXT MODIFICATION REQUEST* message, the gNB-DU shall, if supported, take it into account for configuring MBS Session Resources, if applicable, and shall include the *Multicast F1-U Context Reference CU IE*, if available, in the *UE CONTEXT MODIFICATION RESPONSE* message. And if the *MBS PTP Retransmission Tunnel Required IE* is included in the *UE Multicast MRB to Be Setup at Modify Item IEs IE*, the gNB-DU shall, if supported trigger the establishment of the MBS PTP Retransmission F1-U tunnel.

If the *MBS PTP Forwarding Tunnel Required Information IE* is included in the *UE Multicast MRB to Be Setup at Modify Item IEs IE*, the gNB-DU shall, if supported trigger the establishment of the MBS PTP Forwarding F1-U tunnel.

If the *Management Based MDT PLMN Modification List IE* is contained in the *UE CONTEXT MODIFICATION REQUEST* message, the gNB-DU 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 [29].

If the *Dedicated SI Delivery Indication IE* is included in the *UE CONTEXT MODIFICATION RESPONSE* message, the gNB-CU shall, if supported, take it into account for the system information delivery to the UE as described in TS 38.331 [8].

If the *InterFrequencyConfig-NoGap IE* is included in the *DU to CU RRC Information IE* contained in the *UE CONTEXT MODIFICATION RESPONSE* message, the gNB-CU shall, if supported, use it as described in TS 38.331 [8].

If the *ul-GapFR2-Config IE* is contained in the *DU to CU RRC Information IE* that is included in the *UE CONTEXT MODIFICATION RESPONSE* message, the gNB-CU shall, if supported, use it as described in TS 38.331 [8].

If the *TwoPHRModeMCG IE* or the *TwoPHRModeSCG IE* is contained in the *DU to CU RRC Information IE* that is included in the *UE CONTEXT MODIFICATION RESPONSE* message, the gNB-CU shall, if supported, use this value as described in TS 38.331 [8].

If the *MBSInterestIndication IE* is included in the *CU to DU RRC Information IE* in the *UE CONTEXT MODIFICATION REQUEST* message, the gNB-DU shall, if supported, take it into account when configuring resources for the UE.

If the *ncd-SSB-RedCapInitialBWP-SDT IE* is contained in the *DU to CU RRC Information IE* that is included in the *UE CONTEXT MODIFICATION RESPONSE* message, the gNB-CU shall, if supported, use it as described in TS 38.331 [8].

8.3.4.3 Unsuccessful Operation

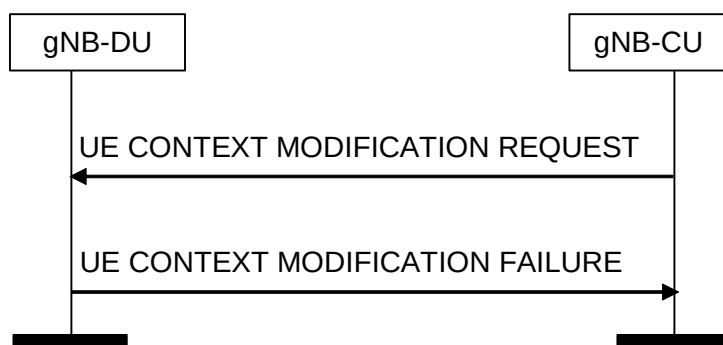


Figure 8.3.4.3-1: UE Context Modification procedure. Unsuccessful operation

In case none of the requested modifications of the UE context can be successfully performed, the gNB-DU shall respond with the *UE CONTEXT MODIFICATION FAILURE* message with an appropriate cause value. If the *Conditional Intra-DU Mobility Information IE* was included in the *UE CONTEXT MODIFICATION REQUEST* message and set to "CHO-initiation", the gNB-DU shall include the received *SpCell ID IE* as the *Requested Target Cell ID IE* in the *UE CONTEXT MODIFICATION FAILURE* message.

If the gNB-DU is not able to accept the *SpCell ID* IE in UE CONTEXT MODIFICATION REQUEST message, it shall reply with the UE CONTEXT MODIFICATION FAILURE message.

If the *Conditional Intra-DU Mobility Information* IE was included and set to "CHO-initiation" or "CHO-replace" but the *SpCell ID* IE was not included in the UE CONTEXT MODIFICATION REQUEST message, the gNB-DU shall respond with the UE CONTEXT MODIFICATION FAILURE message with an appropriate cause value.

8.3.4.4 Abnormal Conditions

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

If the gNB-DU receives a UE CONTEXT MODIFICATION REQUEST message containing a *DRB QoS* IE for a GBR QoS DRB but where the *GBR QoS Flow Information* IE is not present, the gNB-DU shall report the establishment of the corresponding DRBs as failed in the *DRB Failed to Setup List* IE of the UE CONTEXT MODIFICATION RESPONSE message with an appropriate cause value.

If the *Delay Critical* IE is included in the *Dynamic 5QI Descriptor* IE within the *DRB QoS* IE in the UE CONTEXT MODIFICATION REQUEST message and is set to the value "delay critical" but the *Maximum Data Burst Volume* IE is not present, the gNB-DU shall report the establishment of the corresponding DRB as failed in the *DRB Failed to Setup List* IE of the of the UE CONTEXT MODIFICATION RESPONSE message with an appropriate cause value.

If one or more candidate cells in the *Candidate Cells To Be Cancelled List* IE included in the UE CONTEXT MODIFICATION REQUEST message were not prepared using the same UE-associated signaling connection, the gNB-DU shall ignore those non-associated candidate cells.

If more than one of the following IEs, i.e., the *Uplink TxDirectCurrentList Information* IE or the *Uplink TxDirectCurrentTwoCarrierList* Information IE or the *Uplink TxDirectCurrentMoreCarrierList* Information IE is included in the UE CONTEXT MODIFICATION REQUEST message, the gNB-DU shall consider it as a logical error.

8.3.5 UE Context Modification Required (gNB-DU initiated)

8.3.5.1 General

The purpose of the UE Context Modification Required procedure is to modify the established UE Context, e.g., modifying and releasing radio bearer resources, or sidelink radio bearer resources or candidate cells in conditional handover or conditional PSCell addition or conditional PSCell change. The procedure uses UE-associated signalling.

8.3.5.2 Successful Operation

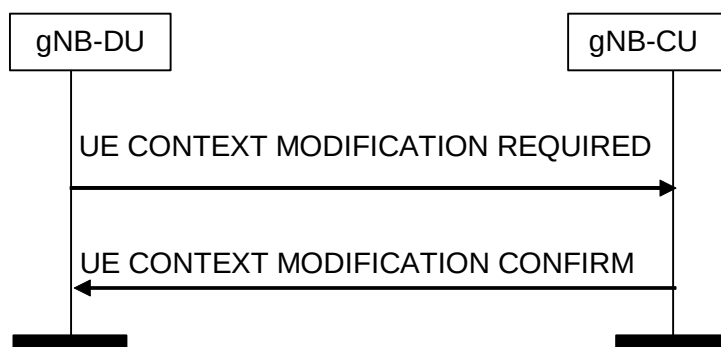


Figure 8.3.5.2-1: UE Context Modification Required procedure. Successful operation

The F1AP UE CONTEXT MODIFICATION REQUIRED message is initiated by the gNB-DU.

The gNB-CU reports the successful update of the UE context in the UE CONTEXT MODIFICATION CONFIRM message.

For a given bearer for which PDCP CA duplication was already configured, if two *DL UP TNL Information* IEs are included in UE CONTEXT MODIFICATION REQUIRED message for a DRB, the gNB-CU shall include two *UL UP TNL Information* IEs in UE CONTEXT MODIFICATION CONFIRM message. The gNB-CU and gNB-DU use the *UL UP TNL Information* IEs and *DL UP TNL Information* IEs to support packet duplication for intra-gNB-DU CA as defined in TS 38.470 [2], and the first *UP TNL Information* IE is still for the primary path.

For a given bearer for which PDCP CA duplication was already configured, if one or two *Additional PDCP Duplication UP TNL Information* IEs are included in the UE CONTEXT MODIFICATION REQUIRED message for a DRB, the gNB-CU shall, if supported, include one or two *Additional PDCP Duplication UP TNL Information* IEs in the UE CONTEXT MODIFICATION CONFIRM message. The gNB-CU and gNB-DU use the *Additional PDCP Duplication UP TNL Information* IEs to support packet duplication for intra-gNB-DU CA as defined in TS 38.470 [2].

If the *BH Information* IE is included in the *UL UP TNL Information to be setup List* IE or the *Additional PDCP Duplication TNL List* IE for a DRB, the gNB-DU shall, if supported, use the indicated BAP Routing ID and BH RLC channel for transmission of the corresponding GTP-U packets to the IAB-donor, as specified in TS 38.340 [30].

If the *Resource Coordination Transfer Container* IE is included in the UE CONTEXT MODIFICATION REQUIRED, the gNB-CU shall transparently transfer this information for the purpose of resource coordination as described in TS 36.423 [9], TS 38.423 [28].

For EN-DC operation, if the gNB-CU includes the *Resource Coordination Transfer Information* IE in the UE CONTEXT MODIFICATION CONFIRM message, the gNB-DU shall, if supported, use it for the purpose of resource coordination. If the gNB-CU received the MeNB Resource Coordination Information as defined in TS 36.423 [9], after completion of UE Context Modification Required procedures, the gNB-CU shall transparently transfer it to the gNB-DU via the *Resource Coordination Transfer Container* IE in the UE CONTEXT MODIFICATION CONFIRM message. The gNB-DU shall use the information received in the *Resource Coordination Transfer Container* IE for reception of MeNB Resource Coordination Information at the gNB acting as secondary node as described in TS 36.423 [9]. If the *Resource Coordination E-UTRA Cell Information* IE is included in the *Resource Coordination Transfer Information* IE, the gNB-DU shall store the information replacing previously received information for the same E-UTRA cell, and use the stored information for the purpose of resource coordination. If the *Ignore PRACH Configuration* IE is present and set to "true" the *E-UTRA PRACH Configuration* IE in the UE CONTEXT MODIFICATION CONFIRM message shall be ignored.

For NGEN-DC or NE-DC operation, if the gNB-CU includes the *Resource Coordination Transfer Information* IE in the UE CONTEXT MODIFICATION CONFIRM message, the gNB-DU shall, if supported, use it for the purpose of resource coordination. If the gNB-CU received the MR-DC Resource Coordination Information as defined in TS 38.423 [28], after completion of UE Context Modification Required procedures, the gNB-CU shall transparently transfer it to the gNB-DU via the *Resource Coordination Transfer Container* IE in the UE CONTEXT MODIFICATION CONFIRM message. The gNB-DU shall use the information received in the *Resource Coordination Transfer Container* IE for reception of MR-DC Resource Coordination Information at the gNB as described in TS 38.423 [28].

If the *DU to CU RRC Information* IE is included in the UE CONTEXT MODIFICATION REQUIRED message, the gNB-CU shall perform RRC Reconfiguration as described in TS 38.331 [8]. The *CellGroupConfig* IE shall transparently be signaled to the UE as specified in TS 38.331 [8].

If the *ServCellInfoList* IE is included in the *DU to CU RRC Information* IE contained in the UE CONTEXT MODIFICATION REQUIRED message, the gNB-CU shall take it into account to generate the content of inter-node message, i.e., *CG-Config* or *CG-ConfigInfo*, as described in TS 38.331 [8].

If the UE CONTEXT MODIFICATION CONFIRM message includes the *Execute Duplication* IE, the gNB-DU shall perform CA based duplication, if configured, for the SRB for the included *RRC-Container* IE.

If the UE CONTEXT MODIFICATION REQUIRED message contains the *RLC Status* IE, the gNB-CU shall assume that RLC has been reestablished at the gNB-DU and may trigger PDCP data recovery.

If the *Candidate Cells To Be Cancelled List* IE is included in the UE CONTEXT MODIFICATION REQUIRED message, the gNB-CU shall consider that only the resources reserved for the candidate cells identified by the included NR CGIs and associated to the UE-associated signaling identified by the *gNB-CU UE F1AP ID* IE and the *gNB-CU UE F1AP ID* IE are about to be released by the gNB-DU.

If the *PC5 RLC Channel Required to be Modified List* IE or the *PC5 RLC Channel Required to be Released List* IE is included in the UE CONTEXT MODIFICATION REQUIRED message and the F1AP-IDs is associated with a U2N Relay UE, the *PC5 RLC Channel Required to be Modified List* IE or the *PC5 RLC Channel Required to be Released*

List shall include the *Remote UE Local ID* and correspondingly, the *PC5 RLC Channel Modified Item IEs* in the UE CONTEXT MODIFICATION CONFIRM message shall include the *Remote UE Local ID IE*.

If the *UE Multicast MRB Required to Be Modified List IE* is included in the UE CONTEXT MODIFICATION REQUIRED message

- containing for an MRB the *MRB type reconfiguration IE* set to "true" the gNB-CU shall take the *MRB Reconfigured RLC mode IE* into account to reconfigure the UE and to decide whether to request a PDCP status report as specified in TS 38.300 [6] and include the *MBS PTP Retransmission Tunnel Required IE* in the *UE Multicast MRB Confirmed to Be Modified Item IEs IE*.
- containing for an MRB the *Multicast F1-U Context Reference CU IE* the gNB-CU shall, if supported, replace previously provided information by the newly received and take it into account when retrieving MRB progress information.

Interaction with the Multicast Distribution Setup procedure:

If the UE CONTEXT MODIFICATION CONFIRM message contains for an MRB the *MBS PTP Retransmission Tunnel Required IE* in the *UE Multicast MRB Confirmed to Be Modified Item IEs IE* the gNB-DU shall, if supported, trigger the Multicast Distribution Setup procedure to setup requested F1-U resources, if applicable.

8.3.5.2A Unsuccessful Operation

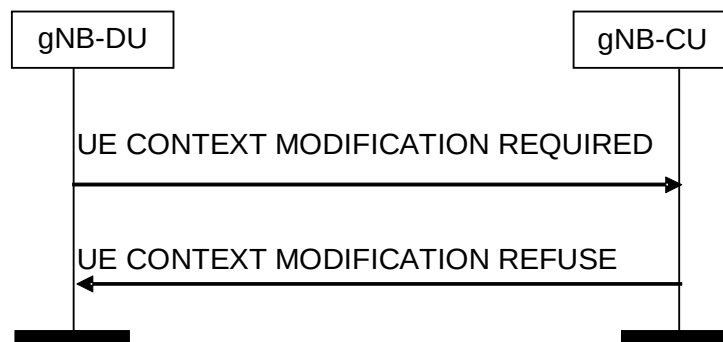


Figure 8.3.5.2A-1: UE Context Modification Required procedure. Unsuccessful operation.

In case none of the requested modifications of the UE context can be successfully performed, the gNB-CU shall respond with the UE CONTEXT MODIFICATION REFUSE message with an appropriate cause value.

8.3.5.3 Abnormal Conditions

If one or more candidate cells in the *Candidate Cells To Be Cancelled List IE* included in the UE CONTEXT MODIFICATION REQUIRED message were not prepared using the same UE-associated signaling connection, the gNB-CU shall ignore those non-associated candidate cells.

8.3.6 UE Inactivity Notification

8.3.6.1 General

This procedure is initiated by the gNB-DU to indicate the UE activity event.

The procedure is also used to request the termination of SDT session.

The procedure uses UE-associated signalling.

8.3.6.2 Successful Operation



Figure 8.3.6.2-1: UE Inactivity Notification procedure.

The gNB-DU initiates the procedure by sending the UE INACTIVITY NOTIFICATION message to the gNB-CU.

If the *DRB ID* IE is included in the *DRB Activity Item* IE in the UE INACTIVITY NOTIFICATION message, the *DRB Activity* IE shall also be included

If the gNB-CU receives the *SDT Termination Request* IE in the UE INACTIVITY NOTIFICATION message, the gNB-CU shall, if supported, consider that the termination of the ongoing SDT transaction is requested from the gNB-DU for this UE and act as specified in TS 38.300 [6].

8.3.6.3 Abnormal Conditions

Not applicable.

8.3.7 Notify

8.3.7.1 General

The purpose of the Notify procedure is to enable the gNB-DU to inform the gNB-CU that the QoS of an already established GBR DRB cannot be fulfilled any longer or that it can be fulfilled again. The procedure uses UE-associated signalling.

8.3.7.2 Successful Operation

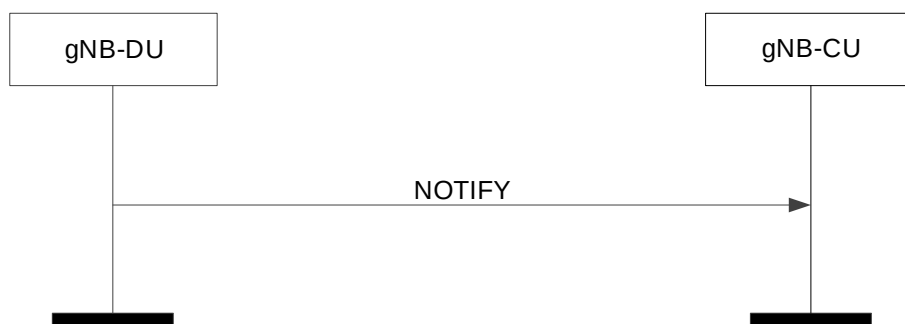


Figure 8.3.7.2-1: Notify procedure. Successful operation.

The gNB-DU initiates the procedure by sending a NOTIFY message.

The NOTIFY message shall contain the list of the GBR DRBs associated with notification control for which the QoS is not fulfilled anymore or for which the QoS is fulfilled again by the gNB-DU. The gNB-DU may also indicate an alternative QoS parameters set which it can currently fulfil in the *Current QoS Parameters Set Index* IE.

Upon reception of the NOTIFY message, the gNB-CU may identify which are the affected PDU sessions and QoS flows. The gNB-CU may inform the 5GC that the QoS for these PDU sessions or QoS flows is not fulfilled any longer or it is fulfilled again.

8.3.7.3 Abnormal Conditions

Not applicable.

8.3.8 Access Success

8.3.8.1 General

The purpose of the Access Success procedure is to enable the gNB-DU to inform the gNB-CU of which cell the UE has successfully accessed during conditional handover or conditional PSCell addition or conditional PSCell change. The procedure uses UE-associated signalling.

8.3.8.2 Successful Operation



Figure 8.3.8.2-1: Access Success procedure. Successful operation.

The gNB-DU initiates the procedure by sending a ACCESS SUCCESS message.

Upon reception of the ACCESS SUCCESS message, the gNB-CU shall consider that the UE successfully accessed the cell indicated by the included *NR CGI* IE in this gNB-DU and consider all the other CHO preparations or conditional PSCell addition or conditional PSCell change preparations accepted for this UE under the same UE-associated signaling connection in this gNB-DU as cancelled.

Interaction with other procedure:

The gNB-CU may initiate UE Context Release procedure toward the other signalling connections or other candidate gNB-DUs for this UE, if any.

8.3.8.3 Abnormal Conditions

If the ACCESS SUCCESS message refers to a context that does not exist, the gNB-CU shall ignore the message.

8.4 RRC Message Transfer procedures

8.4.1 Initial UL RRC Message Transfer

8.4.1.1 General

The purpose of the Initial UL RRC Message Transfer procedure is to transfer the initial RRC message to the gNB-CU. The procedure uses non-UE-associated signaling.

8.4.1.2 Successful operation



Figure 8.4.1.2-1: Initial UL RRC Message Transfer procedure.

The gNB-DU initiates the procedure by sending an INITIAL UL RRC MESSAGE TRANSFER. The establishment of the UE-associated logical F1-connection shall be initiated as part of the procedure.

If neither the *DU to CU RRC Container IE* nor the *Sidelink Configuration Container IE* in the *Sidelink Relay Configuration IE* is included in the INITIAL UL RRC MESSAGE TRANSFER, the gNB-CU should reject the UE under the assumption that the gNB-DU is not able to serve such UE. If the gNB-DU is able to serve the UE, the gNB-DU shall include the *DU to CU RRC Container IE* or the *Sidelink Configuration Container IE* in the *Sidelink Relay Configuration IE* and the gNB-CU shall configure the UE as specified in TS 38.331 [8]. The gNB-DU shall not include the *ReconfigurationWithSync* field in the *CellGroupConfig IE* as defined in TS 38.331 [8] of the *DU to CU RRC Container IE*.

If the *SUL Access Indication IE* is included in the INITIAL UL RRC MESSAGE TRANSFER, the gNB-CU shall consider that the UE has performed access on SUL carrier.

If the *RAN UE ID IE* is contained in the INITIAL UL RRC MESSAGE TRANSFER message, the gNB-CU shall, if supported, store it and use it as specified in TS 38.401 [4].

If the *RRC-Container-RRCSetupComplete IE* is included in the INITIAL UL RRC MESSAGE TRANSFER, the gNB-CU shall take it into account as specified in TS 38.401 [4].

If the *NR RedCap UE Indication IE* is included in the INITIAL UL RRC MESSAGE TRANSFER message, the gNB-CU shall, if supported, consider that the accessing UE is a RedCap UE.

If the *SDT Information IE* is included in the INITIAL UL RRC MESSAGE TRANSFER, the gNB-CU shall, if supported, consider that the UE is accessing for SDT as defined in TS 38.300 [6], and may use the information contained in the *SDT Assistant Information IE*, if any, for context retrieval.

If the *Sidelink Relay Configuration IE* is included in the INITIAL UL RRC MESSAGE TRANSFER, the gNB-CU shall, if supported, consider that the UE is a NR ProSe Layer-2 U2N Remote UE identified by the *Remote UE Local ID IE*, and it is connected to the U2N Relay UE indicated by the *gNB-DU UE F1AP ID of Relay UE IE*.

8.4.1.3 Abnormal Conditions

Not applicable.

8.4.2 DL RRC Message Transfer

8.4.2.1 General

The purpose of the DL RRC Message Transfer procedure is to transfer an RRC message. The procedure uses UE-associated signalling.

8.4.2.2 Successful operation



Figure 8.4.2.2-1: DL RRC Message Transfer procedure

The gNB-CU initiates the procedure by sending a DL RRC MESSAGE TRANSFER message. If a UE-associated logical F1-connection exists, the DL RRC MESSAGE TRANSFER message shall contain the *gNB-DU UE F1AP ID* IE, which should be used by gNB-DU to lookup the stored UE context. If no UE-associated logical F1-connection exists, the UE-associated logical F1-connection shall be established at reception of the DL RRC MESSAGE TRANSFER message.

If the *Index to RAT/Frequency Selection Priority* IE is included in the DL RRC MESSAGE TRANSFER, the gNB-DU may use it for RRM purposes. If the *Additional RRM Policy Index* IE is included in the DL RRC MESSAGE TRANSFER, the gNB-DU may use it for RRM purposes.

The DL RRC MESSAGE TRANSFER message shall include, if available, the *old gNB-DU UE F1AP ID* IE so that the gNB-DU can retrieve the existing UE context in RRC connection reestablishment procedure, as defined in TS 38.401 [4].

The DL RRC MESSAGE TRANSFER message shall include, if SRB duplication is activated, the *Execute Duplication* IE, so that the gNB-DU can perform CA based duplication for the SRB.

If the gNB-DU identifies the UE-associated logical F1-connection by the *gNB-DU UE F1AP ID* IE in the DL RRC MESSAGE TRANSFER message and the *old gNB-DU UE F1AP ID* IE is included, it shall release the old gNB-DU UE F1AP ID and the related configurations associated with the old gNB-DU UE F1AP ID.

If the *UE Context not retrievable* IE set to "true" is included in the DL RRC MESSAGE TRANSFER, the DL RRC MESSAGE TRANSFER may contain the *Redirected RRC message* IE and use it as specified in TS 38.401 [4].

If the *UE Context not retrievable* IE set to "true" is included in the DL RRC MESSAGE TRANSFER, the DL RRC MESSAGE TRANSFER may contain the *PLMN Assistance Info for Network Sharing* IE, if available at the gNB-CU and may use it as specified in TS 38.401 [4].

If the DL RRC MESSAGE TRANSFER message contains the *New gNB-CU UE F1AP ID* IE, the gNB-DU shall, if supported, replace the value received in the *gNB-CU UE F1AP ID* IE by the value of the *New gNB-CU UE F1AP ID* and use it for further signalling.

If the DL RRC MESSAGE TRANSFER contains the *SRB Mapping Info* IE, the gNB-DU shall, if supported, use it for the Remote UE's SRB0 or SRB1 transfer.

Interactions with UE Context Release Request procedure:

If the *UE Context not retrievable* IE set to "true" is included in the DL RRC MESSAGE TRANSFER, the gNB-DU may trigger the UE Context Release Request procedure, as specified in TS 38.401 [4].

8.4.2.3 Abnormal Conditions

Not applicable.

8.4.3 UL RRC Message Transfer

8.4.3.1 General

The purpose of the UL RRC Message Transfer procedure is to transfer an RRC message as an UL PDCP-PDU to the gNB-CU. The procedure uses UE-associated signalling.

8.4.3.2 Successful operation



Figure 8.4.3.2-1: UL RRC Message Transfer procedure

The gNB-DU initiates the procedure by sending a UL RRC MESSAGE TRANSFER message. When the gNB-DU has received from the radio interface an RRC message to which a UE-associated logical F1-connection for the UE exists, the gNB-DU shall send the UL RRC MESSAGE TRANSFER message to the gNB-CU including the RRC message as a *RRC-Container* IE.

If the *Selected PLMN ID* IE is contained in the UL RRC MESSAGE TRANSFER message, the gNB-CU may use it as specified in TS 38.401 [4].

If the UL RRC MESSAGE TRANSFER message contains the *New gNB-DU UE F1AP ID* IE, the gNB-CU shall, if supported, replace the value received in the *gNB-DU UE F1AP ID* IE by the value of the *New gNB-DU UE F1AP ID* and use it for further signalling.

8.4.3.3 Abnormal Conditions

Not applicable.

8.4.4 RRC Delivery Report

8.4.4.1 General

The purpose of the RRC Delivery Report procedure is to transfer to the gNB-CU information about successful delivery of DL PDCP-PDUs including RRC messages. The procedure uses UE-associated signalling.

8.4.4.2 Successful operation



Figure 8.4.4.2-1: RRC Delivery Report procedure.

The gNB-DU initiates the procedure by sending an RRC DELIVERY REPORT message. When the gNB-DU has successfully delivered an RRC message to the UE for which the gNB-CU has requested a delivery report, the gNB-DU shall send the RRC DELIVERY REPORT message to the gNB-CU containing the *RRC Delivery Status* IE and the *SRB ID* IE.

8.4.4.3 Abnormal Conditions

Not applicable.

8.5 Warning Message Transmission Procedures

8.5.1 Write-Replace Warning

8.5.1.1 General

The purpose of Write-Replace Warning procedure is to start or overwrite the broadcasting of warning messages. The procedure uses non UE-associated signalling.

8.5.1.2 Successful Operation

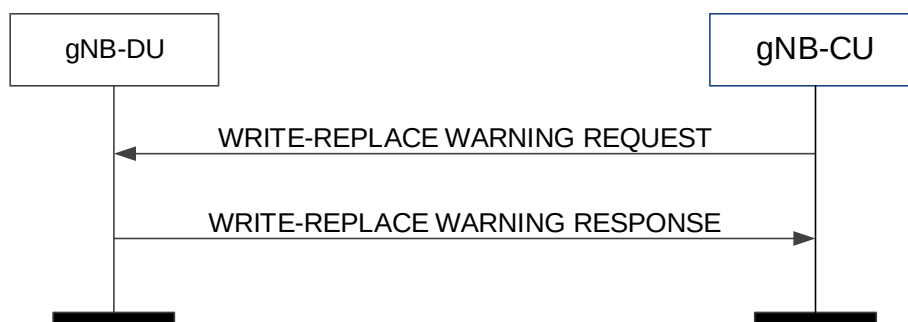


Figure 8.5.1.2-1: Write-Replace Warning procedure: successful operation

The gNB-CU initiates the procedure by sending a WRITE-REPLACE WARNING REQUEST message to the gNB-DU.

Upon receipt of the WRITE-REPLACE WARNING REQUEST message, the gNB-DU shall prioritise its resources to process the warning message.

The gNB-DU acknowledges the WRITE-REPLACE WARNING REQUEST message by sending a WRITE-REPLACE WARNING RESPONSE message to the gNB-CU.

Upon receipt of the WRITE-REPLACE WARNING REQUEST message, the gNB-DU shall include the *Dedicated SI Delivery Needed UE List* IE in the WRITE-REPLACE WARNING RESPONSE message for UEs that are unable to receive system information from broadcast.

If *Dedicated SI Delivery Needed UE List* IE is contained in the WRITE-REPLACE WARNING RESPONSE message, the gNB-CU should take it into account when informing the UE of the updated system information via the dedicated RRC message.

Upon reception of the *Notification Information* IE in the *PWS System Information* IE in the WRITE-REPLACE WARNING REQUEST message, the gNB-DU shall use this information to avoid that duplications trigger new broadcast or replace existing broadcast.

If the gNB-DU receives a WRITE-REPLACE WARNING REQUEST message with the *Notification Information* IE in the *PWS System Information* IE which are different from those of ongoing broadcast warning messages, and if the *SIB Type* IE is set to "8", the gNB-DU shall broadcast the received warning message concurrently with other ongoing messages.

If the gNB-DU receives a WRITE-REPLACE WARNING REQUEST message with the *Notification Information* IE in the *PWS System Information* IE which are different from those of ongoing broadcast warning messages, and if the *SIB Type* IE is set to the value other than '8', the gNB-DU shall use the newly received one to replace the ongoing broadcast warning message with the same value of *SIB Type* IE.

If the *SIB Type* IE in the *PWS System Information* IE in the WRITE-REPLACE WARNING REQUEST message is set to "8" and if a value "0" is received in the *Number of Broadcast Requested* IE and if the *Repetition Period* IE is different from "0", the gNB-DU shall broadcast the received warning message indefinitely.

If *Additional SIB Message List* IE is included in *PWS System Information* IE, the gNB-DU shall store all SIB message(s) in *PWS System Information* IE, and consider that the first segment of public warning message is included in *SIB message* IE, and the remaining segments are listed in *Additional SIB Message List* IE in segmentation sequence order.

8.5.1.3 Unsuccessful Operation

Not applicable.

8.5.1.4 Abnormal Conditions

If the gNB-DU receives a WRITE-REPLACE WARNING REQUEST message which does not include the *Notification Information* IE in the *PWS System Information* IE, the gNB-DU shall consider it as a logical error.

8.5.2 PWS Cancel

8.5.2.1 General

The purpose of the PWS Cancel procedure is to cancel an already ongoing broadcast of a warning message. The procedure uses non UE-associated signalling.

8.5.2.2 Successful Operation

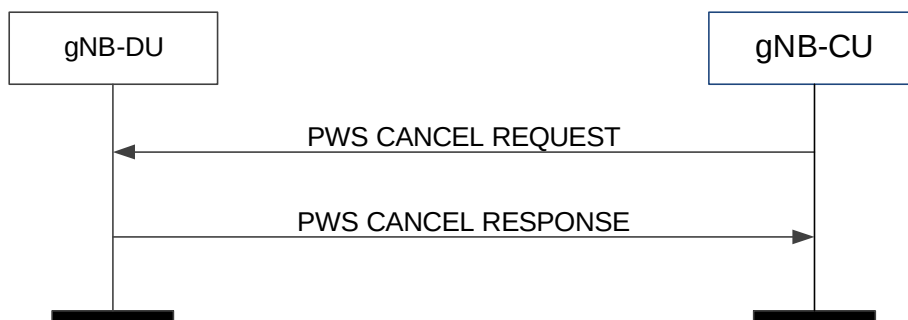


Figure 8.5.2.2-1: PWS Cancel procedure: successful operation

The gNB-CU initiates the procedure by sending a PWS CANCEL REQUEST message to the gNB-DU.

The gNB-DU shall acknowledge the PWS CANCEL REQUEST message by sending the PWS CANCEL RESPONSE message.

If the *Cancel-All Warning Messages Indicator* IE is present in the PWS CANCEL REQUEST message, then the gNB-DU shall stop broadcasting and discard all warning messages for the area as indicated in the *Cell Broadcast To Be Cancelled List* IE or in all the cells of the gNB-DU if the *Cell Broadcast To Be Cancelled List* IE is not included. The gNB-DU shall acknowledge the PWS CANCEL REQUEST message by sending the PWS CANCEL RESPONSE message, and shall, if there is area to report where an ongoing broadcast was stopped successfully, include the *Cell Broadcast Cancelled List* IE with the *Number of Broadcasts* IE set to 0.

If the *Cell Broadcast To Be Cancelled List* IE is not included in the PWS CANCEL REQUEST message, the gNB-DU shall stop broadcasting and discard the warning message identified by the *Message Identifier* IE and the *Serial Number* IE in the *Notification Information* IE in all of the cells in the gNB-DU.

If the *Notification Information* IE is included in the PWS CANCEL REQUEST, the gNB-DU shall cancel broadcast of the public warning message identified by the *Notification Information* IE.

If an area included in the *Cell Broadcast To Be Cancelled List* IE in the PWS CANCEL REQUEST message does not appear in the *Cell Broadcast Cancelled List* IE in the PWS CANCEL RESPONSE, the gNB-CU shall consider that the gNB-DU had no ongoing broadcast to stop for the public warning message identified, if present, by the *Notification Information* IE in that area.

If the *Cell Broadcast Cancelled List* IE is not included in the PWS CANCEL RESPONSE message, the gNB-CU shall consider that the gNB-DU had no ongoing broadcast to stop for the public warning message identified, if present, by the *Notification Information* IE.

8.5.2.3 Unsuccessful Operation

If the gNB-DU receives a PWS CANCEL REQUEST message which contains neither the *Cancel-all Warning Messages Indicator* IE nor the *Notification Information* IE, the gNB-DU shall consider it as a logical error.

8.5.2.4 Abnormal Conditions

Not applicable.

8.5.3 PWS Restart Indication

8.5.3.1 General

The purpose of PWS Restart Indication procedure is to inform the gNB-CU that PWS information for some or all cells of the gNB-DU are available for reloading from the CBC if needed. The procedure uses non UE-associated signalling.

8.5.3.2 Successful Operation



Figure 8.5.3.2-1: PWS restart indication

The gNB-DU initiates the procedure by sending a PWS RESTART INDICATION message to the gNB-CU.

8.5.3.3 Abnormal Conditions

Not applicable.

8.5.4 PWS Failure Indication

8.5.4.1 General

The purpose of the PWS Failure Indication procedure is to inform the gNB-CU that ongoing PWS operation for one or more cells of the gNB-DU has failed. The procedure uses non UE-associated signalling.

8.5.4.2 Successful Operation

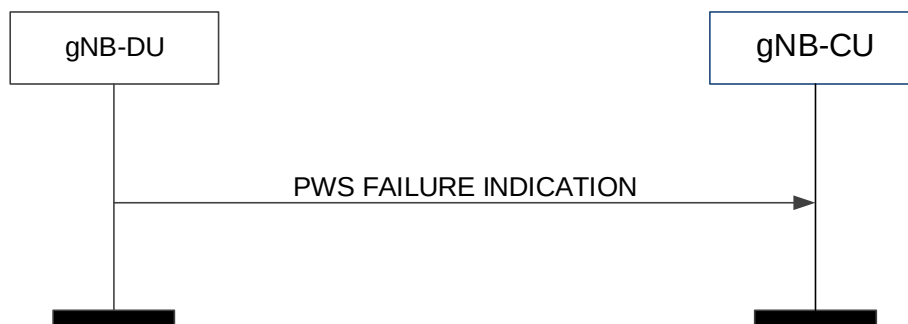


Figure 8.5.4.2-1: PWS failure indication

The gNB-DU initiates the procedure by sending a PWS FAILURE INDICATION message to the gNB-CU.

8.5.4.3 Abnormal Conditions

Not applicable.

8.6 System Information Procedures

8.6.1 System Information Delivery

8.6.1.1 General

The purpose of the System Information Delivery procedure is to command the gNB-DU to broadcast the requested one or several *SystemInformation* messages including the Other SI as requested by the gNB-CU. The procedure uses non-UE associated signalling.

8.6.1.2 Successful Operation

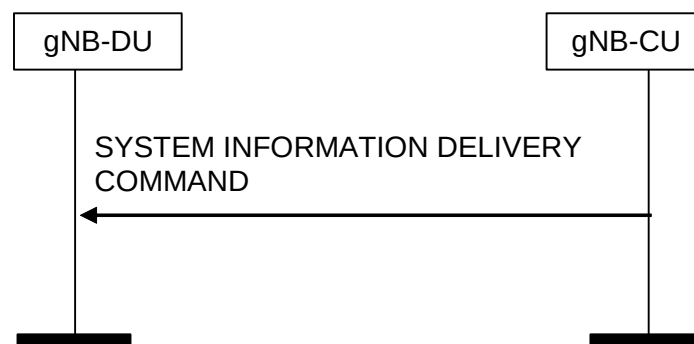


Figure 8.6.1.2-1: System Information Delivery procedure. Successful operation.

The gNB-CU initiates the procedure by sending a SYSTEM INFORMATION DELIVERY COMMAND message to the gNB-DU.

Upon reception of the SYSTEM INFORMATION DELIVERY COMMAND message, the gNB-DU shall broadcast the requested one or several *SystemInformation* messages, including the Other SI, indicated by the *SIType List* IE, and if the UE corresponding to the *confirmed UE ID* IE is not in RRC connected state, delete the UE context, if any.

Interactions with gNB-DU Configuration Update procedure:

Upon reception of SYSTEM INFORMATION DELIVERY COMMAND message, the gNB-DU Configuration Update procedure may be performed, and as part of such procedure the gNB-DU shall include the *Dedicated SI Delivery Needed UE List* IE in GNB-DU CONFIGURATION UPDATE message for UEs that are unable to receive system information from broadcast.

8.6.1.3 Abnormal Conditions

Not applicable.

8.7 Paging procedures

8.7.1 Paging

8.7.1.1 General

The purpose of the Paging procedure is used to provide the paging information to enable the gNB-DU to page a UE. The procedure uses non-UE associated signalling.

8.7.1.2 Successful Operation



Figure 8.7.1.2-1: Paging procedure. Successful operation.

The gNB-CU initiates the procedure by sending a PAGING message.

The *Paging DRX* IE may be included in the PAGING message, and if present the gNB-DU may use it to determine the final paging cycle for the UE.

The *Paging Priority* IE may be included in the PAGING message, and if present the gNB-DU may use it according to TS 23.501 [21].

At the reception of the PAGING message, the gNB-DU shall perform paging of the UE in cells which belong to cells as indicated in the *Paging Cell List* IE.

The *Paging Origin* IE may be included in the PAGING message, and if present the gNB-DU shall transfer it to the UE.

The *RAN UE Paging DRX* IE may be included in the PAGING message, and if present the gNB-DU may use it according to TS 38.304 [24].

The *CN UE Paging DRX* IE may be included in the PAGING message, and if present the gNB-DU may use it according to TS 38.304 [24].

The *NR Paging eDRX Information* IE may be included in the PAGING message, and if present the gNB-DU may use it according to TS 38.304 [24].

The *NR Paging eDRX Information for RRC INACTIVE* IE may be included in the PAGING message, and if present the gNB-DU shall, if supported, use it according to TS 38.304 [24].

The *Paging Cause* IE may be included in the PAGING message. If present the gNB-DU shall, if supported, send it to UE according to TS 38.331 [8].

The *PEIPS Assistance Information* IE may be included in the PAGING message, and if present the gNB-DU shall, if supported, use it for paging subgrouping of the UE, as specified in TS 38.300 [6].

The *RedCap Indication* IE may be included in the *UE Paging Capability* IE in the PAGING message, and if present the gNB-DU shall, if supported, use it for paging of RedCap UEs.

The *Last Used Cell Indication* IE may be included in the *Paging Cell Item IEs* IE of the PAGING message, and if present the gNB-DU shall, if supported, consider the cell identified by the *NR CGI* IE as the last used cell of the paged UE, and use it as specified in TS 38.331 [8].

The *PEI Subgrouping Support Indication* IE may be included in the *Paging Cell Item IEs* IE in the PAGING message, and if present the gNB-DU shall, if supported, consider that the cell identified by the *NR CGI* IE is supported by the UE to receive the paging early indication as described in TS 38.300 [6] and TS 38.304 [24].

The *UE Paging Capability* IE may be included in the PAGING message, and if present the gNB-DU shall, if supported, take it into account when paging the UE.

The *Extended UE Identity Index Value* IE may be included in the PAGING message, and if present the gNB-DU shall, if supported, use it according to TS 38.304 [24].

The *Hashed UE Identity Index Value* IE may be included in the PAGING message, and if present the gNB-DU shall, if supported, use it according to TS 38.304 [24].

8.7.1.3 Abnormal Conditions

Not applicable.

8.8 Trace Procedures

8.8.1 Trace Start

8.8.1.1 General

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

8.8.1.2 Successful Operation



Figure 8.8.1.2-1: Trace start procedure: Successful Operation.

The gNB-CU initiates the procedure by sending a TRACE START message. Upon reception of the TRACE START message, the gNB-DU shall initiate the requested trace session for the requested UE, as described in TS 32.422 [29]. In particular, the gNB-DU shall, if supported:

- if the *Trace Activation* IE includes the *MDT Activation* IE set to "Immediate MDT and Trace" initiate the requested trace session and MDT session as described in TS 32.422 [29];
- if the *Trace Activation* IE includes the *MDT Activation* IE set to "Immediate MDT Only" initiate the requested MDT session as described in TS 32.422 [29] and the gNB-DU shall ignore *Interfaces To Trace* IE, and *Trace Depth* IE;

8.8.1.3 Abnormal Conditions

Void.

8.8.2 Deactivate Trace

8.8.2.1 General

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

8.8.2.2 Successful Operation



Figure 8.8.2.2-1: Deactivate trace procedure: Successful Operation

The gNB-CU initiates the procedure by sending a DEACTIVATE TRACE message. Upon reception of the DEACTIVATE TRACE message, the gNB-DU shall stop the trace session for the indicated trace reference contained in the *Trace ID* IE, as described in TS 32.422 [29].

8.8.2.3 Abnormal Conditions

Void.

8.8.3 Cell Traffic Trace

8.8.3.1 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. The procedure uses UE-associated signalling.

8.8.3.2 Successful Operation



Figure 8.8.3.2-1: Cell Traffic Trace procedure. Successful operation.

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

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

8.8.3.3 Abnormal Conditions

Void.

8.9 Radio Information Transfer procedures

8.9.1 DU-CU Radio Information Transfer

8.9.1.1 General

The purpose of the DU-CU Radio Information Transfer procedure is to transfer radio-related information from the gNB-DU to the gNB-CU. The procedure uses non-UE-associated signalling.

8.9.1.2 Successful operation



Figure 8.9.1.2-1: DU-CU Radio Information Transfer procedure.

The gNB-DU initiates the procedure by sending the DU-CU RADIO INFORMATION TRANSFER message to the gNB-CU.

The gNB-CU considers that the *RIM-RS Detection Status* IE indicates the RIM-RS detection status of the cell identified by *Aggressor Cell ID* IE.

8.9.1.3 Abnormal Conditions

Not applicable.

8.9.2 CU-DU Radio Information Transfer

8.9.2.1 General

The purpose of the CU-DU Radio Information Transfer procedure is to transfer radio-related information from the gNB-CU to the gNB-DU. The procedure uses non-UE-associated signalling.

8.9.2.2 Successful operation



Figure 8.9.2.2-1: CU-DU Radio Information Transfer procedure.

The gNB-CU initiates the procedure by sending the CU-DU RADIO INFORMATION TRANSFER message to the gNB-DU. The gNB-DU considers that the *RIM-RS Detection Status* IE indicates the detection status of RIM-RS associated with *Victim gNB Set ID* IE.

8.9.2.3 Abnormal Conditions

Not applicable.

8.10 IAB Procedures

8.10.0 General

In this version of the specification, the IAB procedures are used to configure IAB-donor-DU or IAB-DU.

NOTE: The IAB procedures are applicable for IAB-nodes and IAB-donor-DU, where the term "gNB-DU" applies to IAB-DU and IAB-donor-DU, and the term "gNB-CU" applies to IAB-donor-CU, unless otherwise specified.

8.10.1 BAP Mapping Configuration

8.10.1.1 General

The BAP Mapping Configuration Procedure is initiated by the gNB-CU to configure the DL/UL routing information and/or traffic mapping information needed for the gNB-DU. The procedure uses non-UE associated signalling.

NOTE: Implementation shall ensure the avoidance of potential race conditions, i.e. it shall ensure that conflicting traffic mapping configurations are not concurrently performed using the non-UE-associated BAP Mapping Configuration procedure and the UE-associated UE Context Management procedures.

8.10.1.2 Successful Operation

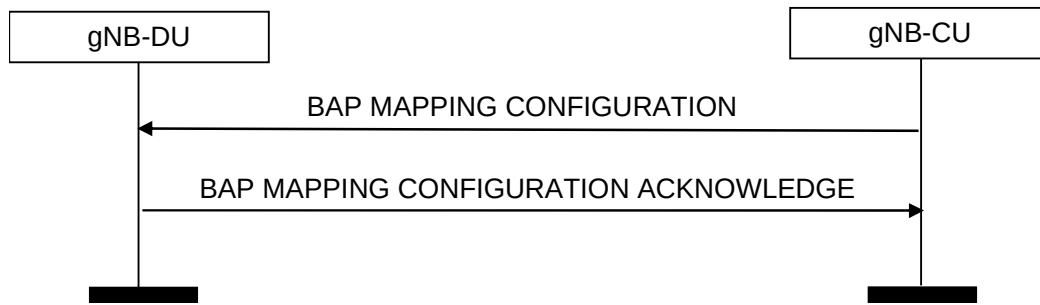


Figure 8.10.1.2-1: BAP Mapping Configuration procedure: Successful Operation

The gNB-CU initiates the procedure by sending BAP MAPPING CONFIGURATION message to the gNB-DU. The gNB-DU replies to the gNB-CU with BAP MAPPING CONFIGURATION ACKNOWLEDGE.

If *BH Routing Information Added List* IE is included in the BAP MAPPING CONFIGURATION message, the gNB-DU shall, if supported, store the BH routing information from this IE and use it for DL/UL traffic forwarding as specified in TS 38.340 [30]. If *BH Routing Information Added List* IE contains information for an existing BAP Routing ID, the gNB-DU shall, if supported, replace the previously stored routing information for this BAP Routing ID with the corresponding information in the *BH Routing Information Added List* IE.

If *BH Routing Information Removed List* IE is included in the BAP MAPPING CONFIGURATION message, the gNB-DU shall, if supported, remove the BH routing information according to such IE.

If the *Traffic Mapping Information* IE is included in the BAP MAPPING CONFIGURATION message, the gNB-DU shall, if supported, process the *Traffic Mapping Information* IE as follows:

- if the *IP to layer2 Traffic Mapping Info* IE is included, the gNB-DU shall store the mapping information contained in the *IP to layer2 Traffic Mapping Info To Add* IE, if present, and remove the previously stored mapping information as indicated by the *IP to layer2 Traffic Mapping Info To Remove* IE, if present. The gNB-DU shall use the mapping information stored for the mapping of IP traffic to layer 2, as specified in TS 38.340 [30].
- if the *BAP layer BH RLC channel Mapping Info* IE is included, the gNB-DU shall store the mapping information contained in the *BAP layer BH RLC channel Mapping Info To Add* IE, if present, and remove the previously stored mapping information as indicated by the *BAP layer BH RLC channel Mapping Info To Remove* IE, if present. The gNB-DU shall use the mapping information stored when forwarding traffic on BAP sublayer, as specified in TS 38.340 [30].

If the *Buffer Size Threshold* IE is included in the BAP MAPPING CONFIGURATION message, the gNB-DU shall, if supported, use it to determine the DL congestion based on the flow control feedback from child IAB-nodes as specified in TS 38.340 [30].

If *BAP Header Rewriting Added List* IE is included in the BAP MAPPING CONFIGURATION message, the gNB-DU shall, if supported, store the BAP header rewriting configuration from this IE, and use it as specified in TS 38.340 [30]. If *BAP Header Rewriting Added List* IE contains information for an existing ingress BAP Routing ID, the gNB-DU shall, if supported, replace the previously stored BAP header rewriting configuration for this ingress BAP Routing ID with the corresponding information in the *BAP Header Rewriting Added List* IE.

If *BAP Header Rewriting Removed List* IE is included in the BAP MAPPING CONFIGURATION message, the gNB-DU shall, if supported, remove the BAP header rewriting configuration according to such IE.

If the *Re-routing Enable Indicator* IE is included in the BAP MAPPING CONFIGURATION message, and the value is set as “false”, the gNB-DU shall, if supported, disable the inter-donor-DU re-routing. If the *Re-routing Enable Indicator* IE is included in the BAP MAPPING CONFIGURATION message, and the value is set as “true”, the gNB-DU shall, if supported, enable the inter-donor-DU re-routing, as specified in TS 38.340 [30].

8.10.1.A Unsuccessful Operation

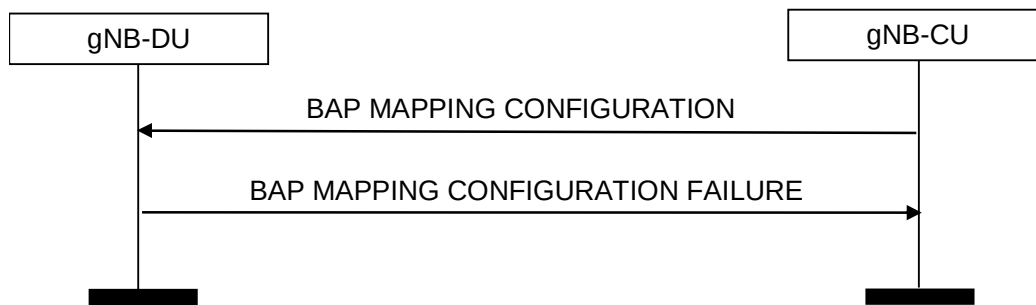


Figure 8.10.1.3-1: BAP Mapping Configuration procedure: Unsuccessful Operation

If the gNB-DU cannot accept the configuration, it shall respond with a BAP MAPPING CONFIGURATION FAILURE and appropriate cause value.

If the BAP MAPPING CONFIGURATION FAILURE message includes the Time To Wait IE, the gNB-CU shall wait at least for the indicated time before reinitiating the BAP MAPPING CONFIGURATION message towards the same gNB-DU.

8.10.1.3 Abnormal Conditions

Not applicable.

8.10.2 gNB-DU Resource Configuration

8.10.2.1 General

The gNB-DU Resource Configuration procedure is initiated by the gNB-CU in order to configure the resource usage for a gNB-DU. The procedure uses non-UE associated signalling.

In this version of the specification, this procedure is used to configure IAB resources.

8.10.2.2 Successful Operation

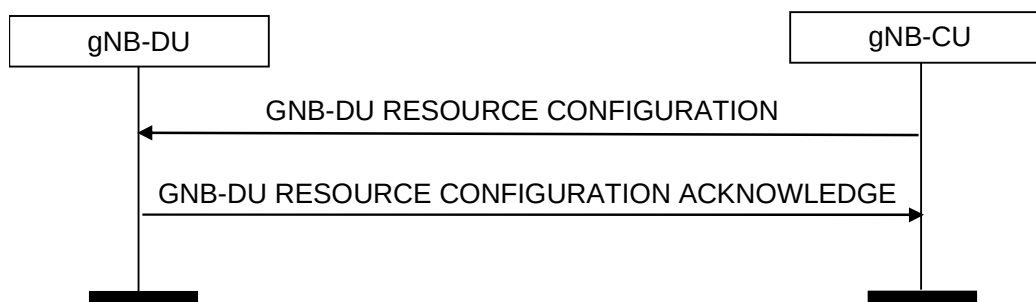


Figure 8.10.2.2-1: gNB-DU Resource Configuration procedure: Successful Operation

The gNB-CU initiates the procedure by sending the GNB-DU RESOURCE CONFIGURATION message to gNB-DU. The gNB-DU replies to the gNB-CU with the GNB-DU RESOURCE CONFIGURATION ACKNOWLEDGE message.

For each cell in the *Activated Cells to Be Updated List* IE of the GNB-DU RESOURCE CONFIGURATION message, the gNB-DU shall store the resource configuration contained in the *IAB-DU Cell Resource Configuration-Mode-Info* IE and use it when performing scheduling in compliance with TS 38.213 [31].

If the *Child-Node List* IE is included in the GNB-DU RESOURCE CONFIGURATION message, for each child-node indicated by the *gNB-CU UE F1AP ID* IE and *gNB-DU UE F1AP ID* IE, and for each cell served by this child node

indicated by the *NR CGI* IE in the *Child-Node Cells List* IE, the gNB-DU shall store the received information and use this information for scheduling, in compliance with TS 38.213 [31], clause 14.

If the *Neighbour-Node Cells List* IE is included in the GNB-DU RESOURCE CONFIGURATION message, for each neighbour-node cell indicated by the *NR CGI* IE in the *Neighbour-Node Cells List* IE, the gNB-DU shall store the received information and use this information for cross-link interference management and/or semi-static resource coordination. If the *Peer Parent-Node Indicator* IE is included in the GNB-DU RESOURCE CONFIGURATION message and the value is set as “true”, the gNB-DU shall, consider the cell indicated by the *NR CGI* IE is served by the peer parent node of the IAB-node indicated by the *gNB-CU UE F1AP ID* IE and the *gNB-DU UE F1AP ID* IE.

If the *Serving Cells List* IE is included in the GNB-DU RESOURCE CONFIGURATION message, the gNB-DU shall store the received information and use this information for scheduling, in compliance with TS 38.213 [31], clause 14.

8.10.2.B Unsuccessful Operation

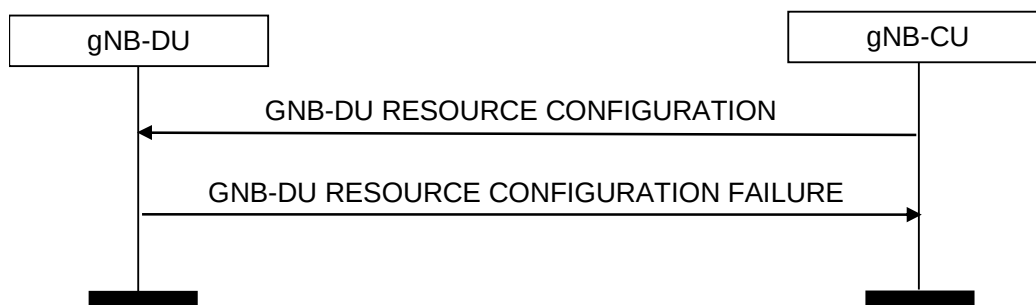


Figure 8.10.2.3-1: gNB-DU Resource Configuration procedure: Unsuccessful Operation

If the gNB-DU cannot accept the configuration, it shall respond with a GNB-DU RESOURCE CONFIGURATION FAILURE and appropriate cause value.

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

8.10.2.3 Abnormal Conditions

Not applicable.

8.10.3 IAB TNL Address Allocation

8.10.3.1 General

The purpose of the IAB TNL Address Allocation procedure is to allocate TNL addresses to be used by the IAB-node(s). This procedure uses non-UE associated signalling.

NOTE: This procedure is applicable for IAB-donor-DU, where the term "gNB-DU" applies to IAB-donor-DU, and the term "gNB-CU" applies to IAB-donor-CU.

8.10.3.2 Successful Operation

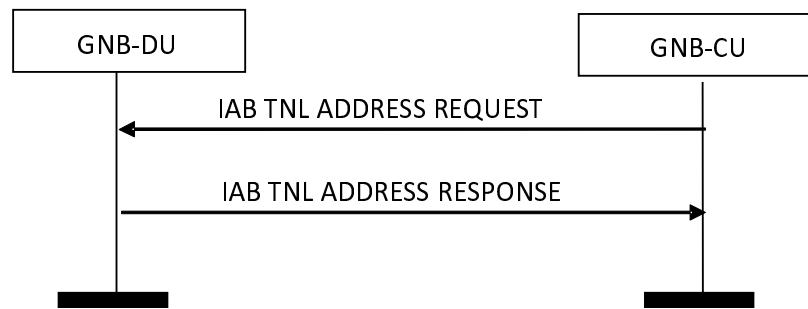


Figure 8.10.3.2-1: IAB TNL Address Allocation procedure: Successful Operation

The gNB-CU initiates the procedure by sending the IAB TNL ADDRESS REQUEST message to the gNB-DU.

If the IAB TNL ADDRESS REQUEST message contains the *IAB IPv4 Addresses Requested* IE, the gNB-DU shall allocate the individual TNL address(es) accordingly and include these IPv4 address(es) in the IAB TNL ADDRESS RESPONSE message.

If the IAB TNL ADDRESS REQUEST message contains the *IAB IPv6 Request Type* IE, the gNB-DU shall allocate the individual IPv6 address(es) or IPv6 address prefix(es) accordingly and include these IPv6 address(es) or IPv6 address prefix(es) in the IAB TNL ADDRESS RESPONSE message.

If the IAB TNL ADDRESS REQUEST message contains the *IAB TNL Addresses To Remove List* IE, the gNB-DU shall consider that the TNL address(es) and/or TNL address prefix(es) therein are no longer used by the IAB-node(s). In addition, if the IAB TNL ADDRESS REQUEST message only contains the *IAB TNL Addresses to Remove List* IE, the gNB-CU shall ignore the *IAB Allocated TNL Address List* IE in the IAB TNL ADDRESS RESPONSE message.

If the IAB TNL ADDRESS RESPONSE message contains the *IAB TNL Address Usage* IE in the *IAB Allocated TNL Address Item* IE, the gNB-CU shall consider the indicated TNL address usage when allocating a TNL address to an IAB-node. Otherwise, the gNB-CU shall consider that the TNL address can be used for all traffic when allocating the TNL address to an IAB-node.

If the *IAB TNL Address Exception* IE is included in the IAB TNL ADDRESS REQUEST message and the gNB-DU is an IAB-donor-DU, the gNB-DU shall, if supported, consider the IP address(es) therein as exempt from TNL address filtering, and forward the packets with the address(es) indicated by this IE, as specified in TS 38.401 [4].

8.10.3.C Unsuccessful Operation

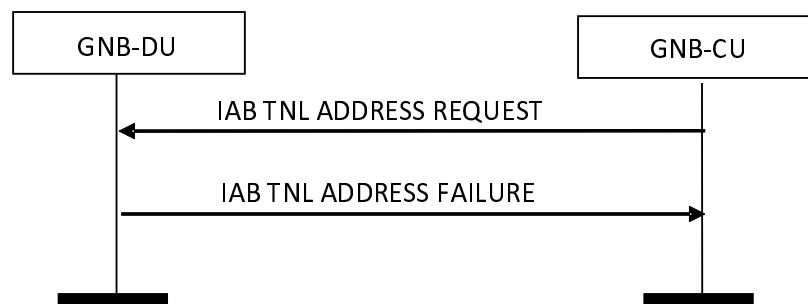


Figure 8.10.3.3-1: IAB TNL Address Allocation procedure: Unsuccessful Operation

If the gNB-DU cannot accept the request, it shall respond with an IAB TNL ADDRESS FAILURE and appropriate cause value.

If the IAB TNL ADDRESS FAILURE message includes the Time To Wait IE, the gNB-CU shall wait at least for the indicated time before reinitiating the IAB TNL ADDRESS REQUEST message towards the same gNB-DU.

8.10.3.3 Abnormal Conditions

Not applicable.

8.10.4 IAB UP Configuration Update

8.10.4.1 General

The purpose of the IAB UP Configuration Update procedure is to update the UP parameters including UL mapping configuration and the UL/DL UP TNL information between IAB-donor-CU and IAB-node. This procedure uses non-UE associated signalling.

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

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

8.10.4.2 Successful Operation

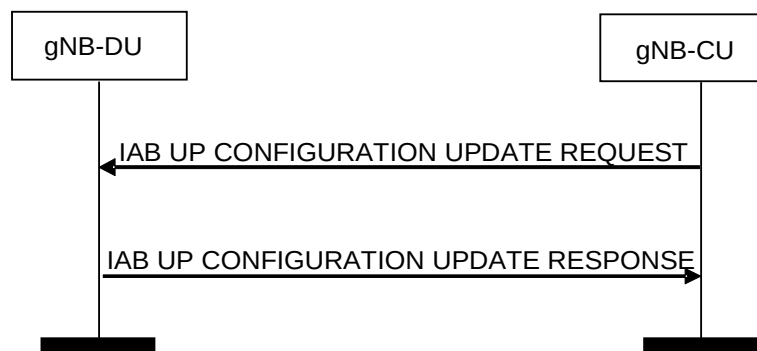


Figure 8.10.4.2-1: IAB UP Configuration Update procedure: Successful Operation

The gNB-CU initiates the procedure by sending the IAB UP CONFIGURATION UPDATE REQUEST message to the gNB-DU. The gNB-DU replies to the gNB-CU with the IAB UP CONFIGURATION UPDATE RESPONSE message.

If the *UL UP TNL Information to Update List* IE is included in the IAB UP CONFIGURATION UPDATE REQUEST message, the gNB-DU shall perform the mapping according to the new received *BH Information* IE for each F1-U GTP tunnel indicated by the *UL UP TNL Information* IE. If the *New UL UP TNL Information* IE is included in *UL UP TNL Information to Update List* IE, the gNB-DU shall use it to replace the information of UL F1-U GTP tunnel indicated by the *UL UP TNL Information* IE.

If the *UL UP TNL Address to Update List* IE is included in the IAB UP CONFIGURATION UPDATE REQUEST message, the gNB-DU shall replace the old TNL address with the new TNL address for all the maintained UL F1-U GTP tunnels corresponding to the old TNL address.

If the *DL UP TNL Address to Update List* IE is included in the IAB UP CONFIGURATION UPDATE RESPONSE message, the gNB-CU shall replace the old TNL address with the new TNL address for all the maintained DL F1-U GTP tunnels corresponding to the old TNL address.

8.10.4.3 Unsuccessful Operation

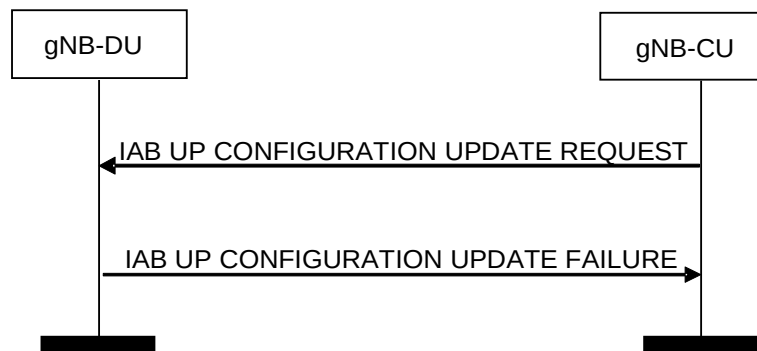


Figure 8.10.4.3-1: IAB UP Configuration Update procedure: Unsuccessful Operation

If the gNB-DU receives an IAB UP CONFIGURATION UPDATE REQUEST message and cannot perform any update accordingly, it shall consider the update procedure as failed and respond with an IAB UP CONFIGURATION UPDATE FAILURE message and an appropriate cause value.

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

8.10.4.4 Abnormal Conditions

Not applicable.

8.11 Self Optimisation Support procedures

8.11.1 Access and Mobility Indication

8.11.1.1 General

This procedure is initiated by gNB-CU to send the Access and Mobility related Information to gNB-DU.

The procedure uses non-UE-associated signalling.

8.11.1.2 Successful Operation



Figure 8.11.1.2-1: Access and Mobility Indication procedure. Successful operation

The Access and Mobility Indication procedure is initiated by ACCESS AND MOBILITY INDICATION message sent from gNB-CU to gNB-DU.

If the ACCESS AND MOBILITY INDICATION message contains the *RACH Report Information List* IE the gNB-DU shall take it into account for optimisation of RACH access procedures.

If the ACCESS AND MOBILITY INDICATION message contains the *RLF Report Information List* IE the gNB-DU shall take it into account for optimisation of mobility parameters.

If the ACCESS AND MOBILITY INDICATION message contains the *Successful HO Report Information List* IE the gNB-DU may take it into account for optimisation of mobility parameters.

8.11.1.3 Abnormal Conditions

Not applicable.

8.12 Reference Time Information Reporting procedures

8.12.1 Reference Time Information Reporting Control

8.12.1.1 General

The purpose of the Reference Time Information Reporting Control procedure is to command the gNB-DU to send the requested accurate reference time information to the gNB-CU. The procedure uses non-UE associated signalling.

8.12.1.2 Successful Operation

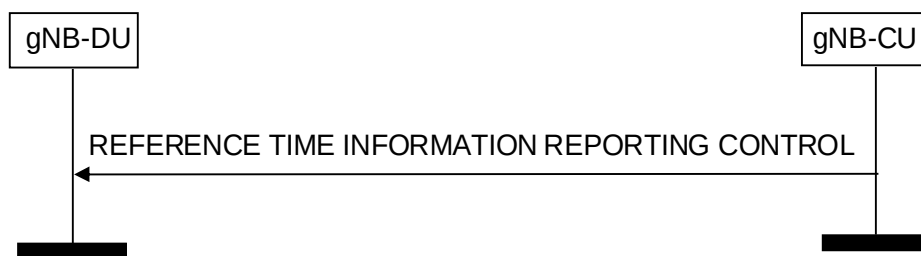


Figure 8.12.1.2-1: Reference Time Information Reporting Control

The gNB-CU initiates the procedure by sending REFERENCE TIME INFORMATION REPORTING CONTROL message to the gNB-DU. Upon reception of the REFERENCE TIME INFORMATION REPORTING CONTROL message, the gNB-DU shall, if supported, perform the requested reference time information reporting action.

The *Report Type* IE indicates to the gNB-DU whether:

- to report on demand;
- to report periodic, with a frequency as specified by the *Report Periodicity* IE;
- to stop periodic reporting.

8.12.1.3 Abnormal Conditions

Not applicable.

8.12.2 Reference Time Information Report

8.12.2.1 General

The purpose of the Reference Time Information Report procedure is to report the accurate reference time information from the gNB-DU to the gNB-CU. The procedure uses non-UE associated signalling.

8.12.2.2 Successful Operation



Figure 8.12.2-1: Reference Time Information Report

The gNB-DU initiates the procedure by sending a REFERENCE TIME INFORMATION REPORT message to the gNB-CU. The REFERENCE TIME INFORMATION REPORT message may be used as a response to the REFERENCE TIME INFORMATION REPORTING CONTROL message.

8.12.2.3 Abnormal Conditions

Not applicable.

8.13 Positioning Procedures

8.13.1 Positioning Assistance Information Control

8.13.1.1 General

The purpose of the Positioning Assistance Information Control procedure is to allow the gNB-CU to signal positioning assistance information to the gNB-DU for positioning assistance information broadcasting. The procedure uses non-UE-associated signalling.

8.13.1.2 Successful Operation

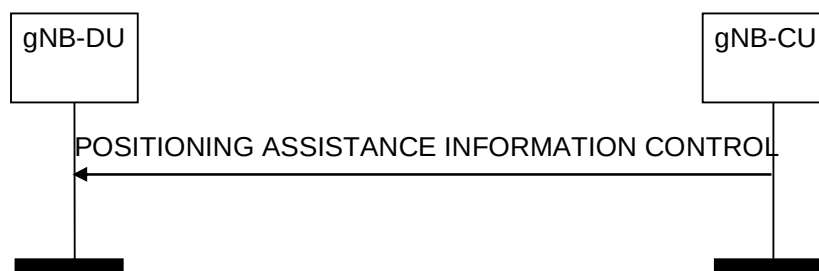


Figure 8.13.1.2-1: Positioning Assistance Information Control procedure

The gNB-CU initiates the procedure by sending a POSITIONING ASSISTANCE INFORMATION CONTROL message.

If the *Positioning Assistance Information* IE is included in the POSITIONING ASSISTANCE INFORMATION CONTROL message, the gNB-DU shall replace any previously received positioning assistance information with the newly received information, and use the newly received information to configure positioning assistance information broadcasting as specified in TS 38.455 [37].

If the *Broadcast* IE is included in the POSITIONING ASSISTANCE INFORMATION CONTROL message and set to "start", the gNB-DU may start broadcasting the positioning assistance information. If the *Broadcast* IE is included in the POSITIONING ASSISTANCE INFORMATION CONTROL message and set to "stop", the gNB-DU may stop broadcasting the positioning assistance information.

If the *Positioning Broadcast Cells* IE is included in the POSITIONING ASSISTANCE INFORMATION CONTROL message, the gNB-DU shall, if supported, consider that the procedure is applicable only to the indicated cells in this IE.

Interaction with the Positioning Assistance Information Feedback procedure:

If the *Routing ID* IE is included in the POSITIONING ASSISTANCE INFORMATION CONTROL message, the gNB-DU shall, if supported, store this information and include it in any future POSITIONING ASSISTANCE INFORMATION FEEDBACK messages associated to the requested positioning assistance information broadcasting.

8.13.1.3 Abnormal Conditions

If the *Broadcast* IE is set to "start", and the *Positioning Assistance Information* IE is not included, the gNB-DU shall consider the procedure as failed.

If the *Broadcast* IE is not included in the POSITIONING ASSISTANCE INFORMATION CONTROL message, the gNB-DU shall consider the procedure as failed.

8.13.2 Positioning Assistance Information Feedback**8.13.2.1 General**

The purpose of the Positioning Assistance Information Feedback procedure is to allow the gNB-DU to give feedback to the gNB-CU on positioning assistance information broadcasting. The procedure uses non-UE-associated signalling.

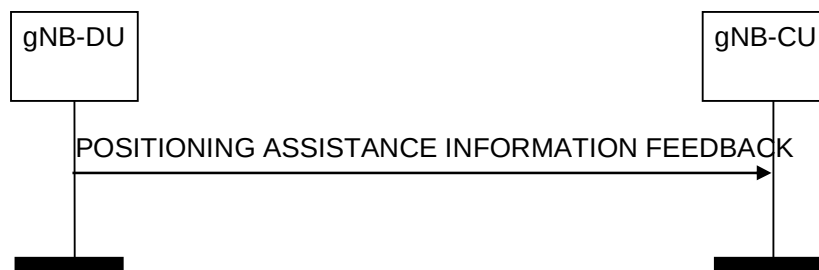
8.13.2.2 Successful Operation

Figure 8.13.2.2-1: Positioning Assistance Information Feedback procedure

The gNB-DU initiates the procedure by sending a POSITIONING ASSISTANCE INFORMATION FEEDBACK message. If the *Positioning Assistance Information Failure List* IE is included in the POSITIONING ASSISTANCE INFORMATION FEEDBACK message, the gNB-CU shall consider that positioning assistance information broadcasting could not be configured for the relevant information.

If the *Positioning Broadcast Cells* IE is included in the POSITIONING ASSISTANCE INFORMATION FEEDBACK message, the gNB-CU shall consider that the feedback provided is applicable to the cells in this IE.

If the *Routing ID* IE is included in the POSITIONING ASSISTANCE INFORMATION FEEDBACK message, the gNB-CU may use this information to identify the positioning assistance information broadcasting for which feedback is provided.

8.13.2.3 Abnormal Conditions

Void.

8.13.3 Positioning Measurement**8.13.3.1 General**

The purpose of the Positioning Measurement procedure is to allow the gNB-CU to request one or more TRPs in the gNB-DU to perform and report positioning measurements. The procedure uses non-UE-associated signalling.

8.13.3.2 Successful Operation

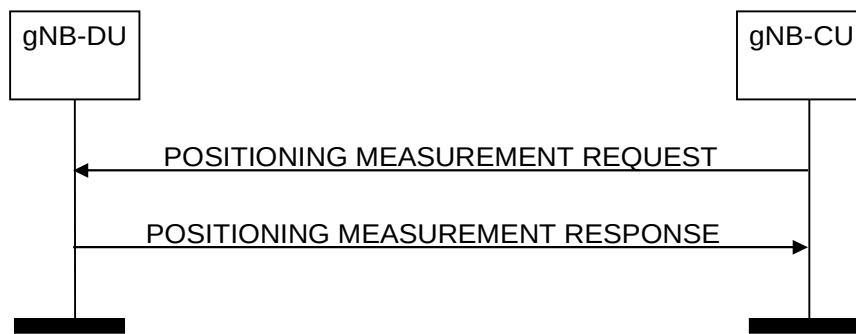


Figure 8.13.3.2-1: Positioning Measurement procedure: successful operation

The gNB-CU initiates the procedure by sending a POSITIONING MEASUREMENT REQUEST message to the gNB-DU, indicating in the *TRP Measurement Request List* IE the TRP(s) from which measurements are requested. The gNB-DU node shall use the included information to configure positioning measurements by the indicated TRP(s). If at least one of the requested measurements has been successful for at least one of the TRPs, the gNB-DU shall reply with the POSITIONING MEASUREMENT RESPONSE message including the *Positioning Measurement Response List* IE.

If the *Positioning Report Characteristics* IE is set to "OnDemand", the gNB-DU shall return the corresponding measurement results in the *Positioning Measurement Result List* IE in the POSITIONING MEASUREMENT RESPONSE message, and the gNB-CU shall consider that this reporting has been terminated by the gNB-DU.

If the *Measurement Beam Information Request* IE is included in the POSITIONING MEASUREMENT REQUEST message, the gNB-DU node shall, if supported, include the *Measurement Beam Information* IE in the *Positioning Measurement Result* IE of the POSITIONING MEASUREMENT RESPONSE message.

If the *Measurement Quality* IE is included in the *Measurement Result* IE in the POSITIONING MEASUREMENT RESPONSE message, the gNB-CU may use it for further signalling. If the *Measurement Quality* IE includes the *Zenith Quality* IE, the gNB-CU may use it for further signalling.

If the *System Frame Number* IE and/or the *Slot Number* IE are included in the POSITIONING MEASUREMENT REQUEST message, the gNB-DU node shall, if supported, consider that the respective information indicates the activation time of SRS transmission.

If the *Measurement Characteristics Request Indicator* IE is included in the POSITIONING MEASUREMENT REQUEST message, the gNB-DU shall, if supported, take the requested measurement characteristics into account when configuring measurements, and include the requested information, if available, in the POSITIONING MEASUREMENT RESPONSE message.

If the *Number of TRP Rx TEGs* IE is included in the POSITIONING MEASUREMENT REQUEST message, the gNB-DU shall, if supported, use it to measure the same SRS resource with different TRP Rx TEGs for the indicated TRP, and report the corresponding UL-RTOA and/or gNB Rx-Tx time difference measurements.

If the *Number of TRP RxTx TEGs* IE is included in the POSITIONING MEASUREMENT REQUEST message, the gNB-DU shall, if supported, use it to measure the same SRS resource with different TRP RxTx TEGs with the same TRP Tx TEG for the indicated TRP, and report the corresponding gNB Rx-Tx time difference measurements.

If the *Measurement Time Occasion* IE is included in the POSITIONING MEASUREMENT REQUEST message, the gNB-DU may take it into account as the number of SRS measurement time occasions for a measurement instance.

Interaction with the Positioning Measurement Report procedure:

If the *Positioning Report Characteristics* IE is set to "Periodic", the gNB-DU shall initiate the corresponding measurements, and it shall reply with the POSITIONING MEASUREMENT RESPONSE message without including any measurement results in the message. The gNB-DU shall then periodically initiate the Positioning Measurement Report procedure for the corresponding measurements, with the requested reporting periodicity.

If the *Report Characteristics* IE is set to "OnDemand" and the *Response Time* IE is included in the POSITIONING MEASUREMENT REQUEST message, the gNB-DU shall, if supported, return the corresponding measurement results in the POSITIONING MEASUREMENT RESPONSE message within the indicated time.

If the *Positioning Report Characteristics* IE is set to "Periodic" and the *Positioning Measurement Amount* IE is included in the POSITIONING MEASUREMENT REQUEST message, the gNB-DU shall, if supported, take it into account for sending the POSITIONING MEASUREMENT REPORT message.

8.13.3.3 Unsuccessful Operation

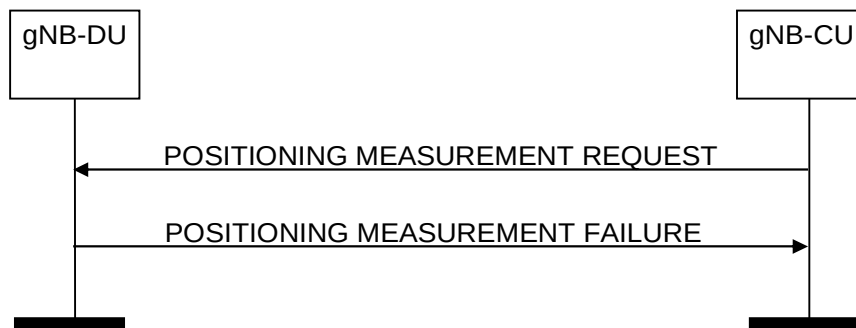


Figure 8.13.3.3-1: Positioning Measurement procedure: unsuccessful operation

If the gNB-DU is unable to configure any of the requested positioning measurements for any of the TRPs in the *TRP Measurement Request List* IE of the POSITIONING MEASUREMENT REQUEST message, it shall respond with a POSITIONING MEASUREMENT FAILURE message.

8.13.3.4 Abnormal Conditions

If the gNB-DU receives a POSITIONING MEASUREMENT REQUEST message containing an LMF Measurement ID corresponding to an ongoing positioning measurement, it shall consider the procedure as failed and initiate local error handling.

8.13.4 Positioning Measurement Report

8.13.4.1 General

The purpose of the Positioning Measurement Report procedure is for the gNB-DU to report positioning measurements to the gNB-CU. The procedure uses non-UE-associated signalling.

8.13.4.2 Successful Operation



Figure 8.13.4.2-1: Positioning Measurement Report procedure: successful operation

The gNB-DU initiates the procedure by sending a POSITIONING MEASUREMENT REPORT message. The POSITIONING MEASUREMENT REPORT message contains the positioning measurement results according to the associated measurement configuration.

8.13.4.3 Unsuccessful Operation

Not applicable.

8.13.4.4 Abnormal Conditions

Not applicable.

8.13.5 Positioning Measurement Abort

8.13.5.1 General

The purpose of the Positioning Measurement Abort procedure is to enable the gNB-CU to abort an on-going measurement. The procedure uses non-UE-associated signalling.

8.13.5.2 Successful Operation

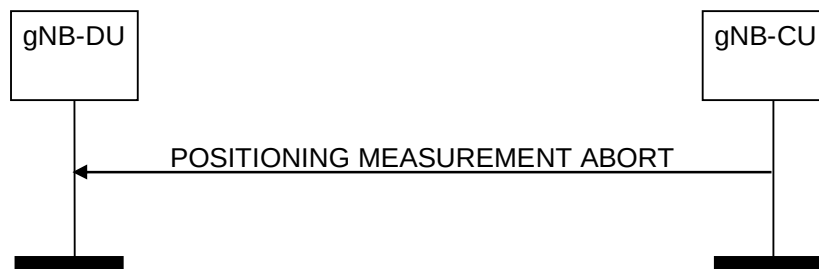


Figure 8.13.5.2-1: Positioning Measurement Abort procedure: successful operation

The gNB-CU initiates the procedure by generating a POSITIONING MEASUREMENT ABORT message. Upon receiving this message, the gNB-DU shall terminate the on-going measurement identified by the *RAN Measurement ID* IE and may release any resources previously allocated for the same measurement.

8.13.5.3 Unsuccessful Operation

Not applicable.

8.13.5.4 Abnormal Conditions

If the gNB-DU cannot identify the previously requested measurement to be aborted, it shall ignore the POSITIONING MEASUREMENT ABORT message.

8.13.6 Positioning Measurement Failure Indication

8.13.6.1 General

The purpose of the Positioning Measurement Failure Indication procedure is for the gNB-DU to notify the gNB-CU that the positioning measurements previously requested with the Positioning Measurement procedure can no longer be reported. The procedure uses non-UE-associated signalling.

8.13.6.2 Successful Operation

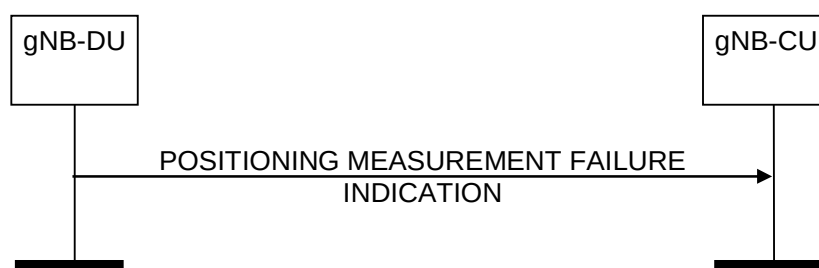


Figure 8.13.6.2-1: Positioning Measurement Failure Indication procedure: successful operation

The gNB-DU initiates the procedure by sending a POSITIONING MEASUREMENT FAILURE INDICATION message. Upon reception of the POSITIONING MEASUREMENT FAILURE INDICATION message, the gNB-CU shall consider that the indicated positioning measurements have been terminated by the gNB-DU.

8.13.6.3 Unsuccessful Operation

Not applicable.

8.13.6.4 Abnormal Conditions

Not applicable.

8.13.7 Positioning Measurement Update

8.13.7.1 General

The purpose of the Positioning Measurement Update procedure is to modify one or more periodic positioning measurements performed by the gNB-DU. The procedure uses non-UE-associated signalling.

8.13.7.2 Successful Operation

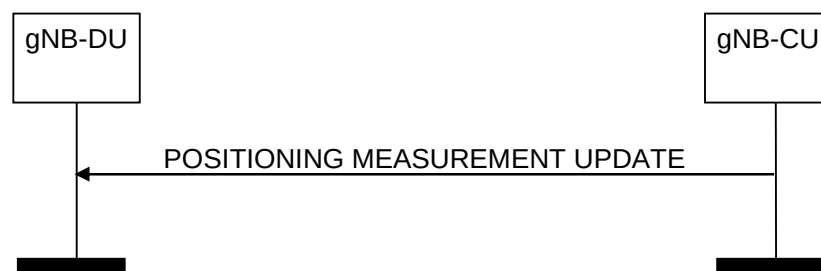


Figure 8.13.7.2-1: Positioning Measurement Update procedure: successful operation

The gNB-CU initiates the procedure by generating a POSITIONING MEASUREMENT UPDATE message. Upon receiving the message, the gNB-DU shall overwrite the previously received measurement configuration for the corresponding measurements.

If the *Number of TRP Rx TEGs* IE is included in the *TRP Measurement Update List* IE in the POSITIONING MEASUREMENT UPDATE message, the gNB-DU shall clear any previously stored information and store the newly received information.

If the *Number of TRP RxTx TEGs* IE is included in the *TRP Measurement Update List* IE in the POSITIONING MEASUREMENT UPDATE message, the gNB-DU shall clear any previously stored information and store the newly received information.

If the *Measurement Characteristics Request Indicator* IE is included in the POSITIONING MEASUREMENT UPDATE message, the gNB-DU shall clear any previously stored information and store the newly received information.

If the *Measurement Time Occasion* IE is included in the POSITIONING MEASUREMENT UPDATE message, the gNB-DU shall clear any previously stored information and store the newly received information.

8.13.7.3 Unsuccessful Operation

Not applicable.

8.13.7.4 Abnormal Conditions

If the gNB-DU cannot identify the given positioning measurements, it shall regard the procedure as failed and initiate local error handling.

8.13.8 TRP Information Exchange

8.13.8.1 General

The purpose of the TRP Information Exchange procedure is to allow the gNB-CU to request the gNB-DU to provide detailed information for TRPs hosted by the gNB-DU. The procedure uses non-UE-associated signalling.

8.13.8.2 Successful Operation

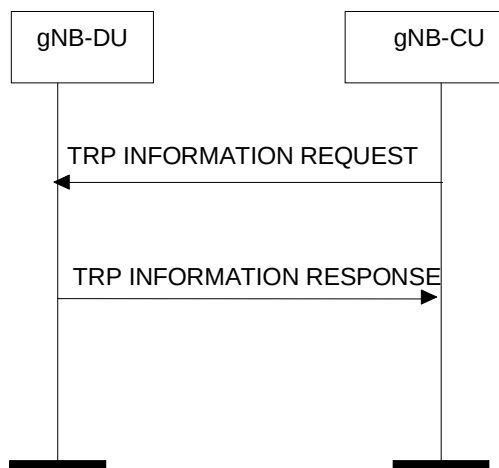


Figure 8.13.8.2-1: TRP Information Exchange procedure, successful operation

The gNB-CU initiates the procedure by sending a TRP INFORMATION REQUEST message. The gNB-DU responds with a TRP INFORMATION RESPONSE message that contains the requested TRP information.

If the *TRP List* IE is included in the TRP INFORMATION REQUEST message, the gNB-DU should include in the TRP INFORMATION RESPONSE message, the requested information for all TRPs included in the *TRP List* IE.

If the *TRP List* IE is not included in the TRP INFORMATION REQUEST message, the gNB-DU should include the requested information for all TRPs hosted by the gNB-DU in the TRP INFORMATION RESPONSE message.

If the *PRS Muting* IE is included in the *PRS Configuration* IE in the TRP INFORMATION RESPONSE message, the gNB-CU may use it for further signaling.

If the *QCL Info* IE is included in the *PRS Configuration* IE in the TRP INFORMATION RESPONSE message, the gNB-CU may use it for further signaling.

If the *DL-PRS Resource Coordinates* IE is included in the *Geographical Coordinates* IE in the *TRP Information* IE in the TRP INFORMATION RESPONSE message, the gNB-CU may use it for further signaling.

8.13.8.3 Unsuccessful Operation

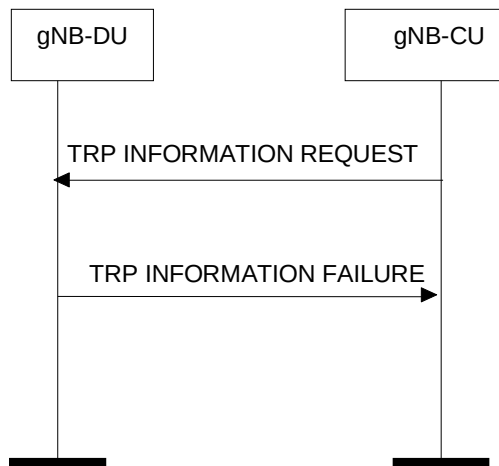


Figure 8.13.8.3-1: TRP Information Exchange procedure, unsuccessful operation

If the gNB-DU cannot provide any of the requested information, the gNB-DU shall respond with a TRP INFORMATION FAILURE message.

8.13.9 Positioning Information Exchange

8.13.9.1 General

The Positioning Information Exchange procedure is initiated by the gNB-CU to indicate to the gNB-DU the need to configure the UE to transmit SRS signals and to retrieve the SRS configuration from the gNB-DU. The procedure uses UE-associated signalling.

8.13.9.2 Successful Operation

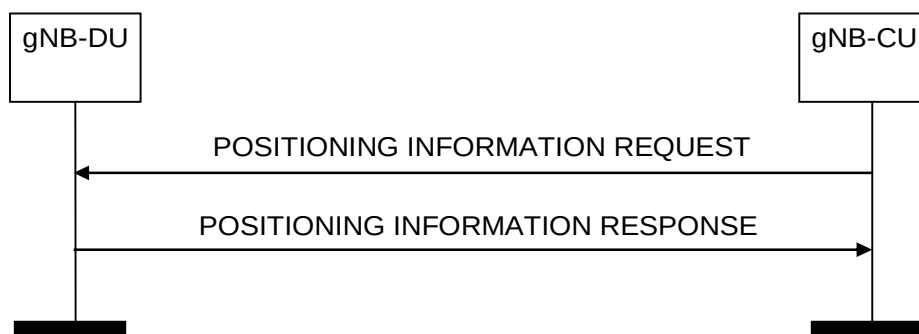


Figure 8.13.9.2-1: Positioning Information Exchange procedure, successful operation

The gNB-CU initiates the procedure by sending a POSITIONING INFORMATION REQUEST message to the gNB-DU.

If the *Requested SRS Transmission Characteristics* IE is included in the POSITIONING INFORMATION REQUEST message, the gNB-DU may take this information into account when configuring SRS transmissions for the UE, and it shall include the *SRS Configuration* IE and the *SFN Initialisation Time* IE in the POSITIONING INFORMATION RESPONSE message. If the *SRS Positioning INACTIVE Query Indication* IE is also included in the POSITIONING INFORMATION REQUEST message and set to 'true', the gNB-DU shall, if supported, include the *SRS-PosRRC-InactiveConfig* IE in the POSITIONING INFORMATION RESPONSE message.

If the *Spatial Relation Information per SRS Resource* IE and the *Periodicity List* IE are both included in the *Requested SRS Transmission Characteristics* IE, the gNB-DU shall consider that the *Spatial Relation per SRS Resource Item* IE and the *Periodicity List Item* IE have one-to-one mapping relation.

If the *UE Reporting Information* IE is included in the POSITIONING INFORMATION REQUEST message, the gNB-DU may take this information into account for allocating proper CG-SDT resources when positioning a UE.

Interaction with the UE Context Modification Required (gNB-DU initiated) procedure:

The UE Context Modification Required (gNB-DU initiated) procedure may be performed before the POSITIONING INFORMATION RESPONSE message.

8.13.9.3 Unsuccessful Operation

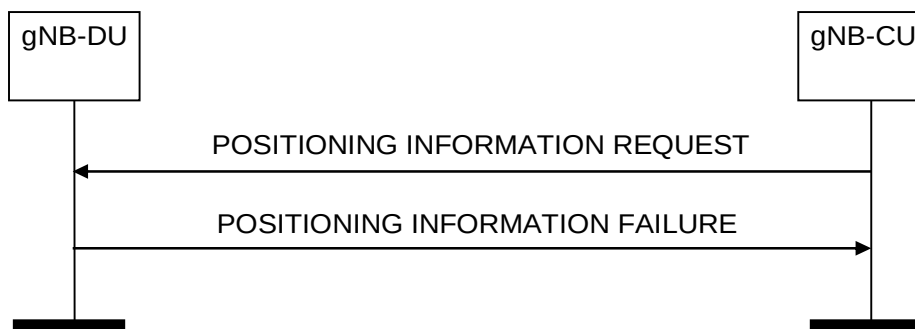


Figure 8.13.9.3-1: Positioning Information Exchange procedure, unsuccessful operation

If the *Requested SRS Transmission Characteristics* IE is included in the POSITIONING INFORMATION REQUEST message and the gNB-DU is unable to configure any SRS transmissions for the UE, the gNB-DU shall respond with a POSITIONING INFORMATION FAILURE message with an appropriate cause value.

If the gNB-DU is unable to provide any of the requested information, the gNB-DU shall respond with a POSITIONING INFORMATION FAILURE message with an appropriate cause value.

8.13.10 Positioning Activation

8.13.10.1 General

The Positioning Activation procedure is initiated by the gNB-CU to request the gNB-DU to activate semi-persistent or trigger aperiodic UL SRS transmission by the UE. The procedure uses UE-associated signalling.

8.13.10.2 Successful Operation

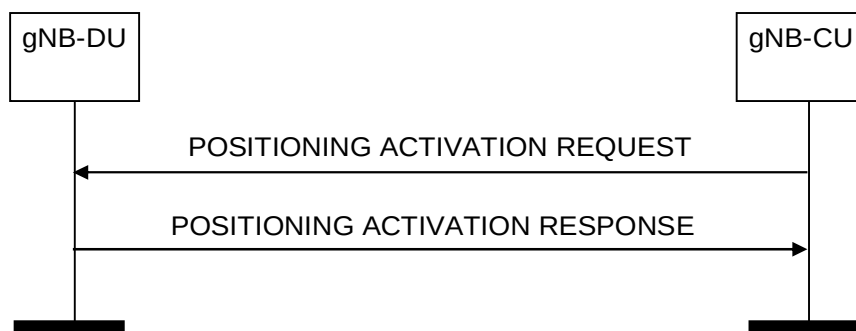


Figure 8.13.10.2-1: Positioning Activation procedure, successful operation

The gNB-CU initiates the procedure by sending a POSITIONING ACTIVATION REQUEST message to the gNB-DU.

For semi-persistent UL SRS, the POSITIONING ACTIVATION REQUEST message includes an indication of the UL SRS resource set to be activated, and may include the spatial relation for the semi-persistent UL SRS resource to be activated. For aperiodic UL SRS, if the *SRS Resource Trigger* IE is included in the POSITIONING ACTIVATION REQUEST message, the gNB-DU shall take the value of this IE into account when triggering aperiodic SRS transmission by the UE.

If the *Activation Time* IE is included in the POSITIONING ACTIVATION REQUEST message, the gNB-DU shall take the indicated value as the requested time for activation of the UE's SRS transmission.

Following successful activation of UL SRS transmission in the UE, the gNB-DU shall respond with a POSITIONING ACTIVATION RESPONSE message. If the POSITIONING ACTIVATION RESPONSE message includes the *System Frame Number* and/or the *Slot Number* IEs, the gNB-CU shall consider that the respective information indicates the activation time of SRS transmission by the UE.

8.13.10.3 Unsuccessful Operation

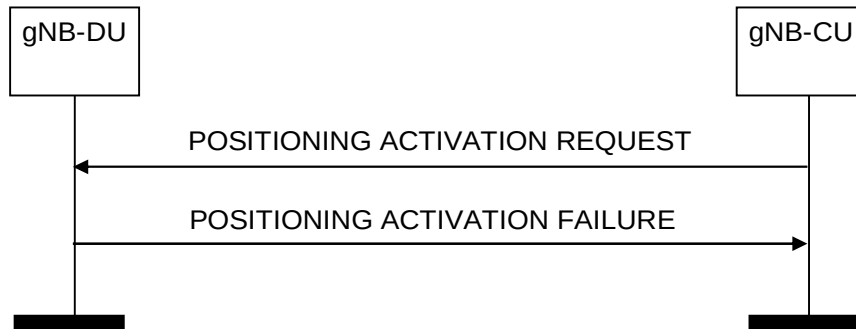


Figure 8.13.10.3-1: Positioning Activation procedure, unsuccessful operation

If the gNB-DU is unable to activate UL SRS transmission in the UE, it shall respond with a POSITIONING ACTIVATION FAILURE message.

If the gNB-DU is unable to trigger the aperiodic SRS transmission with the indicated *SRS Resource Trigger* IE, it shall respond with a POSITIONING ACTIVATION FAILURE message with an appropriate cause value

8.13.10.4 Abnormal Conditions

Void.

8.13.11 Positioning Deactivation

8.13.11.1 General

The Positioning Deactivation procedure is initiated by the gNB-CU to indicate to the gNB-DU node that UL SRS transmission should be deactivated in the UE. The procedure uses UE-associated signalling.

8.13.11.2 Successful Operation



Figure 8.13.11.2-1: Positioning Deactivation procedure, successful operation

The gNB-CU initiates the procedure by sending a POSITIONING DEACTIVATION message to the gNB-DU, including an indication of the UL SRS resources to be deactivated.

8.13.11.3 Unsuccessful Operation

Not Applicable.

8.13.11.4 Abnormal Conditions

Void.

8.13.12 E-CID Measurement Initiation

8.13.12.1 General

The purpose of E-CID Measurement Initiation procedure is to allow the gNB-CU to request the gNB-DU to report E-CID measurements used by LMF to compute the location of the UE. The procedure uses UE-associated signalling.

8.13.12.2 Successful Operation

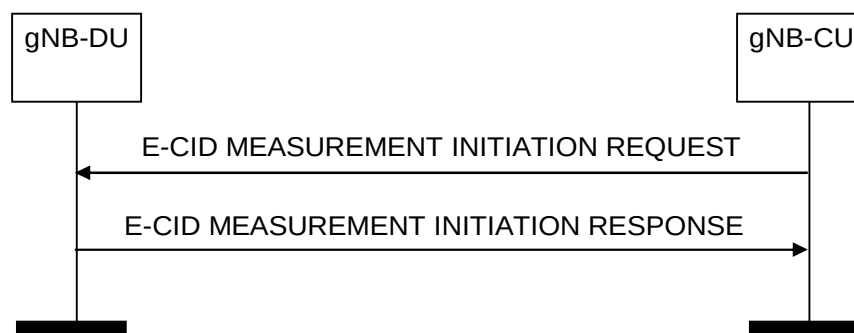


Figure 8.13.12.2-1: E-CID Measurement Initiation procedure, successful operation

The gNB-CU initiates the procedure by sending an E-CID MEASUREMENT INITIATION REQUEST message. If the gNB-DU is able to initiate the requested E-CID measurements, it shall reply with the E-CID MEASUREMENT INITIATION RESPONSE message.

If the *E-CID Report Characteristics* IE is set to "OnDemand", the gNB-DU shall return the result of the measurement in the E-CID MEASUREMENT INITIATION RESPONSE message including, if available, the *Geographical Coordinates* IE in the *E-CID Measurement Result* IE and the *Cell Portion ID* IE, and the gNB-CU shall consider that the E-CID measurements for the UE have been terminated by the gNB-DU. The *Measured Results List* IE shall be included in the *E-CID Measurement Result* IE of the E-CID MEASUREMENT INITIATION RESPONSE message when measurement quantities other than "Default" have been requested.

Interaction with the E-CID Measurement Report procedure:

If the *E-CID Report Characteristics* IE is set to "Periodic", the gNB-DU shall initiate the requested measurements and shall reply with the E-CID MEASUREMENT INITIATION RESPONSE message without including either the *E-CID Measurement Result* IE or the *Cell Portion ID* IE in this message. The gNB-DU shall then periodically initiate the E-CID Measurement Report procedure for the measurements, with the requested reporting periodicity.

8.13.12.3 Unsuccessful Operation

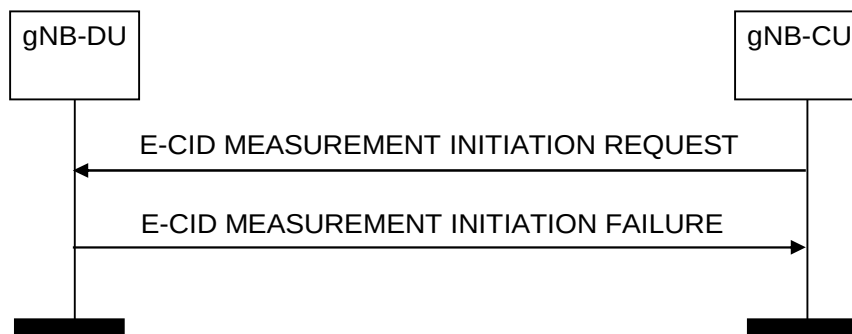


Figure 8.13.12.3-1: E-CID Measurement Initiation procedure, unsuccessful operation

If the gNB-DU is not able to initiate at least one of the requested E-CID measurements, the gNB-DU shall respond with an E-CID MEASUREMENT INITIATION FAILURE message.

8.13.13 E-CID Measurement Failure Indication

8.13.13.1 General

The purpose of the E-CID Measurement Failure Indication procedure is for the gNB-DU to notify the gNB-CU that the E-CID measurements previously requested with the E-CID Measurement Initiation procedure can no longer be reported. The procedure uses UE-associated signalling.

8.13.13.2 Successful Operation



Figure 8.13.13.2-1: E-CID Measurement Failure Indication, successful operation

The gNB-DU initiates the procedure by sending an E-CID MEASUREMENT FAILURE INDICATION message. Upon reception of the E-CID MEASUREMENT FAILURE INDICATION message, the gNB-CU shall consider that the E-CID measurements for the UE have been terminated by the gNB-DU.

8.13.13.3 Unsuccessful Operation

Not applicable.

8.13.14 E-CID Measurement Report

8.13.14.1 General

The purpose of E-CID Measurement Report procedure is for the gNB-DU to provide the E-CID measurements for the UE to the gNB-CU. The procedure uses UE-associated signalling.

8.13.14.2 Successful Operation



Figure 8.13.14.2-1: E-CID Measurement Report procedure, successful operation

The gNB-DU initiates the procedure by sending an E-CID MEASUREMENT REPORT message. The E-CID MEASUREMENT REPORT message contains the E-CID measurement results according to the measurement configuration in the respective E-CID MEASUREMENT INITIATION REQUEST message.

The *Measured Results List* IE shall be included in the *E-CID Measurement Result* IE of the E-CID MEASUREMENT REPORT message when measurement quantities other than "Default" have been requested.

If available, the gNB-DU shall include the *Geographical Coordinates* IE in the *E-CID Measurement Result* IE in the E-CID MEASUREMENT REPORT message.

If available, the gNB-DU shall include the *Cell Portion ID* IE in the E-CID MEASUREMENT REPORT message.

8.13.14.3 Unsuccessful Operation

Not applicable.

8.13.15 E-CID Measurement Termination

8.13.15.1 General

The purpose of E-CID Measurement Termination procedure is to terminate periodical E-CID measurements for the UE performed by the gNB-DU. The procedure uses UE-associated signalling.

8.13.15.2 Successful Operation



Figure 8.13.15.2-1: E-CID Measurement Termination procedure, successful operation

The gNB-CU initiates the procedure by generating an E-CID MEASUREMENT TERMINATION COMMAND message.

8.13.15.3 Unsuccessful Operation

Not applicable.

8.13.16 Positioning Information Update

8.13.16.1 General

The Positioning Information Update procedure is initiated by the gNB-DU to indicate to the gNB-CU that a change has occurred in the SRS configuration. The procedure uses UE-associated signalling.

8.13.16.2 Successful Operation

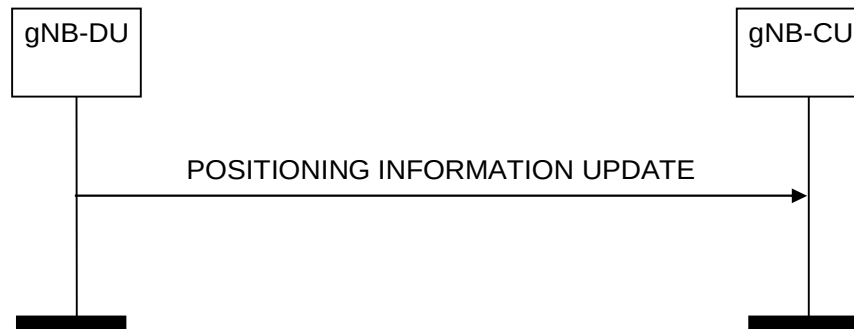


Figure 8.13.16.2-1: Positioning Information Update procedure, successful operation

The gNB-DU initiates the procedure by sending a POSITIONING INFORMATION UPDATE message to the gNB-CU.

If the SRS Configuration IE is included in the POSITIONING INFORMATION UPDATE message, the gNB-CU shall consider this information as the updated SRS Configuration for the UE. If the *SFN Initialisation Time* IE is included in the POSITIONING INFORMATION UPDATE message, the gNB-CU shall consider this information as the SFN Initialisation Time associated to the SRS Configuration.

8.13.16.3 Unsuccessful Operation

Not Applicable.

8.13.16.4 Abnormal Conditions

Void.

8.13.17 PRS Configuration Exchange

8.13.17.1 General

The PRS Configuration Exchange procedure is initiated by the gNB-CU to request the gNB-DU to configure or update (i.e., turn off) the PRS transmissions.

The procedure uses non-UE-associated signalling.

8.13.17.2 Successful Operation

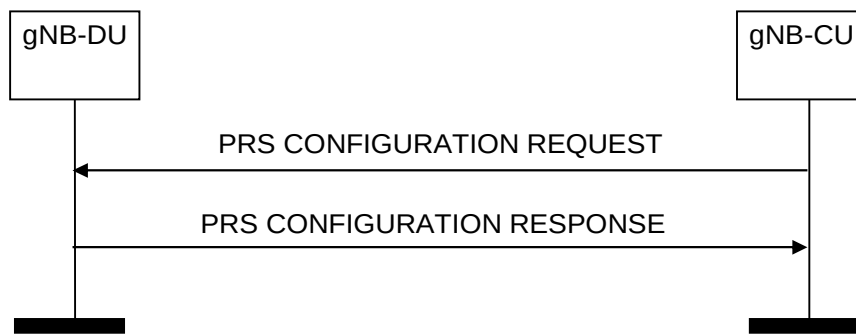


Figure 8.13.17.2-1: PRS Configuration Exchange procedure, successful operation

The gNB-CU initiates the procedure by sending a PRS CONFIGURATION REQUEST message to the gNB-DU.

If the *PRS Configuration Request Type* IE is set to “configure”, the gNB-DU should use the information in the *Requested DL PRS Transmission Characteristics* IE to configure DL-PRS transmission by the indicated TRP(s).

If the *PRS Configuration Request Type* IE is set to “off”, the gNB-DU should, if supported, use the information in the *PRS Transmission Off Information* IE to turn off the DL-PRS transmission for the indicated TRP(s), PRS Resource Set(s), or PRS Resource(s).

If DL-PRS transmission is successfully configured or updated for at least one of the TRPs, the gNB-DU shall respond with the PRS CONFIGURATION RESPONSE message.

8.13.17.3 Unsuccessful Operation

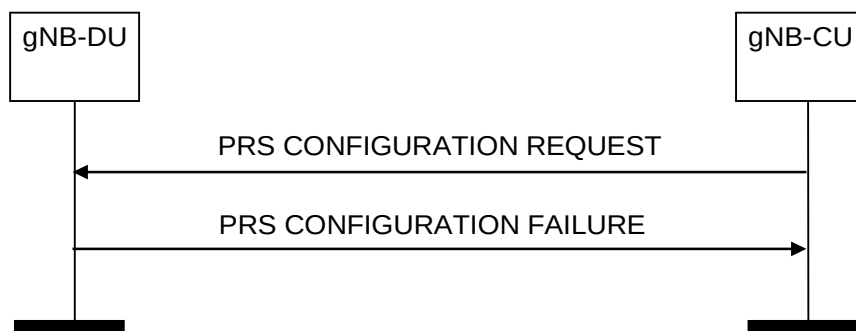


Figure 8.13.17.3-1: PRS Configuration Exchange procedure, unsuccessful operation

If the gNB-DU cannot configure or update DL-PRS transmission for any of the TRPs in the *PRS TRP List* IE of the PRS CONFIGURATION REQUEST message, it shall respond with a PRS CONFIGURATION FAILURE message with an appropriate cause value.

8.13.17.4 Abnormal Conditions

Void.

8.13.18 Measurement Preconfiguration

8.13.18.1 General

The Measurement Preconfiguration procedure allows the gNB-CU to provide necessary information to the serving gNB-DU and request the gNB-DU to preconfigure measurement gap and/or PRS processing window of the UE.

8.13.18.2 Successful Operation

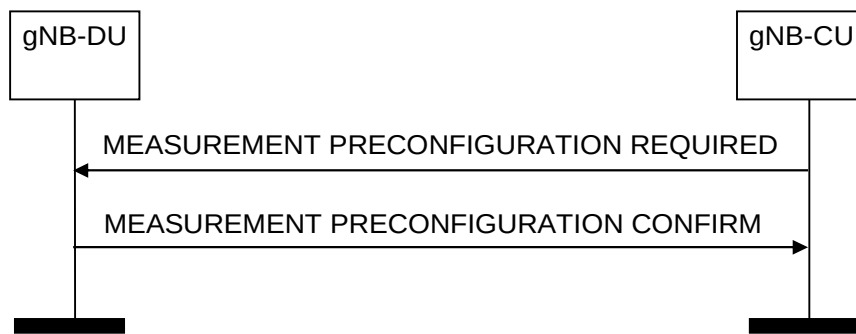


Figure 8.13.18.2-1: Measurement Preconfiguration procedure, successful operation

The gNB-CU initiates the procedure by sending a MEASUREMENT PRECONFIGURATION REQUIRED message.

If the gNB-DU is able to configure measurement gap or PRS processing window, it shall reply with the MEASUREMENT PRECONFIGURATION CONFIRM message.

If the *PosMeasGapPreConfigList* IE is included in the MEASUREMENT PRECONFIGURATION CONFIRM message, the gNB-CU shall, if supported, take the preconfigured measurement gaps information into account.

8.13.18.3 Unsuccessful Operation

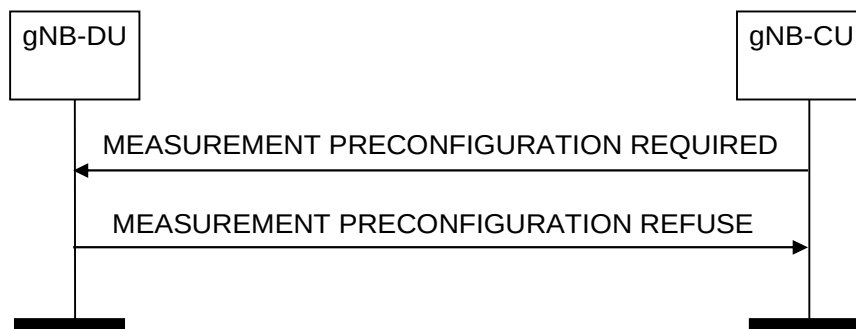


Figure 8.13.18.3-1: Measurement Preconfiguration procedure, unsuccessful operation

If the gNB-DU cannot configure any of the measurement gap or PRS processing window, the gNB-DU shall respond with a MEASUREMENT PRECONFIGURATION REFUSE message.

8.13.19 Measurement Activation

8.13.19.1 General

The Measurement Activation procedure is initiated by the gNB-CU to request the gNB-DU to activate or deactivate the preconfigured measurement gap or PRS processing window for the UE.

8.13.19.2 Successful Operation



Figure 8.13.19.2-1: Measurement Activation procedure, successful operation

The gNB-CU initiates the procedure by sending a MEASUREMENT ACTIVATION message.

If the *PRS Measurement Info List* IE is included in the MEASUREMENT ACTIVATION message, the gNB-DU may take it into account when activating pre-configured measurement gap in the UE.

8.13.19.3 Unsuccessful Operation

Not Applicable.

8.13.20 Positioning System Information Delivery

8.13.20.1 General

The purpose of the Positioning System Information Delivery procedure is to command the gNB-DU to broadcast the requested one or several Positioning SI messages indicated by the gNB-CU. The procedure uses non-UE associated signalling.

8.13.20.2 Successful Operation

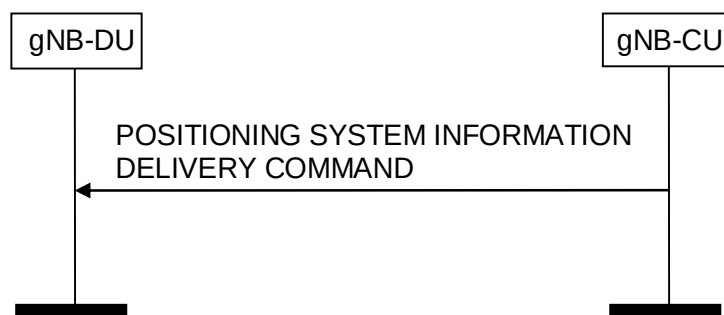


Figure 8.13.20.2-1: Positioning System Information Delivery procedure. Successful operation.

The gNB-CU initiates the procedure by sending a POSITIONING SYSTEM INFORMATION DELIVERY COMMAND message to the gNB-DU.

Upon reception of the POSITIONING SYSTEM INFORMATION DELIVERY COMMAND message, the gNB-DU shall broadcast the requested one or several Positioning SI messages, indicated by the *PosSITypeList* IE, and if the UE corresponding to the *Confirmed UE ID* IE is not in the RRC connected state, delete the UE context, if any.

Interactions with gNB-DU Configuration Update procedure:

Upon reception of POSITIONING SYSTEM INFORMATION DELIVERY COMMAND message, the gNB-DU Configuration Update procedure may be performed, and as part of such procedure the gNB-DU shall include the *Dedicated SI Delivery Needed UE List* IE in GNB-DU CONFIGURATION UPDATE message for UEs that are unable to receive system information from broadcast.

8.13.20.3 Abnormal Conditions

Not applicable.

8.14 NR MBS Procedures

8.14.1 Broadcast Context Setup

8.14.1.1 General

The purpose of the Broadcast Context Setup procedure is to establish an MBS Session context for a broadcast session in the gNB-DU.

The procedure uses MBS-associated signalling.

8.14.1.2 Successful Operation

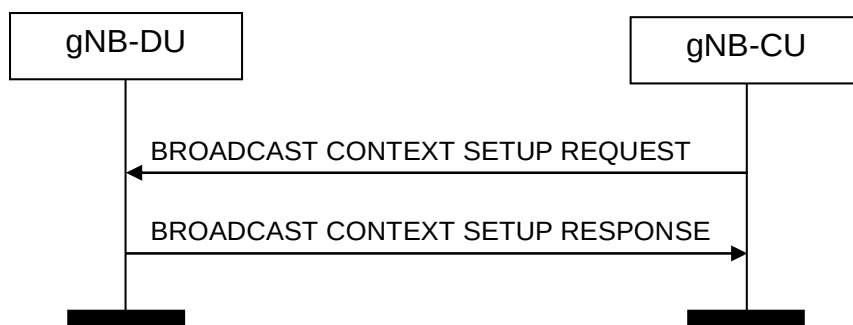


Figure 8.14.1.2-1: Broadcast Context Setup procedure: Successful Operation

The gNB-CU initiates the procedure by sending BROADCAST CONTEXT SETUP REQUEST message to the gNB-DU. If the gNB-DU succeeds to establish the broadcast MBS Session context, it replies to the gNB-CU with BROADCAST CONTEXT SETUP RESPONSE.

If the *MBS Service Area* IE is included in the BROADCAST CONTEXT SETUP REQUEST message, the gNB-DU shall take this information into account for shared F1-U tunnel assignment.

The gNB-DU shall report to the gNB-CU, in the BROADCAST CONTEXT SETUP RESPONSE message, the result of all the requested Broadcast MRBs in the following way:

- A list of MRBs which have been successfully established shall be included in the *Broadcast MRB Setup List* IE;
- A list of MRBs which failed to be established shall be included in the *Broadcast MRB Failed To Be Setup List* IE;

If the *Broadcast MRB Failed To Setup List* IE is contained in the BROADCAST CONTEXT SETUP RESPONSE message, the gNB-CU shall regard the Broadcast MRB(s) failed to be setup with an appropriate cause value for each Broadcast MRB failed to setup.

If

- either the *MBS Service Area* IE was included in the BROADCAST CONTEXT SETUP REQUEST message,
- or the *MBS Service Area* IE was not included in the BROADCAST CONTEXT SETUP REQUEST message and the gNB-DU was not able to establish MBS Session Resources in all cells served by the gNB-DU,

the *Broadcast Area Scope* IE shall be included in the BROADCAST CONTEXT SETUP RESPONSE message to indicate the cells where MBS Session resources have been successfully established in the gNB-DU.

8.14.1.3 Unsuccessful Operation

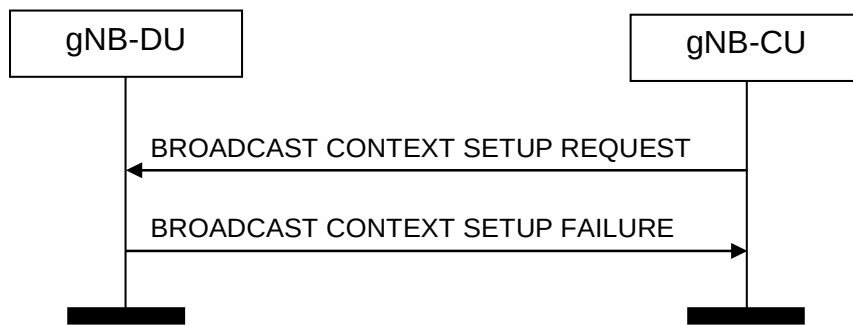


Figure 8.14.1.3-1: Broadcast Context Setup procedure: unsuccessful Operation

If the gNB-DU is not able to establish the requested MBS session context for all the MRBs in any of its cells it shall consider the procedure as failed and reply with the BROADCAST CONTEXT SETUP FAILURE message.

8.14.1.4 Abnormal Conditions

Not applicable.

8.14.2 Broadcast Context Release

8.14.2.1 General

The purpose of the Broadcast Context Release procedure is to enable the gNB-CU to order the release of an established MBS Session context for a broadcast session in the gNB-DU.

The procedure uses MBS-associated signalling.

8.14.2.2 Successful Operation

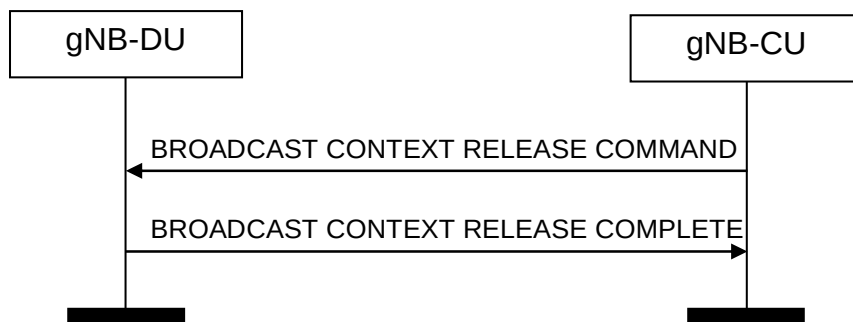


Figure 8.14.2.2-1: Broadcast Context Release procedure. Successful operation

The gNB-CU initiates the procedure by sending the BROADCAST CONTEXT RELEASE COMMAND message to the gNB-DU.

Upon reception of the BROADCAST CONTEXT RELEASE COMMAND message, the gNB-DU shall release all signalling and user data transport resources associated with the context and reply with the BROADCAST CONTEXT RELEASE COMPLETE message.

8.14.2.3 Unsuccessful Operation

Not applicable.

8.14.2.4 Abnormal Conditions

Not applicable.

8.14.3 Broadcast Context Release Request

8.14.3.1 General

The purpose of the Broadcast Context Release Request procedure is to request the gNB-CU to trigger the Broadcast Context Release procedure.

The procedure uses MBS-associated signalling.

8.14.3.2 Successful Operation



Figure 8.14.3.2-1: Broadcast Context Release Request procedure. Successful operation

The gNB-DU initiates the procedure by sending the BROADCAST CONTEXT RELEASE REQUEST message to the gNB-CU.

Interaction with the Broadcast Context Release procedure:

Upon reception of the BROADCAST CONTEXT RELEASE REQUEST message, the gNB-CU should trigger the Broadcast Context Release procedure.

8.14.3.3 Unsuccessful Operation

Not applicable.

8.14.3.4 Abnormal Conditions

Not applicable.

8.14.4 Broadcast Context Modification

8.14.4.1 General

The purpose of the Broadcast Context Modification procedure is to modify an established MBS Session context for a broadcast session in the gNB-DU.

The procedure uses MBS-associated signalling.

8.14.4.2 Successful Operation

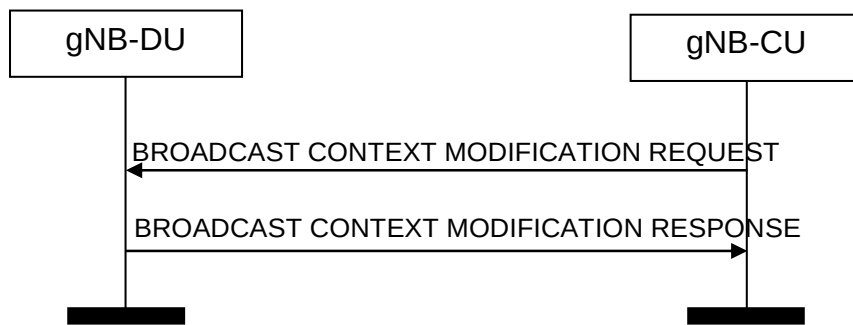


Figure 8.14.4.2-1: Broadcast Context Modification procedure. Successful operation

The BROADCAST CONTEXT MODIFICATION REQUEST message is initiated by the gNB-CU.

Upon reception of the BROADCAST CONTEXT MODIFICATION REQUEST message, the gNB-DU shall perform the modifications, and, if successful, report the update in the BROADCAST CONTEXT MODIFICATION RESPONSE message.

If the *Broadcast MRB To Be Setup List* IE is contained in the BROADCAST CONTEXT MODIFICATION REQUEST message, the gNB-DU shall setup the corresponding resources for the requested MRB(s), and report to the gNB-CU, in the BROADCAST CONTEXT MODIFICATION RESPONSE message, the result of all the requested Broadcast MRBs in the following way:

- A list of MRBs which have been successfully established shall be included in the *Broadcast MRB Setup List* IE;
- A list of MRBs which failed to be established shall be included in the *Broadcast MRB Failed To Be Setup List* IE;

If the *Broadcast MRB Failed To Be Setup List* IE is contained in the BROADCAST CONTEXT MODIFICATION RESPONSE message, the gNB-CU shall regard the setup of the indicated MRB(s) as failed and indicate the reason for the failure with an appropriate cause value for each MRB failed to be setup.

If the *Broadcast MRB To Be Modified List* IE is contained in the BROADCAST CONTEXT MODIFICATION REQUEST message, the gNB-DU shall update the corresponding context and resources for the requested MRB(s), and report to the gNB-CU, in the BROADCAST CONTEXT MODIFICATION RESPONSE message, the modification result of all the requested Broadcast MRBs in the following way:

- A list of MRBs which have been successfully modified shall be included in the *Broadcast MRB Modified List* IE;
- A list of MRBs which failed to be modified shall be included in the *Broadcast MRB Failed To Be Modified List* IE;

If the *Broadcast MRB Failed To Be Modified List* IE is contained in the BROADCAST CONTEXT MODIFICATION RESPONSE message, the gNB-CU shall regard the Broadcast MRB(s) failed to be modified with an appropriate cause value for each Broadcast MRB failed to modify.

If the *MBS Service Area* IE is included in the BROADCAST CONTEXT MODIFICATION REQUEST message, the gNB-DU shall

- release MBS Session Resources within cells not contained in the *MBS Service Area* IE, if any;
- establish MBS Session Resources within cells which have not been contained in MBS Service Area information previously received;
- replace MBS Service Area information previously received with information received in the *MBS Service Area* IE included in the BROADCAST CONTEXT MODIFICATION REQUEST message;
- include the *Broadcast Area Scope* IE in the BROADCAST CONTEXT MODIFICATION RESPONSE message to indicate the cells where MBS Session resources are currently established in the gNB-DU.

If the the *MBS Service Area* IE was not included in the BROADCAST CONTEXT MODIFICATION REQUEST message and the gNB-DU has released MBS Session Resources within at least one cell or has established MBS Session Resources within at least one cell the gNB-DU shall include the *Broadcast Area Scope* IE in the BROADCAST CONTEXT MODIFICATION RESPONSE message to indicate the cells where MBS Session resources are currently established in the gNB-DU.

8.14.4.3 Unsuccessful Operation

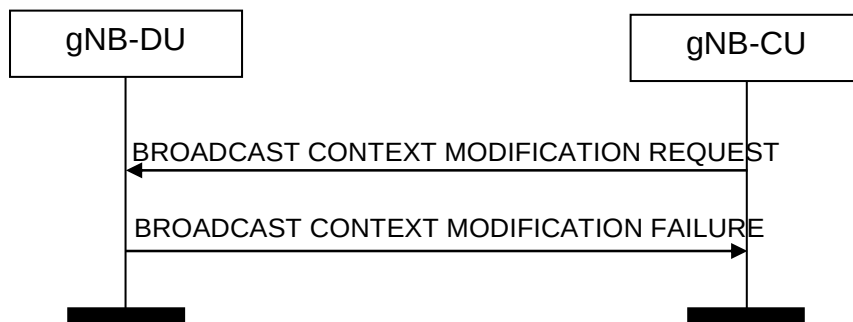


Figure 8.14.4.3-1: Broadcast Context Modification procedure. Unsuccessful operation

In case none of the requested modifications of the broadcast context can be successfully performed, the gNB-DU shall respond with the BROADCAST CONTEXT MODIFICATION FAILURE message with an appropriate cause value.

8.14.4.4 Abnormal Conditions

Not applicable.

8.14.5 Multicast Group Paging

8.14.5.1 General

The purpose of the Multicast Group Paging procedure is used to provide the paging information to enable the gNB-DU to multicast group page UEs which have joined an MBS Session and notify them about its activation. The procedure uses non-UE associated signalling.

8.14.5.2 Successful Operation



Figure 8.14.5.2-1: Multicast Group Paging

The gNB-CU initiates the Multicast Group Paging procedure by sending the MULTICAST GROUP PAGING message to the gNB-DU.

At the reception of the MULTICAST GROUP PAGING message, the gNB-DU shall perform paging of the MBS Session identified by the *MBS Session ID* IE.

If the *Paging DRX* IE is included in the MULTICAST GROUP PAGING message gNB-DU shall use it according to TS 38.304 [24].

If the *UE Identity List for Paging* IE is included in the MULTICAST GROUP PAGING message, the gNB-DU shall, if supported, use it according to TS 38.304 [24]. If absent, the gNB-DU shall perform multicast group paging of the MBS session in all paging occasions within at least one default paging cycle, as specified in TS 38.304 [24].

At the reception of the MULTICAST GROUP PAGING message, the gNB-DU shall perform paging of the MBS Session in all the served cells of the PLMN indicated in the *MBS Session ID* IE except if the *MC Paging Cell List* IE is included in which case the gNB-DU shall, if supported, perform multicast group paging of the MBS session in the indicated cells only.

8.14.5.3 Abnormal Conditions

Void.

8.14.6 Multicast Context Setup

8.14.6.1 General

The purpose of the Multicast Context Setup procedure is to establish an MBS Session context in the gNB-DU for a multicast session.

The procedure uses MBS-associated signalling.

8.14.6.2 Successful Operation

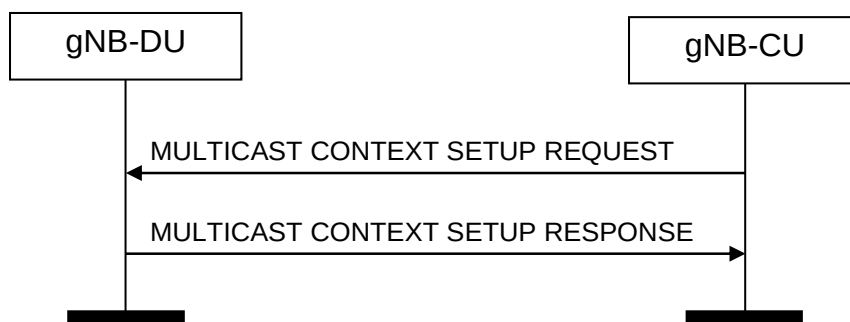


Figure 8.14.6.2-1: Multicast Context Setup procedure: Successful Operation

The gNB-CU initiates the procedure by sending MULTICAST CONTEXT SETUP REQUEST message to the gNB-DU. If the gNB-DU succeeds to establish the multicast MBS Session context, it replies to the gNB-CU with MULTICAST CONTEXT SETUP RESPONSE.

If the *MBS Service Area* IE is included in the MULTICAST CONTEXT SETUP REQUEST message, the gNB-DU shall take this information into account for shared F1-U tunnel assignment.

The gNB-DU shall report to the gNB-CU, in the MULTICAST CONTEXT SETUP RESPONSE message, the result of all the requested Multicast MRBs in the following way:

- A list of MRBs which have been successfully established shall be included in the *Multicast MRB Setup List* IE;
- A list of MRBs which failed to be established shall be included in the *Multicast MRB Failed To Be Setup List* IE;

If the *Multicast MRB Failed To Setup List* IE is contained in the MULTICAST CONTEXT SETUP RESPONSE message, the gNB-CU shall regard the Multicast MRB(s) failed to be setup with an appropriate cause value for each Multicast MRB failed to setup.

Interaction with the Multicast Distribution Context Setup procedure:

Upon reception of the MULTICAST CONTEXT SETUP REQUEST procedure, the gNB-DU shall trigger either per cell or per MBS Area Session ID or for the whole gNB-DU the Multicast Distribution Context Setup procedure to establish per cell or per MBS Area Session ID or the the whole gNB DU per accepted MRB a shared F1-U tunnel.

8.14.6.3 Unsuccessful Operation

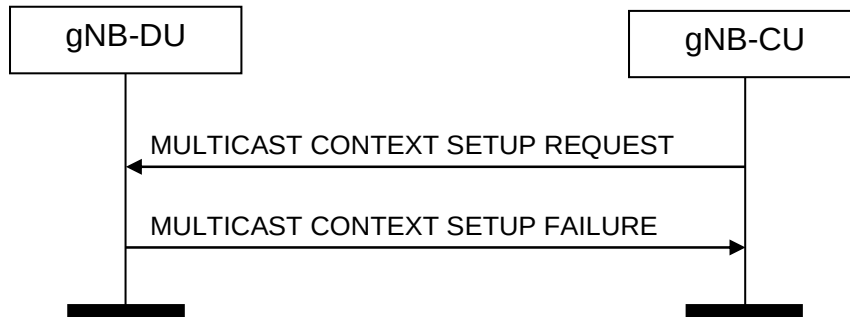


Figure 8.14.6.3-1: Multicast Context Setup procedure: unsuccessful Operation

If the gNB-DU is not able to establish the MBS session context it shall consider the procedure as failed and reply with the MULTICAST CONTEXT SETUP FAILURE message.

8.14.6.4 Abnormal Conditions

Not applicable.

8.14.7 Multicast Context Release

8.14.7.1 General

The purpose of the Multicast Context Release procedure is to enable the gNB-CU to order the release of an established MBS session context in the gNB-DU for a multicast session.

The procedure uses MBS-associated signalling.

8.14.7.2 Successful Operation

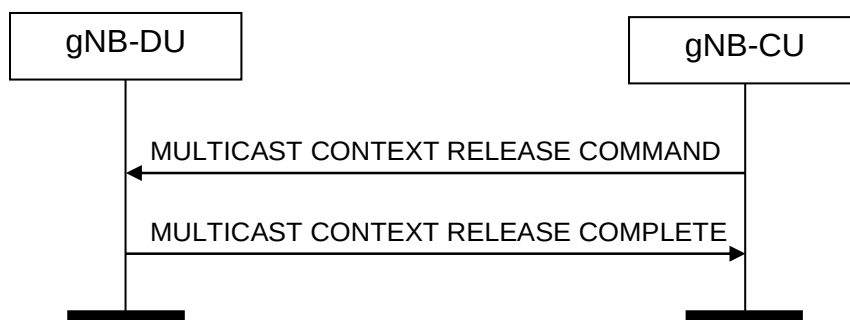


Figure 8.14.7.2-1: Multicast Context Release procedure. Successful operation

The gNB-CU initiates the procedure by sending the MULTICAST CONTEXT RELEASE COMMAND message to the gNB-DU.

Upon reception of the MULTICAST CONTEXT RELEASE COMMAND message, the gNB-DU shall release all signalling and user data transport resources associated with the context and reply with the MULTICAST CONTEXT RELEASE COMPLETE message.

8.14.7.3 Unsuccessful Operation

Not applicable.

8.14.7.4 Abnormal Conditions

Not applicable.

8.14.8 Multicast Context Release Request

8.14.8.1 General

The purpose of the Multicast Context Release Request procedure is to request the gNB-CU to trigger the Multicast Context Release procedure.

The procedure uses MBS-associated signalling.

8.14.8.2 Successful Operation



Figure 8.14.8.2-1: Multicast Context Release Request procedure. Successful operation

The gNB-DU initiates the procedure by sending the MULTICAST CONTEXT RELEASE REQUEST message to the gNB-CU.

Interaction with the Multicast Context Release procedure:

Upon reception of the MULTICAST CONTEXT RELEASE REQUEST message, the gNB-CU should trigger the Multicast Context Release procedure.

8.14.8.3 Unsuccessful Operation

Not applicable.

8.14.8.4 Abnormal Conditions

Not applicable.

8.14.9 Multicast Context Modification

8.14.9.1 General

The purpose of the Multicast Context Modification procedure is to modify an established MBS session context in the gNB-DU for a multicast session.

The procedure uses MBS-associated signalling.

8.14.9.2 Successful Operation

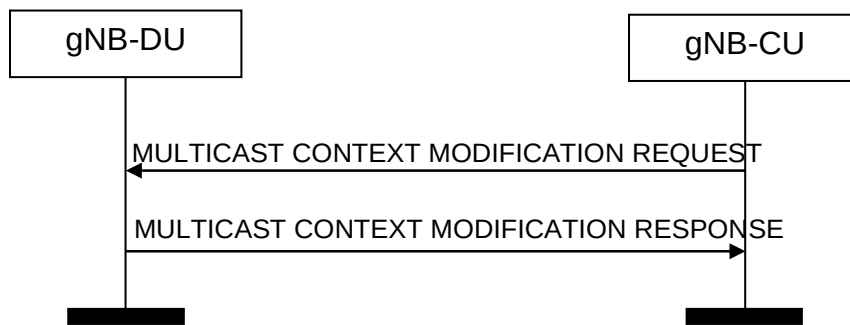


Figure 8.14.9.2-1: Multicast Context Modification procedure. Successful operation

The MULTICAST CONTEXT MODIFICATION REQUEST message is initiated by the gNB-CU.

Upon reception of the MULTICAST CONTEXT MODIFICATION REQUEST message, the gNB-DU shall perform the modifications, and, if successful, report the update in the MULTICAST CONTEXT MODIFICATION RESPONSE message.

If the *Multicast MRB To Be Setup List* IE is contained in the MULTICAST CONTEXT MODIFICATION REQUEST message, the gNB-DU shall setup the corresponding resources for the requested MRB(s), and report to the gNB-CU, in the MULTICAST CONTEXT MODIFICATION RESPONSE message, the result of all the requested Multicast MRBs in the following way:

- A list of MRBs which have been successfully established shall be included in the *Multicast MRB Setup List* IE;
- A list of MRBs which failed to be established shall be included in the *Multicast MRB Failed To Be Setup List* IE;

If the *Multicast MRB Failed To Be Setup List* IE is contained in the MULTICAST CONTEXT MODIFICATION RESPONSE message, the gNB-CU shall regard the setup of the indicated MRB(s) as failed and indicated the resource for the failure with an appropriate cause value for each MRB failed to be setup.

If the *Multicast MRB To Be Modified List* IE is contained in the MULTICAST CONTEXT MODIFICATION REQUEST message, the gNB-DU shall update the corresponding context and resources for the requested MRB(s), and report to the gNB-CU, in the MULTICAST CONTEXT MODIFICATION RESPONSE message, the modification result of all the requested Multicast MRBs in the following way:

- A list of MRBs which have been successfully modified shall be included in the *Multicast MRB Modified List* IE;
- A list of MRBs which failed to be modified shall be included in the *Multicast MRB Failed To Be Modified List* IE;

If the *Multicast MRB Failed To Be Modified List* IE is contained in the MULTICAST CONTEXT MODIFICATION RESPONSE message, the gNB-CU shall regard the Multicast MRB(s) failed to be modified with an appropriate cause value for each Multicast MRB failed to modify.

8.14.9.3 Unsuccessful Operation

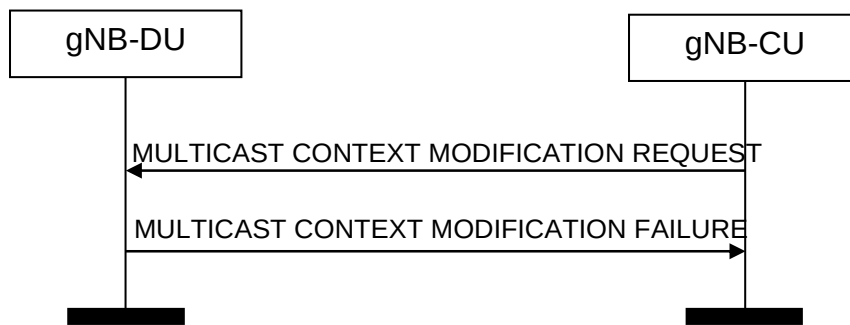


Figure 8.14.9.3-1: Multicast Context Modification procedure. Unsuccessful operation

In case none of the requested modifications of the multicast context can be successfully performed, the gNB-DU shall respond with the MULTICAST CONTEXT MODIFICATION FAILURE message with an appropriate cause value.

8.14.9.4 Abnormal Conditions

Not applicable.

8.14.10 Multicast Distribution Setup

8.14.10.1 General

The purpose of the Multicast Distribution Setup procedure is to establish F1-U bearers for the multicast MBS session. The procedure uses MBS-associated signalling.

8.14.10.2 Successful Operation

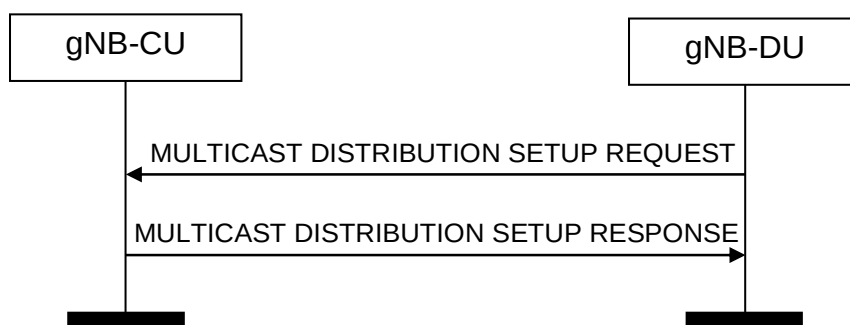


Figure 8.14.10.2-1: Multicast Distribution Setup procedure: Successful Operation

The gNB-DU initiates the procedure by sending MULTICAST DISTRIBUTION SETUP REQUEST message to the gNB-CU. If the gNB-CU succeeds to establish the multicast context, it replies to the gNB-DU with MULTICAST DISTRIBUTION SETUP RESPONSE.

The MULTICAST DISTRIBUTION SETUP REQUEST message shall contain F1-U TNL information for the MRBs accepted for the MBS Session by the gNB-DU and indicate in the *MBS Multicast F1-U Context Descriptor* IE, if the shared F1-U tunnel(s) for the MRB(s) are established on a per NR CGI or per MBS Area Session ID basis or for a ptp MRB leg.

Upon reception of the MULTICAST DISTRIBUTION SETUP REQUEST message the gNB-CU shall allocate F1-U resources and reply accordingly to the gNB-DU in the MULTICAST DISTRIBUTION SETUP RESPONSE message.

If the *MC F1-U Context usage* IE in the *MBS Multicast F1-U Context Descriptor* IE is set to "ptp forwarding" the gNB-CU shall, if supported, use the *MRB Progress Information* IE to determine at which PDCP SN to start transmitting multicast data to the gNB-DU.

8.14.10.3 Unsuccessful Operation

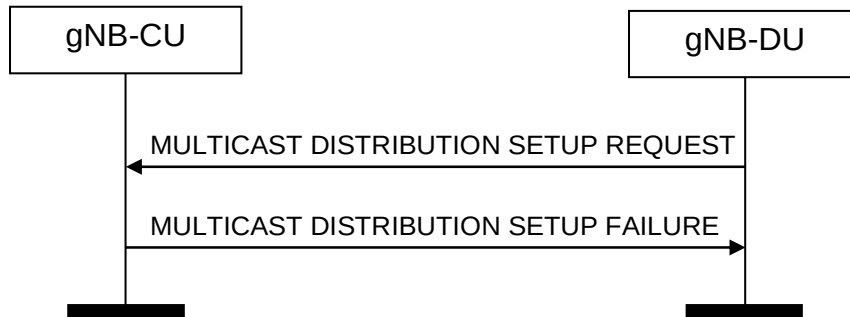


Figure 8.14.10.3-1: Multicast Distribution Setup procedure: unsuccessful Operation

If the gNB-CU is not able to provide the requested resources it shall consider the procedure as failed and reply with the MULTICAST CONTEXT SETUP FAILURE message.

8.14.10.4 Abnormal Conditions

Not applicable.

8.14.11 Multicast Distribution Release

8.14.11.1 General

The purpose of the Multicast Distribution Release procedure is to enable the gNB-DU to order the release of F1-U tunnels previously established using the Multicast Distribution Setup procedure.

The procedure uses MBS-associated signalling.

8.14.11.2 Successful Operation

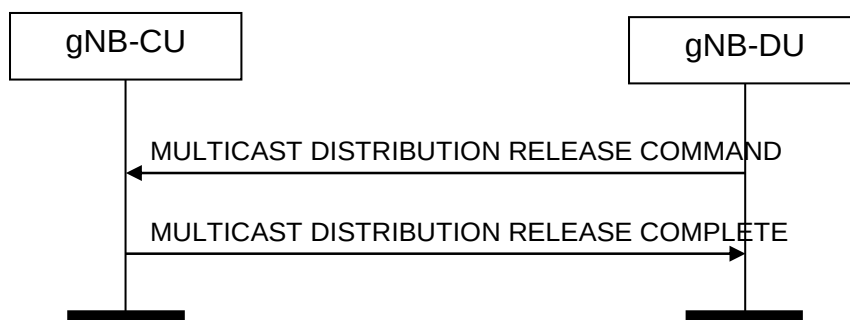


Figure 8.14.11.2-1: Multicast Distribution Release procedure. Successful operation

The gNB-DU initiates the procedure by sending the MULTICAST DISTRIBUTION RELEASE COMMAND message to the gNB-CU.

Upon reception of the MULTICAST DISTRIBUTION RELEASE COMMAND message, the gNB-CU shall release all signalling and user data transport resources associated with the context and reply with the MULTICAST DISTRIBUTION RELEASE COMPLETE message.

8.14.11.3 Unsuccessful Operation

Not applicable.

8.14.11.4 Abnormal Conditions

Not applicable.

8.15 PDC Measurement Reporting procedures

8.15.1 PDC Measurement Initiation

8.15.1.1 General

The purpose of the PDC Measurement Initiation procedure is to enable the gNB-CU to request the gNB-DU to report measurements used for propagation delay compensation at the gNB-CU or UE. The procedure uses UE-associated signalling.

8.15.1.2 Successful Operation

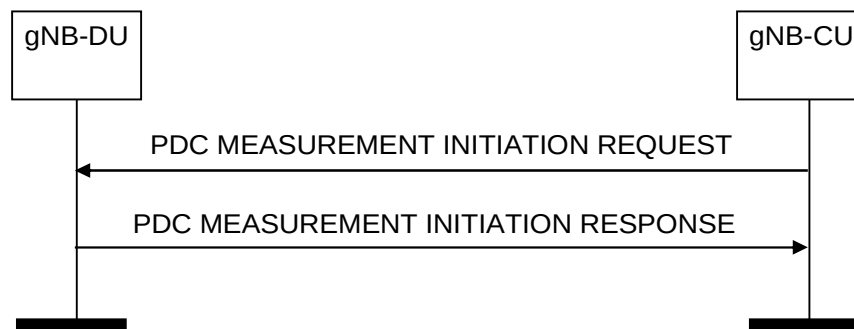


Figure 8.15.1.2-1: PDC Measurement Initiation procedure, successful operation

The gNB-CU initiates the procedure by sending a PDC MEASUREMENT INITIATION REQUEST message. If the gNB-DU is able to initiate the requested PDC measurements, it shall reply with the PDC MEASUREMENT INITIATION RESPONSE message.

If the *PDC Report Type* IE is set to "OnDemand", the gNB-DU shall return the result of the measurement in the PDC MEASUREMENT INITIATION RESPONSE message including the *PDC Measurement Result* IE, and the gNB-CU shall consider that the PDC measurements for the UE have been terminated by the gNB-DU.

Interaction with the PDC Measurement Report procedure:

If the *PDC Report Type* IE is set to "Periodic", the gNB-DU shall initiate the requested measurements and shall reply with the PDC MEASUREMENT INITIATION RESPONSE message without including the *PDC Measurement Result* IE in this message. The gNB-DU shall then periodically initiate the PDC Measurement Report procedure for the measurements, with the requested reporting periodicity.

8.15.1.3 Unsuccessful Operation

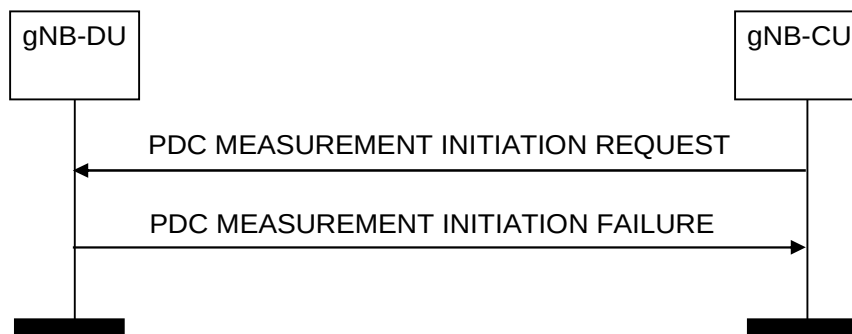


Figure 8.15.1.3-1: PDC Measurement Initiation procedure, unsuccessful operation

If the gNB-DU is not able to initiate at least one of the requested PDC measurements, the gNB-DU shall respond with a PDC MEASUREMENT INITIATION FAILURE message.

8.15.2 PDC Measurement Report

8.15.2.1 General

The purpose of the PDC Measurement Report procedure is for the gNB-DU to provide the PDC measurements for the UE to the gNB-CU. The procedure uses UE-associated signalling.

8.15.2.2 Successful Operation

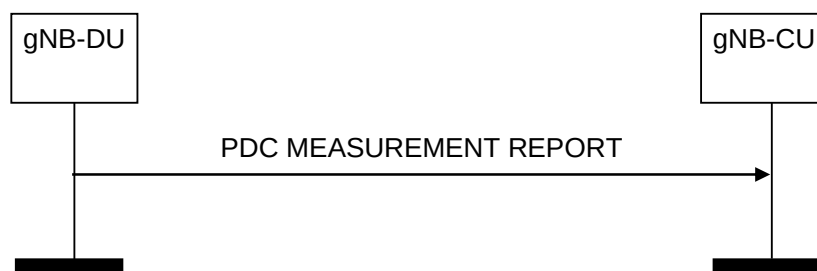


Figure 8.15.2.2-1: PDC Measurement Report procedure, successful operation

The gNB-DU initiates the procedure by sending a PDC MEASUREMENT REPORT message. The PDC MEASUREMENT REPORT message contains the PDC measurement results according to the measurement configuration in the respective PDC MEASUREMENT INITIATION REQUEST message.

8.15.2.3 Unsuccessful Operation

Not applicable.

8.15.3 PDC Measurement Termination

8.15.3.1 General

The purpose of the PDC Measurement Termination procedure is to enable the gNB-CU to terminate an on-going periodical PDC measurement. The procedure uses UE-associated signalling.

8.15.3.2 Successful Operation

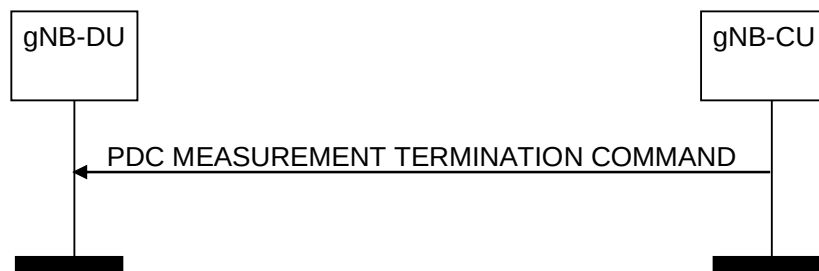


Figure 8.15.3.2-1: PDC Measurement Termination procedure: successful operation

The gNB-CU initiates the procedure by sending a PDC MEASUREMENT TERMINATION COMMAND message. Upon receiving this message, the gNB-DU shall terminate the ongoing PDC measurement and may release any resources previously allocated for the same measurement.

8.15.3.3 Unsuccessful Operation

Not applicable.

8.15.3.4 Abnormal Conditions

If the gNB-DU cannot identify the previously requested measurement to be terminated, it shall ignore the PDC MEASUREMENT TERMINATION COMMAND message.

8.15.4 PDC Measurement Failure Indication

8.15.4.1 General

The purpose of the PDC Measurement Failure Indication procedure is for the gNB-DU to notify the gNB-CU that the PDC measurements previously requested with the PDC Measurement Initiation procedure can no longer be reported. The procedure uses UE-associated signalling.

8.15.4.2 Successful Operation

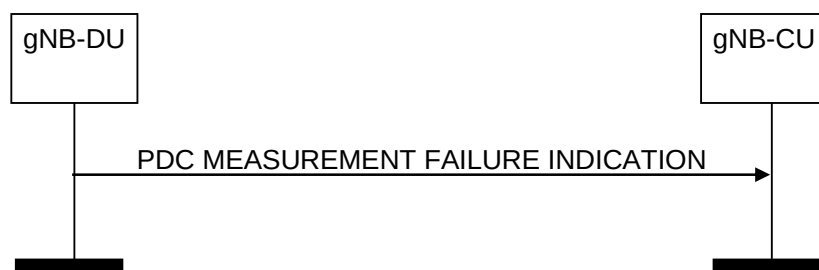


Figure 8.15.4.2-1: PDC Measurement Failure Indication procedure: successful operation

The gNB-DU initiates the procedure by sending a PDC MEASUREMENT FAILURE INDICATION message. Upon reception of the PDC MEASUREMENT FAILURE INDICATION message, the gNB-CU shall consider that the indicated PDC measurements have been terminated by the gNB-DU.

8.15.4.3 Unsuccessful Operation

Not applicable.

8.15.4.4 Abnormal Conditions

Void.

8.16 QMC Procedures

8.16.1 QoE Information Transfer

8.16.1.1 General

The purpose of the QoE Information Transfer procedure is to transfer RAN visible QoE information from the gNB-CU to the gNB-DU. The procedure uses UE-associated signalling.

8.16.1.2 Successful operation

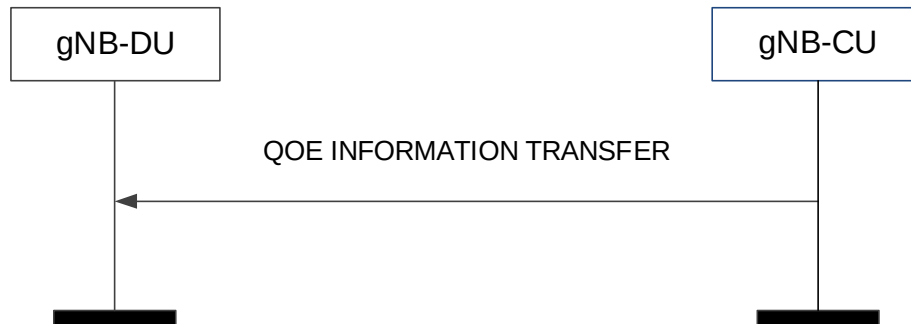


Figure 8.16.1.2-1: QoE Information Transfer procedure

The gNB-CU initiates the procedure by sending the QOE INFORMATION TRANSFER message to the gNB-DU.

If the *QoE Information List* IE is included in QOE INFORMATION TRANSFER message, the gNB-DU may take it into account according to TS 38.300 [6].

8.16.1.3 Abnormal Conditions

Not applicable.

9 Elements for F1AP Communication

9.1 General

Subclauses 9.2 and 9.3 present the F1AP 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 [14].

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 [3].

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 and the gNB-DU and is used to request that the F1 interface, or parts of the F1 interface, to be reset.

Direction: gNB-CU → gNB-DU and gNB-DU → gNB-CU

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
Transaction ID	M		9.3.1.23		YES	reject
Cause	M		9.3.1.2		YES	ignore
CHOICE <i>Reset Type</i>	M				YES	reject
> <i>F1 interface</i>						
>>Reset All	M		ENUMERATED (Reset all,...)		-	
> <i>Part of F1 interface</i>						
>>UE-associated logical F1-connection list		1			-	
>>>UE-associated logical F1-connection Item		1 .. <maxnoofIndividualF1ConnectionsToReset>			EACH	reject
>>>>gNB-CU UE F1AP ID	O		9.3.1.4		-	
>>>>gNB-DU UE F1AP ID	O		9.3.1.5		-	

Range bound	Explanation
maxnoofIndividualF1ConnectionsToReset	Maximum no. of UE-associated logical F1-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 and the gNB-DU as a response to a RESET message.

Direction: gNB-DU → gNB-CU and gNB-CU → gNB-DU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
Transaction ID	M		9.3.1.23		YES	reject
UE-associated logical F1-connection list		0..1			YES	ignore
>UE-associated logical F1-connection Item		1 .. <maxnoofIndividualF1ConnectionsToReset>			EACH	ignore
>>gNB-CU UE F1AP ID	O		9.3.1.4		-	
>>gNB-DU UE F1AP ID	O		9.3.1.5		-	
Criticality Diagnostics	O		9.3.1.3		YES	ignore

Range bound	Explanation
maxnoofIndividualF1ConnectionsToReset	Maximum no. of UE-associated logical F1-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 and the gNB-DU and is used to indicate that some error has been detected in the node.

Direction: gNB-CU → gNB-DU and gNB-DU → gNB-CU

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	ignore
Transaction ID	M		9.3.1.23	This IE is ignored if received in UE associated signalling message.	YES	reject
gNB-CU UE F1AP ID	O		9.3.1.4		YES	ignore
gNB-DU UE F1AP 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

9.2.1.4 F1 SETUP REQUEST

This message is sent by the gNB-DU to transfer information associated to an F1-C interface instance.

NOTE: If a TNL association is shared among several F1-C interface instances, several F1 Setup procedures are issued via the same TNL association after that TNL association has become operational.

Direction: gNB-DU → gNB-CU

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
Transaction ID	M		9.3.1.23		YES	reject
gNB-DU ID	M		9.3.1.9		YES	reject
gNB-DU Name	O		PrintableString(SIZE(1..150,...))		YES	ignore
gNB-DU Served Cells List		0.. 1		List of cells configured in the gNB-DU	YES	reject
>gNB-DU Served Cells Item		1.. <maxCellingNB-DU>			EACH	reject
>>Served Cell Information	M		9.3.1.10	Information about the cells configured in the gNB-DU	-	
>>gNB-DU System Information	O		9.3.1.18	RRC container with system information owned by gNB-DU	-	
gNB-DU RRC version	M		RRC version 9.3.1.70		YES	reject
Transport Layer Address Info	O		9.3.2.5		YES	ignore
BAP Address	O		9.3.1.111	Indicates a BAP address assigned to the IAB-node.	YES	ignore
Extended gNB-DU	O		9.3.1.205		YES	ignore

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Name						

Range bound	Explanation
maxCellingNBDU	Maximum no. cells that can be served by a gNB-DU. Value is 512.

9.2.1.5 F1 SETUP RESPONSE

This message is sent by the gNB-CU to transfer information associated to an F1-C interface instance.

Direction: gNB-CU → gNB-DU

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
Transaction ID	M		9.3.1.23		YES	reject
gNB-CU Name	O		PrintableString(SIZE(1..150,...))	Human readable name of the gNB-CU.	YES	ignore
Cells to be Activated List		0.. 1			YES	reject
>Cells to be Activated List Item		1.. <maxCellingNBDU>		List of cells to be activated	EACH	reject
>>NR CGI	M		9.3.1.12		-	
>>NR PCI	O		INTEGER (0..1007)	Physical Cell ID	-	
>>gNB-CU System Information	O		9.3.1.42	RRC container with system information owned by gNB-CU	YES	reject
>>Available PLMN List	O		9.3.1.65		YES	ignore
>>Extended Available PLMN List	O		9.3.1.76	This is included if <i>Available PLMN List</i> IE is included and if more than 6 Available PLMNs is to be signalled.	YES	ignore
>>IAB Info IAB-donor-CU	O		9.3.1.105	IAB-related configuration sent by the IAB-donor-CU.	YES	ignore
>>Available SNPN ID List	O		9.3.1.163	Indicates the available SNPN ID list. If this IE is included, the content of the <i>Available PLMN List</i> IE and <i>Extended Available PLMN List</i> IE if present in the <i>Cells to be Activated List Item</i> IE is ignored.	YES	ignore
>>MBS Broadcast Neighbour Cell List	O		9.3.1.226		YES	ignore
gNB-CU RRC version	M		RRC version 9.3.1.70		YES	reject
Transport Layer Address Info	O		9.3.2.5		YES	ignore
Uplink BH Non-UP	O		9.3.1.103		YES	reject

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Traffic Mapping						
BAP Address	O		9.3.1.111	Indicates a BAP address assigned to the IAB-donor-DU.	YES	ignore
Extended gNB-CU Name	O		9.3.1.206		YES	ignore

Range bound	Explanation
maxCellingNBDU	Maximum no. cells that can be served by a gNB-DU. Value is 512.

9.2.1.6 F1 SETUP FAILURE

This message is sent by the gNB-CU to indicate F1 Setup failure.

Direction: gNB-CU → gNB-DU

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
Transaction ID	M		9.3.1.23		YES	reject
Cause	M		9.3.1.2		YES	ignore
Time to wait	O		9.3.1.13		YES	ignore
Criticality Diagnostics	O		9.3.1.3		YES	ignore

9.2.1.7 GNB-DU CONFIGURATION UPDATE

This message is sent by the gNB-DU to transfer updated information associated to an F1-C interface instance.

NOTE: If F1-C signalling transport is shared among several F1-C interface instances, this message may transfer updated information associated to several F1-C interface instances.

Direction: gNB-DU → gNB-CU

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
Transaction ID	M		9.3.1.23		YES	reject
Served Cells To Add List		0..1		Complete list of added cells served by the gNB-DU	YES	reject
>Served Cells To Add Item		1 .. <maxCellingNBDU>			EACH	reject
>>Served Cell Information	M		9.3.1.10	Information about the cells configured in the gNB-DU	-	
>>gNB-DU System Information	O		9.3.1.18	RRC container with system information owned by gNB-DU	-	
Served Cells To Modify List		0..1		Complete list of modified cells served by the gNB-DU	YES	reject
>Served Cells To Modify Item		1 .. <maxCellingNBDU>			EACH	reject
>>Old NR CGI	M		NR CGI 9.3.1.12		-	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
>>Served Cell Information	M		9.3.1.10	Information about the cells configured in the gNB-DU	-	
>>gNB-DU System Information	O		9.3.1.18	RRC container with system information owned by gNB-DU	-	
Served Cells To Delete List		0..1		Complete list of deleted cells served by the gNB-DU	YES	reject
>Served Cells To Delete Item		1.. <maxCellingNBdu>			EACH	reject
>>Old NR CGI	M		NR CGI 9.3.1.12		-	
Cells Status List		0..1		Complete list of active cells	YES	reject
>Cells Status Item		0.. <maxCellingNBdu>			EACH	reject
>>NR CGI	M		9.3.1.12		-	
>>Service Status	M		9.3.1.68		-	
Dedicated SI Delivery Needed UE List		0..1		List of UEs unable to receive system information from broadcast	YES	ignore
>Dedicated SI Delivery Needed UE Item		1.. <maxnoofUEIDs>			EACH	ignore
>>gNB-CU UE F1AP ID	M		9.3.1.4		-	
>>NR CGI	M		9.3.1.12		-	
gNB-DU ID	O		9.3.1.9		YES	reject
gNB-DU TNL Association To Remove List		0..1			YES	reject
>gNB-DU TNL Association To Remove Item IEs		1.. <maxnoofTNLAassociation>			EACH	reject
>>TNL Association Transport Layer Address	M		CP Transport Layer Address 9.3.2.4	Transport Layer Address of the gNB-DU.	-	-
>>TNL Association Transport Layer Address gNB-CU	O		CP Transport Layer Address 9.3.2.4	Transport Layer Address of the gNB-CU	-	-
Transport Layer Address Info	O		9.3.2.5		YES	ignore
Coverage Modification Notification	O		9.3.1.213		YES	Ignore
gNB-DU Name	O		PrintableString(SIZE(1..150,...))	Human readable name of the gNB-DU.	YES	ignore
Extended gNB-DU Name	O		9.3.1.205		YES	ignore

Range bound	Explanation
maxCellingNBdu	Maximum no. cells that can be served by a gNB-DU. Value is 512.
maxnoofUEIDs	Maximum no. of UEs that can be served by a gNB-DU. Value is 65536.
maxnoofTNLAassociations	Maximum numbers of TNL Associations between the gNB-CU and the gNB-DU. Value is 32.

9.2.1.8 GNB-DU CONFIGURATION UPDATE ACKNOWLEDGE

This message is sent by a gNB-CU to a gNB-DU to acknowledge update of information associated to an F1-C interface instance.

NOTE: If F1-C signalling transport is shared among several F1-C interface instances, this message may transfer updated information associated to several F1-C interface instances.

Direction: gNB-CU → gNB-DU

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
Transaction ID	M		9.3.1.23		YES	reject
Cells to be Activated List		0.. 1		List of cells to be activated	YES	reject
>Cells to be Activated List Item		1.. <maxCellingNBdu>			EACH	reject
>> NR CGI	M		9.3.1.12		-	
>> NR PCI	O		INTEGER (0..1007)	Physical Cell ID	-	
>> gNB-CU System Information	O		9.3.1.42	RRC container with system information owned by gNB-CU	YES	reject
>>Available PLMN List	O		9.3.1.65		YES	ignore
>>Extended Available PLMN List	O		9.3.1.76	This is included if <i>Available PLMN List</i> IE is included and if more than 6 Available PLMNs is to be signalled.	YES	ignore
>>IAB Info IAB-donor-CU	O		9.3.1.105	IAB-related configuration sent by the IAB-donor-CU.	YES	ignore
>>Available SNPN ID List	O		9.3.1.163	Indicates the available SNPN ID list. If this IE is included, the content of the <i>Available PLMN List</i> IE and <i>Extended Available PLMN List</i> IE if present in the <i>Cells to be Activated List Item</i> IE is ignored.	YES	ignore
>>MBS Broadcast Neighbour Cell List	O		9.3.1.226		YES	ignore
Criticality Diagnostics	O		9.3.1.3		YES	ignore
Cells to be Deactivated List		0.. 1		List of cells to be deactivated	YES	reject
>Cells to be Deactivated List Item		1.. <maxCellingNBdu>			EACH	reject
>>NR CGI	M		9.3.1.12		-	-
Transport Layer Address Info	O		9.3.2.5		YES	ignore
Uplink BH Non-UP Traffic Mapping	O		9.3.1.103		YES	reject
BAP Address	O		9.3.1.111	Indicates a BAP address assigned	YES	ignore

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				to the IAB-donor-DU.		
Cells for SON List	O		9.3.1.214		YES	ignore

Range bound	Explanation
maxCellingNBDU	Maximum no. cells that can be served by a gNB-DU. Value is 512.

9.2.1.9 GNB-DU CONFIGURATION UPDATE FAILURE

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

Direction: gNB-CU → gNB-DU

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
Transaction ID	M		9.3.1.23		YES	reject
Cause	M		9.3.1.2		YES	ignore
Time to wait	O		9.3.1.13		YES	ignore
Criticality Diagnostics	O		9.3.1.3		YES	ignore

9.2.1.10 GNB-CU CONFIGURATION UPDATE

This message is sent by the gNB-CU to transfer updated information associated to an F1-C interface instance.

NOTE: If F1-C signalling transport is shared among several F1-C interface instances, this message may transfer updated information associated to several F1-C interface instances.

Direction: gNB-CU → gNB-DU

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
Transaction ID	M		9.3.1.23		YES	reject
Cells to be Activated List		0..1		List of cells to be activated or modified	YES	reject
>Cells to be Activated List Item		1.. <maxCellingNBDU>			EACH	reject
>>NR CGI	M		9.3.1.12		-	
>>NR PCI	O		INTEGER (0..1007)	Physical Cell ID	-	
>>gNB-CU System Information	O		9.3.1.42	RRC container with system information owned by gNB-CU	YES	reject
>>Available PLMN List	O		9.3.1.65		YES	ignore
>>Extended Available PLMN List	O		9.3.1.76	This is included if <i>Available PLMN List</i> IE is included and if more than 6 Available PLMNs is to be signalled.	YES	ignore
>>IAB Info IAB-donor-CU	O		9.3.1.105	IAB-related configuration sent by the IAB-donor-CU.	YES	ignore
>>Available SNPN ID List	O		9.3.1.163	Indicates the available SNPN ID	YES	ignore

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				list. If this IE is included, the content of the <i>Available PLMN List</i> IE and <i>Extended Available PLMN List</i> IE if present in the <i>Cells to be Activated List Item</i> IE is ignored.		
>>MBS Broadcast Neighbour Cell List	O		9.3.1.226		YES	ignore
Cells to be Deactivated List		0..1		List of cells to be deactivated	YES	reject
>Cells to be Deactivated List Item		1.. <maxCelli ngNBDU>			EACH	reject
>>NR CGI	M		9.3.1.12		-	
gNB-CU TNL Association To Add List		0..1			YES	ignore
>gNB-CU TNL Association To Add Item IEs		1.. <maxno ofTNLAss ociations>			EACH	ignore
>>TNL Association Transport Layer Information	M		CP Transport Layer Address 9.3.2.4	Transport Layer Address of the gNB-CU.	-	
>>TNL Association Usage	M		ENUMERATED (ue, non-ue, both, ...)	Indicates whether the TNL association is only used for UE-associated signalling, or non-UE-associated signalling, or both. For usage of this IE, refer to TS 38.472 [22].	-	
gNB-CU TNL Association To Remove List		0..1			YES	ignore
>gNB-CU TNL Association To Remove Item IEs		1.. <maxno ofTNLAss ociation>			EACH	ignore
>>TNL Association Transport Layer Address	M		CP Transport Layer Address 9.3.2.4	Transport Layer Address of the gNB-CU.	-	
>>TNL Association Transport Layer Address gNB-DU	O		CP Transport Layer Address 9.3.2.4	Transport Layer Address of the gNB-DU.	YES	reject
gNB-CU TNL Association To Update List		0..1			YES	ignore
>gNB-CU TNL Association To Update Item IEs		1.. <maxno ofTNLAss ociations>			EACH	ignore
>>TNL Association Transport Layer Address	M		CP Transport Layer Address 9.3.2.4	Transport Layer Address of the gNB-CU.	-	
>>TNL Association Usage	O		ENUMERATED (ue, non-ue, both, ...)	Indicates whether the TNL association is only used for UE-associated	-	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				signalling, or non-UE-associated signalling, or both. For usage of this IE, refer to TS 38.472 [22].		
Cells to be barred List		0..1		List of cells to be barred.	YES	ignore
>Cells to be barred List Item		1.. <maxCelli ngNBDU>			EACH	ignore
>>NR CGI	M		9.3.1.12		-	
>>Cell Barred	M		ENUMERATED (barred, not- barred, ...)		-	
>>IAB Barred	O		ENUMERATED (barred, not- barred, ...)	Corresponds to information provided in the <i>iab-Support</i> contained in the <i>PLMN-IdentityInfo</i> IE or contained in the <i>NPN-IdentityInfo</i> IE as defined in TS 38.331 [8]. The codepoint value "barred" indicates that the <i>iab-Support</i> is not sent in SIB1, and the codepoint value "not-barred" indicates that the <i>iab-Support</i> is sent in SIB1.	-	
Protected E-UTRA Resources List		0..1		List of Protected E-UTRA Resources.	YES	reject
>Protected E-UTRA Resources List Item		1.. <maxCelli neNB>			EACH	reject
>>Spectrum Sharing Group ID	M		INTEGER (1.. maxCellineNB)	Indicates the E-UTRA cells involved in resource coordination with the NR cells affiliated with the same Spectrum Sharing Group ID.	-	
>>>E-UTRA Cells List		1		List of applicable E-UTRA cells.	-	
>>>>E-UTRA Cells List Item		1.. <maxCelli neNB>			-	
>>>>>EUTRA Cell ID	M		BIT STRING (SIZE(28))	Indicates the E-UTRAN Cell Identifier IE contained in the ECGI as defined in subclause 9.2.14 in TS 36.423 [9].	-	
>>>>>Served E-UTRA Cell	M		9.3.1.64		-	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Information						
Neighbour Cell Information List		0..1			YES	ignore
>Neighbour Cell Information List Item		1.. <maxCellingNBDU>			EACH	ignore
>>NR CGI	M		9.3.1.12		-	
>>Intended TDD DL-UL Configuration	O		9.3.1.89		-	
Transport Layer Address Info	O		9.3.2.5		YES	ignore
Uplink BH Non-UP Traffic Mapping	O		9.3.1.103		YES	reject
BAP Address	O		9.3.1.111	Indicates a BAP address assigned to the IAB-donor-DU.	YES	ignore
CCO Assistance Information	O		9.3.1.211	Indicates CCO Assistance Information for cells and beams served by the gNB-DU of the same NG-RAN node or for cells and beams not served by the gNB-DU.	YES	Ignore
Cells for SON List	O		9.3.1.214		YES	ignore
gNB-CU Name	O		PrintableString(SIZE(1..150,...))	Human readable name of the gNB-CU.	YES	ignore
Extended gNB-CU Name	O		9.3.1.206		YES	ignore

Range bound	Explanation
maxCellingNBDU	Maximum numbers of cells that can be served by a gNB-DU. Value is 512.
maxnoofTNLAssociations	Maximum numbers of TNL Associations between the gNB-CU and the gNB-DU. Value is 32.
maxCellineNB	Maximum no. cells that can be served by an eNB. Value is 256.

9.2.1.11 GNB-CU CONFIGURATION UPDATE ACKNOWLEDGE

This message is sent by a gNB-DU to a gNB-CU to acknowledge update of information associated to an F1-C interface instance.

NOTE: If F1-C signalling transport is shared among several F1-C interface instance, this message may transfer updated information associated to several F1-C interface instances.

Direction: gNB-DU → gNB-CU

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
Transaction ID	M		9.3.1.23		YES	reject
Cells Failed to be Activated List		0..1		List of cells which are failed to be activated	YES	reject
>Cells Failed to be Activated Item		1.. <maxCellingNBDU>			EACH	reject

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
>>NR CGI	M		9.3.1.12		-	
>>Cause	M		9.3.1.2		-	
Criticality Diagnostics	O		9.3.1.3		YES	ignore
gNB-CU TNL Association Setup List		0..1			YES	ignore
>gNB-CU TNL Association Setup Item IEs		1..<maxno ofTNLAssociations>			EACH	ignore
>>TNL Association Transport Layer Address	M		CP Transport Layer Address 9.3.2.4	Transport Layer Address of the gNB-CU	-	
gNB-CU TNL Association Failed to Setup List		0..1			YES	ignore
>gNB-CU TNL Association Failed To Setup Item IEs		1..<maxno ofTNLAssociations>			EACH	ignore
>>TNL Association Transport Layer Address	M		CP Transport Layer Address 9.3.2.4	Transport Layer Address of the gNB-CU	-	
>>Cause	M		9.3.1.2		-	
Dedicated SI Delivery Needed UE List		0..1		List of UEs unable to receive system information from broadcast	YES	ignore
>Dedicated SI Delivery Needed UE List		1 .. <maxno of UEIDs>			EACH	ignore
>>gNB-CU UE F1AP ID	M		9.3.1.4		-	-
>>NR CGI	M		9.3.1.12		-	-
Transport Layer Address Info	O		9.3.2.5		YES	ignore

Range bound	Explanation
maxCellingNBDU	Maximum no. cells that can be served by a gNB-DU. Value is 512.
maxnoofTNLAssociations	Maximum no. of TNL Associations between the gNB-CU and the gNB-DU. Value is 32.
maxnoofUEIDs	Maximum no. of UEs that can be served by a gNB-DU. Value is 65536.

9.2.1.12 GNB-CU CONFIGURATION UPDATE FAILURE

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

Direction: gNB-DU → gNB-CU

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
Transaction ID	M		9.3.1.23		YES	reject
Cause	M		9.3.1.2		YES	ignore
Time to wait	O		9.3.1.13		YES	ignore
Criticality Diagnostics	O		9.3.1.3		YES	ignore

9.2.1.13 GNB-DU RESOURCE COORDINATION REQUEST

This message is sent by a gNB-CU to a gNB-DU, to express the desired resource allocation for data traffic, for the sake of resource coordination. The message triggers gNB-DU resource coordination (for NR-initiated resource coordination), to indicate an initial resource offer by the E-UTRA node (for E-UTRA-initiated gNB-DU Resource Coordination), or to

indicate the agreed resource allocation that is to be executed.

Direction: gNB-CU → gNB-DU

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
Transaction ID	M		9.3.1.23		YES	reject
Request type	M		ENUMERATED (offer, execution, ...)		YES	reject
E-UTRA – NR Cell Resource Coordination Request Container	M		OCTET STRING	In EN-DC case, includes the X2AP E-UTRA – NR CELL RESOURCE COORDINATION REQUEST message as defined in subclause 9.1.4.24 in TS 36.423 [9]. In NG-RAN cases, includes the XnAP E-UTRA – NR CELL RESOURCE COORDINATION REQUEST message as defined in subclause 9.1.2.23 in TS 38.423 [28].	YES	reject
Ignore Coordination Request Container	O		ENUMERATED (yes, ...)		YES	reject

9.2.1.14 GNB-DU RESOURCE COORDINATION RESPONSE

This message is sent by a gNB-DU to a gNB-CU, to express the desired resource allocation for data traffic, as a response to the GNB-DU RESOURCE COORDINATION REQUEST.

Direction: gNB-DU → gNB-CU

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
Transaction ID	M		9.3.1.23		YES	reject
E-UTRA – NR Cell Resource Coordination Response Container	M		OCTET STRING	In EN-DC case, includes the X2AP E-UTRA – NR CELL RESOURCE COORDINATION RESPONSE message as defined in subclause 9.1.4.25 in TS 36.423 [9]. In NG-RAN cases, includes the XnAP E-UTRA – NR CELL RESOURCE COORDINATION RESPONSE message as	YES	reject

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				defined in subclause 9.1.2.24 in TS 38.423 [28].		

9.2.1.15 GNB-DU STATUS INDICATION

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

Direction: gNB-DU → gNB-CU

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	ignore
Transaction ID	M		9.3.1.23		YES	reject
gNB-DU Overload Information	M		ENUMERATED (overloaded, not-overloaded)		YES	reject
IAB Congestion Indication	O		9.3.1.227		YES	ignore

9.2.1.16 F1 REMOVAL REQUEST

This message is sent by either the gNB-DU or the gNB-CU to initiate the removal of the interface instance and the related resources.

Direction: gNB-DU → gNB-CU, gNB-CU → gNB-DU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
Transaction ID	M		9.3.1.23		YES	reject

9.2.1.17 F1 REMOVAL RESPONSE

This message is sent by either the gNB-DU or the gNB-CU to acknowledge the initiation of removal of the interface instance and the related resources.

Direction: gNB-CU → gNB-DU, gNB-DU → gNB-CU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
Transaction ID	M		9.3.1.23		YES	reject
Criticality Diagnostics	O		9.3.1.3		YES	ignore

9.2.1.18 F1 REMOVAL FAILURE

This message is sent by either the gNB-DU or the gNB-CU to indicate that removing the interface instance and the related resources cannot be accepted.

Direction: gNB-CU → gNB-DU, gNB-DU → gNB-CU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	reject
Transaction ID	M		9.3.1.23		YES	reject
Cause	M		9.3.1.2		YES	ignore
Criticality Diagnostics	O		9.3.1.3		YES	ignore

9.2.1.19 NETWORK ACCESS RATE REDUCTION

This message is sent by the gNB-CU to indicate to the gNB-DU a need to reduce the rate at which UEs access the network.

Direction: gNB-CU → gNB-DU

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	ignore
Transaction ID	M		9.3.1.23		YES	reject
UAC Assistance Information	M		9.3.1.83		YES	reject

9.2.1.20 RESOURCE STATUS REQUEST

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

Direction: gNB-CU → gNB-DU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
Transaction ID	M		9.3.1.23		YES	reject
gNB-CU Measurement ID	M		INTEGER (1..4095,...)	Allocated by gNB-CU	YES	reject
gNB-DU Measurement ID	C-ifRegistrationRequestStoporAdd		INTEGER (1..4095,...)	Allocated by gNB-DU	YES	ignore
Registration Request	M		ENUMERATED (start, stop, add, ...)	Type of request for which the resource status is required.	YES	ignore
Report Characteristics	C-ifRegistrationRequestStart		BIT STRING (SIZE(32))	Each position in the bitmap indicates measurement object the gNB-DU is requested to report. First Bit = PRB Periodic, Second Bit = TNL Capacity Ind Periodic, Third Bit = Composite Available Capacity Periodic, Fourth Bit = HW LoadInd Periodic, Fifth Bit = Number of Active UEs Periodic, Sixth Bit = NR-U Channel List Periodic. Other bits shall be ignored by the gNB-DU.	YES	ignore
Cell To Report List		0..1		Cell ID list to which the request	YES	ignore

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				applies.		
>Cell To Report Item		1 .. <maxCellingNBDU>			-	
>>Cell ID	M		NR CGI 9.3.1.12		-	
>>SSB To Report List		0..1		SSB list to which the request applies.	-	
>>>SSB To Report Item		1 .. <maxnoofSSBAreas>			-	
>>>>SSB index	M		INTEGER (0..63)		-	
>>Slice To Report List		0..1		S-NSSAI list to which the request applies.	-	
>>>Slice To Report Item		1..<maxnoofBPLMNsNR>			-	
>>>>PLMN Identity	M		9.3.1.14	Broadcast PLMN	-	
>>>>S-NSSAI List		1			-	
>>>>>S-NSSAI Item		1 .. <maxnoofSliceltems>			-	
>>>>>>S-NSSAI	M		9.3.1.38		-	
Reporting Periodicity	O		ENUMERATED (500ms, 1000ms, 2000ms, 5000ms, 10000 ms, ...)	Periodicity that can be used for reporting of indicated measurements. Also used as the averaging window length for all measurement object if supported. This IE is ignored if the <i>Registration Request</i> IE is set to "add".	YES	ignore

Condition	Explanation
ifRegistrationRequestStoporAdd	This IE shall be present if the <i>Registration Request</i> IE is set to the value "stop" or "add".
ifRegistrationRequestStart	This IE shall be present if the <i>Registration Request</i> IE is set to the value "start".

Range bound	Explanation
maxCellingNBDU	Maximum no. cells that can be served by a gNB-DU. Value is 512.
maxnoofSSBAreas	Maximum no. SSB Areas that can be served by a gNB node cell. Value is 64.
maxnoofSliceltems	Maximum no. of signalled slice support items. Value is 1024.
maxnoofBPLMNsNR	Maximum no. of PLMN Ids.broadcast in a cell. Value is 12.

9.2.1.21 RESOURCE STATUS RESPONSE

This message is sent by gNB-DU to gNB-CU to indicate that the requested measurement is successfully initiated.

Direction: gNB-DU → gNB-CU

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
Transaction ID	M		9.3.1.23		YES	reject
gNB-CU Measurement ID	M		INTEGER (1..4095,...)	Allocated by gNB-CU	YES	reject
gNB-DU Measurement ID	M		INTEGER (1..4095,...)	Allocated by gNB-DU	YES	ignore
Criticality Diagnostics	O		9.3.1.3		YES	ignore

9.2.1.22 RESOURCE STATUS FAILURE

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

Direction: gNB-DU → gNB-CU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
Transaction ID	M		9.3.1.23		YES	reject
gNB-CU Measurement ID	M		INTEGER (1..4095,...)	Allocated by gNB-CU	YES	reject
gNB-DU Measurement ID	M		INTEGER (1..4095,...)	Allocated by gNB-DU	YES	ignore
Cause	M		9.3.1.2		YES	ignore
Criticality Diagnostics	O		9.3.1.3		YES	ignore

9.2.1.23 RESOURCE STATUS UPDATE

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

Direction: gNB-DU → gNB-CU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	ignore
Transaction ID	M		9.3.1.23		YES	reject
gNB-CU Measurement ID	M		INTEGER (1..4095,...)	Allocated by gNB-CU	YES	reject
gNB-DU Measurement ID	M		INTEGER (1..4095,...)	Allocated by gNB-DU	YES	ignore
Hardware Load Indicator	O		9.3.1.136		YES	ignore
TNL Capacity Indicator	O		9.3.1.128		YES	ignore
Cell Measurement Result		0..1			YES	ignore
>Cell Measurement Result Item		1 .. <maxCellingNB-DU>			-	
>>Cell ID	M		NR CGI 9.3.1.12		-	
>>Radio Resource Status	O		9.3.1.129		-	
>>Composite Available Capacity Group	O		9.3.1.130		-	
>>Slice Available Capacity	O		9.3.1.134		-	
>>Number of Active	O		9.3.1.135		-	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
UEs						
>>NR-U Channel List		0..1			YES	ignore
>>>NR-U Channel Item		1..<maxno ofNR-UChannelIDs>			-	
>>>>NR-U Channel ID	M		INTEGER (1..maxno ofNR-UChannelIDs, ...)	Identifies a portion of the NR-U Channel Bandwidth on which channel access procedure in shared spectrum has been performed in the last reporting period.	-	
>>>>Channel occupancy time percentage DL	M		INTEGER (0..100)	The percentage of time for which the channel resources have been utilised for DL traffic served by the corresponding NR-U Channel of the serving cell. Value 100 indicates that the channel resources have been utilized for DL traffic served by the corresponding NR-U Channel of the serving cell for the whole duration between consecutive reporting.	-	
>>>>Energy Detection Threshold DL	M		INTEGER (-100..-50,...)	Average ED Threshold used for DL channel sensing at the gNB. Value is in dBm.	-	

Range bound	Explanation
maxCellingNB DU	Maximum no. cells that can be served by a gNB-DU. Value is 512.
maxno ofNR-UChannelIDs	Maximum no. NR-U Channel IDs in a cell. Value is 16.

9.2.2 UE Context Management messages

9.2.2.1 UE CONTEXT SETUP REQUEST

This message is sent by the gNB-CU to request the setup of a UE context.

Direction: gNB-CU → gNB-DU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
gNB-CU UE F1AP ID	M		9.3.1.4		YES	reject
gNB-DU UE F1AP ID	O		9.3.1.5		YES	ignore
SpCell ID	M		NR CGI 9.3.1.12	Special Cell as defined in TS 38.321 [16]. For handover case, this IE is considered as target cell.	YES	reject
ServCellIndex	M		INTEGER (0..31,...)		YES	reject
SpCell UL Configured	O		Cell UL Configured 9.3.1.33		YES	ignore
CU to DU RRC Information	M		9.3.1.25		YES	reject
Candidate SpCell List		0..1			YES	ignore
>Candidate SpCell Item IEs		1.. <maxnoof Candidate SpCells>			EACH	ignore
>>Candidate SpCell ID	M		NR CGI 9.3.1.12	Special Cell as defined in TS 38.321 [16]	-	
DRX Cycle	O		DRX Cycle 9.3.1.24		YES	ignore
Resource Coordination Transfer Container	O		OCTET STRING	Includes the <i>MeNB Resource Coordination Information</i> IE as defined in subclause 9.2.116 of TS 36.423 [9] for EN-DC case or <i>MR-DC Resource Coordination Information</i> IE as defined in TS 38.423 [28] for NGEN-DC and NE-DC cases.	YES	ignore
SCell To Be Setup List		0..1			YES	ignore
>SCell to Be Setup Item IEs		1.. <maxnoof SCells>			EACH	ignore
>>SCell ID	M		NR CGI 9.3.1.12	SCell Identifier in gNB	-	
>>SCellIndex	M		INTEGER (1..31)		-	
>>SCell UL Configured	O		Cell UL Configured 9.3.1.33		-	
>>servingCellMO	O		INTEGER (1..64)		YES	ignore
SRB to Be Setup List		0..1			YES	reject
>SRB to Be Setup Item IEs		1.. <maxnoof SRBs>			EACH	reject
>>SRB ID	M		9.3.1.7		-	
>>Duplication Indication	O		ENUMERATED (true, ..., false)	If included, it should be set to true. This IE is ignored if the <i>Additional</i>	-	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				<i>Duplication Indication</i> IE is present.		
>>Additional Duplication Indication	O		ENUMERATED (three, four, ...)		YES	ignore
>>SDT RLC Bearer Configuration	O		OCTET STRING	Includes the <i>RLC-BearerConfig</i> IE defined in subclause 6.3.2 of TS 38.331 [8]	YES	ignore
>>SRB Mapping Info	O		Uu RLC Channel ID 9.3.1.266	This IE contains the mapped Uu Relay RLC CH ID for the SRB	YES	ignore
DRB to Be Setup List		0..1			YES	reject
>DRB to Be Setup Item IEs		1 .. <maxnoof DRBs>			EACH	reject
>>DRB ID	M		9.3.1.8		-	
>>CHOICE QoS Information	M				-	
>>>E-UTRAN QoS						
>>>>E-UTRAN QoS	M		9.3.1.19	Shall be used for EN-DC case to convey E-RAB Level QoS Parameters	-	
>>>>DRB Information						
>>>>>DRB Information		1		Shall be used for NG-RAN cases	YES	ignore
>>>>>DRB QoS	M		9.3.1.45		-	
>>>>>S-NSSAI	M		9.3.1.38		-	
>>>>>Notification Control	O		9.3.1.56		-	
>>>>>Flows Mapped to DRB Item		1 .. <maxnoof QoSFlows>			-	
>>>>>>QoS Flow Identifier	M		9.3.1.63		-	
>>>>>>QoS Flow Level QoS Parameters	M		9.3.1.45		-	
>>>>>>QoS Flow Mapping Indication	O		9.3.1.72		YES	ignore
>>>>>>TSC Traffic Characteristics	O		9.3.1.141	Traffic pattern information associated with the QFI. Details in TS 23.501 [21].	YES	ignore
>>UL UP TNL Information to be setup List		1			-	
>>>UL UP TNL Information to Be Setup Item IEs		1 .. <maxnoof ULUPTNL Information>			-	
>>>>UL UP TNL Information	M		UP Transport Layer Information 9.3.2.1	gNB-CU endpoint of the F1 transport bearer. For delivery of UL	-	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				PDU.		
>>>>BH Information	O		9.3.1.114		YES	ignore
>>>>DRB Mapping Info	O		Uu RLC Channel ID 9.3.1.266	This IE contains the mapped Uu Relay RLC CH ID of the DL tunnel corresponding to such UL tunnel	YES	ignore
>>RLC Mode	M		9.3.1.27		-	
>>UL Configuration	O		UL Configuraiton 9.3.1.31	Information about UL usage in gNB-DU.	-	
>>Duplication Activation	O		9.3.1.36	Information on the initial state of CA based UL PDCP duplication. This IE is ignored if the <i>RLC Duplication Information</i> IE is present.	-	
>>DC Based Duplication Configured	O		ENUMERATED (true, ..., false)	Indication on whether DC based PDCP duplication is configured or not. If included, it should be set to true.	YES	reject
>>DC Based Duplication Activation	O		Duplication Activation 9.3.1.36	Information on the initial state of DC basedUL PDCP duplication. This IE is ignored if the <i>RLC Duplication Information</i> IE is present.	YES	reject
>>DL PDCP SN length	M		ENUMERATED (12bits, 18bits, ...)		YES	ignore
>>UL PDCP SN length	O		ENUMERATED (12bits, 18bits, ...)		YES	ignore
>>Additional PDCP Duplication TNL List		0..1			YES	ignore
>>>Additional PDCP Duplication TNL Items		1 .. <maxnoof Additional PDCPDuplicationTNL>			EACH	ignore
>>>>Additional PDCP Duplication UP TNL Information	M		UP Transport Layer Information 9.3.2.1	gNB-CU endpoint of the F1 transport bearer. For delivery of UL PDUs.	-	
>>>>BH Information	O		9.3.1.114		YES	ignore
>>RLC Duplication Information	O		9.3.1.146		YES	ignore
>>SDT RLC Bearer Configuration	O		OCTET STRING	RLC-BearerConfig IE defined in subclause 6.3.2 of	YES	ignore

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				TS 38.331 [8]		
Inactivity Monitoring Request	O		ENUMERATED (true, ...)		YES	reject
RAT-Frequency Priority Information	O		9.3.1.34		YES	reject
RRC-Container	O		9.3.1.6	Includes the <i>DL-DCCH-Message</i> message as defined in subclause 6.2 of TS 38.331 [8], encapsulated in a PDCP PDU.	YES	ignore
Masked IMEISV	O		9.3.1.55		YES	ignore
Serving PLMN	O		PLMN ID 9.3.1.14	Indicates the PLMN serving the UE.	YES	ignore
gNB-DU UE Aggregate Maximum Bit Rate Uplink	C-ifDRBSetup		Bit Rate 9.3.1.22	The gNB-DU UE Aggregate Maximum Bit Rate Uplink is to be enforced by the gNB-DU.	YES	ignore
RRC Delivery Status Request	O		ENUMERATED (true, ...)	Indicates whether RRC DELIVERY REPORT procedure is requested for the RRC message.	YES	ignore
Resource Coordination Transfer Information	O		9.3.1.73		YES	ignore
servingCellMO	O		INTEGER (1..64, ...)		YES	ignore
New gNB-CU UE F1AP ID	O		gNB-CU UE F1AP ID 9.3.1.4		YES	reject
RAN UE ID	O		OCTET STRING (SIZE (8))		YES	ignore
Trace Activation	O		9.3.1.88		YES	ignore
Additional RRM Policy Index	O		9.3.1.90		YES	ignore
BH RLC Channel to be Setup List		0..1			YES	reject
>BH RLC Channel to be Setup Item IEs		1 .. <maxnoof BHRLLCChannels>			EACH	reject
>>BH RLC CH ID	M		9.3.1.113		-	
>>CHOICE BH QoS Information	M					
>>>BH RLC CH QoS						
>>>>BH RLC CH QoS	M		QoS Flow Level QoS Parameters 9.3.1.45	Shall be used for SA case.	-	
>>>>E-UTRAN BH RLC CH QoS						
>>>>E-UTRAN BH RLC CH QoS	M		E-UTRAN QoS 9.3.1.19	Shall be used for EN-DC case.	-	
>>>>Control Plane Traffic Type						
>>>>>Control Plane Traffic Type	M		9.3.1.115		-	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
>>RLC Mode	M		9.3.1.27		-	
>>BAP Control PDU Channel	O		ENUMERATED (true, ...)		-	
>>Traffic Mapping Information	O		9.3.1.95		-	
Configured BAP Address	O		9.3.1.111	The BAP address configured for the corresponding child IAB-node.	YES	reject
NR V2X Services Authorized	O		9.3.1.116		YES	ignore
LTE V2X Services Authorized	O		9.3.1.117		YES	ignore
NR UE Sidelink Aggregate Maximum Bit Rate	O		9.3.1.119	This IE applies only if the UE is authorized for NR V2X services.	YES	ignore
LTE UE Sidelink Aggregate Maximum Bit Rate	O		9.3.1.118	This IE applies only if the UE is authorized for LTE V2X services.	YES	ignore
PC5 Link Aggregate Bit Rate	O		Bit Rate 9.3.1.22	Only applies for non-GBR and unicast QoS Flows.	YES	ignore
SL DRB to Be Setup List		0..1			YES	reject
>SL DRB to Be Setup Item IEs		1 .. <maxnoof SLDRBs>			EACH	reject
>>SL DRB ID	M		9.3.1.120		-	
>>SL DRB Information		1			YES	ignore
>>>SL DRB QoS	M		PC5 QoS Parameters 9.3.1.122		-	
>>>Flows Mapped to SL DRB Item		1 .. <maxnoof PC5QoSFlows>			-	
>>>>PC5 QoS Flow Identifier			9.3.1.121		-	
>>RLC mode	M		9.3.1.27		-	
Conditional Inter-DU Mobility Information	O				YES	reject
>CHO Trigger	M		ENUMERATED (CHO-initiation, CHO-replace, ...)		-	-
>Target gNB-DU UE F1AP ID	C-ifCHOmod		9.3.1.5	Allocated at the target gNB-DU	-	-
>Estimated Arrival Probability	O		INTEGER (1..100)		YES	ignore
Management Based MDT PLMN List	O		MDT PLMN List 9.3.1.151		YES	ignore
Serving NID	O		9.3.1.155		YES	reject
F1-C Transfer Path	O		9.3.1.207		YES	reject
F1-C Transfer Path NRDC	O		9.3.1.228		YES	reject
MDT Polluted Measurement Indicator	O		ENUMERATED (IDC,no-IDC, ...)	Indication on whether MDT Measurement affect (e.g. IDC) is undertaken or not.	YES	ignore
SCG Activation Request	O		9.3.1.233		YES	ignore

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Old CG-SDT Session Info	O		CG-SDT Session Info 9.3.1.261		YES	ignore
5G ProSe Authorized	O		9.3.1.268		YES	ignore
5G ProSe UE PC5 Aggregate Maximum Bit Rate	O		NR UE Sidelink Aggregate Maximum Bit Rate 9.3.1.119	This IE applies only if the UE is authorized for 5G ProSe services.	YES	ignore
5G ProSe PC5 Link Aggregate Bit Rate	O		Bit Rate 9.3.1.22	This IE applies only if the UE is authorized for 5G ProSe services, and only applies for non-GBR and unicast QoS Flows.	YES	ignore
Uu RLC Channel to Be Setup List		0..1			YES	reject
>Uu RLC Channel to be Setup Item IEs		1 .. <maxnoof UuRLCChannels>			-	
>>Uu RLC Channel ID	M		9.3.1.266		-	
>>CHOICE Uu RLC Channel QoS Information	M				-	
>>>Uu RLC Channel QoS						
>>>>Uu RLC Channel QoS	M		QoS Flow Level QoS Parameters 9.3.1.45		-	
>>>>Uu Control Plane Traffic Type						
>>>>>Uu Control Plane Traffic Type	M		ENUMERATED (SRB0, SRB1, SRB2, ...)	This IE indicates the type of SRB conveyed via the Uu Relay RLC Channel.	-	
>>RLC Mode	M		9.3.1.27		-	
PC5 RLC Channel to Be Setup List		0..1			YES	reject
>PC5 RLC Channel to be Setup Item IEs		1 .. <maxnoof PC5RLCCannels>			-	
>>PC5 RLC Channel ID	M		9.3.1.265		-	
>>Remote UE Local ID	O		9.3.1.267	This IE is not used in this version of the specification.	-	
>>CHOICE PC5 RLC Channel QoS Information	M				-	
>>>PC5 RLC Channel QoS						
>>>>PC5 RLC Channel QoS	M		QoS Flow Level QoS Parameters 9.3.1.45		-	
>>>>PC5 Control Plane Traffic Type						
>>>>>PC5 Control	M		ENUMERATED	This IE indicates	-	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Plane Traffic Type			(SRB1, SRB2, ...)	the type of SRB conveyed via the PC5 Relay RLC Channel.		
>>RLC Mode	M		9.3.1.27		-	
Path Switch Configuration	O		9.3.1.263		YES	ignore
gNB-DU UE Slice Maximum Bit Rate List	O		9.3.1.271	The Slice Maximum Bit Rate List is the maximum aggregate UL bit rate per slice, to be enforced by the gNB-DU, if feasible. This IE is ignored if the <i>DRB to Be Setup List</i> IE is not present.	YES	ignore
Multicast MBS Session Setup List	O		Multicast MBS Session List 9.3.1.272	The list of MBS Session ID that UE has joined.	YES	reject
UE Multicast MRB to Be Setup List		0..1			YES	reject
>UE Multicast MRB to Be Setup Item IEs		1 .. <maxnoof MRBsforUE>			EACH	reject
>>MRB ID	M		9.3.1.224	MRB ID for the UE.	-	
>>MBS PTP Retransmission Tunnel Required	O		9.3.2.10		-	
>>MBS PTP Forwarding Tunnel Required Information	O		MRB Progress Information 9.3.2.12		-	
>>Source MRB ID	O		9.3.1.224 MRB ID	In case of inter-DU handover, indicates the MRB ID provided to the UE in the source cell.	-	ignore
ServingCellIMO List		0..1		For NCD-SSBs	YES	ignore
>ServingCellIMO Item IEs		1 .. <maxnoof ServingCellIMOs>			EACH	ignore
>>servingCellIMO	M		INTEGER (1..64)		-	
>>SSB frequency	M		INTEGER (0..3279165)	ARFCN	-	

Range bound	Explanation
maxnoofSCells	Maximum no. of SCells allowed towards one UE, the maximum value is 32.
maxnoofServingCellIMOs	Maximum number of ServingCellIMOs for NCD-SSB per cell. Maximum value is 16
maxnoofSRBs	Maximum no. of SRB allowed towards one UE, the maximum value is 8.
maxnoofDRBs	Maximum no. of DRB allowed towards one UE, the maximum value is 64.
maxnoofULUPTNLInformation	Maximum no. of ULUP TNL Information allowed towards one DRB, the maximum value is 2.

Range bound	Explanation
maxnoofCandidateSpCells	Maximum no. of SpCells allowed towards one UE, the maximum value is 64.
maxnoofQoSFlows	Maximum no. of flows allowed to be mapped to one DRB, the maximum value is 64.
maxnoofBHRLCChannels	Maximum no. of BH RLC channels allowed towards one IAB-node, the maximum value is 65536.
maxnoofSLDRBs	Maximum no. of SL DRB allowed for NR sidelink communication per UE, the maximum value is 512.
maxnoofPC5QoSFlows	Maximum no. of PC5 QoS flow allowed towards one UE for NR sidelink communication, the maximum value is 2048.
maxnoofAdditionalPDCPDuplicationTNL	Maximum no. of additional UP TNL Information allowed towards one DRB, the maximum value is 2.
maxnoofUuRLCChannels	Maximum no. of Uu Relay RLC channels for L2 U2N relaying per Relay UE, the maximum value is 32.
maxnoofPC5RLCChannels	Maximum no. of PC5 Relay RLC channels allowed for L2 U2N relaying per Remote UE or Relay UE, the maximum value is 512.
maxnoofMRBsforUE	Maximum no. of multicast MRB allowed towards one UE, the maximum value is 64.

Condition	Explanation
ifDRBSetup	This IE shall be present only if the <i>DRB to Be Setup List</i> IE is present.
ifCHOmod	This IE shall be present if the <i>CHO Trigger</i> IE is present and set to "CHO-replace".

9.2.2.2 UE CONTEXT SETUP RESPONSE

This message is sent by the gNB-DU to confirm the setup of a UE context.

Direction: gNB-DU → gNB-CU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
gNB-CU UE F1AP ID	M		9.3.1.4		YES	reject
gNB-DU UE F1AP ID	M		9.3.1.5		YES	reject
DU To CU RRC Information	M		9.3.1.26		YES	reject
C-RNTI	O		9.3.1.32	C-RNTI allocated at the gNB-DU	YES	ignore
Resource Coordination Transfer Container	O		OCTET STRING	Includes the <i>SgNB Resource Coordination Information</i> IE as defined in subclause 9.2.117 of TS 36.423 [9] for EN-DC case or <i>MR-DC Resource Coordination Information</i> IE as defined in TS 38.423 [28] for NGEN-DC and NE-DC cases.	YES	ignore
Full Configuration	O		ENUMERATED (full, ...)		YES	reject
DRB Setup List		0..1		The List of DRBs which are successfully established.	YES	ignore
>DRB Setup Item list		1 .. <maxnoof			EACH	ignore

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
		<i>DRBs></i>				
>>DRB ID	M		9.3.1.8		-	
>>LCID	O		9.3.1.35	LCID for the primary path or for the split secondary path for fallback to split bearer if PDCP duplication is applied.	-	
>>DL UP TNL Information to be setup List		1			-	
>>>DL UP TNL Information to Be Setup Item IEs		1 .. <maxnoof DLUPTNL Informatio n>			-	
>>>>DL UP TNL Information	M		UP Transport Layer Information 9.3.2.1	gNB-DU endpoint of the F1 transport bearer. For delivery of DL PDUs.	-	
>>Additional PDCP Duplication TNL List		0..1			YES	ignore
>>>Additional PDCP Duplication TNL Items		1 .. <maxnoof Additional PDCPDup licationTN L>			EACH	ignore
>>>>Additional PDCP Duplication UP TNL Information	M		UP Transport Layer Information 9.3.2.1	gNB-DU endpoint of the F1 transport bearer. For delivery of DL PDUs.	-	
>>>>BH Information	O		9.3.1.114	This IE is not used in this version of the specification.	YES	ignore
>>Current QoS Parameters Set Index	O		Alternative QoS Parameters Set Index 9.3.1.123	Index to the currently fulfilled alternative QoS parameters set.	YES	ignore
SRB Failed to Setup List		0..1			YES	ignore
>SRB Failed to Setup Item		1 .. <maxnoof SRBs>			EACH	ignore
>>SRB ID	M		9.3.1.7		-	
>>Cause	O		9.3.1.2		-	
DRB Failed to Setup List		0..1			YES	ignore
>DRB Failed to Setup Item		1 .. <maxnoof DRBs>			EACH	ignore
>>DRB ID	M		9.3.1.8		-	
>>Cause	O		9.3.1.2		-	
SCell Failed To Setup List		0..1			YES	ignore
>SCell Failed to Setup Item		1 .. <maxnoof SCells>			EACH	ignore
>>SCell ID	M		NR CGI 9.3.1.12	SCell Identifier in gNB	-	
>>Cause	O		9.3.1.2		-	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Inactivity Monitoring Response	O		ENUMERATED (not-supported, ...)		YES	reject
Criticality Diagnostics	O		9.3.1.3		YES	ignore
SRB Setup List		0..1			YES	ignore
>SRB Setup Item		1 .. <maxnoof SRBs>			EACH	ignore
>>SRB ID	M		9.3.1.7		-	
>>LCID	M		9.3.1.35	LCID for the primary path if PDCP duplication is applied	-	
BH RLC Channel Setup List		0..1		The list of BH RLC channels which are successfully established.	YES	ignore
>BH RLC Channel Setup Item		1 .. <maxnoof BHRLCCh annels>			EACH	ignore
>>BH RLC CH ID	M		9.3.1.113		-	
BH RLC Channel Failed to be Setup List		0..1		The list of BH RLC channels whose setup has failed.	YES	ignore
>BH RLC Channel Failed to be Setup Item		1 .. <maxnoof BHRLCCh annels>			EACH	ignore
>>BH RLC CH ID	M		9.3.1.113		-	
>>Cause	O		9.3.1.2		-	
SL DRB Setup List		0..1		The List of SL DRBs which are successfully established.	YES	ignore
>SL DRB Setup Item IEs		1 .. <maxnoof SLDRBs>			EACH	ignore
>>SL DRB ID	M		9.3.1.120		-	
SL DRB Failed To Setup List		0..1			EACH	ignore
>SL DRB Failed To Setup Item IE		1 .. <maxnoof SLDRBs>			EACH	ignore
>>SL DRB ID	M		9.3.1.120		-	
>>Cause	O		9.3.1.2		-	
Requested Target Cell ID	O		NR CGI 9.3.1.12	Special Cell indicated in the UE CONTEXT SETUP REQUEST message.	YES	reject
SCG Activation Status	O		9.3.1.234		YES	ignore
Uu RLC Channel Setup List		0..1			YES	ignore
>Uu RLC Channel Setup Item IEs		1 .. <maxnoof UuRLCCh annels>			-	
>>Uu RLC Channel ID	M		9.3.1.266		-	
Uu RLC Channel Failed to be Setup List		0..1			YES	ignore
>Uu RLC Channel Failed to be Setup Item IEs		1 .. <maxnoof UuRLCCh			-	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
		<i>annels></i>				
>>Uu RLC Channel ID	M		9.3.1.266		-	
>>Cause	O		9.3.1.2		-	
PC5 RLC Channel Setup List		0..1			YES	ignore
>PC5 RLC Channel Setup Item IEs		1 .. <maxnoof PC5RLCC hannels>			-	
>>PC5 RLC Channel ID	M		9.3.1.265		-	
>>Remote UE Local ID	O		9.3.1.267	This IE is not used in this version of the specification.		
PC5 RLC Channel Failed to be Setup List		0..1			YES	ignore
>PC5 RLC Channel Failed to be Setup Item IEs		1 .. <maxnoof PC5RLCC hannels>			-	
>>PC5 RLC Channel ID	M		9.3.1.265		-	
>>Remote UE Local ID	O		9.3.1.267	This IE is not used in this version of the specification.	-	
>>Cause	O		9.3.1.2		-	
ServingCellIMO-encoded-in-CGC List		0..1			YES	ignore
>ServingCellIMO-encoded-in-CGC Item IEs		1 .. <maxNrof BWPs>		The servingCellIMO which has been encoded in CellGroupConfig IE.	EACH	ignore
>>servingCellIMO	M		INTEGER (1..64)		-	
>>BWP ID	M		INTEGER (0..4)		YES	ignore
UE Multicast MRB Setup List		0..1			YES	reject
>UE Multicast MRB Setup Item IEs		1 .. <maxnoof MRBsforU E>			EACH	reject
>>MRB ID	M		9.3.1.224	MRB ID for the UE.	-	
>>Multicast F1-U Context Reference CU	M		9.3.2.13		-	
Dedicated SI Delivery Indication	O		ENUMERATED (true, ...)		YES	ignore
Configured BWP List		0..1		This IE is present when the gNB-DU configures at least one BWP with NCD-SSB or without SSB.	YES	ignore
>Configured BWP Item IEs		1 .. <maxNrof BWPs>			EACH	ignore
>>BWP-Id	M		INTEGER (0..4)	The IE is used to refer to one BWP.	-	
>>BWP Location And Bandwidth	M		INTEGER (0..37949)	The IE type range is the same as the locationAndBandw		

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				<i>idth</i> IE in <i>BWP</i> IE as specified in TS 38.331 [8].		

Range bound	Explanation
maxnoofSCells	Maximum no. of SCells allowed towards one UE, the maximum value is 32.
maxnoofSRBs	Maximum no. of SRB allowed towards one UE, the maximum value is 8.
maxnoofDRBs	Maximum no. of DRB allowed towards one UE, the maximum value is 64.
maxnoofDLUPTNLInformation	Maximum no. of DL UP TNL Information allowed towards one DRB, the maximum value is 2.
maxnoofBHRLCChannels	Maximum no. of BH RLC channels allowed towards one IAB-node, the maximum value is 65536.
maxnoofSLDRBs	Maximum no. of SL DRB allowed for NR sidelink communication per UE, the maximum value is 512.
maxnoofAdditionalPDCPDuplicationTNL	Maximum no. of additional UP TNL Information allowed towards one DRB, the maximum value is 2.
maxnoofUuRLCChannels	Maximum no. of Uu Relay RLC channels for L2 U2N relaying per Relay UE, the maximum value is 32.
maxnoofPC5RLCChannels	Maximum no. of PC5 Relay RLC channels allowed for L2 U2N relaying per Remote UE or Relay UE, the maximum value is 512.
maxNrofBWPs	Maximum number of BWPs per serving cell, the maximum value is 8.
maxnoofMRBsforUE	Maximum no. of multicast MRB allowed towards one UE, the maximum value is 64.

9.2.2.3 UE CONTEXT SETUP FAILURE

This message is sent by the gNB-DU to indicate that the setup of the UE context was unsuccessful.

Direction: gNB-DU → gNB-CU

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
gNB-CU UE F1AP ID	M		9.3.1.4		YES	reject
gNB-DU UE F1AP ID	O		9.3.1.5		YES	ignore
Cause	M		9.3.1.2		YES	ignore
Criticality Diagnostics	O		9.3.1.3		YES	ignore
Potential SpCell List		0..1			YES	ignore
>Potential SpCell Item IEs		0 .. <maxnoof PotentialSp pCells>			EACH	ignore
>>Potential SpCell ID	M		NR CGI 9.3.1.12	Special Cell as defined in TS 38.321 [16]	-	
Requested Target Cell ID	O		NR CGI 9.3.1.12	Special Cell indicated in the UE CONTEXT SETUP REQUEST message.	YES	reject

Range bound	Explanation
maxnoofPotentialSpCells	Maximum no. of SpCells allowed towards one UE, the maximum value is 64.

9.2.2.4 UE CONTEXT RELEASE REQUEST

This message is sent by the gNB-DU to request the gNB-CU to release the UE-associated logical F1 connection or candidate cells in conditional handover or conditional PSCell addition or conditional PSCell change.

Direction: gNB-DU → gNB-CU

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	ignore
gNB-CU UE F1AP ID	M		9.3.1.4		YES	reject
gNB-DU UE F1AP ID	M		9.3.1.5		YES	reject
Cause	M		9.3.1.2		YES	ignore
Candidate Cells To Be Cancelled List		0 .. <maxnoof CellsinCHO>			YES	reject
>Target Cell ID	M		NR CGI 9.3.1.12		-	-

Range bound	Explanation
maxnoofCellsInCHO	Maximum no. cells that can be prepared for a conditional mobility. Value is 8.

9.2.2.5 UE CONTEXT RELEASE COMMAND

This message is sent by the gNB-CU to request the gNB-DU to release the UE-associated logical F1 connection or candidate cells in conditional handover or conditional PSCell addition or conditional PSCell change.

Direction: gNB-CU → gNB-DU

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
gNB-CU UE F1AP ID	M		9.3.1.4		YES	reject
gNB-DU UE F1AP ID	M		9.3.1.5		YES	reject
Cause	M		9.3.1.2		YES	ignore
RRC-Container	O		9.3.1.6	Includes the <i>DL-DCCH-Message</i> message as defined in subclause 6.2 of TS 38.331 [8] encapsulated in a PDCP PDU, or the <i>DL-CCCH-Message</i> message as defined in subclause 6.2 of TS 38.331 [8].	YES	ignore
SRB ID	C- ifRRCContainer		9.3.1.7	The gNB-DU sends the RRC message on the indicated SRB.	YES	ignore
old gNB-DU UE F1AP ID	O		9.3.1.5	Include it if RRCReestablishmentRequest is not accepted	YES	ignore
Execute Duplication	O		ENUMERATED (true, ...)	This IE may be sent only if duplication has been configured for the UE.	YES	ignore
RRC Delivery Status	O		ENUMERATED	Indicates whether	YES	ignore

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Request			(true, ...)	RRC DELIVERY REPORT procedure is requested for the RRC message.		
Candidate Cells To Be Cancelled List		0 .. <maxnoof CellsinCHO>			YES	reject
>Target Cell ID	M		NR CGI 9.3.1.12		-	-
Positioning Context Reservation Indication	O		ENUMERATED (True,...)		YES	ignore
CG-SDT Kept Indicator	O		ENUMERATED (true, ...)		YES	ignore

Range bound	Explanation
maxnoofCellsinCHO	Maximum no. cells that can be prepared for a conditional mobility. Value is 8.

Condition	Explanation
ifRRCContainer	This IE shall be present if the <i>RRC container</i> IE is present.

9.2.2.6 UE CONTEXT RELEASE COMPLETE

This message is sent by the gNB-DU to confirm the release of the UE-associated logical F1 connection or candidate cells in conditional handover or conditional PSCell addition or conditional PSCell change.

Direction: gNB-DU → gNB-CU

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
gNB-CU UE F1AP ID	M		9.3.1.4		YES	reject
gNB-DU UE F1AP ID	M		9.3.1.5		YES	reject
Criticality Diagnostics	O		9.3.1.3		YES	ignore

9.2.2.7 UE CONTEXT MODIFICATION REQUEST

This message is sent by the gNB-CU to provide UE Context information changes to the gNB-DU.

Direction: gNB-CU → gNB-DU

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
gNB-CU UE F1AP ID	M		9.3.1.4		YES	reject
gNB-DU UE F1AP ID	M		9.3.1.5		YES	reject
SpCell ID	O		NR CGI 9.3.1.12	Special Cell as defined in TS 38.321 [16]. For handover case, this IE is considered as target cell.	YES	ignore
ServCellIndex	O		INTEGER (0..31, ...)		YES	reject
SpCell UL Configured	O		Cell UL Configured		YES	ignore

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
			9.3.1.33			
DRX Cycle	O		DRX Cycle 9.3.1.24		YES	ignore
CU to DU RRC Information	O		9.3.1.25		YES	reject
Transmission Action Indicator	O		9.3.1.11		YES	ignore
Resource Coordination Transfer Container	O		OCTET STRING	Includes the <i>MeNB Resource Coordination Information</i> IE as defined in subclause 9.2.116 of TS 36.423 [9] for EN-DC case or <i>MR-DC Resource Coordination Information</i> IE as defined in TS 38.423 [28] for NGEN-DC and NE-DC cases.	YES	ignore
RRC Reconfiguration Complete Indicator	O		9.3.1.30		YES	ignore
RRC-Container	O		9.3.1.6	Includes the <i>DL-DCCH-Message</i> message as defined in subclause 6.2 of TS 38.331 [8], encapsulated in a PDCP PDU.	YES	reject
SCell To Be Setup List		0..1			YES	ignore
>SCell to Be Setup Item IEs		1.. <maxnoof SCells>			EACH	ignore
>>SCell ID	M		NR CGI 9.3.1.12	SCell Identifier in gNB	-	
>>SCellIndex	M		INTEGER (1..31)		-	
>>SCell UL Configured	O		Cell UL Configured 9.3.1.33		-	
>>servingCellMO	O		INTEGER (1..64)		YES	ignore
SCell To Be Removed List		0..1			YES	ignore
>SCell to Be Removed Item IEs		1.. <maxnoof SCells>			EACH	ignore
>>SCell ID	M		NR CGI 9.3.1.12	SCell Identifier in gNB	-	
SRB to Be Setup List		0..1			YES	reject
>SRB to Be Setup Item IEs		1.. <maxno ofSRBs>			EACH	reject
>>SRB ID	M		9.3.1.7		-	
>>Duplication Indication	O		ENUMERATED (true, ..., false)	This IE is ignored if the <i>Additional Duplication Indication</i> IE is present.	-	
>>Additional Duplication Indication	O		ENUMERATED (three, four, ...)		YES	ignore
>>SRB Mapping Info	O		Uu RLC Channel ID	This IE contains the mapped Uu	YES	ignore

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
			9.3.1.266	Relay RLC CH ID for the SRB		
>>SDT Indicator Setup	O		ENUMERATED (true, ...)	Indicates SDT SRB.	YES	reject
DRB to Be Setup List		0..1			YES	reject
>DRB to Be Setup Item IEs		1 .. <maxnoof DRBs>			EACH	reject
>>DRB ID	M		9.3.1.8		-	
>>CHOICE QoS Information	M				-	
>>>E-UTRAN QoS						
>>>>E-UTRAN QoS	M		9.3.1.19	Shall be used for EN-DC case to convey E-RAB Level QoS Parameters		
>>>>DRB Information						
>>>>>DRB Information		1		Shall be used for NG-RAN cases	YES	ignore
>>>>>DRB QoS	M		9.3.1.45		-	
>>>>>S-NSSAI	M		9.3.1.38		-	
>>>>>Notification Control	O		9.3.1.56		-	
>>>>>Flows Mapped to DRB Item		1 .. <maxnoof QoSFlows>			-	
>>>>>>QoS Flow Identifier	M		9.3.1.63		-	
>>>>>>QoS Flow Level QoS Parameters	M		9.3.1.45		-	
>>>>>>QoS Flow Mapping Indication	O		9.3.1.72		YES	ignore
>>>>>>TSC Traffic Characteristics	O		9.3.1.141	Traffic pattern information associated with the QFI. Details in TS 23.501 [21].	YES	ignore
>>UL UP TNL Information to be setup List		1			-	
>>>UL UP TNL Information to Be Setup Item IEs		1 .. <maxnoof UL UPTNL Information>			-	
>>>>UL UP TNL Information	M		UP Transport Layer Information 9.3.2.1	gNB-CU endpoint of the F1 transport bearer. For delivery of UL PDUs.	-	
>>>>BH Information	O		9.3.1.114		YES	ignore
>>>>DRB Mapping Info	O		Uu RLC Channel ID 9.3.1.266	This IE contains the mapped Uu Relay RLC CH ID of the DL tunnel corresponding to such UL tunnel	YES	ignore
>>RLC Mode	M		9.3.1.27		-	
>>UL Configuration	O		UL	Information about	-	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
			Configuration 9.3.1.31	UL usage in gNB-DU.		
>>Duplication Activation	O		9.3.1.36	Information on the initial state of CA based UL PDCP duplication. This IE is ignored if the <i>RLC Duplication Information</i> IE is present.	-	
>>DC Based Duplication Configured	O		ENUMERATED (true, ..., false)	Indication on whether DC based PDCP duplication is configured or not. If included, it should be set to true.	YES	reject
>>DC Based Duplication Activation	O		Duplication Activation 9.3.1.36	Information on the initial state of DC based UL PDCP duplication. This IE is ignored if the <i>RLC Duplication Information</i> IE is present.	YES	reject
>>DL PDCP SN length	O		ENUMERATED (12bits, 18bits, ...)		YES	ignore
>>UL PDCP SN length	O		ENUMERATED (12bits, 18bits, ...)		YES	ignore
>>>Additional PDCP Duplication TNL List		0..1			YES	ignore
>>>>Additional PDCP Duplication TNL Items		1 .. <maxnoofAdditionalPDCPDuplicationTNL>			EACH	ignore
>>>>>Additional PDCP Duplication UP TNL Information	M		UP Transport Layer Information 9.3.2.1	gNB-CU endpoint of the F1 transport bearer. For delivery of UL PDUs.	-	
>>>>>BH Information	O		9.3.1.114		YES	ignore
>>RLC Duplication Information	O		9.3.1.146		YES	ignore
>>SDT Indicator Setup	O		ENUMERATED (true, ...)	Indicates SDT DRB.	YES	reject
DRB to Be Modified List		0..1			YES	reject
>DRB to Be Modified Item IEs		1 .. <maxnoofDRBs>			EACH	reject
>>DRB ID	M		9.3.1.8		-	
>>CHOICE QoS Information	O				-	
>>>E-UTRAN QoS						
>>>>E-UTRAN QoS	M		9.3.1.19	Used for EN-DC case to convey E-RAB Level QoS Parameters	-	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
>>>DRB Information						
>>>>DRB Information		1		Used for NG-RAN cases	YES	ignore
>>>>>DRB QoS	M		9.3.1.45		-	
>>>>>S-NSSAI	M		9.3.1.38		-	
>>>>>Notification Control	O		9.3.1.56		-	
>>>>>Flows Mapped to DRB Item		1 .. <maxnoof QoSFlows>			-	
>>>>>>QoS Flow Identifier	M		9.3.1.63		-	
>>>>>>QoS Flow Level QoS Parameters	M		9.3.1.45		-	
>>>>>>QoS Flow Mapping Indication	O		9.3.1.72		YES	ignore
>>>>>>TSC Traffic Characteristics	O		9.3.1.141	Traffic pattern information associated with the QFI. Details in TS 23.501 [21].	YES	ignore
>>UL UP TNL Information to be setup List		1			-	
>>>UL UP TNL Information to Be Setup Item IEs		1 .. <maxnoof ULUPTNL Information>			-	
>>>>UL UP TNL Information	M		UP Transport Layer Information 9.3.2.1	gNB-CU endpoint of the F1 transport bearer. For delivery of UL PDUs.	-	
>>>>BH Information	O		9.3.1.114		YES	ignore
>>>>DRB Mapping Info	O		Uu RLC Channel ID 9.3.1.266		YES	ignore
>>UL Configuration	O		UL Configuration 9.3.1.31	Information about UL usage in gNB-DU.	-	
>>DL PDCP SN length	O		ENUMERATED (12bits,18bits , ...)		YES	ignore
>>UL PDCP SN length	O		ENUMERATED (12bits, 18bits, ...)		YES	ignore
>>Bearer Type Change	O		ENUMERATED (true, ...)		YES	ignore
>>RLC Mode	O		9.3.1.27		YES	ignore
>>Duplication Activation	O		9.3.1.36	Information on the initial state of CA based UL PDCP duplication. This IE is ignored if the <i>RLC Duplication Information</i> IE is present.	YES	reject
>>DC Based	O		ENUMERATED	Indication on	YES	reject

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Duplication Configured			(true, ..., false)	whether DC based PDCP duplication is configured or not.		
>>DC Based Duplication Activation	O		9.3.1.36	Information on the initial state of DC based UL PDCP duplication. This IE is ignored if the <i>RLC Duplication Information</i> IE is present.	YES	reject
>>Additional PDCP Duplication TNL List		0..1			YES	ignore
>>>Additional PDCP Duplication TNL Items		1 .. <maxnoof Additional PDCPDuplicationTNL>			EACH	ignore
>>>>Additional PDCP Duplication UP TNL Information	M		UP Transport Layer Information 9.3.2.1	gNB-CU endpoint of the F1 transport bearer. For delivery of UL PDUs.	-	
>>>>BH Information	O		9.3.1.114		YES	ignore
>>RLC Duplication Information	O		9.3.1.146		YES	ignore
>>Transmission Stop Indicator	O		9.3.1.209		YES	ignore
>>SDT Indicator Modify	O		ENUMERATED (true, false, ...)	Indicates SDT DRB or not.	YES	reject
SRB To Be Released List		0..1			YES	reject
>SRB To Be Released Item IEs		1.. <maxnoof SRBs>			EACH	reject
>>SRB ID	M		9.3.1.7			
DRB to Be Released List		0..1			YES	reject
>DRB to Be Released Item IEs		1 .. <maxnoof DRBs>			EACH	reject
>>DRB ID	M		9.3.1.8		-	
Inactivity Monitoring Request	O		ENUMERATED (true, ...)		YES	reject
RAT-Frequency Priority Information	O		9.3.1.34		YES	reject
DRX configuration indicator	O		ENUMERATED (release,...)		YES	ignore
RLC Failure Indication	O		9.3.1.66		YES	ignore
Uplink TxDirectCurrentList Information	O		9.3.1.67		YES	ignore
gNB-DU Configuration Query	O		ENUMERATED (true, ...)	Used to request the gNB-DU to provide its configuration.	YES	reject
gNB-DU UE Aggregate Maximum Bit Rate Uplink	O		Bit Rate 9.3.1.22	The gNB-DU UE Aggregate Maximum Bit Rate	YES	ignore

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				Uplink is to be enforced by the gNB-DU.		
Execute Duplication	O		ENUMERATED (true, ...)	This IE may be sent only if duplication has been configured for the UE.	YES	ignore
RRC Delivery Status Request	O		ENUMERATED (true, ...)	Indicates whether RRC DELIVERY REPORT procedure is requested for the RRC message.	YES	ignore
Resource Coordination Transfer Information	O		9.3.1.73		YES	ignore
servingCellMO	O		INTEGER (1..64, ...)		YES	ignore
Need for Gap	O		ENUMERATED (true, ...)	Indicate gap for SeNB configured measurement is requested. It only applied to NE DC scenario.	Yes	ignore
Full Configuration	O		ENUMERATED (full, ...)		YES	reject
Additional RRM Policy Index	O		9.3.1.90		YES	ignore
Lower Layer Presence Status Change	O		9.3.1.94		Yes	ignore
BH RLC Channel to be Setup List		0..1			YES	reject
>BH RLC Channel to be Setup Item IEs		1 .. <maxnoof BHRLCCh annels>			EACH	reject
>>BH RLC CH ID	M		9.3.1.113		-	
>>CHOICE BH QoS information	M					
>>>BH RLC CH QoS						
>>>>BH RLC CH QoS	M		QoS Flow Level QoS Parameters 9.3.1.45	Shall be used for SA case.		
>>>>E-UTRAN BH RLC CH QoS						
>>>>E-UTRAN BH RLC CH QoS	M		E-UTRAN QoS 9.3.1.19	Shall be used for EN-DC case.		
>>>>Control Plane Traffic Type						
>>>>>Control Plane Traffic Type	M		9.3.1.115			
>>RLC Mode	M		9.3.1.27		-	
>>BAP Control PDU Channel	O		ENUMERATED (true, ...)		-	
>>Traffic Mapping Information	O		9.3.1.95		-	
BH RLC Channel to be Modified List		0..1			YES	reject
>BH RLC Channel to be Modified Item IEs		1 .. <maxnoof BHRLCCh annels>			EACH	reject
>>BH RLC CH ID	M		9.3.1.113		-	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
>>CHOICE <i>BH QoS information</i>	O					
>>>BH RLC CH QoS						
>>>>BH RLC CH QoS	M		QoS Flow Level QoS Parameters 9.3.1.45	Shall be used for SA case.	-	
>>>>E-UTRAN BH RLC CH QoS						
>>>>E-UTRAN BH RLC CH QoS	M		E-UTRAN QoS 9.3.1.19	Shall be used for EN-DC case.	-	
>>>>Control Plane Traffic Type						
>>>>>Control Plane Traffic Type	M		9.3.1.115		-	
>>RLC Mode	O		9.3.1.27		-	
>>BAP Control PDU Channel	O		ENUMERATED (true, ...)		-	
>>Traffic Mapping Information	O		9.3.1.95		-	
BH RLC Channel to be Released List		0..1			YES	reject
>BH RLC Channel to be Released Item IEs		1 .. <maxnoof BHRLCChannels >			EACH	reject
>>BH RLC CH ID	M		9.3.1.113		-	
NR V2X Services Authorized	O		9.3.1.116		YES	ignore
LTE V2X Services Authorized	O		9.3.1.117		YES	ignore
NR UE Sidelink Aggregate Maximum Bit Rate	O		9.3.1.119	This IE applies only if the UE is authorized for NR V2X services.	YES	ignore
LTE UE Sidelink Aggregate Maximum Bit Rate	O		9.3.1.118	This IE applies only if the UE is authorized for LTE V2X services.	YES	ignore
PC5 Link Aggregate Bit Rate	O		Bit Rate 9.3.1.22	Only applies for non-GBR and unicast QoS Flows.	YES	ignore
SL DRB to Be Setup List		0..1			YES	reject
>SL DRB to Be Setup Item IEs		1 .. <maxnoof SLDRBs>			EACH	reject
>>SL DRB ID	M		9.3.1.120		-	
>>SL DRB Information		1			YES	ignore
>>>SL DRB QoS	M		PC5 QoS Parameters 9.3.1.122		-	
>>>>Flows Mapped to SL DRB Item		1 .. <maxnoof PC5QoSFlows>			-	
>>>>>PC5 QoS Flow Identifier	M		9.3.1.121		-	
>>RLC mode	O		9.3.1.27		-	
SL DRB to Be Modified List		0..1			YES	reject
>SL DRB to Be		1 ..			EACH	reject

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Modified Item IEs		<i><maxnoof SLDRBs></i>				
>>SL DRB ID	M		9.3.1.120		-	
>>SL DRB Information		1			YES	ignore
>>>SL DRB QoS	M		PC5 QoS Parameters 9.3.1.122		-	
>>>Flows Mapped to SL DRB Item		1 .. <i><maxnoof PC5QoSFlows></i>			-	
>>>>PC5 QoS Flow Identifier	M		9.3.1.121		-	
>>RLC mode	O		9.3.1.27		-	
SL DRB to Be Released List		0..1			YES	reject
>SL DRB to Be Released Item IEs		1 .. <i><maxnoof SLDRBs></i>			EACH	reject
>>SL DRB ID	M		9.3.1.120		-	
Conditional Intra-DU Mobility Information	O				YES	reject
>CHO Trigger	M		ENUMERATED (CHO-initiation, CHO-replace, CHO-cancel, ...)		-	-
>Candidate Cells To Be Cancelled List	C- ifCHOcancel	0 .. <i><maxnoof CellsinCHO></i>			-	-
>>Target Cell ID	M		NR CGI 9.3.1.12		-	-
>Estimated Arrival Probability	O		INTEGER (1..100)		YES	ignore
F1-C Transfer Path	O		9.3.1.207		YES	reject
SCG Indicator	O		ENUMERATED (released,...)	This IE is used at the MN in NR-DC and NE-DC and it indicates the release of an SCG	YES	ignore
Uplink TxDirectCurrentTwoCarrierList Information	O		9.3.1.283		YES	ignore
IAB Conditional RRC Message Delivery Indication	O		ENUMERATED (true, ...)	Indicates whether the RRC message within should be withheld. This IE is only applicable if the UE is an IAB-MT, and the gNB-DU is an IAB-DU.	YES	reject
F1-C Transfer Path NRDC	O		9.3.1.228	This IE is only applicable if the UE is an IAB-MT.	YES	reject
MDT Polluted Measurement Indicator	O		ENUMERATED (IDC,no-IDC, ...)	Indication on whether MDT Measurement affect (e.g. IDC) is undertaken or not.	YES	ignore
SCG Activation Request	O		9.3.1.233		YES	ignore
CG-SDT Query Indication	O		ENUMERATED (true, ...)		YES	ignore
5G ProSe Authorized	O		9.3.1.268		YES	ignore

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
5G ProSe UE PC5 Aggregate Maximum Bit Rate	O		NR UE Sidelink Aggregate Maximum Bit Rate 9.3.1.119	This IE applies only if the UE is authorized for 5G ProSe services.	YES	ignore
5G ProSe PC5 Link Aggregate Bit Rate	O		Bit Rate 9.3.1.22	This IE applies only if the UE is authorized for 5G ProSe services, and only applies for non-GBR and unicast QoS Flows.	YES	ignore
Updated Remote UE Local ID	O		Remote UE Local ID 9.3.1.267	This IE indicates the updated Remote UE Local ID for the U2N Remote UE associated with the F1AP-IDs	YES	ignore
Uu RLC Channel to Be Setup List		0..1			YES	reject
>Uu RLC Channel to be Setup Item IEs		1 .. <maxnoof UuRLCChannels>			-	
>>Uu RLC Channel ID	M		9.3.1.266		-	
>>CHOICE Uu RLC Channel QoS Information	M				-	
>>>Uu RLC Channel QoS						
>>>>Uu RLC Channel QoS	M		QoS Flow Level QoS Parameters 9.3.1.45		-	
>>>Uu Control Plane Traffic Type						
>>>>Uu Control Plane Traffic Type	M		ENUMERATED (SRB0, SRB1, SRB2, ...)	This IE indicates the type of SRB conveyed via the Uu Relay RLC Channel.	-	
>>RLC Mode	M		9.3.1.27		-	
Uu RLC Channel to Be Modified List		0..1			YES	reject
>Uu RLC Channel to be Modified Item IEs		1 .. <maxnoof UuRLCChannels>			-	
>>Uu RLC Channel ID	M		9.3.1.266		-	
>>CHOICE Uu RLC Channel QoS Information	O				-	
>>>Uu RLC Channel QoS						
>>>>Uu RLC Channel QoS	M		QoS Flow Level QoS Parameters 9.3.1.45		-	
>>>Uu Control Plane Traffic Type						
>>>>Uu Control	M		ENUMERATED	This IE indicates	-	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Plane Traffic Type			(SRB0, SRB1, SRB2, ...)	the type of SRB conveyed via the Uu Relay RLC Channel.		
>>RLC Mode	O		9.3.1.27		-	
Uu RLC Channel to Be Released List		0..1			YES	reject
>Uu RLC Channel to Be Released Item IEs		1 .. <maxnoof UuRLCCh annels>			-	
>>Uu RLC channel ID	M		9.3.1.266		-	
PC5 RLC Channel to Be Setup List		0..1			YES	reject
>PC5 RLC Channel to be Setup Item IEs		1 .. <maxnoof PC5RLCC hannels>			-	
>>PC5 RLC Channel ID	M		9.3.1.265		-	
>>Remote UE Local ID	O		9.3.1.267		-	
>>CHOICE PC5 RLC Channel QoS Information	M				-	
>>>PC5 RLC Channel QoS						
>>>>PC5 RLC Channel QoS	M		QoS Flow Level QoS Parameters 9.3.1.45		-	
>>>>PC5 Control Plane Traffic Type						
>>>>PC5 Control Plane Traffic Type	M		ENUMERATED (SRB1, SRB2, ...)	This IE indicates the type of SRB conveyed via the PC5 Relay RLC Channel.	-	
>>RLC Mode	M		9.3.1.27		-	
PC5 RLC Channel to Be Modified List		0..1			YES	reject
>PC5 RLC Channel to be Modified Item IEs		1 .. <maxnoof PC5RLCC hannels>			-	
>>PC5 RLC Channel ID	M		9.3.1.265		-	
>>Remote UE Local ID	O		9.3.1.267			
>>CHOICE PC5 RLC Channel QoS Information	O				-	
>>>PC5 RLC Channel QoS						
>>>>PC5 RLC Channel QoS	M		QoS Flow Level QoS Parameters 9.3.1.45		-	
>>>>PC5 Control Plane Traffic Type						
>>>>PC5 Control Plane Traffic Type	M		ENUMERATED (SRB1, SRB2, ...)	This IE indicate the type of SRB conveyed via the	-	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				PC5 Relay RLC Channel.		
>>RLC Mode	O		9.3.1.27		-	
PC5 RLC Channel to Be Released List		0..1			YES	reject
>PC5 RLC Channel to be Released Item IEs		1 .. <maxnoof PC5RLCC hannels>			-	
>>PC5 RLC Channel ID	M		9.3.1.265		-	
>>Remote UE Local ID	O		9.3.1.267		-	
Path Switch Configuration	O		9.3.1.263		YES	ignore
gNB-DU UE Slice Maximum Bit Rate List	O		9.3.1.271	The Slice Maximum Bit Rate List is the maximum aggregate UL bit rate per slice, to be enforced by the gNB-DU, if feasible.	YES	ignore
Multicast MBS Session Setup List	O		Multicast MBS Session List 9.3.1.272	The list of MBS Session ID that UE has joined.	YES	reject
Multicast MBS Session Remove List	O		Multicast MBS Session List 9.3.1.272	The list of MBS Session ID that UE has left.	YES	reject
UE Multicast MRB to Be Setup at Modify List		0..1			YES	reject
>UE Multicast MRB to Be Setup at Modify Item IEs		1 .. <maxnoof MRBsforU E>			EACH	reject
>>MRB ID	M		9.3.1.224	MRB ID for the UE.	-	
>>MBS PTP Retransmission Tunnel Required	O		9.3.2.10		-	
>>MBS PTP Forwarding Tunnel Required Information	O		MRB Progress Information 9.3.2.12		-	
UE Multicast MRB to Be Released List		0..1			YES	reject
>UE Multicast MRB to Be Released Item IEs		1 .. <maxnoof MRBsforU E>			EACH	reject
>>MRB ID	M		9.3.1.224	MRB ID for the UE.	-	
SL DRX Cycle List		0..1			YES	ignore
>SL DRX Cycle Item IEs		1 .. <maxnoof SLdestinat ions >			EACH	ignore
>>RX UE ID	M		BIT STRING (SIZE(24))	Indicates the destination L2 ID of RX UE associated to this UE.	-	
>>CHOICE SL DRX Information	M				-	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
>>>SL DRX Cycle						
>>>>SL DRX Cycle Length	M		ENUMERATED (ms10, ms20, ms32, ms40, ms60, ms64, ms70, ms80, ms128, ms160, ms256, ms320, ms512, ms640, ms1024, ms1280, ms2048, ms2560, ms5120, ms10240, ...)	Indicates the desired SL DRX cycle for RX UE associated to this UE.	-	
>>>No SL DRX					-	
>>>>SL DRX configuration indicator	M		ENUMERATED (release,...)		-	
Management Based MDT PLMN Modification List	O		MDT PLMN Modification List 9.3.1.274		YES	ignore
SDT Bearer Configuration Query Indication	O		ENUMERATED (true, ...)		YES	ignore
DAPS HO status	O		ENUMERATED (initiation, ...)	This IE is used if DAPS HO is initiated.	YES	ignore
ServingCellMO List		0..1		For NCD-SSBs	YES	ignore
>ServingCellMO Item IEs		1 .. <maxnoof ServingCellMOs>			EACH	ignore
>>servingCellMO	M		INTEGER (1..64)		-	
>>SSB frequency	M		INTEGER (0..3279165)	ARFCN	-	
Uplink TxDirectCurrentMoreCarrierList Information	O		9.3.1.284		YES	ignore
CPAC MCG Information		0..1		This IE is used at the MN for MCG configuration as specified in TS 37.340 [7] for CPAC.	YES	ignore
>CPAC Trigger	M		ENUMERATED (CPAC-preparation, CPAC-executed, ..., CPAC-cancel)		-	-
>PSCell ID	M		NR CGI 9.3.1.12	The PSCell corresponding to the included CG-Config IE at CPAC-preparation or the selected PSCell by the UE at CPAC-executed. This IE is ignored if the CPAC Trigger IE is set to "CPAC-cancel."	-	-
>Candidate PSCells	C-				YES	ignore

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
To Be Cancelled List	ifCPACcancel					
>> Candidate PSCells To Be Cancelled Item IEs		1 .. <maxnoofCells in CHO>			-	-
>>>PSCell ID	M		NR CGI 9.3.1.12	The corresponding PSCell cancelled at CPAC-cancel.	-	-

Range bound	Explanation
maxnoofSCells	Maximum no. of SCells allowed towards one UE, the maximum value is 32.
maxnoofServingCellMOs	Maximum number of ServingCellMOs for NCD-SSB per cell. Maximum value is 16
maxnoofSRBs	Maximum no. of SRB allowed towards one UE, the maximum value is 8.
maxnoofDRBs	Maximum no. of DRB allowed towards one UE, the maximum value is 64.
maxnoofULUPTNLInformation	Maximum no. of UL UP TNL Information allowed towards one DRB, the maximum value is 2.
maxnoofQoSFlows	Maximum no. of flows allowed to be mapped to one DRB, the maximum value is 64.
maxnoofBHRLCChannels	Maximum no. of BH RLC channels allowed towards one IAB-node, the maximum value is 65536.
maxnoofSLDRBs	Maximum no. of SL DRB allowed for NR sidelink communication per UE, the maximum value is 512.
maxnoofPC5QoSFlows	Maximum no. of PC5 QoS flow allowed towards one UE for NR sidelink communication, the maximum value is 2048.
maxnoofAdditionalPDCPDuplicationTNL	Maximum no. of additional UP TNL Information allowed towards one DRB, the maximum value is 2.
maxnoofCells in CHO	Maximum no. cells that can be prepared for a conditional mobility. Value is 8.
maxnoofUuRLCChannels	Maximum no. of Uu Relay RLC channels for L2 U2N relaying per Relay UE, the maximum value is 32.
maxnoofPC5RLCChannels	Maximum no. of PC5 Relay RLC channel allowed for L2 U2N relaying per Remote UE or Relay UE, the maximum value is 512.
maxnoofMRBs for UE	Maximum no. of multicast MRB allowed towards one UE, the maximum value is 64.
maxnoofSLdestinations	Maximum number of destination for NR sidelink communication, the maximum value is 32

Condition	Explanation
ifCHOCancel	This IE may be present if the CHO Trigger IE is present and set to "CHO-cancel".
ifCPACcancel	This IE may be present if the CPAC Trigger IE is present and set to "CPAC-cancel".

9.2.2.8 UE CONTEXT MODIFICATION RESPONSE

This message is sent by the gNB-DU to confirm the modification of a UE context.

Direction: gNB-DU → gNB-CU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
gNB-CU UE F1AP ID	M		9.3.1.4		YES	reject
gNB-DU UE F1AP ID	M		9.3.1.5		YES	reject
Resource Coordination Transfer Container	O		OCTET STRING	Includes the SgNB Resource	YES	ignore

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				<i>Coordination Information IE as defined in subclause 9.2.117 of TS 36.423 [9] for EN-DC case or MR-DC Resource Coordination Information IE as defined in TS 38.423 [28] for NGEN-DC and NE-DC cases.</i>		
DU To CU RRC Information	O		9.3.1.26		YES	reject
DRB Setup List		<i>0..1</i>		The List of DRBs which are successfully established.	YES	ignore
>DRB Setup Item IEs		<i>1 .. <maxnoof DRBs></i>			EACH	ignore
>>DRB ID	M		9.3.1.8		-	
>>LCID	O		9.3.1.35	LCID for the primary path or for the split secondary path for fallback to split bearer if PDCP duplication is applied.	-	
>>DL UP TNL Information to be setup List		<i>1</i>			-	
>>>DL UP TNL Information to Be Setup Item IEs		<i>1 .. <maxnoof DLUP TNL Information></i>			-	
>>>>DL UP TNL Information	M		UP Transport Layer Information 9.3.2.1	gNB-DU endpoint of the F1 transport bearer. For delivery of DL PDUs.	-	
>>Additional PDCP Duplication TNL List		<i>0..1</i>			YES	ignore
>>>Additional PDCP Duplication TNL Items		<i>1 .. <maxnoof Additional PDCP Duplication TNL></i>			EACH	ignore
>>>>Additional PDCP Duplication UP TNL Information	M		UP Transport Layer Information 9.3.2.1	gNB-DU endpoint of the F1 transport bearer. For delivery of DL PDUs.	-	
>>>>BH Information	O		9.3.1.114	This IE is not used in this version of the specification.	YES	ignore
>>Current QoS Parameters Set Index	O		Alternative QoS Parameters Set Index 9.3.1.123	Index to the currently fulfilled alternative QoS parameters set.	YES	ignore
DRB Modified List		<i>0..1</i>		The List of DRBs which are	YES	ignore

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				successfully modified.		
>DRB Modified Item IEs		1 .. <maxnoof DRBs>			EACH	ignore
>>DRB ID	M		9.3.1.8		-	
>>LCID	O		9.3.1.35	LCID for the primary path or for the split secondary path for fallback to split bearer if PDCP duplication is applied.	-	
>>DL UP TNL Information to be setup List		1			-	
>>>DL UP TNL Information to Be Setup Item IEs		1 .. <maxnoof DLUP TNL Information>			-	
>>>>DL UP TNL Information	M		UP Transport Layer Information 9.3.2.1	gNB-DU endpoint of the F1 transport bearer. For delivery of DL PDUs.	-	
>>RLC Status	O		9.3.1.69	Indicates the RLC has been re-established at the gNB-DU.	YES	ignore
>>Additional PDCP Duplication TNL List		0..1			YES	ignore
>>>Additional PDCP Duplication TNL Items		1 .. <maxnoof Additional PDCP Duplication TNL>			EACH	ignore
>>>>Additional PDCP Duplication UP TNL Information	M		UP Transport Layer Information 9.3.2.1	gNB-DU endpoint of the F1 transport bearer. For delivery of DL PDUs.	-	
>>>>BH Information	O		9.3.1.114	This IE is not used in this version of the specification.	YES	ignore
>>Current QoS Parameters Set Index	O		Alternative QoS Parameters Set Index 9.3.1.123	Index to the currently fulfilled alternative QoS parameters set.	YES	ignore
SRB Failed to be Setup List		0..1		The List of SRBs which are failed to be established.	YES	ignore
>SRB Failed to be Setup Item IEs		1 .. <maxnoof SRBs>			EACH	ignore
>>SRB ID	M		9.3.1.7		-	
>>Cause	O		9.3.1.2		-	
DRB Failed to be Setup List		0..1		The List of DRBs which are failed to be setup.	YES	ignore
>DRB Failed to be Setup Item IEs		1 .. <maxnoof DRBs>			EACH	ignore

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
>>DRB ID	M		9.3.1.8		-	
>>Cause	O		9.3.1.2		-	
SCell Failed To Setup List		0..1			YES	ignore
>SCell Failed to Setup Item		1 .. <maxnoof SCells>			EACH	ignore
>>SCell ID	M		NR CGI 9.3.1.12	SCell Identifier in gNB	-	
>>Cause	O		9.3.1.2		-	
DRB Failed to be Modified List		0..1		The List of DRBs which are failed to be modified.	YES	ignore
>DRB Failed to be Modified Item IEs		1 .. <maxnoof DRBs>			EACH	ignore
>>DRB ID	M		9.3.1.8		-	
>>Cause	O		9.3.1.2		-	
Inactivity Monitoring Response	O		ENUMERATED (Not-supported, ...)		YES	reject
Criticality Diagnostics	O		9.3.1.3		YES	ignore
C-RNTI	O		9.3.1.32	C-RNTI allocated at the gNB-DU	YES	ignore
Associated SCell List	O		9.3.1.77		YES	ignore
SRB Setup List		0..1			YES	ignore
>SRB Setup Item		1 .. <maxnoof SRBs>			EACH	ignore
>>SRB ID	M		9.3.1.7		-	
>>LCID	M		9.3.1.35	LCID for the primary path if PDCP duplication is applied	-	
SRB Modified List		0..1			YES	ignore
>SRB Modified Item		1 .. <maxnoof SRBs>			EACH	ignore
>>SRB ID	M		9.3.1.7		-	
>>LCID	M		9.3.1.35	LCID for the primary path if PDCP duplication is applied	-	
Full Configuration	O		ENUMERATED (full, ...)		YES	reject
BH RLC Channel Setup List		0..1		The list of BH RLC channels which are successfully established.	YES	ignore
>BH RLC Channel Setup Item		1 .. <maxnoof BHRLCCh annels>			EACH	ignore
>>BH RLC CH ID	M		9.3.1.113		-	
BH RLC Channel Failed to be Setup List		0..1		The list of BH RLC channels whose setup has failed.	YES	ignore
>BH RLC Channel Failed to be Setup Item		1 .. <maxnoof BHRLCCh annels>			EACH	ignore
>>BH RLC CH ID	M		9.3.1.113		-	
>>Cause	O		9.3.1.2		-	
BH RLC Channel Modified List		0..1		The list of BH RLC channels which	YES	ignore

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				are successfully modified.		
>BH RLC Channel Modified Item		1 .. <maxnoof BHRLCCh annels>			EACH	ignore
>>BH RLC CH ID	M		9.3.1.113		-	
BH RLC Channel Failed to be Modified List		0..1		The list of BH RLC channels whose modification has failed.	YES	ignore
>BH RLC Channel Failed to be Modified Item		1 .. <maxnoof BHRLCCh annels>			EACH	ignore
>>BH RLC CH ID	M		9.3.1.113		-	
>>Cause	O		9.3.1.2		-	
SL DRB Setup List		0..1		The List of SL DRBs which are successfully established.	YES	ignore
>SL DRB Setup Item IEs		1 .. <maxnoof SLDRBs>			EACH	ignore
>>SL DRB ID	M		9.3.1.120		-	
SL DRB Modified List		0..1		The List of SL DRBs which are successfully modified.	YES	ignore
>SL DRB Modified Item IEs		1 .. <maxnoof SLDRBs>			EACH	ignore
>>SL DRB ID	M		9.3.1.120		-	
SL DRB Failed To Setup List		0..1		The List of SL DRBs which are failed to be setup.	YES	ignore
>SL DRB Failed To Setup Item		1 .. <maxnoof SLDRBs>			EACH	ignore
>>SL DRB ID	M		9.3.1.120		-	
>>Cause	O		9.3.1.2		-	
SL DRB Failed To be Modified List		0..1		The List of SL DRBs which are failed to be modified.	YES	ignore
>SL DRB Failed To be Modified Item		1 .. <maxnoof SLDRBs>			EACH	ignore
>>SL DRB ID	M		9.3.1.120		-	
>>cause	O		9.3.1.2		-	
Requested Target Cell ID	O		NR CGI 9.3.1.12	Special Cell or PSCell ID in the CPAC MCG Information IE indicated in the UE CONTEXT MODIFICATION REQUEST message.	YES	reject
SCG Activation Status	O		9.3.1.234		YES	ignore
Uu RLC Channel Setup List		0..1			YES	ignore
>Uu RLC Channel Setup Item IEs		1 .. <maxnoof UuRLCCh			-	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
		<i>annels></i>				
>>Uu RLC Channel ID	M		9.3.1.266			
Uu RLC Channel Failed to be Setup List		0..1			YES	ignore
>Uu RLC Channel Failed to be Setup Item IEs		1 .. <maxnoof UuRLCCh annels>			-	
>>Uu RLC Channel ID	M		9.3.1.266		-	
>>Cause	O		9.3.1.2		-	
Uu RLC Channel Modified List		0..1			YES	ignore
>Uu RLC Channel Modified Item IEs		1 .. <maxnoof UuRLCCh annels>			-	
>>Uu RLC Channel ID	M		9.3.1.266		-	
Uu RLC Channel Failed to be Modified List		0..1			YES	ignore
>Uu RLC Channel Failed to be Modified Item IEs		1 .. <maxnoof UuRLCCh annels>			-	
>>Uu RLC Channel ID	M		9.3.1.266		-	
>>Cause	O		9.3.1.2		-	
PC5 RLC Channel Setup List		0..1			YES	ignore
>PC5 RLC Channel Setup Item IEs		1 .. <maxnoof PC5RLCC hannels>			-	
>>PC5 RLC Channel ID	M		9.3.1.265		-	
>>Remote UE Local ID	O		9.3.1.267		-	
PC5 RLC Channel Failed to be Setup List		0..1			YES	ignore
>PC5 RLC Channel Failed to be Setup Item IEs		1 .. <maxnoof PC5RLCC hannels>			-	
>>PC5 RLC Channel ID	M		9.3.1.265		-	
>>Remote UE Local ID	O		9.3.1.267		-	
>>Cause	O		9.3.1.2		-	
PC5 RLC Channel Modified List		0..1			YES	ignore
>PC5 RLC Channel Modified Item IEs		1 .. <maxnoof PC5RLCC hannels>			-	
>>PC5 RLC Channel ID	M		9.3.1.265		-	
>>Remote UE Local ID	O		9.3.1.267		-	
PC5 RLC Channel Failed to be Modified List		0..1			YES	ignore
>PC5 RLC Channel		1 ..			-	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Failed to be Modified Item IEs		<i><maxnoof PC5RLCChannels></i>				
>>PC5 RLC Channel ID	M		9.3.1.265		-	
>>Remote UE Local ID	O		9.3.1.267		-	
>>Cause	O		9.3.1.2		-	
SDT Bearer Configuration Info	O		9.3.1.277		YES	ignore
UE Multicast MRB Setup List		0..1			YES	reject
>UE Multicast MRB Setup Item IEs		1 .. <i><maxnoof MRBsforUE></i>			EACH	reject
>>MRB ID	M		9.3.1.224	MRB ID for the UE.	-	
>>Multicast F1-U Context Reference CU	M		9.3.2.13		-	
ServingCellMO-encoded-in-CGC List		0..1			YES	ignore
>ServingCellMO-encoded-in-CGC Item IEs		1 .. <i><maxNrof BWPs></i>		The servingCellMO which has been encoded in <i>CellGroupConfig</i> IE.	-	
>>servingCellMO	M		INTEGER (1..64)		-	
>>BWP ID	M		INTEGER (0..4)		YES	ignore
Dedicated SI Delivery Indication	O		ENUMERATED (true, ...)		YES	ignore
Configured BWP List		0..1		This IE is present when the gNB-DU configures at least one BWP with NCD-SSB or without SSB.	YES	ignore
>Configured BWP Item IEs		1 .. <i><maxNrof BWPs></i>			EACH	ignore
>>BWP-Id	M		INTEGER (0..4)	The IE is used to refer to one BWP.	-	
>>BWP Location And Bandwidth	M		INTEGER (0..37949)	The IE type range is the same as the <i>locationAndBandwidth</i> IE in <i>BWP</i> IE as specified in TS 38.331 [8].		

Range bound	Explanation
maxnoofSRBs	Maximum no. of SRB allowed towards one UE, the maximum value is 8.
maxnoofDRBs	Maximum no. of DRB allowed towards one UE, the maximum value is 64.
maxnoofDLUPTNLInformation	Maximum no. of DL UP TNL Information allowed towards one DRB, the maximum value is 2.
maxnoofSCells	Maximum no. of SCells allowed towards one UE, the maximum value is 32.
maxnoofBHRLCChannels	Maximum no. of BH RLC channels allowed towards one IAB-node, the maximum value is 65536.
maxnoofSLDRBs	Maximum no. of SL DRB allowed for NR sidelink communication per

Range bound	Explanation
	UE, the maximum value is 512.
maxnoofAdditionalPDCPDuplicationTNL	Maximum no. of additional UP TNL Information allowed towards one DRB, the maximum value is 2.
maxnoofUuRLCChannels	Maximum no. of Uu Relay RLC channels for L2 U2N relaying per Relay UE, the maximum value is 32.
maxnoofPC5RLCChannels	Maximum no. of PC5 Relay RLC channels allowed for L2 U2N relaying per Remote UE or Relay UE, the maximum value is 512.
maxNrofBWPs	Maximum number of BWPs per serving cell, the maximum value is 8.
maxnoofMRBsforUE	Maximum no. of multicast MRB allowed towards one UE, the maximum value is 32.

9.2.2.9 UE CONTEXT MODIFICATION FAILURE

This message is sent by the gNB-DU to indicate a context modification failure.

Direction: gNB-DU → gNB-CU

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
gNB-CU UE F1AP ID	M		9.3.1.4		YES	reject
gNB-DU UE F1AP ID	M		9.3.1.5		YES	reject
Cause	M		9.3.1.2		YES	ignore
Criticality Diagnostics	O		9.3.1.3		YES	ignore
Requested Target Cell ID	O		NR CGI 9.3.1.12	Special Cell indicated in the UE CONTEXT MODIFICATION REQUEST message.	YES	reject

9.2.2.10 UE CONTEXT MODIFICATION REQUIRED

This message is sent by the gNB-DU to request the modification of a UE context.

Direction: gNB-DU → gNB-CU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
gNB-CU UE F1AP ID	M		9.3.1.4		YES	reject
gNB-DU UE F1AP ID	M		9.3.1.5		YES	reject
Resource Coordination Transfer Container	O		OCTET STRING	Includes the <i>SgNB Resource Coordination Information</i> IE as defined in subclause 9.2.117 of TS 36.423 [9] for EN-DC case or <i>MR-DC Resource Coordination Information</i> IE as defined in TS 38.423 [28] for NGEN-DC and NE-DC cases.	YES	ignore
DU To CU RRC Information	O		9.3.1.26		YES	reject
DRB Required to Be Modified List		0..1			YES	reject
>DRB Required to Be		1 ..			EACH	reject

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Modified Item IEs		<i><maxnoof DRBs></i>				
>>DRB ID	M		9.3.1.8		-	
>>DL UP TNL Information to be setup List		0..1			-	
>>>DL UP TNL Information to Be Setup Item IEs		1 .. <i><maxnoof DLUPTNL Information></i>			-	
>>>>DL UP TNL Information	M		UP Transport Layer Information 9.3.2.1	gNB-DU endpoint of the F1 transport bearer. For delivery of DL PDUs.	-	
>>RLC Status	O		9.3.1.69	Indicates the RLC has been re-established at the gNB-DU.	YES	ignore
>>Additional PDCP Duplication TNL List		0..1			YES	ignore
>>>Additional PDCP Duplication TNL Items		1 .. <i><maxnoof Additional PDCPDuplicationTNL></i>			EACH	ignore
>>>>Additional PDCP Duplication UP TNL Information	M		UP Transport Layer Information 9.3.2.1	gNB-CU endpoint of the F1 transport bearer. For delivery of DL PDUs.	-	
>>>>BH Information	O		9.3.1.114	This IE is not used in this version of the specification.	YES	ignore
SRB Required to be Released List		0..1			YES	reject
>SRB Required to be Released List Item IEs		1 .. <i><maxnoof SRBs></i>			EACH	reject
>>SRB ID	M		9.3.1.7		-	
DRB Required to be Released List		0..1			YES	reject
>DRB Required to be Released List Item IEs		1 .. <i><maxnoof DRBs></i>			EACH	reject
>>DRB ID	M		9.3.1.8		-	
Cause	M		9.3.1.2		YES	ignore
BH RLC Channel Required to be Released List		0..1			YES	reject
>BH RLC Channel Required to be Released Item IEs		1 .. <i><maxnoof BHRLCChannels></i>			EACH	reject
>>BH RLC CH ID	M		9.3.1.113		-	
SL DRB Required to Be Modified List		0..1			YES	reject
>SL DRB Required to Be Modified Item IEs		1 .. <i><maxnoof SLDRBs></i>			EACH	reject
>>SL DRB ID	M		9.3.1.120		-	
SL DRB Required to		0..1			YES	reject

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
be Released List						
>SL DRB Required to be Release Item IEs		1 .. <maxnoof SLDRBs>			EACH	reject
>>SL DRB ID	M		9.3.1.120		-	
Candidate Cells To Be Cancelled List		0 .. <maxnoof Cells in CH O>			YES	reject
>Target Cell ID	M		NR CGI 9.3.1.12		-	-
Uu RLC Channel Required to be Modified List		0..1			YES	reject
>Uu RLC Channel Required to be Modified Item IEs		1 .. <maxnoof UuRLCCh annels>			-	
>>Uu RLC Channel ID	M		9.3.1.266		-	
Uu RLC Channel Required to be Released List		0..1			YES	reject
>Uu RLC Channel Required to be Released Item IEs		1 .. <maxnoof UuRLCCh annels>			-	
>>Uu RLC Channel ID	M		9.3.1.266		-	
PC5 RLC Channel Required to be Modified List		0..1			YES	reject
>PC5 RLC Channel Required to be Modified Item IEs		1 .. <maxnoof PC5RLCC hannels>			-	
>>PC5 RLC Channel ID	M		9.3.1.265		-	
>>Remote UE Local ID	O		9.3.1.267		-	
PC5 RLC Channel Required to be Released List		0..1			YES	reject
>PC5 RLC Channel Required to be Released Item IEs		1 .. <maxnoof PC5RLCC hannels>			-	
>>PC5 RLC Channel ID	M		9.3.1.265		-	
>>Remote UE Local ID	O		9.3.1.267		-	
UE Multicast MRB Required to Be Modified List		0..1			YES	reject
>UE Multicast MRB Required to Be Modified Item IEs		1 .. <maxnoof MRBs for U E>			EACH	reject
>>MRB ID	M		9.3.1.224	MRB ID for the UE.	-	
>>MRB type reconfiguration	O		ENUMERATED (true, ...)		-	
>>MRB Reconfigured RLC mode	C- ifMRBType Reconf		MRB RLC Configuration 9.3.1.275		-	
>>Multicast F1-U Context Reference	O		9.3.2.13		YES	reject

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
CU						
UE Multicast MRB Required to Be Released List		0..1			YES	reject
>UE Multicast MRB Required to Be Released Item IEs		1 .. <maxnoof MRBsforUE>			EACH	reject
>>MRB ID	M		9.3.1.224	MRB ID for the UE.	-	

Range bound	Explanation
maxnoofSRBs	Maximum no. of SRB allowed towards one UE, the maximum value is 8.
maxnoofDRBs	Maximum no. of DRB allowed towards one UE, the maximum value is 64.
maxnoofDLUPTNLInformation	Maximum no. of DL UP TNL Information allowed towards one DRB, the maximum value is 2.
maxnoofBHRLCChannels	Maximum no. of BH RLC channels allowed towards one IAB-node, the maximum value is 65536.
maxnoofSLDRBs	Maximum no. of SL DRB allowed for NR sidelink communication per UE, the maximum value is 512.
maxnoofAdditionalPDCPDuplicationTNL	Maximum no. of additional UP TNL Information allowed towards one DRB, the maximum value is 2.
maxnoofCellsInCHO	Maximum no. cells that can be prepared for a conditional mobility. Value is 8.
maxnoofUuRLCChannels	Maximum no. of Uu Relay RLC channels for L2 U2N relaying per Relay UE, the maximum value is 32.
maxnoofPC5RLCChannels	Maximum no. of PC5 Relay RLC channels allowed for L2 U2N relaying per Remote UE or Relay UE, the maximum value is 512.
maxnoofMRBsforUE	Maximum no. of multicast MRB allowed towards one UE, the maximum value is 32.

Condition	Explanation
ifMRBTypeReconf	This IE shall be present if the MRB Type Reconfiguration IE is present.

9.2.2.11 UE CONTEXT MODIFICATION CONFIRM

This message is sent by the gNB-CU to inform the gNB-DU the successful modification.

Direction: gNB-CU → gNB-DU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
gNB-CU UE F1AP ID	M		9.3.1.4		YES	reject
gNB-DU UE F1AP ID	M		9.3.1.5		YES	reject
Resource Coordination Transfer Container	O		OCTET STRING	Includes the <i>MeNB Resource Coordination Information</i> IE as defined in subclause 9.2.116 of TS 36.423 [9] for EN-DC case or <i>MR-DC Resource Coordination Information</i> IE as defined in TS 38.423 [28] for	YES	ignore

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				NGEN-DC and NE-DC cases.		
DRB Modified List		0..1		The List of DRBs which are successfully modified.	YES	ignore
>DRB Modified Item IEs		1 .. <maxnoof DRBs>			EACH	ignore
>>DRB ID	M		9.3.1.8		-	
>>>UL UP TNL Information to be setup List		1			-	
>>>>UL UP TNL Information to Be Setup Item IEs		1 .. <maxnoof ULUPTNL Information>			-	
>>>>>UL UP TNL Information	M		UP Transport Layer Information 9.3.2.1	gNB-CU endpoint of the F1 transport bearer. For delivery of UL PDUs.	-	
>>>>>BH Information	O		9.3.1.114		YES	ignore
>>>>>DRB Mapping Info	O		Uu RLC Channel ID 9.3.1.266	This IE is not used in this version of the specification.	YES	ignore
>>>>>Additional PDCP Duplication TNL List		0..1			YES	ignore
>>>>>>Additional PDCP Duplication TNL Items		1 .. <maxnoof Additional PDCPDuplicationTNL>			EACH	ignore
>>>>>>>Additional PDCP Duplication UP TNL Information	M		UP Transport Layer Information 9.3.2.1	gNB-DU endpoint of the F1 transport bearer. For delivery of UL PDUs.	-	
>>>>>>>BH Information	O		9.3.1.114		YES	ignore
RRC-Container	O		9.3.1.6	Includes the <i>DL-DCCH-Message</i> message as defined in subclause 6.2 of TS 38.331 [8], encapsulated in a PDCP PDU.	YES	ignore
Criticality Diagnostics	O		9.3.1.3		YES	ignore
Execute Duplication	O		ENUMERATED (true, ...)	This IE may be sent only if duplication has been configured for the UE.	YES	ignore
Resource Coordination Transfer Information	O		9.3.1.73		YES	ignore
SL DRB Modified List		0..1			YES	reject
>SL DRB Modified Item IEs		1 .. <maxnoof SLDRBs>			EACH	reject
>>SL DRB ID	M		9.3.1.120		-	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Uu RLC Channel Modified List		0..1			YES	reject
>Uu RLC Channel Modified Item IEs		1 .. <maxnoof UuRLCCh annels>			-	
>>Uu RLC Channel ID	M		9.3.1.266		-	
PC5 RLC Channel Modified List		0..1			YES	reject
>PC5 RLC Channel Modified Item IEs		1 .. <maxnoof PC5RLCC hannels>			-	-
>>PC5 RLC Channel ID	M		9.3.1.265		-	
>>Remote UE Local ID	O		9.3.1.267		-	
UE Multicast MRB Confirmed to Be Modified List		0..1			YES	reject
>UE Multicast MRB Confirmed to Be Modified Item IEs		1 .. <maxnoof MRBsforU E>			EACH	reject
>>MRB ID	M		9.3.1.224	MRB ID for the UE.	-	
>>MBS PTP Retransmission Tunnel Required	O		9.3.2.10		-	

Range bound	Explanation
maxnoofDRBs	Maximum no. of DRB allowed towards one UE, the maximum value is 64.
maxnoofULUPTNLInformation	Maximum no. of UL UP TNL Information allowed towards one DRB, the maximum value is 2.
maxnoofSLDRBs	Maximum no. of SL DRB allowed for NR sidelink communication per UE, the maximum value is 512.
maxnoofAdditionalPDCPDuplicationTNL	Maximum no. of additional UP TNL Information allowed towards one DRB, the maximum value is 2.
maxnoofUuRLCChannels	Maximum no. of Uu Relay RLC channels for L2 U2N relaying per Relay UE, the maximum value is 32.
maxnoofPC5RLCChannels	Maximum no. of PC5 Relay RLC channels allowed for L2 U2N relaying per Remote UE or Relay UE, the maximum value is 512.

9.2.2.11A UE CONTEXT MODIFICATION REFUSE

This message is sent by the gNB-CU to indicate the UE context modification was unsuccessful.

Direction: gNB-CU → gNB-DU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
gNB-CU UE F1AP ID	M		9.3.1.4		YES	reject
gNB-DU UE F1AP ID	M		9.3.1.5		YES	reject
Cause	M		9.3.1.2		YES	ignore
Criticality Diagnostics	O		9.3.1.3		YES	ignore

9.2.2.12 UE INACTIVITY NOTIFICATION

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

Direction: gNB-DU → gNB-CU

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	ignore
gNB-CU UE F1AP ID	M		9.3.1.4		YES	reject
gNB-DU UE F1AP ID	M		9.3.1.5		YES	reject
DRB Activity List		1			YES	reject
>DRB Activity Item		1 .. <maxnoof DRBs>			EACH	reject
>>DRB ID	M		9.3.1.8		-	
>>DRB Activity	O		ENUMERATED (Active, Not active)		-	
SDT Termination Request	O		ENUMERATED (radio link problem, normal, ...)	Indicate the reason of request for termination of the ongoing SDT.	YES	ignore

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

9.2.2.13 NOTIFY

This message is sent by the gNB-DU to notify the gNB-CU that the QoS for already established DRBs associated with notification control is not fulfilled any longer or it is fulfilled again.

Direction: gNB-DU → gNB-CU

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	ignore
gNB-CU UE F1AP ID	M		9.3.1.4		YES	reject
gNB-DU UE F1AP ID	M		9.3.1.5		YES	reject
DRB Notify List		1			YES	reject
>DRB Notify Item IEs		<1 .. maxnoofD RBs>			EACH	reject
>>DRB ID	M		9.3.1.8		-	
>>Notification Cause	M		ENUMERATED (Fulfilled, Not-Fulfilled, ...)		-	
>>Current QoS Parameters Set Index	O		Alternative QoS Parameters set Notify Index 9.3.1.124	Index to the currently fulfilled alternative QoS parameters set. Value 0 indicates that NG-RAN cannot even fulfil the lowest alternative parameter set.	YES	ignore

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

9.2.2.14 ACCESS SUCCESS

This message is sent by the gNB-DU to inform the gNB-CU of which cell the UE has successfully accessed during conditional handover or conditional PSCell addition or conditional PSCell change.

Direction: gNB-DU → gNB-CU

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	ignore
gNB-CU UE F1AP ID	M		9.3.1.4		YES	reject
gNB-DU UE F1AP ID	M		9.3.1.5		YES	reject
NR CGI	M		9.3.1.12		YES	reject

9.2.3 RRC Message Transfer messages

9.2.3.1 INITIAL UL RRC MESSAGE TRANSFER

This message is sent by the gNB-DU to transfer the initial layer 3 message to the gNB-CU over the F1 interface.

Direction: gNB-DU → gNB-CU

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	ignore
gNB-DU UE F1AP ID	M		9.3.1.5		YES	reject
NR CGI	M		9.3.1.12	NG-RAN Cell Global Identifier (NR CGI)	YES	reject
C-RNTI	M		9.3.1.32	C-RNTI allocated at the gNB-DU	YES	reject
RRC-Container	M		9.3.1.6	Includes the <i>UL-CCCH-Message</i> message or <i>UL-CCCH1-Message</i> message as defined in subclause 6.2 of TS 38.331 [8].	YES	reject
DU to CU RRC Container	O		OCTET STRING	Includes the <i>CellGroupConfig</i> IE as defined in subclause 6.3.2 in TS 38.331 [8]. Required at least to carry SRB1 configuration. The <i>ReconfigurationWithSync</i> field is not included in the <i>CellGroupConfig</i> IE.	YES	reject
SUL Access Indication	O		ENUMERATED (true, ...)		YES	ignore
Transaction ID	M		9.3.1.23		YES	ignore
RAN UE ID	O		OCTET STRING (SIZE (8))		YES	ignore
RRC-Container-RRCSetupComplete	O		9.3.1.6	Includes the <i>UL-DCCH-Message</i> message including the <i>RRCSetupComplete</i> message, as defined in	YES	ignore

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				subclause 6.2 of TS 38.331 [8].		
NR RedCap UE Indication	O		ENUMERATED (true, ...)		YES	ignore
SDT Information	O		9.3.1.262		YES	ignore
Sidelink Relay Configuration	O		9.3.1.264		YES	ignore

9.2.3.2 DL RRC MESSAGE TRANSFER

This message is sent by the gNB-CU to transfer the layer 3 message to the gNB-DU over the F1 interface.

Direction: gNB-CU → gNB-DU

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	ignore
gNB-CU UE F1AP ID	M		9.3.1.4		YES	reject
gNB-DU UE F1AP ID	M		9.3.1.5		YES	reject
old gNB-DU UE F1AP ID	O		9.3.1.5		YES	reject
SRB ID	M		9.3.1.7		YES	reject
Execute Duplication	O		ENUMERATED (true, ...)		YES	ignore
RRC-Container	M		9.3.1.6	Includes the <i>DL-DCCH-Message</i> message as defined in subclause 6.2 of TS 38.331 [8] encapsulated in a PDCP PDU, or the <i>DL-CCCH-Message</i> message as defined in subclause 6.2 of TS 38.331 [8].	YES	reject
RAT-Frequency Priority Information	O		9.3.1.34		YES	reject
RRC Delivery Status Request	O		ENUMERATED (true, ...)	Indicates whether RRC DELIVERY REPORT procedure is requested for the RRC message.	YES	ignore
UE Context not retrievable	O		ENUMERATED (true, ...)		YES	reject
Redirected RRC message	O		RRC Container 9.3.1.6	Includes the <i>UL-CCCH-Message</i> message as defined in subclause 6.2 of TS 38.331 [8].	YES	reject
PLMN Assistance Info for Network Sharing	O		PLMN Identity 9.3.1.14		YES	ignore
New gNB-CU UE F1AP ID	O		gNB-CU UE F1AP ID 9.3.1.4		YES	reject
Additional RRM Policy Index	O		9.3.1.90		YES	ignore
SRB Mapping Info	O		Uu RLC Channel ID 9.3.1.266	This IE contains the mapped Uu Relay RLC CH ID for the Remote	YES	ignore

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				UE's SRB0 or SRB1.		

9.2.3.3 UL RRC MESSAGE TRANSFER

This message is sent by the gNB-DU to transfer the layer 3 message to the gNB-CU over the F1 interface.

Direction: gNB-DU → gNB-CU

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	ignore
gNB-CU UE F1AP ID	M		9.3.1.4		YES	reject
gNB-DU UE F1AP ID	M		9.3.1.5		YES	reject
SRB ID	M		9.3.1.7		YES	reject
RRC-Container	M		9.3.1.6	Includes the <i>UL-DCCH-Message</i> message as defined in subclause 6.2 of TS 38.331 [8], encapsulated in a PDCP PDU. In case of CG-SDT, may include the <i>UL-CCCH-Message</i> message or <i>UL-CCCH1-Message</i> message as defined in subclause 6.2 of TS 38.331 [8].	YES	reject
Selected PLMN ID	O		PLMN Identity 9.3.1.14		YES	reject
New gNB-DU UE F1AP ID	O		gNB-DU UE F1AP ID 9.3.1.5		YES	reject

9.2.3.4 RRC DELIVERY REPORT

This message is sent by the gNB-DU to inform the gNB-CU about the delivery status of DL RRC messages.

Direction: gNB-DU → gNB-CU

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	ignore
gNB-CU UE F1AP ID	M		9.3.1.4		YES	reject
gNB-DU UE F1AP ID	M		9.3.1.5		YES	reject
RRC Delivery Status	M		9.3.1.71		YES	ignore
SRB ID	M		9.3.1.7		YES	ignore

9.2.4 Warning Message Transmission Messages

9.2.4.1 WRITE-REPLACE WARNING REQUEST

This message is sent by the gNB-CU to request the start or overwrite of the broadcast of a warning message.

Direction: gNB-CU → gNB-DU

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
Transaction ID	M		9.3.1.23		YES	reject
PWS System Information	M		9.3.1.58	This IE includes the system information for public warning, as defined in TS 38.331 [8].	YES	reject
Repetition Period	M		9.3.1.59		YES	reject
Number of Broadcasts Requested	M		9.3.1.60		YES	reject
Cell To Be Broadcast List		0..1			YES	reject
>Cell to Be Broadcast Item IEs		1.. <maxCellingNBdu>			EACH	reject
>>NR CGI	M		9.3.1.12		-	

Range bound	Explanation
maxCellingNBdu	Maximum no. cells that can be served by a gNB-DU. Value is 512.

9.2.4.2 WRITE-REPLACE WARNING RESPONSE

This message is sent by the gNB-DU to acknowledge the gNB-CU on the start or overwrite request of a warning message.

Direction: gNB-DU → gNB-CU

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
Transaction ID	M		9.3.1.23		YES	reject
Cell Broadcast Completed List		0..1			YES	reject
>Cell Broadcast Completed Item IEs		1.. <maxCellingNBdu>			EACH	reject
>>NR CGI	M		9.3.1.12		-	
Criticality Diagnostics	O		9.3.1.3		YES	ignore
Dedicated SI Delivery Needed UE List		0..1		List of UEs unable to receive system information from broadcast	YES	ignore
>Dedicated SI Delivery Needed UE Item		1.. <maxnoofUEIDs>			EACH	ignore
>>gNB-CU UE F1AP ID	M		9.3.1.4		-	
>>NR CGI	M		9.3.1.12		-	

Range bound	Explanation
maxCellingNBDU	Maximum no. cells that can be served by a gNB-DU. Value is 512.
maxnoofUEIDs	Maximum no. of UEs that can be served by a gNB-DU. Value is 65536.

9.2.4.3 PWS CANCEL REQUEST

This message is forwarded by the gNB-CU to gNB-DU to cancel an already ongoing broadcast of a warning message

Direction: gNB-CU → gNB-DU

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
Transaction ID	M		9.3.1.23		YES	reject
Number of Broadcasts Requested	M		9.3.1.60	This IE is not used in this version of the specification	YES	reject
Cell Broadcast To Be Cancelled List		0..1			YES	reject
>Cell Broadcast to Be Cancelled Item IEs		1.. <maxCellingNBDU>			EACH	reject
>>NR CGI	M		9.3.1.12		-	
Cancel-all Warning Messages Indicator	O			ENUMERATED (true, ...)	YES	reject
Notification Information	O			This IE is ignored if the <i>Cancel-all Warning Messages Indicator</i> IE is included.	YES	reject
>Message Identifier	M		9.3.1.81		-	
>Serial Number	M		9.3.1.82		-	

Range bound	Explanation
maxCellingNBDU	Maximum no. cells that can be served by a gNB-DU. Value is 512.

9.2.4.4 PWS CANCEL RESPONSE

This message is sent by the gNB-DU to indicate the list of warning areas where cancellation of the broadcast of the identified message was successful and unsuccessful.

Direction: gNB-DU → gNB-CU

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
Transaction ID	M		9.3.1.23		YES	reject
Cell Broadcast Cancelled List		0..1			YES	reject
>Cell Broadcast Cancelled Item IEs		1.. <maxCellingNBDU>			EACH	reject

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
>>NR CGI	M		9.3.1.12		-	
>>Number of Broadcasts	M		INTEGER (0..65535)	This IE is set to '0' if valid results are not known or not available. It is set to 65535 if the counter results have overflowed.	-	
Criticality Diagnostics	O		9.3.1.3		YES	ignore

Range bound	Explanation
maxCellingNBDU	Maximum no. of cells that can be served by a gNB-DU. Value is 512.

9.2.4.5 PWS RESTART INDICATION

This message is sent by the gNB-DU to inform the gNB-CU that PWS information for some or all cells of the gNB-DU are available if needed.

Direction: gNB-DU → gNB-CU

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	ignore
Transaction ID	M		9.3.1.23		YES	reject
NR CGI List for Restart List		1			YES	reject
>NR CGI List for Restart Item IEs		1..<maxCellingNBDU>			EACH	reject
>>NR CGI	M		9.3.1.12		-	

Range bound	Explanation
maxCellingNBDU	Maximum no. of cells that can be served by a gNB-DU. Value is 512.

9.2.4.6 PWS FAILURE INDICATION

This message is sent by the gNB-DU to inform the gNB-CU that ongoing PWS operation for one or more cells of the gNB-DU has failed.

Direction: gNB-DU → gNB-CU

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	ignore
Transaction ID	M		9.3.1.23		YES	reject
PWS failed NR CGI List		0..1			YES	reject
>PWS failed NR CGI Item IEs		1..<maxCellingNBDU>			EACH	reject

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
>>NR CGI	M		9.3.1.12		-	
>>Number of Broadcasts	M		INTEGER (0..65535)	This IE is not used in the specification and is ignored.	-	

Range bound	Explanation
maxCeilingNB DU	Maximum no. of cells that can be served by a gNB-DU. Value is 512.

9.2.5 System Information messages

9.2.5.1 SYSTEM INFORMATION DELIVERY COMMAND

This message is sent by the gNB-CU and is used to request the gNB-DU to broadcast the requested *SystemInformation* messages including the Other SI.

Direction: gNB-CU → gNB-DU

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	ignore
Transaction ID	M		9.3.1.23		YES	reject
NR CGI	M		9.3.1.12	NR cell identifier	YES	reject
SIType List	M		9.3.1.62		YES	reject
Confirmed UE ID	M		gNB-DU UE F1AP ID 9.3.1.5		YES	reject

9.2.6 Paging messages

9.2.6.1 PAGING

This message is sent by the gNB-CU and is used to request the gNB-DU to page UEs.

Direction: gNB-CU → gNB-DU

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	ignore
UE Identity Index value	M		9.3.1.39		YES	reject
CHOICE <i>Paging Identity</i>	M				YES	reject
>RAN UE Paging identity						
>>RAN UE Paging identity	M		9.3.1.43		-	
>CN UE paging identity						
>>CN UE paging identity	M		9.3.1.44		-	
Paging DRX	O		9.3.1.40	It is defined as the minimum between the RAN UE Paging DRX and CN UE Paging DRX	YES	ignore
Paging Priority	O		9.3.1.41		YES	ignore
Paging Cell List		1			YES	ignore

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
>Paging Cell Item IEs		1 .. <maxnoof PagingCells>			EACH	ignore
>>NR CGI	M		9.3.1.12		-	
>>Last Used Cell Indication	O		ENUMERATED (true, ...)		YES	ignore
>>PEI Subgrouping Support Indication	O		ENUMERATED (true, ...)		YES	ignore
Paging Origin	O		9.3.1.79		YES	ignore
RAN UE Paging DRX	O		Paging DRX 9.3.1.40	This IE indicates the RAN paging cycle as defined in TS 38.304 [24].	YES	ignore
CN UE Paging DRX	O		Paging DRX 9.3.1.40	This IE indicates the UE specific paging cycle as defined in TS 38.304 [24].	YES	ignore
NR Paging eDRX Information	O		9.3.1.258		YES	ignore
NR Paging eDRX Information for RRC INACTIVE	O		9.3.1.259		YES	ignore
Paging Cause	O		ENUMERATED (voice, ...)	This IE indicates the paging cause is IMS voice, refer to TS 23.501[21].	YES	ignore
PEIPS Assistance Information	O		9.3.1.269		YES	ignore
UE Paging Capability	O		9.3.1.270		YES	ignore
Extended UE Identity Index Value	O		9.3.1.285		YES	ignore
Hashed UE Identity Index Value	O		9.3.1.286		YES	ignore

Range bound	Explanation
maxnoofPagingCells	Maximum no. of paging cells, the maximum value is 512.

9.2.7 Trace Messages

9.2.7.1 TRACE START

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

Direction: gNB-CU → gNB-DU

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	ignore
gNB-CU UE F1AP ID	M		9.3.1.4		YES	reject
gNB-DU UE F1AP ID	M		9.3.1.5		YES	reject
Trace Activation	M		9.3.1.88		YES	ignore

9.2.7.2 DEACTIVATE TRACE

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

Direction: gNB-CU → gNB-DU

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	ignore
gNB-CU UE F1AP ID	M		9.3.1.4		YES	reject
gNB-DU UE F1AP ID	M		9.3.1.5		YES	reject
Trace ID	M		OCTET STRING (SIZE(8))	As per Trace ID in Trace Activation IE	YES	ignore

9.2.7.3 CELL TRAFFIC TRACE

This message is sent by the gNB-DU to to transfer trace specific information.

Direction: gNB-DU → gNB-CU

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	ignore
gNB-CU UE F1AP ID	M		9.3.1.4		YES	reject
gNB-DU UE F1AP ID	M		9.3.1.5		YES	reject
Trace ID	M		OCTET STRING (SIZE(8))	This IE is composed of the following: Trace Reference defined in TS 32.422 [29] (leftmost 6 octets, with PLMN information encoded as in 9.3.1.14), and Trace Recording Session Reference defined in TS 32.422 [29] (last 2 octets).	YES	ignore
Trace Collection Entity IP Address	M		Transport Layer Address 9.3.2.3	For File based Reporting. Defined in TS 32.422 [29]. Should be ignored if URI is present	YES	ignore
Privacy Indicator	O		ENUMERATED (Immediate MDT, Logged MDT, ...)		YES	ignore
Trace Collection Entity URI	O		URI 9.3.2.6	For Streaming based Reporting. Defined in TS 32.422 [29] Replaces Trace Collection Entity IP Address if present	YES	ignore

9.2.8 Radio Information Transfer messages

9.2.8.1 DU-CU RADIO INFORMATION TRANSFER

This message is sent by a gNB-DU to a gNB-CU, to convey radio-related information.

Direction: gNB-DU → gNB-CU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	ignore
Transaction ID	M		9.3.1.23		YES	reject
CHOICE <i>DU-CU Radio Information Type</i>	M				YES	ignore
> <i>RIM</i>						
>>DU-CU RIM Information	M		9.3.1.91		-	-

9.2.8.2 CU-DU RADIO INFORMATION TRANSFER

This message is sent by a gNB-CU to a gNB-DU, to convey radio-related information.

Direction: gNB-CU → gNB-DU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	ignore
Transaction ID	M		9.3.1.23		YES	reject
CHOICE <i>CU-DU Radio Information Type</i>	M				YES	ignore
> <i>RIM</i>						
>>CU-DU RIM Information	M		9.3.1.92		-	-

9.2.9 IAB messages

9.2.9.1 BAP MAPPING CONFIGURATION

This message is sent by the gNB-CU to provide the backhaul routing information and/or traffic mapping information to the gNB-DU.

Direction: gNB-CU → gNB-DU

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
Transaction ID	M		9.3.1.23		YES	reject
BH Routing Information Added List		0...1			YES	ignore
> BH Routing Information Added List Item		1.. <maxnoof RoutingEn tries>			EACH	ignore
>>BAP Routing ID	M		9.3.1.110		-	
>>Next-Hop BAP Address	M		9.3.1.111	Indicates the BAP address of the next hop IAB-node or IAB-donor-DU.	-	
>>Non-F1-Terminating IAB-donor Topology Indicator	O		ENUMERATED (true, ...)	If present, indicates that the routing entry applies to the non-F1-terminating IAB-donor topology of the boundary IAB-node.	YES	ignore
BH Routing Information Removed List		0...1			YES	ignore

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
>BH Routing Information Removed List Item		1.. <maxnoof RoutingEn tries>			EACH	ignore
>>BAP Routing ID	M		9.3.1.110		-	
Traffic Mapping Information	O		9.3.1.95		YES	ignore
Buffer Size Threshold	O		INTEGER (0..2 ²⁴ -1)	The buffer size threshold (in kilobytes) for DL local rerouting, triggered by hop-by-hop flow control feedback.	YES	ignore
BAP Header Rewriting Added List		0...1			YES	ignore
>BAP Header Rewriting Added List Item		1.. <maxnoof RoutingEn tries>			EACH	ignore
>>Ingress BAP Routing ID	M		9.3.1.110		-	
>>Egress BAP Routing ID	M		9.3.1.110		-	
>>Non-F1-terminating IAB-donor Topology Indicator	O		ENUMERATED (true, ...)	If present, indicates that the egress BAP Routing ID in the present BAP header rewriting entry pertains to the non-F1-terminating IAB-donor topology of the boundary IAB-node.	-	
Re-routing Enable Indicator	O		ENUMERATED (true, false, ...)		YES	ignore
BAP Header Rewriting Removed List		0...1			YES	ignore
>BAP Header Rewriting Removed List Item		1.. <maxnoof RoutingEn tries>			EACH	ignore
>>Ingress BAP Routing ID	M		9.3.1.110			

Range bound	Explanation
maxnoofRoutingEntries	Maximum no. of routing entries, the maximum value is 1024.

9.2.9.2 BAP MAPPING CONFIGURATION ACKNOWLEDGE

This message is sent by the gNB-DU as a response to a BAP MAPPING CONFIGURATION message.

Direction: gNB-DU → gNB-CU

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
Transaction ID	M		9.3.1.23		YES	reject
Criticality Diagnostics	O		9.3.1.3		YES	ignore

9.2.9.2A BAP MAPPING CONFIGURATION FAILURE

This message is sent by the gNB-DU to indicate a BAP Mapping Configuration Update failure.

Direction: gNB-DU → gNB-CU

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
Transaction ID	M		9.3.1.23		YES	reject
Cause	M		9.3.1.2		YES	ignore
Time to wait	O		9.3.1.13		YES	ignore
Criticality Diagnostics	O		9.3.1.3		YES	ignore

9.2.9.3 GNB-DU RESOURCE CONFIGURATION

This message is sent by the gNB-CU to provide the resource configuration for an gNB-DU.

Direction: gNB-CU → gNB-DU

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
Transaction ID	M		9.3.1.23		YES	reject
Activated Cells to Be Updated List		0..1		List of activated cells served by the IAB-DU or the IAB-donor-DU whose resource configuration is updated	YES	reject
>Activated Cells To Be Updated List Item		1 .. <maxnoof ServedCellsIAB>			EACH	reject
>>NR CGI	M		9.3.1.12		-	
>>IAB-DU Cell Resource Configuration-Mode-Info	M		9.3.1.279	In the current version of this specification, for FDD, this IE only contains the <i>gNB-DU Cell Resource Configuration-FDD-UL</i> IE and the <i>gNB-DU Cell Resource Configuration-FDD-DL</i> IE, for TDD, this IE only contains the <i>gNB-DU Cell Resource Configuration-TDD</i> IE	-	
Child-Nodes List		0..1		List of child IAB-nodes served by the IAB-DU or IAB-donor-DU.	YES	reject
>Child-Nodes List Item		1 .. <maxnoof ChildIABNodes>			EACH	reject
>>gNB-CU UE F1AP ID	M		9.3.1.4	Identifier of a descendant node IAB-MT at the IAB-	YES	reject

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				donor-CU.		
>>gNB-DU UE F1AP ID	M		9.3.1.5	Identifier of a child-node IAB-MT at an IAB-DU or IAB-donor-DU.	YES	reject
>>>Child-Node Cells List		0..1		List of cells served by the child-node IAB-DU whose resource configuration is updated.	YES	reject
>>>>Child-Node Cells List Item		1 .. <maxnoof ServedCellsIAB >			EACH	reject
>>>>>NR CGI	M		9.3.1.12		-	
>>>>>IAB-DU Cell Resource Configuration-Mode-Info	O		9.3.1.279		-	
>>>>>IAB STC Info	O		9.3.1.109	STC configuration of child-node IAB-DU's cell.	-	
>>>>>RACH Config Common	O		OCTET STRING	Includes the <i>rach-ConfigCommon</i> contained in the <i>BWP-UplinkCommon</i> IE as defined in subclause 6.3.2 of TS 38.331 [8].	-	
>>>>>RACH Config Common IAB	O		OCTET STRING	Includes the IAB-specific <i>rach-ConfigCommonIAB</i> contained in the <i>BWP-UplinkCommon</i> IE as defined in subclause 6.3.2 of TS 38.331 [8].	-	
>>>>>CSI-RS Configuration	O		OCTET STRING	Includes the <i>NZP-CSI-RS-Resource</i> IE as defined in subclause 6.3.2 of TS 38.331 [8].	-	
>>>>>SR Configuration	O		OCTET STRING	Includes the <i>SchedulingRequestResourceConfig</i> IE as defined in subclause 6.3.2 of TS 38.331 [8].	-	
>>>>>PDCCH Configuration SIB1	O		OCTET STRING	Includes the <i>PDCCH-ConfigSIB1</i> IE as defined in subclause 6.3.2 of TS 38.331 [8].	-	
>>>>>SCS Common	O		OCTET STRING	Includes the <i>subCarrierSpacingCommon</i> contained in the <i>MIB</i> message as defined in subclause 6.2.2 of TS 38.331 [8].	-	
>>>>>Multiplexing	O		9.3.1.108	Contains	-	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Info				information on multiplexing with cells configured for co-located IAB-MT.		
Neighbour-Node Cells List		0..1		List of neighbor node cells.	YES	reject
>Neighbour-Node Cells List Item		$1 \dots \max(\text{no of Neighbour Node Cells IAB})$			EACH	reject
>>NR CGI	M		9.3.1.12		-	
>>gNB-CU UE F1AP ID	O		9.3.1.4	Identifier of a child-node IAB-MT at an IAB-donor-CU.	-	
>>gNB-DU UE F1AP ID	O		9.3.1.5	Identifier of a child-node IAB-MT at an IAB-DU or IAB-donor-DU.	-	
>>Peer Parent-Node Indicator	O		ENUMERATED (true, ...)	Indicates if the cell belongs to the peer parent IAB-node of the dual connected IAB-node.	-	
>>IAB-DU Cell Resource Configuration-Mode-Info	O		9.3.1.279		-	
>>IAB STC Info	O		9.3.1.109	STC configuration of peer parent node IAB-DU's cell.	-	
>>RACH Config Common	O		OCTET STRING	Common RACH Configuration of peer parent node IAB-DU's cell. Includes the <i>rach-ConfigCommon</i> contained in the <i>BWP-UplinkCommon</i> IE as defined in subclause 6.3.2 of TS 38.331 [8].	-	
>>RACH Config Common IAB	O		OCTET STRING	IAB specific common RACH Configuration of peer parent node IAB-DU's cell. Includes the IAB-specific <i>rach-ConfigCommonIAB</i> contained in the <i>BWP-UplinkCommon</i> IE as defined in subclause 6.3.2 of TS 38.331 [8].	-	
>>CSI-RS Configuration	O		OCTET STRING	CSI-RS configuration of peer parent node IAB-DU's cell. Includes the <i>NZP-</i>	-	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				<i>CSI-RS-Resource</i> as defined in subclause 6.3.2 of TS 38.331 [8].		
>>SR Configuration	O		OCTET STRING	SR configuration of peer parent node IAB-DU's cell. Includes the <i>SchedulingRequestResourceConfig</i> IE as defined in subclause 6.3.2 of TS 38.331 [8].	-	
>>PDCCH Configuration SIB1	O		OCTET STRING	PDCCH configuration SIB1 of peer parent node IAB-DU's cell. Includes the <i>PDCCH-ConfigSIB1</i> IE as defined in subclause 6.3.2 of TS 38.331 [8].	-	
>>SCS Common	O		OCTET STRING	SCS Common of peer parent node IAB-DU's cell. Includes the <i>subCarrierSpacingCommon</i> contained in the <i>MIB</i> message as defined in subclause 6.2.2 of TS 38.331 [8].	-	
Serving Cells List		0..1		List of serving cells of the co-located IAB-MT.	YES	reject
>Serving Cells List Item		1 .. < maxnoofServingCells >			EACH	reject
>>NR CGI	M		9.3.1.12		-	
>>CHOICE IAB-MT Cell NA Resource Configuration-Mode-Info	O				-	
>>>FDD						
>>>>FDD Info		1			-	
>>>>>gNB-DU Cell NA Resource Configuration-FDD-UL	M		gNB-DU Cell Resource Configuration 9.3.1.107	Contains FDD UL NA resource configuration of parent IAB-node's cell for the co-located IAB-MT.	-	
>>>>>gNB-DU Cell NA Resource Configuration-FDD-DL	M		gNB-DU Cell Resource Configuration 9.3.1.107	Contains FDD DL NA resource configuration of parent IAB-node's cell for the co-located IAB-MT.	-	
>>>>>UL Frequency Info	O		NR Frequency Info 9.3.1.17		-	
>>>>>UL Transmission	O		Transmission Bandwidth		-	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Bandwidth			9.3.1.15			
>>>>>UL Carrier List	O		NR Carrier List 9.3.1.137	If included, the <i>UL Transmission Bandwidth</i> IE shall be ignored.	-	
>>>>>DL Frequency Info	O		NR Frequency Info 9.3.1.17		-	
>>>>>DL Transmission Bandwidth	O		Transmission Bandwidth 9.3.1.15		-	
>>>>>DL Carrier List	O		NR Carrier List 9.3.1.137	If included, the <i>DL Transmission Bandwidth</i> IE shall be ignored.	-	
>>>TDD					-	
>>>>TDD Info		1			-	
>>>>>gNB-DU Cell NA Resource Configuration-TDD	M		gNB-DU Cell Resource Configuration 9.3.1.107	Contains TDD NA resource configuration of parent IAB-node's cell for the co-located IAB-MT.	-	
>>>>>NR Frequency Info	O		NR Frequency Info 9.3.1.17		-	
>>>>>Transmission Bandwidth	O		Transmission Bandwidth 9.3.1.15		-	
>>>>>Carrier List	O		NR Carrier List 9.3.1.137	If included, the <i>Transmission Bandwidth</i> IE shall be ignored.	-	

Range bound	Explanation
maxnoofChildIABNodes	Maximum number of child nodes served by an IAB-DU or IAB-donor-DU. Value is 1024.
maxnoofServedCellsIAB	Maximum number of cells served by an IAB-DU or IAB-donor-DU. Value is 512.
maxnoofNeighbourNodeCellsIAB	Maximum no. of neighbour cells. Value is 1024.
MaxnoofServingCells	Maximum no. of serving cells for IAB-MT. Value is 32

9.2.9.4 GNB-DU RESOURCE CONFIGURATION ACKNOWLEDGE

This message is sent by the gNB-DU to acknowledge the reception of an GNB-DU RESOURCE CONFIGURATION message.

Direction: gNB-DU → gNB-CU

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
Transaction ID	M		9.3.1.23		YES	reject
Criticality Diagnostics	O		9.3.1.3		YES	ignore

9.2.9.4A GNB-DU RESOURCE CONFIGURATION FAILURE

This message is sent by the gNB-DU to indicate a gNB-DU Resource Configuration Update failure.

Direction: gNB-DU → gNB-CU

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
Transaction ID	M		9.3.1.23		YES	reject
Cause	M		9.3.1.2		YES	ignore
Time to wait	O		9.3.1.13		YES	ignore
Criticality Diagnostics	O		9.3.1.3		YES	ignore

9.2.9.5 IAB TNL ADDRESS REQUEST

This message is sent by the gNB-CU to request the allocation of IP addresses for IAB-node(s).

Direction: gNB-CU → gNB-DU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
Transaction ID	M		9.3.1.23		YES	reject
IAB IPv4 Addresses Requested	O		IAB TNL Addresses Requested 9.3.1.101		YES	reject
CHOICE IAB IPv6 Request Type	O				YES	reject
>IPv6 Address					-	
>>IAB IPv6 Addresses Requested	M		IAB TNL Addresses Requested 9.3.1.101		-	
>IPv6 Prefix					-	
>>IAB IPv6 Address Prefixes Requested	M		IAB TNL Addresses Requested 9.3.1.101		-	
IAB TNL Addresses To Remove List		0..1			YES	reject
>IAB TNL Addresses To Remove Item		1..<maxno ofTLAsIAB>			EACH	reject
>>IAB TNL Address	M		9.3.1.102		-	
IAB TNL Address Exception	O		9.3.1.229		YES	reject

Range bound	Explanation
maxnoofTLAsIAB	Maximum no. of individual IPv4/IPv6 addresses or IPv6 address prefixes that can be allocated in one procedure execution. The value is 1024.

9.2.9.6 IAB TNL ADDRESS RESPONSE

This message is sent by the gNB-DU to indicate the TNL addresses allocated to IAB-node(s).

Direction: gNB-DU → gNB-CU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
Transaction ID	M		9.3.1.23		YES	reject
IAB Allocated TNL Address List		1			YES	reject
>IAB Allocated TNL Address Item		1..<maxno ofTLAsIAB>			EACH	reject

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
		>				
>>IAB TNL Address	M		9.3.1.102		-	
>>IAB TNL Address Usage	O		ENUMERATED (F1-C, F1-U, Non-F1, ...)	The usage of the allocated IPv4 or IPv6 address or IPv6 address prefix.	-	

Range bound	Explanation
maxnoofTLAsIAB	Maximum no. of IPv6 addresses or IPv6 address prefixes and/or individual IPv4 addresses that can be allocated in one procedure execution. The value is 1024.

9.2.9.6A IAB TNL ADDRESS FAILURE

This message is sent by the gNB-DU to indicate an IAB TNL Address Allocation failure.

Direction: gNB-DU → gNB-CU

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
Transaction ID	M		9.3.1.23		YES	reject
Cause	M		9.3.1.2		YES	ignore
Time to wait	O		9.3.1.13		YES	ignore
Criticality Diagnostics	O		9.3.1.3		YES	ignore

9.2.9.7 IAB UP CONFIGURATION UPDATE REQUEST

This message is sent by the gNB-CU to provide the updated UL BH Information or the updated UL UP TNL Information/Address to the gNB-DU.

Direction: gNB-CU → gNB-DU

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
Transaction ID	M		9.3.1.23		YES	reject
UL UP TNL Information to Update List		0..1			YES	ignore
>UL UP TNL Information to Update List Item IEs		1.. <maxnoofULUPTNLInformationf orIAB>			EACH	ignore
>>UL UP TNL Information	M		UP Transport Layer Information 9.3.2.1	This field indicates the UL UP TNL Information used before configuration update.	-	
>>New UL UP TNL Information	O		UP Transport Layer Information 9.3.2.1	If present, this field indicates the new UL UP TNL Information used after configuration update.	-	
>>BH Information	M		9.3.1.114		-	
UL UP TNL Address to		0..1			YES	ignore

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Update List						
>UL UP TNL Address to Update List Item IEs		<i>1.. < maxnoofUPTNLAddresses></i>			EACH	ignore
>>Old TNL Address	M		Transport Layer Address 9.3.2.3	The old UL UP Transport Layer Address of gNB-CU used for UL F1-U GTP Tunnel before the configuration update.	-	
>>New TNL Address	M		Transport Layer Address 9.3.2.3	The corresponding new UL UP Transport Layer Address that replaces the old one.	-	

Range bound	Explanation
maxnoofULUPTNLInformationforIAB	Maximum no. of UL UP TNL Information allowed towards one IAB node, the maximum value is 32768.
maxnoofUPTNLAddresses	Maximum no. of TNL addresses for F1-U. Value is 8.

9.2.9.8 IAB UP CONFIGURATION UPDATE RESPONSE

This message is sent by the gNB-DU to provide the updated TNL address(es) of the DL F1-U GTP tunnels to the gNB-CU.

Direction: gNB-DU → gNB-CU

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
Transaction ID	M		9.3.1.23		YES	reject
Criticality Diagnostics	O		9.3.1.3		YES	ignore
DL UP TNL Address to Update List		<i>0..1</i>			YES	ignore
>DL UP TNL Address to Update List Item IEs		<i>1.. < maxnoofUPTNLAddresses></i>			EACH	ignore
>>Old TNL Address	M		Transport Layer Address 9.3.2.3	The old DL UP Transport Layer Address of gNB-DU used for DL F1-U GTP tunnel before the configuration update.	-	
>>New TNL Address	M		Transport Layer Address 9.3.2.3	The corresponding new Transport Layer Address used to replace the old one.	-	

Range bound	Explanation
maxnoofUPTNLAddresses	Maximum no. of TNL addresses for F1-U. Value is 8.

9.2.9.9 IAB UP CONFIGURATION UPDATE FAILURE

This message is sent by the gNB-DU to indicate an IAB UP Configuration Update failure.

Direction: gNB-DU → gNB-CU

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
Transaction ID	M		9.3.1.23		YES	reject
Cause	M		9.3.1.2		YES	ignore
Time to wait	O		9.3.1.13		YES	ignore
Criticality Diagnostics	O		9.3.1.3		YES	ignore

9.2.10 Self Optimisation Support Messages

9.2.10.1 ACCESS AND MOBILITY INDICATION

This message is sent by gNB-CU to gNB-DU to provide access and mobility information to the gNB-DU.

Direction: gNB-CU → gNB-DU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	ignore
Transaction ID	M		9.3.1.23		YES	reject
RACH Report Information List		0..1			YES	ignore
>RACH Report Information Item		1 .. <maxnoof RACHRep orts>			-	
>>RACH Report Container	M		OCTET STRING	Includes the <i>RA-ReportList-r16</i> IE as defined in subclause 6.2.2 in TS 38.331 [8].	-	
>>UE Assistant Identifier	O		gNB-DU UE F1AP ID 9.3.1.5		-	
RLF Report Information List		0..1			YES	ignore
>RLF Report Information Item		1 .. <maxnoof RLFRepor ts>			-	
>>NR UE RLF Report Container	M		OCTET STRING	Includes the <i>nr-RLF-Report-r16</i> IE contained in the <i>UEInformationResponse</i> message defined in TS 38.331 [8].	-	
>>UE Assistant Identifier	O		gNB-DU UE F1AP ID 9.3.1.5		-	
Successful HO Report Information List		0..1			YES	ignore
>Successful HO Report Information Item		1 .. <maxnoof Successfu lHOReport s>			-	
>>Successful HO	M		OCTET	Includes the	-	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Report Container			STRING	<i>SuccessHO-Report</i> IE as defined in subclause 6.2.2 in TS 38.331 [8].		

Range bound	Explanation
maxnoofRACHReports	Maximum no. of RACH Reports, the maximum value is 64.
maxnoofRLFReports	Maximum no. of RLF Reports, the maximum value is 64.
maxnoofSuccessfulHOReports	Maximum no. of Successful HO Reports, the maximum value is 64.

9.2.11 Reference Time Information Reporting messages

9.2.11.1 REFERENCE TIME INFORMATION REPORTING CONTROL

This message is sent by the gNB-CU and is used to request the gNB-DU to deliver the accurate reference time information.

Direction: gNB-CU → gNB-DU

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	ignore
Transaction ID	M		9.3.1.23		YES	reject
Reporting Request Type	M		9.3.1.147		YES	reject

9.2.11.2 REFERENCE TIME INFORMATION REPORT

This message is sent by the gNB-DU and is used to report the accurate reference time information to the gNB-CU.

Direction: gNB-DU → gNB-CU

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	ignore
Transaction ID	M		9.3.1.23		YES	ignore
Time Reference Information	M		9.3.1.148		YES	ignore

9.2.12 Messages for Positioning Procedures

9.2.12.1 POSITIONING ASSISTANCE INFORMATION CONTROL

This message is sent by the gNB-CU to transfer positioning assistance information.

Direction: gNB-CU → gNB-DU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	ignore
Transaction ID	M		9.3.1.23		YES	reject
Positioning Assistance Information	O		OCTET STRING	Contains the <i>Assistance Information</i> IE as defined in TS 38.455 [37].	YES	reject

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Broadcast	O		ENUMERATED (start, stop, ...)		YES	reject
Positioning Broadcast Cells	O		9.3.1.191		YES	reject
Routing ID	O		OCTET STRING		YES	reject

9.2.12.2 POSITIONING ASSISTANCE INFORMATION FEEDBACK

This message is sent by the gNB-DU to give feedback on positioning assistance information broadcasting.

Direction: gNB-DU → gNB-CU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	ignore
Transaction ID	M		9.3.1.23		YES	reject
Positioning Assistance Information Failure List	O		OCTET STRING	Contains the <i>Assistance Information Failure List</i> IE as defined in TS 38.455 [37].	YES	reject
Positioning Broadcast Cells	O		9.3.1.191	The cells associated to the feedback provided in the <i>Positioning Assistance Information Failure List</i> IE.	YES	reject
Routing ID	O		OCTET STRING		YES	reject
Criticality Diagnostics	O		9.3.1.3		YES	ignore

9.2.12.3 POSITIONING MEASUREMENT REQUEST

This message is sent by the gNB-CU to request the gNB-DU to configure a positioning measurement.

Direction: gNB-CU → gNB-DU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
Transaction ID	M		9.3.1.23		YES	reject
LMF Measurement ID	M		INTEGER (1..65536, ...)		YES	reject
RAN Measurement ID	M		INTEGER (1..65536, ...)		YES	reject
TRP Measurement Request List		1			YES	reject
>TRP Measurement Request Item		1..<maxno of MeasTRPs>			-	
>>TRP ID	M		9.3.1.197		-	
>>Search Window Information	O		9.3.1.204		-	
>>NR CGI	O		9.3.1.12	The Cell ID of the TRP identified by the <i>TRP ID</i> IE.	YES	ignore
>>AoA Search Window Information	O		UL-AoA Assistance Information 9.3.1.238		YES	ignore

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
>>Number of TRP Rx TEGs	O		ENUMERATED (2, 3, 4, 6, 8, ...)		YES	ignore
>>Number of TRP RxTx TEGs	O		ENUMERATED (2, 3, 4, 6, 8, ...)		YES	ignore
Positioning Report Characteristics	M		ENUMERATED (OnDemand, Periodic, ...)		YES	reject
Positioning Measurement Periodicity	C-ifReportCharacteristicsPeriodic		ENUMERATED (120ms, 240ms, 480ms, 640ms, 1024ms, 2048ms, 5120ms, 10240ms, 1min, 6min, 12min, 30min, ..., 20480ms, 40960ms, extended)	The codepoint 120ms, 240ms, 480ms, 1024ms, 2048ms, 1min, 6min, 12min, and 30min are not applicable.	YES	reject
Positioning Measurement Quantities		1			YES	reject
>Positioning Measurement Quantities Item		1..<maxno ofPosMeasurements>			EACH	
>>Positioning Measurement Type	M		ENUMERATED (gNB RX-TX, UL-SRS-RSRP, UL AoA, UL RTOA, ..., Multiple UL AoA, UL SRS-RSRPP)		-	-
>>Timing Reporting Granularity Factor	O		INTEGER (0..5)	TS 38.133 [38]	-	
SFN Initialisation Time	O		Relative Time 1900 9.3.1.183	If this IE is not present, the TRP may assume that the value is same as its own SFN initialisation time.	YES	ignore
SRS Configuration	O		9.3.1.192		YES	ignore
Measurement Beam Information Request	O		ENUMERATED (true, ...)	This IE is ignored when the Measurement characteristics Request Indicator IE is included.	YES	ignore
System Frame Number	O		INTEGER(0..1023)		YES	ignore
Slot Number	O		INTEGER(0..79)		YES	ignore
Measurement Periodicity Extended	C-ifMeasPerExt		ENUMERATED (160ms, 320ms, 1280ms, 2560ms, 61440ms, 81920ms, 368640ms, 737280ms, 1843200ms, ...)		YES	reject
Response Time	O		9.3.1.242	This IE is ignored when the <i>Positioning Report</i>	YES	ignore

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				<i>Characteristics</i> IE is set to "Periodic".		
Measurement Characteristics Request Indicator	O		9.3.1.254		YES	ignore
Measurement Time Occasion	O		ENUMERATED (o1, o4,...)		YES	ignore
Positioning Measurement Amount	O		ENUMERATED (0, 1, 2, 4, 8, 16, 32, 64)	This IE is ignored if the <i>Positioning Report Characteristics</i> IE is set to 'OnDemand'. Value 0 represents an infinite number of periodic reporting.	YES	ignore

Range bound	Explanation
maxnoofPosMeas	Maximum no. of measured quantities that can be configured and reported with one message. Value is 16384.
maxnoofMeasTRPs	Maximum no. of TRPs that can be included within one measurement message. Value is 64.

Condition	Explanation
ifReportCharacteristicsPeriodic	This IE shall be present if the <i>Positioning Report Characteristics</i> IE is set to the value "Periodic".
ifMeasPerExt	This IE shall be present if the <i>Positioning Measurement Periodicity</i> IE is set to the value "extended".

9.2.12.4 POSITIONING MEASUREMENT RESPONSE

This message is sent by the gNB-DU to report positioning measurements for the target UE.

Direction: gNB-DU → gNB-CU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
Transaction ID	M		9.3.1.23		YES	reject
LMF Measurement ID	M		INTEGER (1..65536, ...)		YES	reject
RAN Measurement ID	M		INTEGER (1..65536, ...)		YES	reject
Positioning Measurement Result List		0..1			YES	reject
>Positioning Measurement Result List Item		1..<maxnoofMeasTRPs>			-	
>>Positioning Measurement Result	M		9.3.1.166		-	-
>>TRP ID	M		9.3.1.197		-	
>>NR CGI	O		9.3.1.12	The Cell ID of the TRP identified by the TRP ID IE.	YES	ignore
Criticality Diagnostics	O		9.3.1.3		YES	ignore

Range bound	Explanation
maxnoofMeasTRPs	Maximum no. of TRP measurements that can be included within one message. Value is 64.

9.2.12.5 POSITIONING MEASUREMENT FAILURE

This message is sent by the gNB-DU to report measurement failure.

Direction: gNB-DU → gNB-CU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
Transaction ID	M		9.3.1.23		YES	reject
LMF Measurement ID	M		INTEGER (1..65536, ...)		YES	reject
RAN Measurement ID	M		INTEGER (1..65536, ...)		YES	reject
Cause	M		9.3.1.2		YES	ignore
Criticality Diagnostics	O		9.3.1.3		YES	ignore

9.2.12.6 POSITIONING MEASUREMENT REPORT

This message is sent by the gNB-DU to report positioning measurements for the target UE.

Direction: gNB-DU → gNB-CU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	ignore
Transaction ID	M		9.3.1.23		YES	reject
LMF Measurement ID	M		INTEGER (1..65536, ...)		YES	reject
RAN Measurement ID	M		INTEGER (1..65536, ...)		YES	reject
Positioning Measurement Result List		1			YES	reject
>Positioning Measurement Result List Item		1..<maxno ofMeasTRPs>			EACH	
>>Positioning Measurement Result	M		9.3.1.166		-	-
>>TRP ID	M		9.3.1.197		-	-
>>NR CGI	O		9.3.1.12	The Cell ID of the TRP identified by the <i>TRP ID</i> IE.	YES	ignore

Range bound	Explanation
maxnoofMeasTRPs	Maximum no. of TRP measurements that can be included within one message. Value is 64.

9.2.12.7 POSITIONING MEASUREMENT ABORT

This message is sent by the gNB-CU to request the gNB-DU to abort a positioning measurement.

Direction: gNB-CU → gNB-DU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	ignore
Transaction ID	M		9.3.1.23		YES	reject
LMF Measurement ID	M		INTEGER (1..65536,...)		YES	reject
RAN Measurement ID	M		INTEGER (1..65536,...)		YES	reject

9.2.12.8 POSITIONING MEASUREMENT FAILURE INDICATION

This message is sent by the gNB-DU to indicate that the previously requested positioning measurements can no longer be reported.

Direction: gNB-DU → gNB-CU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	ignore
Transaction ID	M		9.3.1.23		YES	reject
LMF Measurement ID	M		INTEGER (1..65536,...)		YES	reject
RAN Measurement ID	M		INTEGER (1..65536,...)		YES	reject
Cause	M		9.3.1.2		YES	ignore

9.2.12.9 POSITIONING MEASUREMENT UPDATE

This message is sent by the gNB-CU to update a previously configured measurement.

Direction: gNB-CU → gNB-DU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	ignore
Transaction ID	M		9.3.1.23		YES	reject
LMF Measurement ID	M		INTEGER (1..65536,...)		YES	reject
RAN Measurement ID	M		INTEGER (1..65536,...)		YES	reject
SRS Configuration	O		9.3.1.192		YES	ignore
TRP Measurement Update List		0..1			YES	reject
>TRP Measurement Update Item		1..<maxno of MeasTRPs>			EACH	reject
>>TRP ID	M		9.3.1.197		-	
>>AoA Search Window Information	O		UL-AoA Assistance Information 9.3.1.238		-	
>>Number of TRP Rx TEGs	O		ENUMERATED (2, 3, 4, 6, 8, ...)		YES	ignore
>>Number of TRP RxTx TEGs	O		ENUMERATED (2, 3, 4, 6, 8, ...)		YES	ignore
Measurement Characteristics Request Indicator	O		9.3.1.254		YES	ignore
Measurement Time Occasion	O		ENUMERATED (o1, o4, ...)		YES	ignore

Range bound	Explanation
maxnoofMeasTRPs	Maximum no. of TRPs that can be included within one message. Value is 64.

9.2.12.10 TRP INFORMATION REQUEST

This message is sent by a gNB-CU to request information for TRPs hosted by a gNB-DU.

Direction: gNB-CU → gNB-DU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
Transaction ID	M		9.3.1.23		YES	reject
TRP list		0..1			YES	ignore
>TRP list Item		1..<maxnoofTRPs>			EACH	ignore
>>TRP ID	M		9.3.1.197		-	
TRP Information Type List		1			YES	reject
>TRP Information Type Item		1 .. <maxnoofTRPInfoTypes>			EACH	reject
>>TRP Information Type Item	M		ENUMERATED (nr pci, ng-ran cgi, nr arfcn, prs config, ssb config, sfn init time, spatial direction info, geo-coordinates, ..., trp type, on-demand prs, trp Tx teg, beam antenna info)		-	

Range bound	Explanation
maxnoofTRPInfoTypes	Maximum no of TRP information types that can be requested and reported with one message. Value is 64.
maxnoofTRPs	Maximum no. of TRPs in a gNB. Value is 65535.

9.2.12.11 TRP INFORMATION RESPONSE

This message is sent by a gNB-DU to convey TRP information to a gNB-CU.

Direction: gNB-DU → gNB-CU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
Transaction ID	M		9.3.1.23		YES	reject
TRP Information List		1			YES	ignore
>TRP Information Item		1 .. <maxnoofTRPs>			EACH	ignore
>>TRP Information	M		9.3.1.176		-	
Criticality Diagnostics	O		9.3.1.3		YES	ignore

Range bound	Explanation
maxnoofTRPs	Maximum no. of TRPs in a gNB-DU. Value is 65535.

9.2.12.12 TRP INFORMATION FAILURE

This message is sent by a gNB-DU node to indicate that the requested TRP information cannot be provided to a gNB-CU.

Direction: gNB-DU → gNB-CU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
Transaction ID	M		9.3.1.23		YES	reject
Cause	M		9.3.1.2		YES	ignore
Criticality Diagnostics	O		9.3.1.3		YES	ignore

9.2.12.13 POSITIONING INFORMATION REQUEST

This message is sent by the gNB-CU to indicate to the gNB-DU the need to configure the UE to transmit SRS signals for uplink positioning measurement and also to retrieve the SRS configuration from the gNB-DU.

Direction: gNB-CU → gNB-DU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
gNB-CU UE F1AP ID	M		9.3.1.4		YES	reject
gNB-DU UE F1AP ID	M		9.3.1.5		YES	reject
Requested SRS Transmission Characteristics	O		9.3.1.175		YES	ignore
UE Reporting Information	O		9.3.1.255		YES	ignore
SRS Positioning INACTIVE Query Indication	O		ENUMERATED (true, ...)	Applicable only if the <i>Requested SRS Transmission Characteristics</i> IE is present	YES	ignore

9.2.12.14 POSITIONING INFORMATION RESPONSE

This message is sent by the gNB-DU to provide the configured SRS information to the gNB-CU.

Direction: gNB-DU → gNB-CU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
gNB-CU UE F1AP ID	M		9.3.1.4		YES	reject
gNB-DU UE F1AP ID	M		9.3.1.5		YES	reject
SRS Configuration	O		9.3.1.192		YES	ignore
SFN Initialisation Time	O		Relative Time 1900 9.3.1.183		YES	ignore
Criticality Diagnostics	O		9.3.1.3		YES	ignore
SRS-PosRRC-InactiveConfig	O		OCTET STRING	Includes the <i>SRS-PosRRC-InactiveConfig</i> IE as defined in TS 38.331 [8]	YES	ignore

9.2.12.15 POSITIONING INFORMATION FAILURE

This message is sent by the gNB-DU to indicate that no SRS transmissions could be configured for the UE for uplink positioning measurement.

Direction: gNB-DU → gNB-CU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
gNB-CU UE F1AP ID	M		9.3.1.4		YES	reject
gNB-DU UE F1AP ID	M		9.3.1.5		YES	reject
Cause	M		9.3.1.2		YES	ignore
Criticality Diagnostics	O		9.3.1.3		YES	ignore

9.2.12.16 POSITIONING ACTIVATION REQUEST

This message is sent by the gNB-CU to cause the gNB-DU to activate/trigger UL SRS transmission by the UE.

Direction: gNB-CU → gNB-DU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
gNB-CU UE F1AP ID	M		9.3.1.4		YES	reject
gNB-DU UE F1AP ID	M		9.3.1.5		YES	reject
CHOICE <i>SRS type</i>	M				YES	reject
> <i>Semi-persistent</i>						
>>SRS Resource Set ID	M		9.3.1.180		-	-
>>SRS Spatial Relation	O		Spatial Relation Information 9.3.1.181	This IE is ignored if the <i>Spatial Relation Information per SRS Resource</i> IE is present.	-	-
>>Spatial Relation Information per SRS Resource	O		9.3.1.210		YES	ignore
> <i>Aperiodic</i>						
>>Aperiodic	M		ENUMERATED (true, ...)		-	-
>>SRS Resource Trigger	O		9.3.1.182		-	-
Activation Time	O		Relative Time 1900 9.3.1.183	Indicates the start time when the SRS activation is requested	YES	ignore

9.2.12.17 POSITIONING ACTIVATION RESPONSE

This message is sent by the gNB-DU to confirm successful UL SRS activation in the UE.

Direction: gNB-DU → gNB-CU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
gNB-CU UE F1AP ID	M		9.3.1.4		YES	reject
gNB-DU UE F1AP ID	M		9.3.1.5		YES	reject
System Frame Number	O		INTEGER(0..10		YES	ignore

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
			23)			
Slot Number	O		INTEGER(0..79)		YES	ignore
Criticality Diagnostics	O		9.3.1.3		YES	ignore

9.2.12.18 POSITIONING ACTIVATION FAILURE

This message is sent by the gNB-DU to indicate that activation of UL SRS transmission in the UE was unsuccessful.

Direction: gNB-DU → gNB-CU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
gNB-CU UE F1AP ID	M		9.3.1.4		YES	reject
gNB-DU UE F1AP ID	M		9.3.1.5		YES	reject
Cause	M		9.3.1.2		YES	ignore
Criticality Diagnostics	O		9.3.1.3		YES	ignore

9.2.12.19 POSITIONING DEACTIVATION

This message is sent by the gNB-CU to cause the NG RAN node to deactivate UL SRS transmission or release all the transmission by the UE.

Direction: gNB-CU → gNB-DU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	ignore
gNB-CU UE F1AP ID	M		9.3.1.4		YES	reject
gNB-DU UE F1AP ID	M		9.3.1.5		YES	reject
CHOICE <i>Abort Transmission</i>	M				YES	ignore
>SRS Resource Set ID <i>deactivation</i>						
>>SRS Resource Set ID	M		9.3.1.180		-	
>Release ALL			NULL			

9.2.12.20 E-CID MEASUREMENT INITIATION REQUEST

This message is sent by gNB-CU to initiate E-CID measurements.

Direction: gNB-CU → gNB-DU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
gNB-CU UE F1AP ID	M		9.3.1.4		YES	reject
gNB-DU UE F1AP ID	M		9.3.1.5		YES	reject
LMF UE Measurement ID	M		INTEGER (1..256, ...)		YES	reject
RAN UE Measurement ID	M		INTEGER (1..256, ...)		YES	reject
E-CID Report Characteristics	M		ENUMERATED (OnDemand, Periodic, ...)		YES	reject
E-CID Measurement Periodicity	C-ifReportCh		ENUMERATED (120ms, 240ms, ...)	The codepoint "extended" is not	YES	reject

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
	aracteristicsPeriodic		480ms, 640ms, 1024ms, 2048ms, 5120ms, 10240ms, 1min, 6min, 12min, 30min, ..., 20480ms, 40960ms, extended)	applicable. This IE is not applicable to NR Angle of Arrival.		
E-CID Measurement Quantities		1 .. <maxnoofMeasE-CID>			EACH	reject
>E-CID Measurement Quantities Item	M		ENUMERATED (Default, NR Angle of Arrival, ..., NR Timing Advance)	If "Default" is the only requested measurement quantity, it indicates that the <i>Measured Results List</i> IE need not be included in response or reporting messages.	-	
Measurement Periodicity NR-AoA	C- ifReportCharacteristicsPeriodicAndMeasurementQuantityItemAoA		ENUMERATED (160ms, 320ms, 640ms, 1280ms, 2560ms, 5120ms, 10240ms, 20480ms, 40960ms, 61440ms, 81920ms, 368640ms, 737280ms, 1843200ms, ...)		YES	reject

Range bound	Explanation
maxnoofMeasE-CID	Maximum no. of E-CID measured quantities that can be configured and reported with one message. Value is 64.

Condition	Explanation
ifReportCharacteristicsPeriodic	This IE shall be present if the E-CID Report Characteristics IE is set to the value "Periodic".
ifReportCharacteristicsPeriodicAndMeasurementQuantityItemAoA	This IE shall be present if the E-CID Report Characteristics IE is set to the value "Periodic" and the E-CID Measurement Quantities Item IE is set to the value "NR Angle of Arrival".

9.2.12.21 E-CID MEASUREMENT INITIATION RESPONSE

This message is sent by gNB-DU to indicate that the requested E-CID measurement is successfully initiated.

Direction: gNB-DU → gNB-CU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
gNB-CU UE F1AP ID	M		9.3.1.4		YES	reject

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
gNB-DU UE F1AP ID	M		9.3.1.5		YES	reject
LMF UE Measurement ID	M		INTEGER (1..256, ...)		YES	reject
RAN UE Measurement ID	M		INTEGER (1..256, ...)		YES	reject
E-CID Measurement Result	O		9.3.1.199		YES	ignore
Cell Portion ID	O		9.3.1.200		YES	ignore
Criticality Diagnostics	O		9.3.1.3		YES	ignore

9.2.12.22 E-CID MEASUREMENT INITIATION FAILURE

This message is sent by gNB-DU to indicate that the requested E-CID measurement cannot be initiated.

Direction: gNB-DU → gNB-CU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
gNB-CU UE F1AP ID	M		9.3.1.4		YES	reject
gNB-DU UE F1AP ID	M		9.3.1.5		YES	reject
LMF UE Measurement ID	M		INTEGER (1..256, ...)		YES	reject
RAN UE Measurement ID	M		INTEGER (1..256, ...)		YES	reject
Cause	M		9.3.1.2		YES	ignore
Criticality Diagnostics	O		9.3.1.3		YES	ignore

9.2.12.23 E-CID MEASUREMENT FAILURE INDICATION

This message is sent by gNB-DU to indicate that the previously requested E-CID measurement can no longer be reported.

Direction: gNB-DU → gNB-CU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	ignore
gNB-CU UE F1AP ID	M		9.3.1.4		YES	reject
gNB-DU UE F1AP ID	M		9.3.1.5		YES	reject
LMF UE Measurement ID	M		INTEGER (1..256, ...)		YES	reject
RAN UE Measurement ID	M		INTEGER (1..256, ...)		YES	reject
Cause	M		9.3.1.2		YES	ignore

9.2.12.24 E-CID MEASUREMENT REPORT

This message is sent by gNB-DU to report the results of the requested E-CID measurement.

Direction: gNB-DU → gNB-CU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	ignore
gNB-CU UE F1AP ID	M		9.3.1.4		YES	reject
gNB-DU UE F1AP ID	M		9.3.1.5		YES	reject
LMF UE Measurement ID	M		INTEGER (1..256, ...)		YES	reject

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
RAN UE Measurement ID	M		INTEGER (1..256, ...)		YES	reject
E-CID Measurement Result	M		9.3.1.199		YES	ignore
Cell Portion ID	O		9.3.1.200		YES	ignore

9.2.12.25 E-CID MEASUREMENT TERMINATION COMMAND

This message is sent by the gNB-CU to terminate the requested E-CID measurement.

Direction: gNB-CU → gNB-DU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	ignore
gNB-CU UE F1AP ID	M		9.3.1.4		YES	reject
gNB-DU UE F1AP ID	M		9.3.1.5		YES	reject
LMF UE Measurement ID	M		INTEGER (1..256, ...)		YES	reject
RAN UE Measurement ID	M		INTEGER (1..256, ...)		YES	reject

9.2.12.26 POSITIONING INFORMATION UPDATE

This message is sent by the gNB-DU to indicate that a change in the SRS configuration has occurred.

Direction: gNB-DU → gNB-CU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	ignore
gNB-CU UE F1AP ID	M		9.3.1.4		YES	reject
gNB-DU UE F1AP ID	M		9.3.1.5		YES	reject
SRS configuration	O		9.3.1.192		YES	ignore
SFN Initialisation Time	O		Relative Time 1900 9.3.1.183		YES	ignore

9.2.12.27 PRS CONFIGURATION REQUEST

This message is sent by a gNB-CU to request a gNB-DU to configure or update PRS transmissions.

Direction: gNB-CU → gNB-DU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
Transaction ID	M		9.3.1.23		YES	reject
PRS Configuration Request Type	M		ENUMERATED (configure, off, ...)		YES	reject
PRS TRP List		1			YES	ignore
>PRS TRP Item		1 .. <maxnoof TRPs>			EACH	ignore
>>TRP ID	M		9.3.1.197		-	
>>Requested DL PRS Transmission Characteristics	C-ifConf		9.3.1.235		-	
>>PRS Transmission	C-ifOff		9.3.1.237		-	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Off Information						

Range bound	Explanation
maxnoofTRPs	Maximum no. of TRPs in a gNB-DU Value is 65535

Condition	Explanation
ifConf	This IE shall be present if the <i>PRS Configuration Request Type</i> IE is set to the value "configure".
ifOff	This IE shall be present if the <i>PRS Configuration Request Type</i> IE is set to the value "off".

9.2.12.28 PRS CONFIGURATION RESPONSE

This message is sent by a gNB-DU to acknowledge configuring or updating the PRS transmissions.

Direction: gNB-DU → gNB-CU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
Transaction ID	M		9.3.1.23		YES	reject
PRS Transmission TRP List		0..1			YES	ignore
>PRS Transmission TRP Item		1 .. <maxnoof TRPs>			EACH	ignore
>>TRP ID	M		9.3.1.197		-	
>>PRS Configuration	M		9.3.1.117		-	
Criticality Diagnostics	O		9.3.1.3		YES	ignore

Range bound	Explanation
maxnoofTRPs	Maximum no. of TRPs in a gNB-DU Value is 65535.

9.2.12.29 PRS CONFIGURATION FAILURE

This message is sent by the gNB-DU to indicate that it cannot configure any PRS transmission.

Direction: gNB-DU → gNB-CU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
Transaction ID	M		9.3.1.23		YES	reject
Cause	M		9.3.1.2		YES	ignore
Criticality Diagnostics	O		9.3.1.3		YES	ignore

9.2.12.30 MEASUREMENT PRECONFIGURATION REQUIRED

This message is sent by a gNB-CU to provide the PRS configuration information of multiple TRPs to a gNB-DU and request to configure measurement gap or PRS processing window of the UE.

Direction: gNB-CU → gNB-DU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
gNB-CU UE F1AP ID	M		9.3.1.4		YES	reject

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
gNB-DU UE F1AP ID	M		9.3.1.5		YES	reject
TRP PRS Information List		1			YES	ignore
>TRP PRS Information Item		1 .. <maxnoTRPs>			EACH	ignore
>>TRP ID	M		9.3.1.197		-	
>>NR PCI	M		INTEGER (0..1007)		-	
>>NR CGI	O		9.3.1.12		-	
>>PRS Configuration	M		9.3.1.177		-	

Range bound	Explanation
maxnoofTRPs	Maximum no. of TRPs for on-demand PRS in a gNB-DU Value is 256

9.2.12.31 MEASUREMENT PRECONFIGURATION CONFIRM

This message is sent by an gNB-DU to gNB-CU to confirm successful configuration of measurement gap or PRS processing window of the UE.

Direction: gNB-DU → gNB-CU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
gNB-CU UE F1AP ID	M		9.3.1.4		YES	reject
gNB-DU UE F1AP ID	M		9.3.1.5		YES	reject
PosMeasGapPreConfigList		0..1			YES	ignore
>PosMeasGapPreConfigToAddModList	O		OCTET STRING	Includes the <i>PosMeasGapPreConfigToAddModList</i> IE as defined in TS 38.331 [8]	YES	Ignore
>PosMeasGapPreConfigToReleaseList	O		OCTET STRING	Includes the <i>PosMeasGapPreConfigToReleaseList</i> IE as defined in TS 38.331 [8]	YES	Ignore
Criticality Diagnostics	O		9.3.1.3		YES	ignore

9.2.12.32 MEASUREMENT PRECONFIGURATION REFUSE

This message is sent by gNB-DU to indicate configuration of measurement gap or PRS processing window of the UE was unsuccessful.

Direction: gNB-DU → gNB-CU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
gNB-CU UE F1AP ID	M		9.3.1.4		YES	reject
gNB-DU UE F1AP ID	M		9.3.1.5		YES	reject
Cause	M		9.3.1.2		YES	ignore
Criticality Diagnostics	O		9.3.1.3		YES	ignore

9.2.12.33 MEASUREMENT ACTIVATION

This message is sent by the gNB-CU to request the gNB-DU to activate or deactivate the preconfigured measurement gap or PRS processing window for the UE.

Direction: gNB-CU → gNB-DU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	ignore
gNB-CU UE F1AP ID	M		9.3.1.4		YES	reject
gNB-DU UE F1AP ID	M		9.3.1.5		YES	reject
Request Type	M		ENUMERATED (activate, deactivate, ...)		YES	reject
PRS Measurement Info List		0..1			YES	ignore
>PRS Measurement Info Item		1 .. < <i>maxFreqLayers</i> >			-	
>>Point A	M		INTEGER (0..3279165)		-	
>>MeasPRS Periodicity	M		ENUMERATED (ms20, ms40, ms80, ms160, ...)	Measurement gap periodicity in units of ms	-	
>>MeasPRS Offset	M		INTEGER (0..159, ...)	Measurement gap offset in units of subframes	-	
>>Measurement PRS Length	M		ENUMERATED {ms1dot5, ms3, ms3dot5, ms4, ms5dot5, ms6, ms10, ms20}		-	

Range bound	Explanation
maxFreqLayers	Maximum no. of frequency layers. Value is 4

9.2.12.34 POSITIONING SYSTEM INFORMATION DELIVERY COMMAND

This message is sent by the gNB-CU and is used to request the gNB-DU to broadcast the indicated positioning SI message.

Direction: gNB-CU → gNB-DU

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	ignore
Transaction ID	M		9.3.1.23		YES	reject
NR CGI	M		9.3.1.12	NR cell identifier	YES	reject
PosSIType List	M		9.3.1.278		YES	reject
Confirmed UE ID	M		gNB-DU UE F1AP ID 9.3.1.5		YES	reject

9.2.13 Broadcast Context Management messages

9.2.13.1 BROADCAST CONTEXT SETUP REQUEST

This message is sent by the gNB-CU to request the setup of an MBS session context for a broadcast session, and establish an MBS-associated logical F1-connection.

Direction: gNB-CU → gNB-DU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
gNB-CU MBS F1AP ID	M		9.3.1.219		YES	reject
MBS Session ID	M		9.3.1.218		YES	reject
MBS Service Area	O		9.3.1.222		YES	reject
MBS CU to DU RRC Information	M		9.3.1.225		YES	reject
S-NSSAI	M		9.3.1.38		YES	reject
Broadcast MRB To Be Setup List		1			YES	reject
>Broadcast MRB to Be Setup Item IEs		1 .. <maxnoof MRBs>			EACH	reject
>>MRB ID	M		MRB ID 9.3.1.224		-	
>>MRB QoS Information	M		QoS Flow Level QoS Parameters 9.3.1.45		-	
>>MBS QoS Flows Mapped to MRB Item		1 .. <maxnoof MBSQoSFlows>			-	
>>>MBS QoS Flow Identifier	M		QoS Flow Identifier 9.3.1.63		-	
>>>MBS QoS Flow Level QoS Parameters	M		QoS Flow Level QoS Parameters 9.3.1.45		-	
>>BC Bearer Context F1-U TNL Info at CU	M		BC Bearer Context F1-U TNL Info 9.3.2.7	gNB-CU endpoint(s) of the F1 transport bearer(s). For delivery of F1-U PDU Type 1.	-	

Range bound	Explanation
<i>maxnoofMRBs</i>	Maximum no. of MRB allowed to be setup for one MBS Session, the maximum value is 32.
<i>maxnoofMBSQoSFlows</i>	Maximum no. of flows allowed to be mapped to one MRB, the maximum value is 64.

9.2.13.2 BROADCAST CONTEXT SETUP RESPONSE

This message is sent by the gNB-DU to confirm the setup of a broadcast context.

Direction: gNB-DU → gNB-CU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
gNB-CU MBS F1AP ID	M		9.3.1.219		YES	reject
gNB-DU MBS F1AP ID	M		9.3.1.220		YES	reject
Broadcast MRB Setup List		1			YES	reject
>Broadcast MRB Setup Item IEs		1 .. <maxnoof MRBs>			EACH	reject
>>MRB ID	M		MRB ID 9.3.1.224		-	
>>BC Bearer Context F1-U TNL Info at DU	M		BC Bearer Context F1-U	gNB-DU endpoint(s) of the	-	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
			TNL Info 9.3.2.7	F1-U transport bearer(s). For delivery of DL PDUs.		
Broadcast MRB Failed To Be Setup List		0..1			YES	ignore
>Broadcast MRB Failed To Be Setup Item IEs		1 .. <maxnoof MRBs>			EACH	ignore
>>MRB ID	M		MRB ID 9.3.1.224		-	
>>Cause	O		9.3.1.2		-	
Broadcast Area Scope	O		9.3.1.287		YES	ignore
Criticality Diagnostics	O		9.3.1.3		YES	ignore

Range bound	Explanation
<i>maxnoofMRBs</i>	Maximum no. of MRB allowed to be setup for one MBS Session, the maximum value is 32.

9.2.13.3 BROADCAST CONTEXT SETUP FAILURE

This message is sent by the gNB-DU to indicate that the setup of the broadcast context was unsuccessful.

Direction: gNB-DU → gNB-CU

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
gNB-CU MBS F1AP ID	M		9.3.1.219		YES	reject
gNB-DU MBS F1AP ID	O		9.3.1.220		YES	ignore
Cause	M		9.3.1.2		YES	ignore
Criticality Diagnostics	O		9.3.1.3		YES	ignore

9.2.13.4 BROADCAST CONTEXT RELEASE COMMAND

This message is sent by the gNB-CU to request the gNB-DU to release the broadcast context for a given broadcast service.

Direction: gNB-CU → gNB-DU

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
gNB-CU MBS F1AP ID	M		gNB-CU MBS F1AP ID 9.3.1.219		YES	reject
gNB-DU MBS F1AP ID	M		gNB-DU MBS F1AP ID 9.3.1.220		YES	reject
Cause	M		9.3.1.2		YES	ignore

9.2.13.5 BROADCAST CONTEXT RELEASE COMPLETE

This message is sent by the gNB-DU to confirm the release of the broadcast context for a given broadcast service.

Direction: gNB-DU → gNB-CU

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
gNB-CU MBS F1AP ID	M		9.3.1.219		YES	reject
gNB-DU MBS F1AP ID	M		9.3.1.220		YES	reject
Criticality Diagnostics	O		9.3.1.3		YES	ignore

9.2.13.5a BROADCAST CONTEXT RELEASE REQUEST

This message is sent by the gNB-DU to request the gNB-CU to trigger the Broadcast Context Release procedure.

Direction: gNB-DU → gNB-CU

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
gNB-CU MBS F1AP ID	M		9.3.1.219		YES	reject
gNB-DU MBS F1AP ID	M		9.3.1.220		YES	reject
Cause	M		9.3.1.2		YES	ignore

9.2.13.6 BROADCAST CONTEXT MODIFICATION REQUEST

This message is sent by the gNB-CU to request the gNB-DU to modify broadcast context information.

Direction: gNB-CU → gNB-DU

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
gNB-CU MBS F1AP ID	M		9.3.1.219		YES	reject
gNB-DU MBS F1AP ID	M		9.3.1.220		YES	reject
MBS Service Area	O		9.3.1.222	Overwrites any previously received MBS Service Area information	YES	reject
MBS CU to DU RRC Information	M		9.3.1.225		YES	reject
Broadcast MRB To Be Setup List		0..1			YES	reject
>Broadcast MRB to Be Setup Item IEs		1 .. <maxnoof MRBs>			EACH	reject
>>MRB ID	M		MRB ID 9.3.1.224		-	
>>MRB QoS Information	M		QoS Flow Level QoS Parameters 9.3.1.45		-	
>>MBS QoS Flows Mapped to MRB Item		1 .. <maxnoof MBSQoSFlows>			-	
>>>MBS QoS Flow Identifier	M		QoS Flow Identifier 9.3.1.63		-	
>>>MBS QoS Flow Level QoS Parameters	M		QoS Flow Level QoS Parameters 9.3.1.45		-	
>>BC Bearer Context F1-U TNL Info at CU	M		BC Bearer Context F1-U TNL Info 9.3.2.7	gNB-CU endpoint(s) of the F1 transport bearer(s). For	-	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				delivery of F1-U PDU Type 1.		
Broadcast MRB To Be Modified List		0..1			YES	reject
>Broadcast MRB to Be Modified Item IEs		1 .. <maxnoof MRBs>			EACH	reject
>>MRB ID	M		MRB ID 9.3.1.224		-	
>>MRB QoS Information	O		QoS Flow Level QoS Parameters 9.3.1.45		-	
>>MBS QoS Flows Mapped to MRB Item		0 .. <maxnoof MBSQoSFlows>			-	
>>>MBS QoS Flow Identifier	M		QoS Flow Identifier 9.3.1.63		-	
>>>MBS QoS Flow Level QoS Parameters	M		QoS Flow Level QoS Parameters 9.3.1.45		-	
>>BC Bearer Context F1-U TNL Info at CU	O		BC Bearer Context F1-U TNL Info 9.3.2.7	Updated gNB-CU endpoint(s) of the F1 transport bearer(s). For delivery of F1-U PDU Type 1.	-	
Broadcast MRB To Be Released List		0..1			YES	reject
>Broadcast MRB to Be Released Item IEs		1 .. <maxnoof MRBs>			YES	reject
>>MRB ID	M		MRB ID 9.3.1.224		-	

Range bound	Explanation
<i>maxnoofMRBs</i>	Maximum no. of MRB allowed to be setup for one MBS Session, the maximum value is 32.
<i>maxnoofMBSQoSFlows</i>	Maximum no. of flows allowed to be mapped to one MRB, the maximum value is 64.

9.2.13.7 BROADCAST CONTEXT MODIFICATION RESPONSE

This message is sent by the gNB-DU to confirm the modification of a broadcast context.

Direction: gNB-DU → gNB-CU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
gNB-CU MBS F1AP ID	M		9.3.1.219		YES	reject
gNB-DU MBS F1AP ID	M		9.3.1.220		YES	reject
Broadcast MRB Setup List		0..1			YES	reject
>Broadcast MRB Setup Item IEs		1 .. <maxnoof MRBs>			EACH	reject
>>MRB ID	M		MRB ID 9.3.1.224		-	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
>>BC Bearer Context F1-U TNL Info at DU	M		BC Bearer Context F1-U TNL Info 9.3.2.7	gNB-DU endpoint(s) of the F1-U transport bearer(s). For delivery of DL PDUs.	-	
Broadcast MRB Failed To Be Setup List		0..1			YES	ignore
>Broadcast MRB Failed To Be Setup Item IEs		1 .. <maxnoof MRBs>			EACH	ignore
>>MRB ID	M		MRB ID 9.3.1.224		-	
>>Cause	O		9.3.1.2		-	
Broadcast MRB Modified List		0..1			YES	reject
>Broadcast MRB Modified Item IEs		1 .. <maxnoof MRBs>			EACH	reject
>>MRB ID	M		MRB ID 9.3.1.224		-	
>>BC Bearer Context F1-U TNL Info at DU	O		BC Bearer Context F1-U TNL Info 9.3.2.7	Updated gNB-DU endpoint(s) of the F1-U transport bearer(s). For delivery of DL PDUs.	-	
Broadcast MRB Failed To Be Modified List		0..1			YES	ignore
>Broadcast MRB Failed To Be Modified Item IEs		1 .. <maxnoof MRBs>			EACH	ignore
>>MRB ID	M		MRB ID 9.3.1.224		-	
>>Cause	O		9.3.1.2		-	
Criticality Diagnostics	O		9.3.1.3		YES	ignore
Broadcast Area Scope	O		9.3.1.287		YES	ignore

Range bound	Explanation
<i>maxnoofMRBs</i>	Maximum no. of MRB allowed to be setup for one MBS Session, the maximum value is 32.

9.2.13.8 BROADCAST CONTEXT MODIFICATION FAILURE

This message is sent by the gNB-DU to indicate a broadcast context modification failure.

Direction: gNB-DU → gNB-CU

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
gNB-CU MBS F1AP ID	M		9.3.1.219		YES	reject
gNB-DU MBS F1AP ID	M		9.3.1.220		YES	reject
Cause	M		9.3.1.2		YES	ignore
Criticality Diagnostics	O		9.3.1.3		YES	ignore

9.2.14 Multicast Context Management messages

9.2.14.1 MULTICAST GROUP PAGING

This message is sent by the gNB-CU and is used to request the gNB-DU to multicast group page UEs.

Direction: gNB-CU → gNB-DU

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	ignore
MBS Session ID	M		9.3.1.218		YES	reject
UE Identity List for Paging		0..1			YES	ignore
>UE Identity for Paging Item		1..<maxno ofUEIDfor Paging>			-	
>>UE Identity Index value	M		9.3.1.39		-	
>>Paging DRX	O		9.3.1.40		-	
MC Paging Cell List		0..1			YES	ignore
>MC Paging Cell Item IEs		1 .. <maxno of PagingCells>			EACH	ignore
>>NR CGI	M		9.3.1.12		-	

Range bound	Explanation
maxno ofUEIDforPaging	Maximum no. of UE ID for multicast group paging. Value is 4096.
maxno ofPagingCells	Maximum no. of paging cells, the maximum value is 512.

9.2.14.2 MULTICAST CONTEXT SETUP REQUEST

This message is sent by the gNB-CU to request the setup of an MBS session context for a multicast session, and establish an MBS-associated logical F1-connection.

Direction: gNB-CU → gNB-DU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
gNB-CU MBS F1AP ID	M		9.3.1.219		YES	reject
MBS Session ID	M		9.3.1.218		YES	reject
MBS Service Area	O		9.3.1.222		YES	reject
S-NSSAI	M		9.3.1.38		YES	reject
Multicast MRBs To Be Setup List		1			YES	reject
>Multicast MRBs to Be Setup Item IEs		1 .. <maxno of MRBs>			EACH	reject
>>MRB ID	M		MRB ID 9.3.1.224		-	
>>MRB QoS Information	M		QoS Flow Level QoS Parameters 9.3.1.45		-	
>>MBS QoS Flows Mapped to MRB Item		1 .. <maxno of MBSQoSFlows>			-	
>>>MBS QoS Flow Identifier	M		QoS Flow Identifier 9.3.1.63		-	
>>>MBS QoS Flow Level QoS Parameters	M		QoS Flow Level QoS Parameters 9.3.1.45		-	
>>DL PDCP SN	M		ENUMERATED		-	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Length			(12bits, 18bits, ...)			

Range bound	Explanation
<i>maxnoofMRBs</i>	Maximum no. of MRB allowed to be setup for one MBS Session, the maximum value is 32.
<i>maxnoofMBSQoSFlows</i>	Maximum no. of flows allowed to be mapped to one MRB, the maximum value is 64.

9.2.14.3 MULTICAST CONTEXT SETUP RESPONSE

This message is sent by the gNB-DU to confirm the setup of a multicast context.

Direction: gNB-DU → gNB-CU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
gNB-CU MBS F1AP ID	M		9.3.1.219		YES	reject
gNB-DU MBS F1AP ID	M		9.3.1.220		YES	reject
Multicast MRB Setup List		1			YES	reject
>Multicast MRB Setup Item IEs		1 .. < <i>maxnoofMRBs</i> >			EACH	Reject
>>MRB ID	M		MRB ID 9.3.1.224		-	
Multicast MRB Failed To Be Setup List		0..1			YES	ignore
>Multicast MRB Failed To Be Setup Item IEs		1 .. < <i>maxnoofMRBs</i> >			EACH	ignore
>>MRB ID	M		MRB ID 9.3.1.224		-	
>>Cause	O		9.3.1.2		-	
Criticality Diagnostics	O		9.3.1.3		YES	ignore

Range bound	Explanation
<i>maxnoofMRBs</i>	Maximum no. of MRB allowed to be setup for one MBS Session, the maximum value is 32.

9.2.14.4 MULTICAST CONTEXT SETUP FAILURE

This message is sent by the gNB-DU to indicate that the setup of the multicast context was unsuccessful.

Direction: gNB-DU → gNB-CU

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
gNB-CU MBS F1AP ID	M		9.3.1.219		YES	reject
gNB-DU MBS F1AP ID	O		9.3.1.220		YES	ignore
Cause	M		9.3.1.2		YES	ignore
Criticality Diagnostics	O		9.3.1.3		YES	ignore

9.2.14.5 MULTICAST CONTEXT RELEASE COMMAND

This message is sent by the gNB-CU to request the gNB-DU to release the multicast context for a given multicast service.

Direction: gNB-CU → gNB-DU

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
gNB-CU MBS F1AP ID	M		9.3.1.219		YES	reject
gNB-DU MBS F1AP ID	M		9.3.1.220		YES	reject
Cause	M		9.3.1.2		YES	ignore

9.2.14.6 MULTICAST CONTEXT RELEASE COMPLETE

This message is sent by the gNB-DU to confirm the release of the multicast context for a given multicast service.

Direction: gNB-DU → gNB-CU

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
gNB-CU MBS F1AP ID	M		9.3.1.219		YES	reject
gNB-DU MBS F1AP ID	M		9.3.1.220		YES	reject
Criticality Diagnostics	O		9.3.1.3		YES	ignore

9.2.14.6a MULTICAST CONTEXT RELEASE REQUEST

This message is sent by the gNB-DU to request the gNB-CU to trigger the Multicast Context Release procedure.

Direction: gNB-DU → gNB-CU

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
gNB-CU MBS F1AP ID	M		9.3.1.219		YES	reject
gNB-DU MBS F1AP ID	M		9.3.1.220		YES	reject
Cause	M		9.3.1.2		YES	ignore

9.2.14.7 MULTICAST CONTEXT MODIFICATION REQUEST

This message is sent by the gNB-CU to request the gNB-DU to modify multicast context information.

Direction: gNB-CU → gNB-DU

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
gNB-CU MBS F1AP ID	M		9.3.1.219		YES	reject
gNB-DU MBS F1AP ID	M		9.3.1.220		YES	reject
MBS Service Area	O		9.3.1.222		YES	reject
Multicast MRB To Be Setup List		0..1			YES	reject
>Multicast MRB to Be Setup Item IEs		1 .. <maxnoof MRBs>			EACH	reject
>>MRB ID	M		9.3.1.224		-	
>>MRB QoS Information	M		QoS Flow Level QoS Parameters 9.3.1.45		-	
>>MBS QoS Flows Mapped to MRB		1 .. <maxnoof			-	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Item		<i>MBSQoSFlows</i>				
>>>MBS QoS Flow Identifier	M		QoS Flow Identifier 9.3.1.63		-	
>>>MBS QoS Flow Level QoS Parameters	M		QoS Flow Level QoS Parameters 9.3.1.45		-	
>>DL PDCP SN Length	M		ENUMERATED (12bits, 18bits, ...)		-	
Multicast MRB To Be Modified List		<i>0..1</i>			YES	reject
>Multicast MRB to Be Modified Item IEs		<i>1 .. <maxnoof MRBs></i>			EACH	reject
>>MRB ID	M		9.3.1.224		-	
>>MRB QoS Information	O		QoS Flow Level QoS Parameters 9.3.1.45		-	
>>MBS QoS Flows Mapped to MRB Item		<i>0 .. <maxnoof MBSQoSFlows></i>			-	
>>>MBS QoS Flow Identifier	M		QoS Flow Identifier 9.3.1.63		-	
>>>MBS QoS Flow Level QoS Parameters	M		QoS Flow Level QoS Parameters 9.3.1.45		-	
>>DL PDCP SN Length	O		ENUMERATED (12bits, 18bits, ...)		-	
Multicast MRB To Be Released List		<i>0..1</i>			YES	reject
>Multicast MRB to Be Released Item IEs		<i>1 .. <maxnoof MRBs></i>			YES	reject
>>MRB ID	M		9.3.1.224		-	

Range bound	Explanation
<i>maxnoofMRBs</i>	Maximum no. of MRB allowed to be setup for one MBS Session, the maximum value is 32.
<i>maxnoofMBSQoSFlows</i>	Maximum no. of flows allowed to be mapped to one MRB, the maximum value is 64.

9.2.14.8 MULTICAST CONTEXT MODIFICATION RESPONSE

This message is sent by the gNB-DU to confirm the modification of a multicast context.

Direction: gNB-DU → gNB-CU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
gNB-CU MBS F1AP ID	M		9.3.1.219		YES	reject
gNB-DU MBS F1AP ID	M		9.3.1.220		YES	reject
Multicast MRB Setup List		<i>0..1</i>			YES	reject

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
>Multicast MRB Setup Item IEs		1 .. <maxnoof MRBs>			EACH	reject
>>MRB ID	M		9.3.1.224		-	
Multicast MRB Failed To Be Setup List		0..1			YES	ignore
>Multicast MRB Failed To Be Setup Item IEs		1 .. <maxnoof MRBs>			EACH	ignore
>>MRB ID	M		9.3.1.224		-	
>>Cause	O		9.3.1.2		-	
Multicast MRB Modified List		0..1			YES	reject
>Multicast MRB Modified Item IEs		1 .. <maxnoof MRBs>			EACH	reject
>>MRB ID	M		9.3.1.224		-	
Multicast MRB Failed To Be Modified List		0..1			YES	ignore
>Multicast MRB Failed To Be Modified Item IEs		1 .. <maxnoof MRBs>			EACH	ignore
>>MRB ID	M		9.3.1.224		-	
>>Cause	O		9.3.1.2		-	
Criticality Diagnostics	O		9.3.1.3		YES	ignore

Range bound	Explanation
<i>maxnoofMRBs</i>	Maximum no. of MRB allowed to be setup for one MBS Session, the maximum value is 32.

9.2.14.9 MULTICAST CONTEXT MODIFICATION FAILURE

This message is sent by the gNB-DU to indicate a multicast context modification failure.

Direction: gNB-DU → gNB-CU

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
gNB-CU MBS F1AP ID	M		9.3.1.219		YES	reject
gNB-DU MBS F1AP ID	M		9.3.1.220		YES	reject
Cause	M		9.3.1.2		YES	ignore
Criticality Diagnostics	O		9.3.1.3		YES	ignore

9.2.14.10 MULTICAST DISTRIBUTION SETUP REQUEST

This message is sent by the gNB-DU to request the setup of a Multicast F1-U Context.

Direction: gNB-DU → gNB-CU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
gNB-CU MBS F1AP ID	M		9.3.1.219		YES	reject
gNB-DU MBS F1AP ID	M		9.3.1.220		YES	reject
MBS Multicast F1-U Context Descriptor	M		9.3.2.8		YES	reject
Multicast F1-U Context To Be Setup List		1			YES	reject

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
>Multicast F1-U Context To Be Setup Item		1 .. <maxnoof MRBs>			EACH	reject
>>MRB ID	M		9.3.1.224		-	
>>MRB F1-U TNL Info at DU	M		UP Transport Layer Information 9.3.2.1	gNB-DU endpoint of the F1-U transport bearer.	-	
>>MRB Progress Information	C- ifPTPForw arding		9.3.2.12		-	

Range bound	Explanation
maxnoofMRBs	Maximum no. of MRB allowed to be setup for one MBS Session, the maximum value is 32.
maxnoofMBSQoSFlows	Maximum no. of flows allowed to be mapped to one MRB, the maximum value is 64.

Condition	Explanation
ifPTPForwarding	This IE shall be present if the <i>MC F1-U Context usage</i> IE in the <i>MBS Multicast F1-U Context Descriptor</i> IE is set to "ptp forwarding".

9.2.14.11 MULTICAST DISTRIBUTION SETUP RESPONSE

This message is sent by the gNB-CU to confirm the setup of a Multicast F1-U Context.

Direction: gNB-CU → gNB-DU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
gNB-CU MBS F1AP ID	M		9.3.1.219		YES	reject
gNB-DU MBS F1AP ID	M		9.3.1.220		YES	reject
MBS Multicast F1-U Context Descriptor	M		9.3.2.8		YES	reject
Multicast F1-U Context Setup List		1			YES	reject
>Multicast F1-U Context Setup Item IEs		1 .. <maxnoof MRBs>			EACH	reject
>>MRB ID	M		9.3.1.224		-	
>>MRB F1-U TNL Info at CU	M		UP Transport Layer Information 9.3.2.1	gNB-CU endpoint of the F1-U transport bearer.	-	
Multicast F1-U Context Failed To Be Setup List		0..1			YES	ignore
>Multicast F1-U Context Failed To Be Setup Item IEs		1 .. <maxnoof MRBs>			EACH	ignore
>>MRB ID	M		9.3.1.224		-	
>>Cause	O		9.3.1.2		-	
Criticality Diagnostics	O		9.3.1.3		YES	ignore
Multicast F1-U Context Reference CU	M		9.3.2.13		YES	reject

Range bound	Explanation
<i>maxnoofMRBs</i>	Maximum no. of MRB allowed to be setup for one MBS Session, the maximum value is 32.

9.2.14.12 MULTICAST DISTRIBUTION SETUP FAILURE

This message is sent by the gNB-DU to indicate that the setup of the Multicast F1-U Context was unsuccessful.

Direction: gNB-CU → gNB-DU

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
gNB-CU MBS F1AP ID	M		9.3.1.219		YES	reject
gNB-DU MBS F1AP ID	O		9.3.1.220		YES	ignore
MBS Multicast F1-U Context Descriptor	M		9.3.2.8		YES	reject
Cause	M		9.3.1.2		YES	ignore
Criticality Diagnostics	O		9.3.1.3		YES	ignore

9.2.14.13 MULTICAST DISTRIBUTION RELEASE COMMAND

This message is sent by the gNB-DU to request the gNB-CU to release the Multicast F1-U Context for a given multicast MBS Session.

Direction: gNB-DU → gNB-CU

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
gNB-CU MBS F1AP ID	M		9.3.1.219		YES	reject
gNB-DU MBS F1AP ID	M		9.3.1.220		YES	reject
MBS Multicast F1-U Context Descriptor	M		9.3.2.8		YES	reject
Cause	M		9.3.1.2		YES	ignore

9.2.14.14 MULTICAST DISTRIBUTION RELEASE COMPLETE

This message is sent by the gNB-CU to confirm the release of the Multicast F1-U Context.

Direction: gNB-CU → gNB-DU

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
gNB-CU MBS F1AP ID	M		9.3.1.219		YES	reject
gNB-DU MBS F1AP ID	M		9.3.1.220		YES	reject
MBS Multicast F1-U Context Descriptor	M		9.3.2.8		YES	reject
Criticality Diagnostics	O		9.3.1.3		YES	ignore

9.2.15 PDC Measurement Reporting messages

9.2.15.1 PDC MEASUREMENT INITIATION REQUEST

This message is sent by gNB-CU to initiate PDC measurements.

Direction: gNB-CU → gNB-DU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
gNB-CU UE F1AP ID	M		9.3.1.4		YES	reject
gNB-DU UE F1AP ID	M		9.3.1.5		YES	reject
RAN UE PDC Measurement ID	M		INTEGER (1..16, ...)		YES	reject
PDC Report Type	M		ENUMERATED (OnDemand, Periodic, ...)		YES	reject
PDC Measurement Periodicity	C-ifReportTypePeriodic		ENUMERATED (80ms, 120ms, 160ms, 240ms, 320ms, 480ms, 640ms, 1024ms, 1280ms, 2048ms, 2560ms, 5120ms, ...)		YES	reject
PDC Measurement Quantities		1 .. <maxnoMeasPDC>			EACH	reject
>PDC Measurement Quantities Item	M		ENUMERATED (NR PDC TADV, gNB RX-TX, ...)		-	

Range bound	Explanation
maxnoMeasPDC	Maximum no. of PDC measured quantities that can be configured and reported with one message. Value is 16. Maximum is 1 in this release.

Condition	Explanation
ifReportTypePeriodic	This IE shall be present if the PDC Report Type IE is set to the value "Periodic".

9.2.15.2 PDC MEASUREMENT INITIATION RESPONSE

This message is sent by gNB-DU to indicate that the requested PDC measurement is successfully initiated.

Direction: gNB-DU → gNB-CU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
gNB-CU UE F1AP ID	M		9.3.1.4		YES	reject
gNB-DU UE F1AP ID	M		9.3.1.5		YES	reject
RAN UE PDC Measurement ID	M		INTEGER (1..16, ...)		YES	reject
PDC Measurement Result	O		9.3.1.232		YES	ignore
Criticality Diagnostics	O		9.3.1.3		YES	ignore

9.2.15.3 PDC MEASUREMENT INITIATION FAILURE

This message is sent by gNB-DU to indicate that the requested PDC measurement cannot be initiated.

Direction: gNB-DU → gNB-CU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	reject
gNB-CU UE F1AP ID	M		9.3.1.4		YES	reject
gNB-DU UE F1AP ID	M		9.3.1.5		YES	reject
RAN UE PDC Measurement ID	M		INTEGER (1..16, ...)		YES	ignore
Cause	M		9.3.1.2		YES	ignore
Criticality Diagnostics	O		9.3.1.3		YES	ignore

9.2.15.4 PDC MEASUREMENT REPORT

This message is sent by gNB-DU to report the results of the requested PDC measurement.

Direction: gNB-DU → gNB-CU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	ignore
gNB-CU UE F1AP ID	M		9.3.1.4		YES	reject
gNB-DU UE F1AP ID	M		9.3.1.5		YES	reject
RAN UE PDC Measurement ID	M		INTEGER (1..16, ...)		YES	reject
PDC Measurement Result	M		9.3.1.232		YES	ignore

9.2.15.5 PDC MEASUREMENT TERMINATION COMMAND

This message is sent by the gNB-CU to request the gNB-DU to terminate an ongoing periodical PDC measurement.

Direction: gNB-CU → gNB-DU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	ignore
gNB-CU UE F1AP ID	M		9.3.1.4		YES	reject
gNB-DU UE F1AP ID	M		9.3.1.5		YES	reject
RAN UE PDC Measurement ID	M		INTEGER (1..16, ...)		YES	ignore

9.2.15.6 PDC MEASUREMENT FAILURE INDICATION

This message is sent by the gNB-DU to indicate that the previously requested PDC measurements can no longer be reported.

Direction: gNB-DU → gNB-CU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	ignore
gNB-CU UE F1AP ID	M		9.3.1.4		YES	reject
gNB-DU UE F1AP ID	M		9.3.1.5		YES	reject
RAN UE PDC Measurement ID	M		INTEGER (1..16, ...)		YES	ignore
Cause	M		9.3.1.2		YES	ignore

9.2.16 QMC messages

9.2.16.1 QOE INFORMATION TRANSFER

This message is sent by a gNB-CU to a gNB-DU, to indicate information related to RAN visible QoE.

Direction: gNB-CU → gNB-DU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.3.1.1		YES	ignore
gNB-CU UE F1AP ID	M		9.3.1.4		YES	reject
gNB-DU UE F1AP ID	M		9.3.1.5		YES	reject
QoE Information List			<i>0..1</i>		YES	ignore
>QoE Information Item			<i>1..<maxnoofQoEInformation></i>		EACH	ignore
>>QoE Metrics	O		9.3.1.260		-	-

Range bound	Explanation
maxnoofQoEInformation	Maximum no. of QoE information for one UE, the maximum value is 16.

9.3 Information Element Definitions

9.3.1 Radio 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 F1AP protocol.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
CHOICE <i>Cause Group</i>	M			
>Radio Network Layer				
>>Radio Network Layer Cause	M		ENUMERATED (Unspecified, RL failure-RLC, Unknown or already allocated gNB-CU UE F1AP ID, Unknown or already allocated gNB-DU UE F1AP ID, Unknown or inconsistent pair of UE F1AP ID, Interaction with other procedure,	

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
			Not supported QCI Value, Action Desirable for Radio Reasons, No Radio Resources Available, Procedure cancelled, Normal Release, ..., Cell not available, RL failure-others, UE rejection, Resources not available for the slice(s), AMF initiated abnormal release, Release due to Pre-Emption, PLMN not served by the gNB-CU, Multiple DRB ID Instances, Unknown DRB ID, Multiple BH RLC CH ID Instances, Unknown BH RLC CH ID, CHO-CPC resources to be changed, NPN not supported, NPN access denied, gNB-CU Cell Capacity Exceeded, Report Characteristics Empty, Existing Measurement ID, Measurement Temporarily not Available, Measurement not Supported For The Object, Unknown BAP address, Unknown BAP routing ID, Insufficient UE Capabilities, SCG activation deactivation failure, SCG deactivation failure due to data transmission, Requested Item not Supported on Time, Unknown or already allocated gNB-CU MBS F1AP ID, Unknown or already allocated gNB-DU MBS F1AP ID, Unknown or inconsistent pair of MBS F1AP ID, Unknown or inconsistent MRB	

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
			ID, TAT-SDT expiry)	
<i>>Transport Layer</i>				
>>Transport Layer Cause	M		ENUMERATED (Unspecified, Transport Resource Unavailable, ... , Unknown TNL address for IAB, Unknown UP TNL information for IAB)	
<i>>Protocol</i>				
>>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, ...)	
<i>>Misc</i>				
>>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.
RL Failure-RLC	The action is due to an RL failure caused by exceeding the maximum number of ARQ retransmissions.
Unknown or already allocated gNB-CU UE F1AP ID	The action failed because the gNB-CU UE F1AP 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-DU UE F1AP ID	The action failed because the gNB-DU UE F1AP ID is either unknown, or (for a first message received at the gNB-DU) is known and already allocated to an existing context.
Unknown or inconsistent pair of UE F1AP ID	The action failed because both UE F1AP 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.
Not supported QCI Value	The action failed because the requested QCI is not supported.
Action Desirable for Radio Reasons	The reason for requesting the action is radio related.
No Radio Resources Available	The cell(s) in the requested node don't have sufficient radio resources available.
Procedure cancelled	The sending node cancelled the procedure due to other urgent actions to be performed.

Radio Network Layer cause	Meaning
Normal Release	The action is due to a normal release of the UE (e.g. because of mobility) and does not indicate an error.
Cell Not Available	The action failed due to no cell available in the requested node.
RL Failure-others	The action is due to an RL failure caused by other radio link failures than exceeding the maximum number of ARQ retransmissions.
UE rejection	The action is due to gNB-CU's rejection of a UE access request.
Resources not available for the slice(s)	The requested resources are not available for the slice(s).
AMF initiated abnormal release	The release is triggered by an error in the AMF or in the NAS layer.
Release due to Pre-Emption	Release is initiated due to pre-emption.
PLMN not served by the gNB-CU	The PLMN indicated by the UE is not served by the gNB-CU.
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 unknown.
Multiple BH RLC CH ID Instances	The action failed because multiple instances of the same BH RLC CH ID had been provided. This cause value is only applicable to IAB.
Unknown BH RLC CH ID	The action failed because the BH RLC CH ID is unknown. This cause value is only applicable to IAB.
CHO-CPC resources to be changed	The gNB-DU requires gNB-CU to replace, i.e. overwrite the configuration of indicated candidate target cell.
NPN not supported	The action fails because the indicated SNPN is not supported in the node.
NPN access denied	The action is due to rejection of a UE access request for NPN.
gNB-CU Cell Capacity Exceeded	The number of cells requested to be added was exceeding maximum cell capacity in the gNB-CU.
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-DU 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.
Unknown BAP address	The action failed because the BAP address is unknown. This cause value is only applicable to IAB.
Unknown BAP routing ID	The action failed because the BAP routing ID is unknown. This cause value is only applicable to IAB.
Insufficient UE Capabilities	The setup can't proceed due to insufficient UE capabilities.
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 failure due to ongoing or arriving data transmission.
Requested Item not Supported on Time	The gNB-DU is unable to provide the measurement results on time.
Unknown or already allocated gNB-CU MBS F1AP ID	The action failed because the gNB-CU MBS F1AP 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-DU MBS F1AP ID	The action failed because the gNB-DU MBS F1AP ID is either unknown, or (for a first message received at the gNB-DU) is known and already allocated to an existing context.
Unknown or inconsistent pair of MBS F1AP ID	The action failed because both MBS F1AP 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.
TAT-SDT expiry	The UE context release is requested from the gNB-DU due to the expiry of the Timing Alignment timer for CG-SDT.

Transport Layer cause	Meaning
Unspecified	Sent when none of the above cause values applies but still the cause is Transport Network Layer related.

Transport Layer cause	Meaning
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 only applicable to IAB.
Unknown UP TNL information for IAB	The action failed because the UP TNL information is unknown. This cause value is only applicable to IAB.

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 Enough User 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 or Protocol.

9.3.1.3 Criticality Diagnostics

The *Criticality Diagnostics* IE is sent by the gNB-DU or the gNB-CU 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.

For further details on how to use the *Criticality Diagnostics* IE, (see clause 10). The conditions for inclusion of the *Transaction ID* IE are described in 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		9.3.1.23	
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/Group Name	Presence	Range	IE type and reference	Semantics description
>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 UE F1AP ID

The gNB-CU UE F1AP ID uniquely identifies the UE association over the F1 interface within the gNB-CU.

NOTE: If F1-C signalling transport is shared among multiple interface instances, the value of the gNB-CU UE F1AP ID is allocated so that it can be associated with the corresponding F1-C interface instance.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
gNB-CU UE F1AP ID	M		INTEGER (0 .. 2 ³² - 1)	

9.3.1.5 gNB-DU UE F1AP ID

The gNB-DU UE F1AP ID uniquely identifies the UE association over the F1 interface within the gNB-DU.

NOTE: If F1-C signalling transport is shared among multiple interface instances, the value of the gNB-DU UE F1AP ID is allocated so that it can be associated with the corresponding F1-C interface instance.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
gNB-DU UE F1AP ID	M		INTEGER (0 .. 2 ³² - 1)	

9.3.1.6 RRC-Container

This information element contains a gNB-CU→UE or a UE → gNB-CU message that is transferred without interpretation in the gNB-DU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
RRC-Container	M		OCTET STRING	

9.3.1.7 SRB ID

This IE uniquely identifies a SRB for a UE.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
SRB ID	M		INTEGER (0..3, ..., 4)	Corresponds to the identities of SRB as defined in TS 38.331 [8]. Value 0 indicates SRB0, value 1 indicates SRB1, etc.

9.3.1.8 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, ...)	Corresponds to the <i>DRB-Identity</i> defined in TS 38.331 [8].

9.3.1.9 gNB-DU ID

The gNB-DU ID uniquely identifies the 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 .. 2 ³⁶ -1)	The gNB-DU ID is independently configured from cell identifiers, i.e. no connection between gNB-DU ID and cell identifiers.

9.3.1.10 Served Cell Information

This IE contains cell configuration information of a cell in the gNB-DU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
NR CGI	M		9.3.1.12		-	
NR PCI	M		INTEGER (0..1007)	Physical Cell ID	-	
5GS TAC	O		9.3.1.29	5GS Tracking Area Code	-	
Configured EPS TAC	O		9.3.1.29a		-	
Served PLMNs		<i>1..<maxno ofBPLMNs></i>		Broadcast PLMNs in SIB 1 associated to the NR Cell Identity in the <i>NR CGI</i> IE	-	
>PLMN Identity	M		9.3.1.14		-	
>TAI Slice Support List	O		Slice Support List 9.3.1.37	Supported S-NSSAIs per PLMN or per SNPN.	YES	ignore
>NPN Support Information	O		9.3.1.156	Supported NPNs per PLMN.	YES	reject
>Extended TAI Slice Support List	O		Extended Slice Support List 9.3.1.165	Additional Supported S-NSSAIs per PLMN or per SNPN.	YES	reject
>TAI NSAG Support List	O		9.3.1.273	NSAG information associated with the slices per TAC, per PLMN or per SNPN.	YES	ignore
CHOICE <i>NR-Mode-Info</i>	M				-	
> <i>FDD</i>					-	
>> FDD Info		<i>1</i>			-	
>>>UL FreqInfo	M		NR Frequency Info 9.3.1.17	This IE is ignored if the <i>Cell Direction</i> IE is included and set to "dl-only".	-	
>>>DL FreqInfo	M		NR Frequency Info 9.3.1.17	This IE is ignored if the <i>Cell Direction</i> IE is included and set to "ul-only".	-	
>>>UL Transmission Bandwidth	M		Transmission Bandwidth 9.3.1.15	This IE is ignored if the <i>Cell Direction</i> IE is included and	-	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				set to "dl-only".		
>>>DL Transmission Bandwidth	M		Transmission Bandwidth 9.3.1.15	This IE is ignored if the <i>Cell Direction</i> IE is included and set to "ul-only".	-	
>>>UL Carrier List	O		NR Carrier List 9.3.1.137	If included, the <i>UL Transmission Bandwidth</i> IE shall be ignored.	YES	ignore
>>>DL Carrier List	O		NR Carrier List 9.3.1.137	If included, the <i>DL Transmission Bandwidth</i> IE shall be ignored.	YES	ignore
>TDD					-	
>>TDD Info		1			-	
>>>NR FreqInfo	M		NR Frequency Info 9.3.1.17		-	
>>>Transmission Bandwidth	M		Transmission Bandwidth 9.3.1.15	This IE is ignored if the <i>Transmission Bandwidth asymmetric</i> IE is present.	-	
>>>Intended TDD DL-UL Configuration	O		9.3.1.89		YES	ignore
>>>TDD UL-DL Configuration Common NR	O		OCTET STRING	Includes the <i>tdd-UL-DL-ConfigurationCommon</i> contained in the <i>ServingCellConfigCommon</i> IE as defined in TS 38.331 [8]	YES	ignore
>>>Carrier List	O		NR Carrier List 9.3.1.137	If included, the <i>Transmission Bandwidth</i> IE shall be ignored.	YES	ignore
>>>Transmission Bandwidth asymmetric		0..1		Indicates the asymmetric UL and DL transmission bandwidth.	YES	ignore
>>>>UL Transmission Bandwidth	M		Transmission Bandwidth 9.3.1.15	.	—	
>>>>DL Transmission Bandwidth	M		Transmission Bandwidth 9.3.1.15		—	
>NR-U					YES	ignore
>>NR-U Channel Info List		1..<maxnoofNR-UChannelIDs>			-	
>>>NR-U Channel Info Item					-	
>>>>NR-U Channel ID	M		INTEGER (1..maxnoofNR-UChannelIDs, ...)	Index to uniquely identify the part of the NR-U Channel Bandwidth consisting of a contiguous set of resource blocks (RBs) on which a channel access	-	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				procedure is performed in shared spectrum. Value 1 represents the first part of the NR-U Channel Bandwidth on which a channel access procedure is performed. Value 2 represents the second part of the NR-U Channel Bandwidth on which a channel access procedure is performed, and so on.		
>>>>NR-U ARFCN	M		INTEGER (0..maxNRARFCN)	It represents the centre frequency of the NR-U Channel Bandwidth for NR bands restricted to operation with shared spectrum channel access, as defined in TS 37.213 [46]. Allowed values are specified in TS 38.101-1 [26] in Table 5.4.2.3-2, Table 5.4.2.3-3 and Table 5.4.2.3-4.	-	
>>>>NR-U Channel Bandwidth	M		ENUMERATED (10MHz, 20MHz, 40MHz, 60 MHz, 80 MHz, ..., 100MHz)		-	
Measurement Timing Configuration	M		OCTET STRING	Includes the <i>MeasurementTimingConfiguration</i> inter-node message defined in TS 38.331 [8].	-	
RANAC	O		RAN Area Code 9.3.1.57		YES	ignore
Extended Served PLMNs List		0..1		This is included if more than 6 Served PLMNs is to be signalled.	YES	ignore
>Extended Served PLMNs Item		1 ..<maxnumberOfExtendedBPLMNs>			-	
>>PLMN Identity	M		9.3.1.14		-	
>>TAI Slice Support List	O		Slice Support List 9.3.1.37	Supported S-NSSAIs per PLMN or per SNPN.	-	
>>NPN Support	O		9.3.1.156	Supported NPNs	YES	reject

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Information				per PLMN.		
>>Extended TAI Slice Support List	O		Extended Slice Support List 9.3.1.165	Additional Supported S-NSSAIs per PLMN or per SNPN.	YES	reject
>TAI NSAG Support List	O		9.3.1.273	NSAG information associated with the slices per TAC, per PLMN or per SNPN.	YES	ignore
Cell Direction	O		9.3.1.78		YES	ignore
Broadcast PLMN Identity Info List		<i>0..<maxno ofBPLMNs NR></i>		This IE corresponds to the <i>PLMN-IdentityInfoList</i> IE and the <i>NPN-IdentityInfoList</i> IE (if available) in <i>SIB1</i> as specified in TS 38.331 [8]. All PLMN Identities and associated information contained in the <i>PLMN-IdentityInfoList</i> IE and NPN identities and associated information contained in the <i>NPN-IdentityInfoList</i> IE (if available) are included and provided in the same order as broadcast in <i>SIB1</i> . NOTE: In case of NPN-only cell, the PLMN Identities and associated information contained in the <i>PLMN-IdentityInfoList</i> IE are not included.	YES	ignore
Cell Type	O		9.3.1.87		YES	ignore
>PLMN Identity List	M		Available PLMN List 9.3.1.65	Broadcast PLMN IDs in <i>SIB1</i> associated to the <i>NR Cell Identity</i> IE	-	
>Extended PLMN Identity List	O		Extended Available PLMN List 9.3.1.76		-	
>5GS-TAC	O		OCTET STRING (3)		-	
>NR Cell Identity	M		BIT STRING (36)		-	
>RANAC	O		RAN Area Code 9.3.1.57		-	
>Configured TAC Indication	O		9.3.1.87a	NOTE: This IE is associated with the 5GS TAC in the <i>Broadcast</i>	YES	ignore

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				<i>PLMN Identity Info List IE</i>		
>NPN Broadcast Information	O		9.3.1.157	If this IE is included the content of the <i>PLMN Identity List IE</i> and <i>Extended PLMN Identity List IE</i> if present in the <i>Broadcast PLMN Identity Info List IE</i> is ignored.	YES	reject
Configured TAC Indication	O		9.3.1.87a	NOTE: This IE is associated with the 5GS TAC on top-level of the <i>Served Cell Information IE</i>	YES	ignore
Aggressor gNB Set ID	O		9.3.1.93	This IE indicates the associated aggressor gNB Set ID of the cell	YES	ignore
Victim gNB Set ID	O		9.3.1.93	This IE indicates the associated Victim gNB Set ID of the cell	YES	ignore
IAB Info IAB-DU	O		9.3.1.106		YES	ignore
SSB Positions In Burst	O		9.3.1.138		YES	ignore
NR PRACH Configuration	O		9.3.1.139		YES	ignore
SFN Offset	O		9.3.1.208		YES	ignore
NPN Broadcast Information	O		9.3.1.157		YES	reject
Supported MBS FSA ID List		<i>0..<maxno of MBSFS As></i>		Shall contain all MBS Frequency Selection Area Identities associated with the NR CGI.	YES	ignore
>MBS Frequency Selection Area Identity	M		OCTET STRING(3)		–	
RedCap Broadcast Information	O		BIT STRING (SIZE(8))	The presence of this IE indicates that the <i>intraFreqReselectionRedCap IE</i> is broadcast in SIB1 of the corresponding cell, see TS 38.331 [8]. Each position in the bitmap indicates which RedCap UEs are allowed access, according to the setting of RedCap barring indicators in SIB1, see TS 38.331 [8]. First bit = 1Rx, second bit = 2Rx, third bit = halfDuplex, other bits reserved for future	YES	ignore

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				use. Value '1' indicates 'access allowed'. Value '0' indicates 'access not allowed'.		

Range bound	Explanation
maxnoofBPLMNs	Maximum no. of Broadcast PLMN Ids. Value is 6.
maxnoofExtendedBPLMNs	Maximum no. of Extended Broadcast PLMN Ids. Value is 6.
maxnoofBPLMNsNR	Maximum no. of PLMN Ids.broadcast in an NR cell. Value is 12.
maxnoofNR-UChannelIDs	Maximum no. NR-U Channel IDs in a cell. Value is 16.
maxnoofMBSFSAs	Maximum no. of MBS FSAs by a cell. Value is 256.

9.3.1.11 Transmission Action Indicator

This IE indicates actions for the gNB-DU for the data transmission to the UE.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Transmission Action Indicator	M		ENUMERATED (stop, ..., restart)	

9.3.1.12 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		9.3.1.14	
NR Cell Identity	M		BIT STRING (SIZE(36))	

9.3.1.13 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)	

9.3.1.14 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

IE/Group Name	Presence	Range	IE type and reference	Semantics description
				-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).

9.3.1.15 Transmission Bandwidth

The *Transmission Bandwidth* IE is used to indicate the UL or DL transmission bandwidth.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
NR SCS	M		ENUMERATED (scs15, scs30, scs60, scs120, ... , scs480, scs960)	The values scs15, scs30, scs60, scs120, scs480 and scs960 corresponds to the sub carrier spacing in TS 38.104 [17].
NRB	M		ENUMERATED (nrb11, nrb18, nrb24, nrb25, nrb31, nrb32, nrb38, nrb51, nrb52, nrb65, nrb66, nrb78, nrb79, nrb93, nrb106, nrb107, nrb121, nrb132, nrb133, nrb135, nrb160, nrb162, nrb189, nrb216, nrb217, nrb245, nrb264, nrb270, nrb273, ..., nrb33, nrb62, nrb124, nrb148, nrb248, nrb44, nrb58, nrb92, nrb119, nrb188, nrb242)	This IE is used to indicate the UL or DL transmission bandwidth expressed in units of resource blocks "N _{RB} " (TS 38.104 [17]). The values nrb11, nrb18, etc. correspond to the number of resource blocks "N _{RB} " 11, 18, etc.

9.3.1.16 Void

Reserved for future use.

9.3.1.17 NR Frequency Info

The NR Frequency Info defines the carrier frequency used in a cell for a given direction (UL or DL) in FDD or for both UL and DL directions in TDD or for an SUL carrier.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
NR ARFCN	M		INTEGER (0.. maxNRARFCN)	RF Reference Frequency as defined in TS 38.104 [17] section 5.4.2.1. The frequency provided in this IE identifies the absolute frequency position of the reference resource block (Common RB 0) of	–	

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
				the carrier. Its lowest subcarrier is also known as Point A.		
SUL Information	O		9.3.1.28		–	
Frequency Band List		1			–	
>Frequency Band Item		1..<i>maxno ofNrCellBands</i>			–	
>>NR Frequency Band	M		INTEGER (1..1024, ...)	Operating Band as defined in TS 38.104 [17] section 5.4.2.3. The value 1 corresponds to NR operating band n1, value 2 corresponds to NR operating band n2, etc.	–	
>>Supported SUL band List		0..<i>maxno ofNrCellBands</i>			–	
>>>Supported SUL band Item	M		INTEGER (1..1024, ...)	Supplementary NR Operating Band as defined in TS 38.104 [17] section 5.4.2.3 that can be used for SUL duplex mode as per TS 38.101-1 [26] table 5.2.-1. The value 80 corresponds to NR operating band n80, value 81 corresponds to NR operating band n81, etc.	–	
Frequency Shift 7p5khz	O		ENUMERATED (false, true, ...)	Indicate whether the value of Δ_{shift} is 0kHz or 7.5kHz when calculating $F_{\text{REF,shift}}$ as defined in Section 5.4.2.1 of TS 38.104 [17].	YES	ignore

Range bound	Explanation
maxNRARFCN	Maximum value of NR ARFCNs. Value is 3279165.
maxnoofNrCellBands	Maximum no. of frequency bands supported for a NR cell. Value is 32.

9.3.1.18 gNB-DU System Information

This IE contains the system information generated by the gNB-DU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
MIB message	M		OCTET STRING	Includes the MIB message, as defined in subclause 6.2.2 in	-	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				TS 38.331 [8].		
SIB1 message	M		OCTET STRING	Includes the SIB1 message, as defined in subclause 6.2.2 in TS 38.331 [8].	-	
SIB12 message	O		OCTET STRING	Includes the SIB12 IE, as defined in subclause 6.3.1 in TS 38.331 [8].	YES	ignore
SIB13 message	O		OCTET STRING	Includes the SIB13 IE, as defined in subclause 6.3.1 in TS 38.331 [8].	YES	ignore
SIB14 message	O		OCTET STRING	Includes the SIB14 IE, as defined in subclause 6.3.1 in TS 38.331 [8].	YES	ignore
SIB10 message	O		OCTET STRING	Includes the SIB10 IE, as defined in subclause 6.3.1 in TS 38.331 [8].	YES	ignore
SIB17 message	O		OCTET STRING	Includes the SIB17 IE, as defined in subclause 6.3.1 in TS 38.331 [8].	YES	ignore
SIB20 message	O		OCTET STRING	Includes the SIB20 IE, as defined in subclause 6.3.1 in TS 38.331 [8].	YES	ignore
SIB15 message	O		OCTET STRING	Includes the SIB15 IE, as defined in subclause 6.3.1 in TS 38.331 [8].	YES	ignore

9.3.1.19 E-UTRAN QoS

This IE defines the QoS to be applied to a DRB or to a BH RLC channel 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 [10]. Logical range and coding specified in TS 23.203 [11]. For a BH RLC channel, the Packet Delay Budget included in QCI defines the upper bound for the time that a packet may be delayed between the gNB-DU and its child IAB-MT.	-	
Allocation and Retention Priority	M		9.3.1.20		-	
GBR QoS Information	O		9.3.1.21	This IE shall be present for GBR	-	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				bearers only and is ignored otherwise.		
ENB DL Transport Layer Address	O		Transport Layer Address 9.3.2.3	DL Transport Layer Address of node terminating PDCP. Included for MN-terminated SCG bearers.	YES	ignore

9.3.1.20 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 [10]). 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 (see TS 23.401 [10]). 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 (see TS 23.401 [10]). Usage: The E-RAB shall not be pre-empted by other E-RABs or the E-RAB may be pre-empted by other E-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.

9.3.1.21 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
E-RAB Maximum Bit Rate Downlink	M		Bit Rate 9.3.1.22	Maximum Bit Rate in DL (i.e. from EPC to E-UTRAN) for the bearer. Details in TS 23.401 [10].
E-RAB Maximum Bit Rate Uplink	M		Bit Rate 9.3.1.22	Maximum Bit Rate in UL (i.e. from E-UTRAN to EPC) for the bearer. Details in TS 23.401 [10].
E-RAB Guaranteed Bit Rate Downlink	M		Bit Rate 9.3.1.22	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 [10].
E-RAB Guaranteed Bit Rate Uplink	M		Bit Rate 9.3.1.22	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 [10].

9.3.1.22 Bit Rate

This IE indicates the number of bits delivered by NG-RAN in UL or to NG-RAN 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 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

9.3.1.23 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 use the same Transaction ID. The Transaction ID is determined by the initiating peer of a procedure.

NOTE: If F1-C signalling transport is shared among multiple interface instances, the Transaction ID is allocated so that it can be associated with an F1-C interface instance. The Transaction ID may identify more than one interface instance.

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

9.3.1.24 DRX Cycle

The *DRX Cycle* IE is to indicate the desired DRX cycle.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
Long DRX Cycle Length	M		ENUMERATED (ms10, ms20, ms32, ms40, ms60, ms64, ms70, ms80,	Corresponds to the <i>preferredDRX-LongCycle</i> contained in the <i>UEAssistanceInformation</i>

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
			ms128, ms160, ms256, ms320, ms512, ms640, ms1024, ms1280, ms2048, ms2560, ms5120, ms10240, ...)	message defined in TS 38.331 [8]
Short DRX Cycle Length	O		ENUMERATED (ms2, ms3, ms4, ms5, ms6, ms7, ms8, ms10, ms14, ms16, ms20, ms30, ms32, ms35, ms40, ms64, ms80, ms128, ms160, ms256, ms320, ms512, ms640, ...)	Corresponds to the <i>preferredDRX-ShortCycle</i> contained in the <i>UEAssistanceInformation</i> message defined in TS 38.331 [8]
Short DRX Cycle Timer	O		INTEGER (1..16)	Corresponds to the <i>preferredDRX-ShortCycleTimer</i> contained in the <i>UEAssistanceInformation</i> message defined in TS 38.331 [8]

9.3.1.25 CU to DU RRC Information

This IE contains the RRC Information that are sent from gNB-CU to gNB-DU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
CG-ConfigInfo	O		OCTET STRING	Includes the <i>CG-ConfigInfo</i> message, as defined in TS 38.331 [8].	-	
UE-CapabilityRAT-ContainerList	O		OCTET STRING	This IE is used in the NG-RAN and it includes the <i>UE-CapabilityRAT-ContainerList</i> IE, as defined in TS 38.331 [8].	-	
MeasConfig	O		OCTET STRING	Includes the <i>MeasConfig</i> IE, as defined in TS 38.331 [8] (without the <i>MeasGapConfig</i> IE). For EN-DC/NGEN-DC operation, includes the list of FR2 frequencies for which the gNB-CU requests the gNB-DU to generate gaps. For NG-RAN, NE-DC and MN for NR-NR DC, includes the list of FR1 and/or FR2 frequencies, for	-	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				which the gNB-CU requests the gNB-DU to generate gaps and the gap type (per-UE or per-FR).		
Handover Preparation Information	O		OCTET STRING	Includes the <i>HandoverPreparationInformation</i> message, as defined in TS 38.331 [8].	YES	ignore
CellGroupConfig	O		OCTET STRING	Includes the <i>CellGroupConfig</i> IE, as defined in TS 38.331 [8].	YES	ignore
Measurement Timing Configuration	O		OCTET STRING	Contains the <i>MeasurementTimingConfiguration</i> inter-node message defined in TS 38.331 [8]. In EN-DC/NGEN-DC, it is included when the gaps for FR2 are requested to be configured by the MeNB. For MN in NR-NR DC, it is included when the gaps for FR2 and/or FR1 are requested by the SgNB.	YES	ignore
UEAssistanceInformation	O		OCTET STRING	Includes the <i>UEAssistanceInformation</i> message, as defined in TS 38.331 [8].	YES	ignore
CG-Config	O		OCTET STRING	Includes the <i>CG-Config</i> message, as defined in TS 38.331 [8].	YES	ignore
UEAssistanceInformationEUTRA	O		OCTET STRING	Includes the <i>UEAssistanceInformation</i> message, as defined in TS 36.331 [41].	YES	ignore
Location Measurement Information	O		OCTET STRING	Includes the <i>LocationMeasurementInfo</i> IE, as defined in TS 38.331[8].	YES	ignore
MUSIM-GapConfig	O		OCTET STRING	Includes the <i>MUSIM-GapConfig</i> IE as defined in TS 38.331 [8].	YES	reject
SDT-MAC-PHY-CG-Config	O		OCTET STRING	Includes the <i>SDT-MAC-PHY-CG-Config</i> IE, as defined in TS 38.331 [8].	YES	ignore
MBSInterestIndication	O		OCTET STRING	Includes the <i>MBSInterestIndication</i> message as	YES	ignore

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				defined in TS 38.331 [8].		
NeedForGapsInfoNR	O		OCTET STRING	Includes the <i>NeedForGapsInfoNR</i> IE, as defined in TS 38.331 [8].	YES	ignore
NeedForGapNCSG-InfoNR	O		OCTET STRING	Includes the <i>NeedForGapNCSG-InfoNR</i> IE, as defined in TS 38.331 [8].	YES	ignore
NeedForGapNCSG-InfoEUTRA	O		OCTET STRING	Includes the <i>NeedForGapNCSG-InfoEUTRA</i> IE, as defined in TS 38.331 [8].	YES	ignore
ConfigRestrictInfoDAPS	O		OCTET STRING	Includes the <i>ConfigRestrictInfoDAPS-r16</i> IE as defined in TS 38.331 [8]. This IE is used at the source node if DAPS HO is configured.	YES	ignore
Preconfigured measurement GAP Request	O		ENUMERATED (true, ...)		YES	ignore

9.3.1.26 DU to CU RRC Information

This IE contains the RRC Information that are sent from the gNB-DU to the gNB-CU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
CellGroupConfig	M		OCTET STRING	Includes the <i>CellGroupConfig</i> IE, as defined in TS 38.331 [8].	-	
MeasGapConfig	O		OCTET STRING	Includes the <i>MeasGapConfig</i> IE as defined in TS 38.331 [8]. For EN-DC/NGEN-DC operation, includes the gap for FR2, as requested by the gNB-CU via MeasConfig IE. For NG-RAN, NE-DC and MN for NR-NR DC, includes the gap(s) for FR1 and/or FR2, as requested by the gNB-CU via MeasConfig IE. For pre-configured measurement GAP scenario, it	-	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				includes the <i>gapToAddModList</i> and/or <i>gapToReleaseList</i> as defined in TS 38.331 [8].		
Requested P-MaxFR1	O		OCTET STRING	Includes the <i>requestedP-MaxFR1</i> contained in the <i>CG-Config</i> message, as defined in TS 38.331 [8]. For EN-DC, NGEN-DC and NR-DC operation, this IE should be included.	-	
DRX Long Cycle Start Offset	O		INTEGER (0..10239)	Corresponds to the <i>drx-LongCycleStartOffset</i> IE contained in the <i>DRX-Config</i> IE as defined in TS 38.331 [8]. This field is not used in NR-DC.	-	
Selected BandCombinationIndex	O		OCTET STRING	Includes the <i>BandCombinationIndex</i> IE, as defined in TS 38.331 [8]. For (NG)EN-DC and NR DC operation, this IE should be included so that gNB-CU is informed of the selected Band Combination; if this IE is included, the gNB-CU uses this information to deduce the selected band.	YES	ignore
Selected FeatureSetEntryIndex	O		OCTET STRING	Includes the <i>FeatureSetEntryIndex</i> IE, as defined in TS 38.331 [8]. For (NG)EN-DC and NR DC operation, this IE should be included so that gNB-CU is informed of the selected FeatureSet.	YES	ignore
Ph-InfoSCG	O		OCTET STRING	Includes the <i>PH-TypeListSCG</i> IE, as defined in TS 38.331 [8]. For MR-DC, this IE should be included so that gNB-CU is informed of the Power Headroom	Yes	ignore

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				type for each serving cell in SN.		
Requested BandCombinationIndex	O		OCTET STRING	Includes the <i>BandCombinationIndex</i> IE, as defined in TS 38.331 [8]. This IE is used for the gNB-DU to request a new Band Combination.	YES	ignore
Requested FeatureSetEntryIndex	O		OCTET STRING	Includes the <i>FeatureSetEntryIndex</i> IE, as defined in TS 38.331 [8]. This IE is used for the gNB-DU to request a new Feature Set.	YES	ignore
DRX Config	O		OCTET STRING	Includes the <i>DRX-Config</i> IE, as defined in TS 38.331 [8]. This field is only used in NR-DC.	YES	ignore
PDCCH BlindDetectionSCG	O		OCTET STRING	Includes the <i>pdccch-BlindDetectionSCG</i> contained in the <i>CG-ConfigInfo</i> message, as defined in TS 38.331 [8]. This IE is used between the MgNB-DU and the MgNB-CU.	YES	ignore
Requested PDCCH BlindDetectionSCG	O		OCTET STRING	Includes the <i>requestedPDCCH-BlindDetectionSCG</i> contained in the <i>CG-Config</i> message, as defined in TS 38.331 [8]. This IE is used between the SgNB-DU and the SgNB-CU.	YES	ignore
Ph-InfoMCG	O		OCTET STRING	Includes the <i>PH-TypeListMCG</i> IE, as defined in TS 38.331 [8]. For MR-DC, this IE should be included so that gNB-CU is informed of the Power Headroom type for each serving cell in MCG.	YES	ignore
MeasGapSharingConfig	O		OCTET STRING	Includes the <i>MeasGapSharingConfig</i> IE as defined in TS 38.331 [8].	YES	ignore
SL-PHY-MAC-RLC-	O		OCTET	Includes the <i>SL-</i>	YES	ignore

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Config			STRING	<i>PHY-MAC-RLC-Config-r16</i> IE as defined in TS 38.331 [8].		
SL-ConfigDedicatedEUTRA-Info	O		OCTET STRING	Includes the <i>SL-ConfigDedicatedEUTRA-Info</i> IE as defined in TS 38.331 [8].	YES	ignore
Requested P-MaxFR2	O		OCTET STRING	Includes the <i>requestedP-MaxFR2</i> contained in the <i>CG-Config</i> message, as defined in TS 38.331 [8]. For NR-DC operation, this IE should be included.	YES	ignore
SDT-MAC-PHY-CG-Config	O		OCTET STRING	Includes the <i>SDT-MAC-PHY-CG-Config</i> IE, as defined in TS 38.331 [8].	YES	ignore
MUSIM-GapConfig	O		OCTET STRING	Includes the <i>MUSIM-GapConfig</i> IE as defined in TS 38.331 [8].	YES	ignore
SL-RLC-ChannelToAddModList	O		OCTET STRING	Includes the <i>sl-RLC-ChannelToAddModList-r17</i> contained in the <i>SL-ConfigDedicatedNR</i> IE, as defined in TS 38.331 [8].	YES	ignore
InterFrequencyConfig-NoGap	O		ENUMERATED (true, ...)	Corresponds to the <i>interFrequencyConfig-NoGap-r16</i> contained in the <i>MeasConfig</i> IE, as defined in TS 38.331 [8].	YES	ignore
ul-GapFR2-Config	O		OCTET STRING	Includes the <i>ul-GapFR2-Config</i> contained in the <i>RRCReconfiguration</i> message, as specified in TS 38.331 [8].	YES	ignore
TwoPHRModeMCG	O		ENUMERATED (enabled, ...)	Corresponds to the <i>twoPHRModeMCG</i> contained in the <i>CG-ConfigInfo</i> message, as defined in TS 38.331 [8]. For NR-DC, this IE should be included so that gNB-CU is informed of the	YES	ignore

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				two PHR mode in the MN.		
TwoPHRModeSCG	O		ENUMERATED (enabled, ...)	Corresponds to the <i>twoPHRModeSCG</i> contained in the <i>CG-Config</i> message, as defined in TS 38.331 [8]. For NR-DC, this IE should be included so that gNB-CU is informed of the two PHR mode in the SN.	YES	ignore
ncd-SSB-RedCapInitialBWP-SDT	O		OCTET STRING	Includes the <i>NonCellDefiningSSB</i> contained in the <i>RRCRelease</i> message, as specified in TS 38.331 [8].	YES	ignore
ServCellInfoList	O		OCTET STRING	Includes the <i>ServCellInfoListSCG-NR</i> IE or the <i>ServCellInfoListMCG-NR</i> IE, as defined in TS 38.331 [8]. This IE is used for inter-node message for MN and SN in case of split gNB architecture.	YES	ignore
Extended SL-PHY-MAC-RLC-Config	O		OCTET STRING	Includes the <i>SL-PHY-MAC-RLC-Config-v1700</i> IE as defined in TS 38.331 [8]. If this IE is present, the <i>SL-RLC-ChannelToAddModList</i> IE is ignored.	YES	ignore

9.3.1.27 RLC Mode

The *RLC Mode* IE indicates the RLC Mode used for a DRB or a BH RLC channel, or a Uu Relay RLC channel, or a PC5 Relay RLC channel.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
RLC Mode	M		ENUMERATED (RLC-AM, RLC-UM-Bidirectional, RLC-UM-Unidirectional-UL, RLC-UM-Unidirectional-DL, ...)	

9.3.1.28 SUL Information

This IE provides information about the SUL carrier.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
SUL ARFCN	M		INTEGER (0.. maxNRARFCN)	RF Reference Frequency as defined in TS 38.104 [17] section 5.4.2.1. The frequency provided in this IE identifies the absolute frequency position of the reference resource block (Common RB 0) of the SUL carrier. Its lowest subcarrier is also known as Point A.	–	
SUL Transmission Bandwidth	M		Transmission Bandwidth 9.3.1.15		–	
Carrier List	O		NR Carrier List 9.3.1.137	If included, the SUL Transmission Bandwidth IE shall be ignored.	YES	ignore
Frequency Shift 7p5khz	O		ENUMERATED (false, true, ...)	Indicate whether the value of Δ_{shift} is 0kHz or 7.5kHz when calculating $F_{\text{REF,shift}}$ as defined in Section 5.4.2.1 of TS 38.104 [17].	YES	ignore

Range bound	Explanation
maxNRARFCN	Maximum value of NR ARFCNs. Value is 3279165.

9.3.1.29 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))	

9.3.1.29a Configured EPS TAC

This information element is used to identify a configured EPS Tracking Area Code in order to enable application of Roaming and Access Restrictions for EN-DC as specified in TS 37.340 [7]. This IE is configured for the cell, but not broadcast.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Configured EPS TAC	M		OCTET STRING (SIZE (2))	

9.3.1.30 RRC Reconfiguration Complete Indicator

This IE indicates the result of the reconfiguration performed towards the UE.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
RRC Reconfiguration Complete Indicator	M		ENUMERATED (true, ... , failure)	

9.3.1.31 UL Configuration

This IE indicates how the UL scheduling is configured at gNB-DU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
UL UE Configuration	M		ENUMERATED (no-data, shared, only, ...)	Indicates how the UE uses the UL at gNB-DU, for which "no-data" indicates that the UL scheduling is not performed at gNB-DU, "shared" indicates that the UL scheduling is performed at both gNB-DU and another node, and "only" indicates that the UL scheduling is only performed at the gNB-DU.

9.3.1.32 C-RNTI

This IE contains the C-RNTI information.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
C-RNTI	M		INTEGER (0..65535, ...)	C-RNTI as defined in TS 38.331 [8].

9.3.1.33 Cell UL Configured

This IE indicates whether the gNB-CU requests the gNB-DU to configure the uplink as no UL, UL, SUL or UL+SUL for the indicated cell for the UE.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Cell UL Configured	M		ENUMERATED (none, UL, SUL, UL and SUL, ...)	Further details are defined in TS 38.331 [8]

9.3.1.34 RAT-Frequency Priority Information

The RAT-Frequency Priority Information contains either the *Subscriber Profile ID for RAT/Frequency priority* IE or the *Index to RAT/Frequency Selection Priority* IE. These parameters are used to define local configuration for RRM strategies.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
CHOICE <i>RAT-Frequency Priority Information</i>	M			
>EN-DC				
>>Subscriber Profile ID for RAT/Frequency priority	M		INTEGER (1.. 256, ...)	

IE/Group Name	Presence	Range	IE type and reference	Semantics description
> <i>NG-RAN</i>				
>>Index to RAT/Frequency Selection Priority	M		INTEGER (1..256, ...)	

9.3.1.35 LCID

This IE uniquely identifies a LCID for the associated SRB or DRB.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
LCID	M		INTEGER (1..32, ...)	Corresponds to the <i>LogicalChannelIdentity</i> defined in TS 38.331 [8].

9.3.1.36 Duplication activation

The *Duplication Activation* IE indicates whether UL PDCP Duplication is activated or not.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
Duplication Activation	M		ENUMERATED (Active, Inactive, ...)	

9.3.1.37 Slice Support List

This IE indicates the list of supported slices.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Slice Support Item IEs		<i>1..<maxnoofSliceltems></i>		
>S-NSSAI	M		9.3.1.38	

Range bound	Explanation
maxnoofSliceltems	Maximum no. of signalled slice support items. Value is 1024.

9.3.1.38 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))	

9.3.1.39 UE Identity Index value

This IE is used by the gNB-DU to calculate the Paging Frame.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
CHOICE <i>UE Identity Index Value</i>	M			

IE/Group Name	Presence	Range	IE type and reference	Semantics description
>Length-10				
>>Index Length 10	M		BIT STRING (SIZE(10))	Coded as specified in TS 38.304 [24].

9.3.1.40 Paging DRX

This IE indicates the Paging DRX as defined in TS 38.304 [24].

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Paging DRX	M		ENUMERATED(32, 64, 128, 256, ...)	Unit in radio frame.

9.3.1.41 Paging Priority

This IE indicates the paging priority for paging a UE.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Paging Priority	M		ENUMERATED (PrioLevel1, PrioLevel2, PrioLevel3, PrioLevel4, PrioLevel5, PrioLevel6, PrioLevel7, PrioLevel8, ...)	Lower value codepoint indicates higher priority.

9.3.1.42 gNB-CU System Information

This IE contains the system information encoded by the gNB-CU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
SIB type to Be Updated List		1			-	
>SIB type to Be Updated Item IEs		1... <maxnoof SIBTypes >			-	
>>SIB type	M		INTEGER (2..32, ...)	Indicates a certain SIB block, e.g. 2 means sibType2, 3 for sibType3, etc. Values for SIBs generated by the gNB-DU as defined subclause 5.2.2 in TS 38.470 [2], values 6, 7, 8 and values corresponding to not defined SIBs in TS 38.331 [8] are not applicable in this version of the specifications.	-	
>>SIB message	M		OCTET STRING	SIB as defined in subclause 6.3.1 in TS 38.331 [8].	-	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
>>Value Tag	M		INTEGER (0..31, ...)		-	
>>areaScope	O		ENUMERATED (true, ...)	Indicates that a SIB is area specific. If the field is not present, the SIB is cell specific.	YES	ignore
SystemInformationAreaID	O		BIT STRING (SIZE (24))	Indicates the system information area that the cell belongs to, if any.	YES	ignore

Range bound	Explanation
maxnoofSIBTypes	Maximum no. of SIB types, the maximum value is 32.

9.3.1.43 RAN UE Paging identity

This IE indicates the RAN UE Paging identity.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
I-RNTI	M		BIT STRING (SIZE(40))	

9.3.1.44 CN UE Paging Identity

The 5G-S-TMSI is used as UE identifier for CN paging.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
CHOICE CN UE paging identity	M			
>5G-S-TMSI				
>>5G-S-TMSI	M		BIT STRING (SIZE(48))	Details defined in TS 38.413 [3]

9.3.1.45 QoS Flow Level QoS Parameters

This IE defines the QoS to be applied to a QoS flow, or to a DRB, or to a BH RLC channel, or to a Uu Relay RLC channel, or to a PC5 Relay RLC channel, or to a MRB.

NOTE: For a BH RLC channel, the listed mandatory IEs and the *GBR QoS Flow Information* IE are applicable, where *GBR QoS Flow Information* IE may be present if BH RLC channel conveys the traffic belonging to a GBR 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		9.3.1.49		-	
>Dynamic 5QI					-	
>>Dynamic 5QI Descriptor	M		9.3.1.47		-	
NG-RAN Allocation and Retention Priority	M		9.3.1.48		-	
GBR QoS Flow	O		9.3.1.46	This IE shall be	-	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Information				present for GBR QoS Flows only and is ignored otherwise.		
Reflective QoS Attribute	O		ENUMERATED (subject to, ...)	Details in TS 23.501 [21]. This IE applies to non-GBR flows only and is ignored otherwise.	-	
PDU Session ID	O		INTEGER (0 ..255)	As specified in TS 23.501 [21].	YES	ignore
UL PDU Session Aggregate Maximum Bit Rate	O		Bit Rate 9.3.1.22	The PDU session Aggregate Maximum Bit Rate Uplink which is associated with the involved PDU session.	YES	ignore
QoS Monitoring Request	O		ENUMERATED (UL, DL, Both, ..., stop)	Indicates to measure UL, or DL, or both UL/DL delays for the associated QoS flow or stop the corresponding QoS monitoring.	YES	ignore
PDCCP Terminating Node DL Transport Layer Address	O		Transport Layer Address 9.3.2.3	DL Transport Layer Address of node terminating PDCCP. Included for MN-terminated SCG bearers and SN-terminated MCG bearers.	YES	ignore

9.3.1.46 GBR QoS Flow Information

This IE indicates QoS parameters for a GBR QoS flow or GBR bearer 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 9.3.1.22	Maximum Bit Rate in DL. Details in TS 23.501 [21].	-	
Maximum Flow Bit Rate Uplink	M		Bit Rate 9.3.1.22	Maximum Bit Rate in UL. Details in TS 23.501 [21].	-	
Guaranteed Flow Bit Rate Downlink	M		Bit Rate 9.3.1.22	Guaranteed Bit Rate (provided there is data to deliver) in DL. Details in TS 23.501 [21].	-	
Guaranteed Flow Bit Rate Uplink	M		Bit Rate 9.3.1.22	Guaranteed Bit Rate (provided there is data to deliver). Details in TS 23.501 [21].	-	
Maximum Packet Loss Rate Downlink	O		Maximum Packet Loss Rate 9.3.1.50	Indicates the maximum rate for lost packets that can be tolerated in the downlink	-	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				direction. Details in TS 23.501 [21].		
Maximum Packet Loss Rate Uplink	O		Maximum Packet Loss Rate 9.3.1.50	Indicates the maximum rate for lost packets that can be tolerated in the uplink direction. Details in TS 23.501 [21].	-	
Alternative QoS Parameters Set List	O		9.3.1.125	Indicates alternative sets of QoS Parameters for the QoS flow.	YES	ignore

9.3.1.47 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
QoS Priority Level	M		INTEGER (1..127)	For details see TS 23.501 [21].	-	
Packet Delay Budget	M		9.3.1.51	For details see TS 23.501 [21]. For IAB, the Packet Delay Budget defines the upper bound for the time that a packet may be delayed between the IAB-DU/IAB-donor-DU and its child IAB-MT, or between the IAB-DU and its served UE. For a PC5 Relay RLC channel, the Packet Delay Budget defines the upper bound for the time that a packet may be delayed between the L2 U2N relay UE and L2 U2N remote UE. For a Uu Relay RLC channel, the Packet Delay Budget defines the upper bound for the time that a packet may be delayed between the gNB-DU and L2 U2N relay UE. This IE is ignored if the <i>Extended Packet Delay Budget</i> IE is present.	-	
Packet Error Rate	M		9.3.1.52	For details see TS 23.501 [21].	-	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
5QI	O		INTEGER (0..255,...)	This IE contains the dynamically assigned 5QI as specified in TS 23.501 [21].	-	
Delay Critical	C-ifGBRflow		ENUMERATED (delay critical, non-delay critical)	For details see TS 23.501 [21].	-	
Averaging Window	C-ifGBRflow		9.3.1.53	For details see TS 23.501 [21].	-	
Maximum Data Burst Volume	O		9.3.1.54	For details see TS 23.501 [21]. This IE shall be included if the <i>Delay Critical</i> IE is set to "delay critical" and is ignored otherwise.	-	
Extended Packet Delay Budget	O		9.3.1.145	Packet Delay Budget is specified in TS 23.501 [21].	YES	ignore
CN Packet Delay Budget Downlink	O		Extended Packet Delay Budget 9.3.1.145	Core Network Packet Delay Budget is specified in TS 23.501 [21]. 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 9.3.1.145	Core Network Packet Delay Budget is specified in TS 23.501 [21]. 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 <i>GBR QoS Flow Information</i> IE is present in the <i>QoS Flow Level QoS Parameters</i> IE.

9.3.1.48 NG-RAN Allocation and Retention Priority

This IE specifies the relative importance of a QoS flow or a DRB compared to other QoS flows or DRBs 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 [21]). 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 [21].
Pre-emption Capability	M		ENUMERATED (shall not trigger	Desc.: This IE indicates the pre-emption capability of the request

IE/Group Name	Presence	Range	IE type and reference	Semantics description
			pre-emption, may trigger pre-emption)	on other QoS flows (see TS 23.501 [21]). Usage: The QoS flow shall not pre-empt other QoS flows or, the QoS flow may pre-empt other QoS flows. 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 gNB.
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 (see TS 23.501 [21]). 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. 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 gNB.

9.3.1.49 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 [21]. For a BH RLC channel, the Packet Delay Budget included in 5QI defines the upper bound for the time that a packet may be delayed between the gNB-DU and its child IAB-MT.	-	
Priority Level	O		INTEGER (1..127)	For details see TS 23.501 [21]. When included overrides standardized or pre-configured value.	-	
Averaging Window	O		9.3.1.53	For details see TS 23.501 [21]. When included overrides standardized or pre-configured value.	-	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Maximum Data Burst Volume	O		9.3.1.54	For details see TS 23.501 [21]. When included overrides standardized or pre-configured value.	-	
CN Packet Delay Budget Downlink	O		Extended Packet Delay Budget 9.3.1.145	Core Network Packet Delay Budget is specified in TS 23.501 [21]. 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 9.3.1.145	Core Network Packet Delay Budget is specified in TS 23.501 [21]. This IE may be present in case of GBR QoS flows and is ignored otherwise.	YES	ignore

9.3.1.50 Maximum Packet Loss Rate

This IE indicates the Maximum Packet Loss Rate.

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

9.3.1.51 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.

9.3.1.52 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, ...)	

9.3.1.53 Averaging Window

This IE indicates the Averaging Window for a QoS flow, and applies to GBR QoS Flows only.

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

9.3.1.54 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.

9.3.1.55 Masked IMEISV

This information element contains the IMEISV value with a mask, to identify a terminal model without identifying an individual Mobile Equipment.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Masked IMEISV	M		BIT STRING (SIZE (64))	Coded as the International Mobile station Equipment Identity and Software Version Number (IMEISV) defined in TS 23.003 [23] with the last 4 digits of the SNR masked by setting the corresponding bits to 1. The first to fourth bits correspond to the first digit of the IMEISV, the fifth to eighth bits correspond to the second digit of the IMEISV, and so on.

9.3.1.56 Notification Control

The *Notification Control* IE indicates whether the notification control for a given DRB is active or not-active.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
Notification Control	M		ENUMERATED(Active, Not-Active, ...)	

9.3.1.57 RAN Area Code

This information element is used to uniquely identify a RAN Area Code.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
RANAC	M		INTEGER (0..255)	RAN Area Code

9.3.1.58 PWS System Information

This IE contains the system information used for public warning.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
SIB type	M		INTEGER (6..8, ...)	Indicates a certain SIB block for	-	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				public warning message, e.g. 6 means sibType6, 7 for sibType7, etc.		
SIB message	M		OCTET STRING	SIB message for public warning, as defined in TS 38.331 [8].	-	
Notification Information	O				YES	ignore
>Message Identifier	M		9.3.1.81		-	
>Serial Number	M		9.3.1.82		-	
Additional SIB Message List	O		9.3.1.86	Additional SIB messages containing different segments of a public warning message if segmentation is applied, as defined in TS 38.331 [8].	YES	reject

9.3.1.59 Repetition Period

This IE indicates the periodicity of the warning message to be broadcast.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Repetition Period	M		INTEGER (0..2 ¹⁷ -1)	The unit of value 1 to 2 ¹⁷ -1 is [second].

9.3.1.60 Number of Broadcasts Requested

This IE indicates the number of times a message is to be broadcast.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Number of Broadcasts Requested	M		INTEGER (0..65535)	

9.3.1.61 Void

9.3.1.62 SType List

This IE is used by the gNB-CU to indicate to the gNB-DU to broadcast one or several *SystemInformation* messages including the Other SI.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
SI type item IEs		1.. <maxnoofSTypes>		
>SI Type	M		INTEGER (1..32, ...)	Value "1" corresponds to the SI message identified by the first SI message indicated in the <i>SI-SchedulingInfo</i> IE in the <i>SIB1</i> message, value "2" to the SI message identified by the second SI message indicated in

IE/Group Name	Presence	Range	IE type and reference	Semantics description
				the <i>SI-SchedulingInfo</i> IE in the <i>SIB1</i> message, and so on, as defined in TS 38.331 [8].

Range bound	Explanation
maxnoofSITypes	Maximum no. of SI types, the maximum value is 32.

9.3.1.63 QoS Flow Identifier

This IE identifies a QoS Flow within a PDU Session, a MBS QoS flow within a MBS session. The definition and use of the QoS Flow Identifier is specified in TS 23.501 [21].

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

9.3.1.64 Served E-UTRA Cell Information

This IE contains served cell information of an E-UTRA cell for spectrum sharing between E-UTRA and NR.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
CHOICE <i>EUTRA-Mode-Info</i>	M			
> <i>FDD</i>				
>> FDD Info		1		
>>>UL Offset to Point A	M		INTEGER (0..2199,...)	Indicates the offset to the center of the NR carrier for UL.
>>>DL Offset to Point A	M		INTEGER (0..2199,...)	Indicates the offset to the center of the NR carrier for DL.
> <i>TDD</i>				
>> TDD Info		1		
>>>Offset to Point A	M		INTEGER (0..2199,...)	Indicates the offset to the center of the NR carrier.
Protected E-UTRA Resource Indication	O		OCTET STRING	Indicates the Protected E-UTRA Resource Indication as defined in subclause 9.2.125 of TS 36.423 [9].

9.3.1.65 Available PLMN List

This IE indicates the list of available PLMN.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Available PLMN Item IEs		1..<maxnoofBPLMNs>		
>PLMN Identity	M		9.3.1.14	

Range bound	Explanation
maxnoofBPLMNs	Maximum no. of Broadcast PLMN Ids. Value is 6.

9.3.1.66 RLC Failure Indication

This IE indicates the LCID associated with the RLC entity needing re-establishment.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Associated LCID	M		LCID 9.3.1.35	

9.3.1.67 Uplink TxDirectCurrentList Information

This IE contains the Uplink TxDirectCurrentList information that is configured by the UE.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Uplink TxDirectCurrentList Information	M		OCTET STRING	Includes the <i>UplinkTxDirectCurrentList</i> IE as defined in TS 38.331 [8].

9.3.1.68 Service Status

This IE is used to indicate the service status of a cell by the gNB-DU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Service State	M		ENUMERATED (In-Service, Out-Of-Service, ...)	Indicates the Service State of the cell. In-Service and Out-of-Service Service States are defined in TS 38.401 [4].
Switching Off Ongoing	O		ENUMERATED (True, ...)	This IE indicates that the gNB-DU will delete the cell after some time using a new gNB-DU Configuration Update procedure.

9.3.1.69 RLC Status

This IE indicates about the RLC configuration change included in the container towards the UE.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Reestablishment Indication	O		ENUMERATED (reestablished, ...)	Indicates that following a change in the radio status, the RLC has been re-established.

9.3.1.70 RRC Version

This information element is used to identify RRC version corresponding to TS 38.331 [8].

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Latest RRC Version	M		BIT STRING (SIZE (3))	This IE is not used in this release.	-	
Latest RRC Version Enhanced	O		OCTET STRING (SIZE (3))	Latest supported RRC version in the release corresponding to TS 38.331 [8]. For a 3GPP specification version x.y.z, x is encoded by the leftmost byte, y by the middle byte, and z by the rightmost byte.	YES	ignore

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				If the RRC protocol is not supported in the gNB-DU, this IE is set to all '0's.		

9.3.1.71 RRC Delivery Status

This IE provides information about the delivery status of RRC messages to the UE.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Delivery Status	M		INTEGER (0..2 ¹² -1)	Highest NR PDCP SN successfully delivered in sequence to the UE.
Triggering Message	M		INTEGER (0..2 ¹² -1)	NR PDCP SN for the RRC message that triggered the report.

9.3.1.72 QoS Flow Mapping Indication

This IE is used to indicate only the uplink or downlink QoS flow is mapped to the DRB.

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

9.3.1.73 Resource Coordination Transfer Information

This IE contains information for UE-associated E-UTRA – NR resource coordination.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
MeNB Cell ID	M		BIT STRING (SIZE(28))	E-UTRAN Cell Identifier IE contained in the ECGI as defined in TS 36.423 [9] clause 9.2.14
Resource Coordination E-UTRA Cell Information	O		9.3.1.75	

9.3.1.74 E-UTRA PRACH Configuration

This IE indicates the PRACH resources used in E-UTRA cell.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
RootSequenceIndex	M		INTEGER (0..837)	See section 5.7.2. in TS 36.211 [27]
ZeroCorrelationZoneConfiguration	M		INTEGER (0..15)	See section 5.7.2. in TS 36.211 [27]
HighSpeedFlag	M		BOOLEAN	TRUE corresponds to Restricted set and FALSE to Unrestricted set. See section 5.7.2 in TS 36.211 [27]
PRACH-FrequencyOffset	M		INTEGER (0..94)	See section 5.7.1 of TS 36.211 [27]
PRACH-ConfigurationIndex	C-ifTDD		INTEGER (0..63)	See section 5.7.1. in TS 36.211 [27]

Condition	Explanation
ifTDD	This IE shall be present if the <i>EUTRA-Mode-Info</i> IE in the <i>Resource Coordination E-UTRA Cell Information</i> IE is set to the value "TDD".

9.3.1.75 Resource Coordination E-UTRA Cell Information

This IE contains E-UTRA cell information for UE-associated E-UTRA – NR resource coordination.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
CHOICE <i>EUTRA-Mode-Info</i>	M				-	
> <i>FDD</i>					-	
>> FDD Info		1			-	
>>>UL EARFCN	O		INTEGER (0 .. maxExtendedEARFCN, ...)	The relation between EARFCN and carrier frequency (in MHz) is defined in TS 36.104 [25].	-	
>>>DL EARFCN	M		INTEGER (0 .. maxExtendedEARFCN, ...)	The relation between EARFCN and carrier frequency (in MHz) is defined in TS 36.104 [25].	-	
>>>UL Transmission Bandwidth	O		E-UTRA Transmission Bandwidth 9.3.1.80	Present if <i>UL EARFCN</i> IE is present.	-	
>>>DL Transmission Bandwidth	M		E-UTRA Transmission Bandwidth 9.3.1.80		-	
> <i>TDD</i>					-	
>> TDD Info		1			-	
>>>EARFCN	M		INTEGER (0 .. maxExtendedEARFCN, ...)	The relation between EARFCN and carrier frequency (in MHz) is defined in TS 36.104 [25].	-	
>>>Transmission Bandwidth	M		E-UTRA Transmission Bandwidth 9.3.1.80		-	
>>>Subframe Assignment	M		ENUMERATED (sa0, sa1, sa2, sa3, sa4, sa5, sa6,...)	Uplink-downlink subframe configuration information defined in TS 36.211 [27]. In NB-IOT, sa0 and sa6 are not applicable.	-	
>>> Special Subframe Info		1		Special subframe configuration information defined in TS 36.211 [27]	-	
>>>>Special Subframe Patterns	M		ENUMERATED (ssp0, ssp1, ssp2, ssp3, ssp4, ssp5,		-	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
			ssp6, ssp7, ssp8, ssp9, ssp10, ...)			
>>>>Cyclic Prefix DL	M		ENUMERATED (Normal, Extended,...)		-	
>>>>Cyclic Prefix UL	M		ENUMERATED (Normal, Extended,...)		-	
E-UTRA PRACH Configuration	M		9.3.1.74		-	
Ignore PRACH Configuration	O		ENUMERATED (true,...)		YES	reject

Range bound	Explanation
maxExtendedEARFCN	Maximum value of extended EARFCN. Value is 262143.

9.3.1.76 Extended Available PLMN List

This IE indicates the list of available PLMN.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Extended Available PLMN Item IEs		$1..< \text{maxnoofExtendedBPLMNs} >$		
>PLMN Identity	M		9.3.1.14	

Range bound	Explanation
maxnoofExtendedBPLMNs	Maximum no. of Extended Broadcast PLMN Ids. Value is 6.

9.3.1.77 Associated SCell List

This IE indicates the list of SCells associated with the RLC entity indicated by the *RLC Failure Indication* IE.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Associated SCell Item IEs		$1..< \text{maxnoofSCells} >$			-	-
>SCell ID	M		NR CGI 9.3.1.12		-	

Range bound	Explanation
maxnoofSCells	Maximum no. of SCells allowed towards one UE, the maximum value is 32.

9.3.1.78 Cell Direction

This IE indicates if the cell is either bidirectional or only DL or only UL.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Cell Direction	M		ENUMERATED (dl-only, ul-only)	

9.3.1.79 Paging Origin

This IE indicates whether Paging is originated due to the PDU sessions from the non-3GPP access.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Paging Origin	M		ENUMERATED (non-3GPP, ...)	

9.3.1.80 E-UTRA Transmission Bandwidth

This IE is used to indicate the E-UTRA UL or DL transmission bandwidth expressed in units of resource blocks "N_{RB}" (TS 36.104 [25]). The values bw1, bw6, bw15, bw25, bw50, bw75, bw100 correspond to the number of resource blocks "N_{RB}" 6, 15, 25, 50, 75, 100.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
E-UTRA Transmission Bandwidth	M		ENUMERATED (bw6, bw15, bw25, bw50, bw75, bw100,...)	

9.3.1.81 Message Identifier

This IE identifies the warning message.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Message Identifier	M		BIT STRING (SIZE(16))	This IE is set by the 5GC, transferred to the UE by the gNB node.

9.3.1.82 Serial Number

This IE identifies a particular message from the source and type indicated by the Message Identifier and is altered every time the message with a given Message Identifier is changed.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Serial Number	M		BIT STRING (SIZE(16))	

9.3.1.83 UAC Assistance Information

This information element contains assistance information helping the gNB-DU to set parameters for Unified Access Class barring.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
UAC PLMN List		1			-	
>UAC PLMN Item		1..<maxno of UAC PLMNs>			-	
>>PLMN Identity	M		9.3.1.14		-	
>>UAC Type List		1			-	
>>>UAC Type Item		1..<maxno of UAC per PLMN>			-	
>>>>UAC Reduction	M		9.3.1.85		-	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Indication						
>>>>CHOICE UAC Category Type	M				-	
>>>>>UAC Standardized					-	
>>>>>>UAC Action	M		9.3.1.84		-	
>>>>>UAC Operator Defined					-	
>>>>>>Access Category	M		INTEGER (32..63, ...)	Indicates the operator defined Access Category as defined in subclause 6.3.2 in TS 38.331 [8].	-	
>>>>>>>Access Identity	M		BIT STRING (SIZE(7))	Indicates whether access attempt is allowed for each Access Identity as defined in subclause 6.3.2 in TS 38.331 [8].	-	
>>NID	O		9.3.1.155		YES	ignore

Range bound	Explanation
maxnoofUACPLMNs	Maximum no. of UAC PLMN Ids. Value is 12.
maxnoofUACperPLMN	Maximum no. of signalled categories per PLMN. Value is 64.

9.3.1.84 UAC Action

This IE indicates which signalling traffic is expected to be reduced by the gNB-CU, as defined in clause 8.7.7 of TS 38.413 [3]

IE/Group Name	Presence	Range	IE type and reference	Semantics description
UAC Action	M		ENUMERATED (Reject RRC connection establishments for non-emergency MO DT, Reject RRC connection establishments for Signalling, Permit Emergency Sessions and mobile terminated services only, Permit High Priority Sessions and mobile terminated services only,...)	

9.3.1.85 UAC reduction Indication

This IE indicates the percentage of signalling traffic expected to be reduced by the gNB-CU, relative to the instantaneous incoming rate from the gNB-DU

IE/Group Name	Presence	Range	IE type and reference	Semantics description
UAC reduction Indication	M		INTEGER (0..100)	Value 0 indicates that no access rate reduction is desired. In this version of specification, value 99 indicates the highest desired rate reduction.

9.3.1.86 Additional SIB Message List

This IE indicates the list of additional SIB messages containing all the remaining segments of a public warning message if segmentation is applied to such message.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Additional SIB Message List Item IEs		1.. <maxnoofAdditionalSIBs >		
>Additional SIB	M		OCTET STRING	SIB message containing one segment of a public warning message, as defined in TS 38.331 [8].

Range bound	Explanation
maxnoofAdditionalSIBs	Maximum no. of additional segments of a public warning message. Value is 63.

9.3.1.87 Cell Type

This IE provides the cell coverage area.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Cell Size	M		ENUMERATED (verysmall, small, medium, large, ...)	

9.3.1.87a Configured TAC Indication

This IE indicates that the TAC with which this IE is associated, is only configured for the cell, but not broadcast.

NOTE: This IE is defined in accordance to the possibility foreseen in TS 38.331 [8] to not broadcast the TAC if the NR cell only supports PSCell/SCell functionality.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Configured TAC Indication	M		ENUMERATED (true, ...)	

9.3.1.88 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:	-	-

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				Trace Reference defined in TS 32.422 [29] (leftmost 6 octets, with PLMN information encoded as in 9.3.1.14), and Trace Recording Session Reference defined in TS 32.422 [29] (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 [29].	-	-
Trace Collection Entity IP Address	M		Transport Layer Address 9.3.2.3	For File based Reporting. Defined in TS 32.422 [29]. Should be ignored if URI is present.	-	-
MDT Configuration	O		9.3.1.150		YES	ignore
Trace Collection Entity URI	O		URI 9.3.2.6	For Streaming based Reporting. Defined in TS 32.422 [29] Replaces Trace Collection Entity IP Address if present	YES	ignore

9.3.1.89 Intended TDD DL-UL Configuration

This IE contains the subcarrier spacing, cyclic prefix and TDD DL-UL slot configuration of an NR cell that the receiving gNB needs to take into account for cross-link interference mitigation, and/or for NR-DC power coordination, when operating its own cells.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
NR SCS	M		ENUMERATED (scs15, scs30, scs60, scs120, ..., scs 480, scs960)	The values scs15, scs30, scs60, scs120, scs480 and scs960 corresponds to the sub carrier spacing in TS 38.104 [17].	-	
NR Cyclic Prefix	M		ENUMERATED (Normal, Extended, ...)	The type of cyclic prefix, which determines the number of symbols in a slot.	-	
NR DL-UL Transmission Periodicity	M		ENUMERATED (ms0p5, ms0p625, ms1, ms1p25, ms2, ms2p5, ms3, ms4, ms5, ms10, ms20, ms40, ms60, ms80, ms100, ms120, ms140, ms160, ...)	The periodicity is expressed in the format msXpYZ, and equals X.YZ milliseconds.	-	
Slot Configuration List		1			-	
>Slot Configuration List Item		1..<maxno ofslots>			-	
>>Slot Index	M		INTEGER (0..5119)		-	
>>CHOICE <i>Symbol Allocation in Slot</i>	M				-	
>>>All DL			NULL	This choice implies that all symbols in the slot are DL symbols.	-	
>>>All UL			NULL	This choice implies that all symbols in the slot are UL symbols.	-	
>>>Both DL and UL					-	
>>>>Number of DL Symbols	M		INTEGER (0..13)	Number of consecutive DL symbols in the slot identified by Slot Index IE. If extended cyclic prefix is used, the maximum value is 11. The <i>Permutation</i> IE indicates the location of DL symbols in the slot.	-	
>>>>Number of UL Symbols	M		INTEGER (0..13)	Number of consecutive UL symbols in the slot identified by Slot Index IE. If extended cyclic prefix is used, the maximum value is 11. The <i>Permutation</i> IE indicates the location of UL	-	

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
				symbols in the slot.		
>>>>Permutation	O		ENUMERATED (DFU, UFD, ...)	If not present, the default value is DFU.	YES	ignore

Range bound	Explanation
maxnoofslots	Maximum length of number of slots in a 10-ms period. Value is 5120.

9.3.1.90 Additional RRM Policy Index

The *Additional RRM Policy Index* IE is used to provide additional information independent from the Subscriber Profile ID for RAT/Frequency priority as specified in TS 36.300 [20].

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Additional RRM Policy Index	M		BIT STRING (32)	

9.3.1.91 DU-CU RIM Information

This IE conveys the Remote Interference Management message from the gNB-DU to the gNB-CU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Victim gNB Set ID	M		9.3.1.93	
RIM-RS Detection Status	M		ENUMERATED(RS detected, RS disappeared)	This IE indicates detection status of RIM-RS in gNB-DU
Aggressor Cell List		1		
>Aggressor Cell List Item		1..<maxCellingNB DU >		
>>Aggressor Cell ID	M		NR CGI 9.3.1.12	

Range bound	Explanation
maxCellingNB DU	Maximum no. cells that can be served by a gNB-DU. Value is 512.

9.3.1.92 CU-DU RIM Information

This IE conveys the Remote Interference Management message from the gNB-CU to the gNB-DU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Victim gNB Set ID	M		9.3.1.93	
RIM-RS Detection Status	M		ENUMERATED(RS detected, RS disappeared)	This IE indicates detection status of RIM-RS in remote gNB(s).

9.3.1.93 gNB Set ID

The gNB Set ID IE is used to identify a group of gNBs which transmit the same RIM-RS.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
gNB Set ID	M		BIT STRING (SIZE(22))	

9.3.1.94 Lower Layer Presence Status Change

This IE indicates lower layer resources' presence status shall be changed.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Lower Layer Presence Status Change	M		ENUMERATED (suspend lower layers, resume lower layers ...)	"suspend lower layers" will store CellGroupConfig. From the parameters received within the ReconfigurationWithSync, only the sPCellConfigCommon is stored. "resume lower layers" shall restore SCG and it is set only after "suspend lower layers" has been indicated.

9.3.1.95 Traffic Mapping Information

This IE includes the information used by the gNB-DU to perform traffic mapping.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
CHOICE <i>Traffic Mapping Information Type</i>	M			
>IP to layer2 Traffic Mapping Info				
>>IP to layer2 Traffic Mapping Info To Add	O		IP-to-layer-2 traffic mapping Information List 9.3.1.96	This IE indicates the mapping information for forwarding of IP traffic to layer-2 to be added.
>>IP to layer2 Traffic Mapping Info To Remove	O		Mapping Information to Remove 9.3.1.99	This IE indicates the mapping information for forwarding of IP traffic to layer 2 to be removed.
>BAP layer BH RLC channel Mapping Info				
>>BAP layer BH RLC channel Mapping Info To Add	O		BAP layer BH RLC channel mapping Information List 9.3.1.98	This IE indicates the mapping information for forwarding of traffic on BAP layer to be added.
>>BAP layer BH RLC channel Mapping Info To Remove	O		Mapping Information to Remove 9.3.1.99	This IE indicates the mapping information for forwarding of traffic on BAP layer to be removed.

9.3.1.96 IP-to-layer-2 traffic mapping Information List

This IE includes the information used by the IAB-donor-DU to perform the mapping from IP layer to layer-2. If this IE appears in the UE-associated F1AP signalling, the *BH Information* IE should only contain the *BAP Routing ID* IE.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
IP-to-layer-2 mapping information Item		1.. <maxnoofMappingEntries>		
>Mapping Information Index	M		9.3.1.100	
>IP header information	M		9.3.1.97	

IE/Group Name	Presence	Range	IE type and reference	Semantics description
>BH Information	M		9.3.1.114	

Range bound	Explanation
maxnoofMappingEntries	Maximum no. of mapping entries, the maximum value is 67108864 (i.e. 2^{26}).

9.3.1.97 IP Header Information

This IE indicates the IP header information included in the *Traffic Mapping Information* IE for DL traffic.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Destination IAB TNL Address	M		9.3.1.102	This IE indicates the destination IPv4 address, or IPv6 address or IPv6 prefix of a DL packet.
DS Information List		$0..<maxnoofDSInfo>$		
>DSCP	M		BIT STRING (SIZE(6))	This IE indicates the DS information of DL traffic.
IPv6 Flow Label	O		BIT STRING (SIZE(20))	This IE indicates the IPv6 Flow Label of DL traffic.

Range bound	Explanation
maxnoofDSInfo	Maximum no. of DSCP values related to a destination IP address that can be mapped to one BH RLC channel, the maximum value is 64.

9.3.1.98 BAP layer BH RLC channel mapping Information List

This IE includes the information used by the IAB-DU to perform the BH RLC channel mapping when forwarding traffic on BAP sublayer.

When this IE is included in the UE-associated F1AP signalling for setting up or modifying a BH RLC channel, it contains either the *Prior-Hop BAP Address* IE and the *Ingress BH RLC CH ID* IE to configure a mapping in downlink direction, or the *Next-Hop BAP address* IE and the *Egress BH RLC CH ID* IE to configure a mapping in uplink direction. This IE indicates the BH RLC channel served by the collocated IAB-MT.

When this IE is included in the non-UE-associated F1AP signalling, it shall contain the *Prior-Hop BAP Address* IE, the *Ingress BH RLC CH ID* IE, the *Next-Hop BAP address* IE and the *Egress BH RLC CH ID* IE.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
BAP layer BH RLC channel mapping info Item		$1..<maxnoofMappingEntries>$			-	
>Mapping Information Index	M		9.3.1.100		-	
>Prior-Hop BAP Address	O		9.3.1.111		-	
>Ingress BH RLC CH ID	O		BH RLC Channel ID 9.3.1.113		-	
>Next-Hop BAP Address	O		9.3.1.111		-	
>Egress BH RLC CH ID	O		BH RLC Channel ID 9.3.1.113		-	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
>Ingress Non-F1-terminating IAB-donor Topology Indicator	O		ENUMERATED (true, ...)	If present, indicates that the ingress topology for this entry is the non-F1-terminating IAB-donor topology of the boundary IAB-node.	YES	ignore
>Egress Non-F1-terminating IAB-donor Topology Indicator	O		ENUMERATED (true, ...)	If present, indicates that the egress topology for this entry is the non-F1-terminating IAB-donor topology of the boundary IAB-node.	YES	ignore

Range bound	Explanation
maxnoofMappingEntries	Maximum no. of mapping entries, the maximum value is 67108864 (i.e. 2^{26}).

9.3.1.99 Mapping Information to Remove

This IE includes a list of mapping information indexes corresponding to the mapping configuration which is to be removed.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Mapping Information to Remove List Item		1.. <maxnoofMappingEntries>		
>Mapping Information Index	M		9.3.1.100	

Range bound	Explanation
maxnoofMappingEntries	Maximum no. of mapping entries, the maximum value is 67108864 (i.e. 2^{26}).

9.3.1.100 Mapping Information Index

This IE includes an index of one mapping information entry at the IAB-donor-DU or an IAB-DU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Mapping Information Index	M		BIT STRING (SIZE(26))	

9.3.1.101 IAB TNL Addresses Requested

The *IAB TNL Addresses Requested* IE indicates the number of IPv4 or IPv6 addresses or IPv6 address prefixes requested for the indicated usage.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
TNL Addresses or Prefixes Requested - All Traffic	O		INTEGER (1..256)	The number of TNL addresses/IPv6 prefixes requested for all

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
				traffic.
TNL Addresses or Prefixes Requested - F1-C traffic	O		INTEGER (1..256)	The number of TNL addresses/IPv6 prefixes requested for F1-C traffic.
TNL Addresses or Prefixes Requested - F1-U traffic	O		INTEGER (1..256)	The number of TNL addresses/IPv6 prefixes requested for F1-U traffic.
TNL Addresses or Prefixes Requested - Non-F1 traffic	O		INTEGER (1..256)	The number of TNL addresses/IPv6 prefixes requested for non-F1 traffic.

9.3.1.102 IAB TNL Address

The *IAB TNL Address* IE indicates an IPv4 or IPv6 address or an IPv6 address prefix assigned to an IAB-node.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
CHOICE <i>IAB TNL Address</i>	M			
> <i>IPv4 Address</i>				
>>IPv4 Address	M		BIT STRING (SIZE(32))	The IPv4 address allocated to an IAB-node.
> <i>IPv6 Address</i>				
>>IPv6 Address	M		BIT STRING (SIZE(128))	The IPv6 address allocated to an IAB-node.
> <i>IPv6 Prefix</i>				
>>IPv6 Prefix	M		BIT STRING (SIZE(64))	The IPv6 address prefix allocated to an IAB-node.

9.3.1.103 Uplink BH Non-UP Traffic Mapping

This IE indicates the mapping of uplink non-UP traffic to a BH RLC channel and BAP Routing ID.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Uplink Non-UP Traffic Mapping List		1		
>Uplink Non-UP Traffic Mapping List Item IEs		1 .. <maxnoofNonUPTrafficMappings>		
>>Non-UP Traffic Type	M		9.3.1.104	
>>BH Information	M		9.3.1.114	

Range bound	Explanation
maxnoofNonUPTrafficMappings	Maximum no. of non-UP traffic mappings. Value is 32.

9.3.1.104 Non-UP Traffic Type

This IE indicates the type of non-UP traffic.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Non-UP Traffic Type	M		ENUMERATED(UE-associated F1AP, non-UE-associated F1AP, non-F1, BAP control PDU, ...)	

9.3.1.105 IAB Info IAB-donor-CU

This IE contains cell-specific IAB-related information sent by an IAB-donor-CU to an IAB-DU or IAB-donor-DU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
IAB STC Info	O		9.3.1.109	Contains STC configuration of IAB-DU or IAB-donor-DU.

9.3.1.106 IAB Info IAB-DU

This IE contains cell-specific IAB-related information sent by an IAB-DU or IAB-donor-DU to an IAB-donor-CU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Multiplexing Info	O		9.3.1.108	Contains the information about multiplexing with cells configured for a collocated IAB-MT. Applicable for an IAB-DU.
IAB STC Info	O		9.3.1.109	Contains the information about STC configuration of IAB-DU or IAB-donor-DU.

9.3.1.107 gNB-DU Cell Resource Configuration

This IE contains the resource configuration of the cells served by a gNB-DU, i.e. the TDD/FDD resource parameters for each activated cell (TS 38.213 [31], clause 11.1.1).

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Subcarrier Spacing	M		ENUMERATED (kHz15, kHz30, kHz60, kHz120, kHz240, spare3, spare2, spare1, ...)	Subcarrier spacing used as reference for the TDD/FDD slot configuration.	-	
DUF Transmission Periodicity	O		ENUMERATED (ms0p5, ms0p625, ms1, ms1p25, ms2, ms2p5, ms5, ms10, ...)		-	
DUF Slot Configuration List		<i>0..1</i>			-	
>DUF Slot Configuration Item		<i>1..<maxno ofDUFSlot s></i>		The <i>maxNrofSlots</i> in TS 38.331 [8].	-	
>>CHOICE DUF Slot Configuration	M				-	
>>>Explicit Format						
>>>>Permutation	M		ENUMERATED (DFU, UFD, ...)		-	
>>>>Number of Downlink Symbols	O		INTEGER (0..14)		-	
>>>>Number of Uplink Symbols	O		INTEGER (0..14)		-	
>>>Implicit Format						
>>>>DUF Slot Format Index	M		INTEGER (0..254)	Index into Table 11.1.1-1 and Table 14-2 in TS 38.213 [31], excluding the last row in Table 14-2.	-	
HSNA Transmission	M		ENUMERATED		-	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Periodicity			(ms0p5, ms0p625, ms1, ms1p25, ms2, ms2p5, ms5, ms10, ms20, ms40, ms80, ms160, ...)			
HSNA Slot Configuration List		0..1			-	
>HSNA Slot Configuration Item		1..<maxno ofHSNASlots>			-	
>>HSNA Downlink	O		ENUMERATED (HARD, SOFT, NOTAVAILABLE)	HSNA value for downlink symbols in a slot.	-	
>>HSNA Uplink	O		ENUMERATED (HARD, SOFT, NOTAVAILABLE)	HSNA value for uplink symbols in a slot.	-	
>>HSNA Flexible	O		ENUMERATED (HARD, SOFT, NOTAVAILABLE)	HSNA value for flexible symbols in a slot.	-	
RB Set Configuration	O		9.3.1.230		YES	reject
Frequency-Domain HSNA Configuration List		0..1			YES	reject
>Frequency-Domain HSNA Configuration Item		1..<maxno ofRBsetsPerCell>			EACH	reject
>>RB Set Index	M		INTEGER (0..maxnoofRBsetsPerCell-1, ...)	Refers to an RB set defined by RB Set Configuration. The RB set indices are consecutive (and increasing) starting at 0.	-	
>>Frequency-Domain HSNA Slot Configuration List		1			-	
>>>Frequency-Domain HSNA Slot Configuration Item		1..<maxno ofHSNASlots>			-	
>>>>Slot Index	O		INTEGER (0..5119)	Indicates an index to a slot within the HSNA Transmission Periodicity.	-	
>>>>HSNA Downlink	O		ENUMERATED (HARD, SOFT, NOTAVAILABLE)	HSNA value for downlink symbols in a slot, for an RB set.	-	
>>>>HSNA Uplink	O		ENUMERATED (HARD, SOFT, NOTAVAILABLE)	HSNA value for uplink symbols in a slot, for an RB set.	-	
>>>>HSNA Flexible	O		ENUMERATED (HARD, SOFT, NOTAVAILABLE)	HSNA value for flexible symbols in a slot, for an RB set.	-	
Child IAB-Nodes NA Resource List		0..1		List of child IAB-nodes served by the IAB-DU or IAB-donor-DU.	YES	reject

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
>Child IAB-Nodes NA Resource List Item		1.. <maxno of ChildIABNodes>			EACH	reject
>>gNB-CU UE F1AP ID	M		9.3.1.4	Identifier of a child-node IAB-MT at the IAB-donor-CU.	-	
>>gNB-DU UE F1AP ID	M		9.3.1.5	Identifier of a child-node IAB-MT at an IAB-DU or IAB-donor-DU.	-	
>>NA Resource Configuration List		0..1		List of not-available resources of this cell for this child IAB-node	-	
>>>NA Resource Configuration Item		1.. <maxno of HSNASlots>			-	
>>>>NA Downlink	O		ENUMERATED (true, false, ...)	Indicates whether downlink symbols, in a slot, are available to serve the child IAB-node.	-	
>>>>NA Uplink	O		ENUMERATED (true, false, ...)	Indicates whether uplink symbols, in a slot, are available to serve the child IAB-node.	-	
>>>>NA Flexible	O		ENUMERATED (true, false, ...)	Indicates whether flexible symbols, in a slot, are available to serve the child IAB-node.	-	
Parent IAB Nodes NA Resource Configuration List		0..1		List of unavailable resources of this cell for this IAB-node.	YES	reject
>Parent IAB Nodes NA Resource Configuration Item		1.. <maxno of HSNASlots>			EACH	reject
>>NA Downlink	O		ENUMERATED (true, false, ...)	Indicates whether downlink symbols, in a slot, are unavailable to serve the IAB-node.	-	
>>NA Uplink	O		ENUMERATED (true, false, ...)	Indicates whether uplink symbols, in a slot, are unavailable to serve the IAB-node.	-	
>>NA Flexible	O		ENUMERATED (true, false, ...)	Indicates whether flexible symbols, in a slot, are unavailable to serve the IAB-node.	-	

Range bound	Explanation
maxnoofDUFSlots	Maximum no. of slots in 10ms. Value is 320.
maxnoofSymbols	Maximum no. of symbols in a slot. Value is 14.
maxnoofHSNASlots	Maximum no of "Hard", "Soft" or "Not available" slots in 160ms. Value is 5120.
maxnoofRBsetsPerCell	Maximum no. of RB sets per IAB-DU cell. Value is 8
maxnoofRBsetsPerCell-1	Maximum no. of RB sets per IAB-DU cell minus 1. Value is 7
maxnoofChildIABNodes	Maximum number of child nodes served by an IAB-DU or an IAB-donor-DU. Value is 1024.

9.3.1.108 Multiplexing Info

This IE contains information about the multiplexing capabilities between the gNB-DU's cell and the cells configured on the co-located IAB-MT.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
IAB-MT Cell List		1			-	
>IAB-MT Cell Item		1 .. <maxnoof ServingCells>			-	
>>NR Cell Identity	M		BIT STRING (SIZE(36))	Cell identity of a serving cell configured for a co-located IAB-MT.	-	
>>DU_RX/MT_RX	M		ENUMERATED (supported, not supported)	An indication of whether the IAB-node supports simultaneous reception at its DU and MT side.	-	
>>DU_TX/MT_TX	M		ENUMERATED (supported, not supported)	An indication of whether the IAB-node supports simultaneous transmission at its DU and MT side.	-	
>>DU_RX/MT_TX	M		ENUMERATED (supported, not supported)	An indication of whether the IAB-node supports simultaneous reception at its DU and transmission at its MT side.	-	
>>DU_TX/MT_RX	M		ENUMERATED (supported, not supported)	An indication of whether the IAB-node supports simultaneous transmission at its DU and reception at its MT side.	-	
>>DU_RX/MT_RX_extend	MO		ENUMERATED (supported, not supported, supported and FDM required)	An indication of whether the IAB-node supports simultaneous reception at its DU and MT side. If present, the DU_RX/MT_RX IE shall be ignored.	YES	ignore

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
>>DU_TX/MT_TX_extend	O		ENUMERATED (supported, not supported, supported and FDM required)	An indication of whether the IAB-node supports simultaneous transmission at its DU and MT side. If present, the DU_TX/MT_TX IE shall be ignored.	YES	ignore
>>DU_RX/MT_TX_extend	O		ENUMERATED (supported, not supported, supported and FDM required)	An indication of whether the IAB-node supports simultaneous reception at its DU and transmission at its MT side. If present, the DU_RX/MT_TX IE shall be ignored.	YES	ignore
>>DU_TX/MT_RX_extend	O		ENUMERATED (supported, not supported, supported and FDM required)	An indication of whether the IAB-node supports simultaneous transmission at its DU and reception at its MT side. If present, the DU_TX/MT_RX IE shall be ignored.	YES	ignore

Range bound	Explanation
maxnoofServingCells	Maximum no. of serving cells for IAB-MT. Value is 32, as defined by the <i>maxNrofServingCells</i> in TS 38.331 [8].

9.3.1.109 IAB STC Info

This IE contains cell SSB Transmission Configuration (STC) information of an IAB-DU or IAB-donor-DU. The information is used by neighbour IAB-MTs for discovery and measurements of this IAB-DU or IAB-donor-DU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
IAB STC-Info List		<i>1</i>		
>IAB STC-Info Item		<i>1 ..<maxnoofIABSTCInfo></i>		
>>SSB Frequency Info	M		INTEGER (0.. maxNRARFCN)	The SSB central frequency.
>>SSB Subcarrier Spacing	M		ENUMERATED (kHz15, kHz30, kHz120, kHz240, spare3, spare2, spare1, ...)	The SSB subcarrier spacing.
>>SSB Transmission Periodicity	M		ENUMERATED (sf10, sf20, sf40, sf80, sf160, sf320, sf640, ..., sf5)	
>>SSB Transmission Timing Offset	M		INTEGER (0.. 127, ...)	SSB transmission timing offset in number of half-frames.
>>CHOICE SSB Transmission Bitmap	M			The <i>SSB-ToMeasure</i> IE defined in TS 38.331 [8].

IE/Group Name	Presence	Range	IE type and reference	Semantics description
>>>Short Bitmap				
>>>>Short Bitmap	M		BIT STRING (SIZE (4))	
>>>Medium Bitmap				
>>>>Medium Bitmap	M		BIT STRING (SIZE (8))	
>>>Long Bitmap				
>>>>Long Bitmap	M		BIT STRING (SIZE (64))	

Range bound	Explanation
maxnoofIABSTCInfo	Maximum no. of STC configurations. Value is 5. This includes 1 STC configuration for access and 4 STC configurations for backhaul.
maxNRARFCN	Maximum value of NR ARFCNs. Value is 3279165.

9.3.1.110 BAP Routing ID

This IE indicates the BAP Routing ID.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
BAP Address	M		9.3.1.111	
Path ID	M		BAP Path ID 9.3.1.112	

9.3.1.111 BAP Address

This IE indicates the BAP address of an IAB-node or of an IAB-donor-DU, and it is part of the BAP Routing ID.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
BAP Address	M		BIT STRING (SIZE(10))	Corresponds to the <i>bap-Address</i> contained in the <i>RRCReconfiguration</i> message or contained in the BAP-RoutingID IE, or the <i>iab-donor-DU-BAP-Address</i> contained in the <i>RRCReconfiguration</i> message defined TS 38.331[8].

9.3.1.112 BAP Path ID

This IE indicates the BAP path ID, which is part of the BAP Routing ID.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
BAP Path ID	M		BIT STRING (SIZE(10))	Corresponds to the <i>bap-Pathid</i> contained in the <i>BAP-RoutingID</i> IE defined in subclause 6.3.2 of TS 38.331 [8].

9.3.1.113 BH RLC Channel ID

This IE uniquely identifies a BH RLC channel in the link between IAB-MT of the IAB-node and IAB-DU of the parent IAB-node or IAB-donor-DU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
BH RLC CH ID	M		BIT STRING (SIZE(16))	

9.3.1.114 BH Information

This IE includes the backhaul information for UL or DL.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
BAP Routing ID	O		9.3.1.110	This IE is not needed for the BAP control PDU. For UL F1-U traffic, the BAP address included in this IE also indicates the IAB-donor-DU via which the DL traffic is transmitted.	-	
Egress BH RLC CH List		0..1			-	
>Egress BH RLC CH List Item		1.. <maxnoof EgressLinks>			-	
>>Next-Hop BAP Address	M		9.3.1.111	This IE identifies the next-hop node on the backhaul path to receive the packet. The value of this IE should be unique in the whole list.	-	
>>Egress BH RLC CH ID	M		BH RLC Channel ID 9.3.1.113	This IE identifies the BH RLC channel in the link between the IAB node/IAB-donor-DU and the node identified by the <i>Next-Hop BAP Address</i> IE.	-	
Non-F1-Terminating IAB-donor Topology Indicator	O		ENUMERATED (true, ...)	If present, indicates that the Next-Hop BAP Address and Egress BH RLC CH ID contained in this IE pertain to the non-F1-terminating IAB-donor topology of the boundary IAB-node.	YES	ignore

Range bound	Explanation
maxnoofEgressLinks	Maximum no. of egress links. Value is 2.

9.3.1.115 Control Plane Traffic Type

This IE indicates the control plane traffic type carried over a BH RLC channel.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Control Plane Traffic Type	M		INTEGER (1..3, ...)	Control plane traffic types with different priorities are identified by the different codepoints in this IE, where 1 has the highest priority.

9.3.1.116 NR V2X Services Authorized

This IE provides information on the authorization status of the UE to use the NR sidelink for V2X services.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Vehicle UE	O		ENUMERATED (authorized, not authorized, ...)	Indicates whether the UE is authorized as Vehicle UE.
Pedestrian UE	O		ENUMERATED (authorized, not authorized, ...)	Indicates whether the UE is authorized as Pedestrian UE.

9.3.1.117 LTE V2X Services Authorized

This IE provides information on the authorization status of the UE to use the LTE sidelink for V2X services.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Vehicle UE	O		ENUMERATED (authorized, not authorized, ...)	Indicates whether the UE is authorized as Vehicle UE.
Pedestrian UE	O		ENUMERATED (authorized, not authorized, ...)	Indicates whether the UE is authorized as Pedestrian UE.

9.3.1.118 LTE UE Sidelink Aggregate Maximum Bit Rate

This IE provides information on the Aggregate Maximum Bitrate of the UE's communication over LTE sidelink.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
LTE UE Sidelink Aggregate Maximum Bit Rate	M		Bit Rate 9.3.1.4	Value 0 shall be considered as a logical error by the receiving gNB-DU.

9.3.1.119 NR UE Sidelink Aggregate Maximum Bit Rate

This IE provides information on the Aggregate Maximum Bitrate of the UE's communication over NR sidelink.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
NR UE Sidelink Aggregate Maximum Bit Rate	M		Bit Rate 9.3.1.4	Value 0 shall be considered as a logical error by the receiving

IE/Group Name	Presence	Range	IE type and reference	Semantics description
				gNB-DU.

9.3.1.120 SL DRB ID

This IE uniquely identifies a SL DRB for a UE.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
SL DRB ID	M		INTEGER (1.. 512, ...)	Corresponds to the <i>SLRB-Uu-ConfigIndex</i> IE defined in TS 38.331 [8].

9.3.1.121 PC5 QoS Flow Identifier

This IE uniquely identifies one sidelink QoS flow between the UE and the network in the scope of UE.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
PC5 QoS Flow Identifier	M		INTEGER (1.. 2048)	Corresponds to the <i>SL-QoS-FlowIdentity</i> IE defined in TS 38.331 [8].

9.3.1.122 PC5 QoS Parameters

This IE defines the QoS to be applied to a SL DRB.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
CHOICE <i>PC5 QoS Characteristics</i>	M				-	
> <i>Non-dynamic PQI</i>					-	
>>Non Dynamic PQI Descriptor	M		9.3.1.126		-	
> <i>Dynamic PQI</i>					-	
>>Dynamic PQI Descriptor	M		9.3.1.127		-	
PC5 QoS Flow Bit Rates	O			Only applies for GBR QoS Flows.	-	
>Guaranteed Flow Bit Rate	M		Bit Rate 9.3.1.22	Guaranteed Bit Rate for the PC5 QoS flow. Details in TS 23.287 [40].	-	
>Maximum Flow Bit Rate	M		Bit Rate 9.3.1.22	Maximum Bit Rate for the PC5 QoS flow. Details in TS 23.287 [40].	-	

Range bound	Explanation
maxnoofPC5QoSFlows	Maximum no. of PC5 QoS flows allowed towards one UE for NR sidelink communication, the maximum value is 2048.

9.3.1.123 Alternative QoS Parameters Set Index

This IE indicates the index of alternative QoS parameters set.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Alternative QoS Parameters Set Index	M		INTEGER (1..8, ...)	Values are ordered in decreasing order of priority, i.e., with 1 as the highest priority and 8 as the lowest priority.

9.3.1.124 Alternative QoS Parameters Set Notify Index

This IE indicates the QoS parameters set which can currently be fulfilled.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Alternative QoS Parameters Set Notify Index	M		INTEGER (0..8, ...)	Indicates the index of the item within the the <i>Alternative QoS Parameters Set List</i> IE corresponding to the currently fulfilled alternative QoS parameters set. Value 0 indicates that NG-RAN cannot even fulfil the lowest priority alternative parameter set.

9.3.1.125 Alternative QoS Parameters Set List

This IE contains alternative sets of QoS parameters which the gNB 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 Set Item		<i>1..<maxnoofQoSParaSets></i>		
>Alternative QoS Parameters Set Index	M		9.3.1.123	
>Guaranteed Flow Bit Rate Downlink	O		Bit Rate 9.3.1.22	
>Guaranteed Flow Bit Rate Uplink	O		Bit Rate 9.3.1.22	
>Packet Delay Budget	O		9.3.1.51	
>Packet Error Rate	O		9.3.1.52	

Range bound	Explanation
maxnoofQoSParaSets	Maximum no. of alternative sets of QoS Parameters allowed for the QoS profile. Value is 8.

9.3.1.126 Non Dynamic PQI Descriptor

This IE indicates the QoS Characteristics for a standardized or pre-configured PQI for sidelink.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
5QI	M		INTEGER (0..255,...)	This IE contains the standardized or pre-configured PQI as specified in TS 23.287 [40]
QoS Priority Level	O		INTEGER (1..8,...)	For details see TS 23.501 [21]. When included overrides standardized or pre-configured value.
Averaging Window	O		9.3.1.53	For details see TS 23.501 [21]. When included overrides standardized or pre-configured

IE/Group Name	Presence	Range	IE type and reference	Semantics description
				value.
Maximum Data Burst Volume	O		9.3.1.54	For details see TS 23.501 [21]. When included overrides standardized or pre-configured value.

9.3.1.127 Dynamic PQI Descriptor

This IE indicates the QoS Characteristics for a Non-standardised or not pre-configured PQI for sidelink.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Resource Type	O		ENUMERATED (GBR, non-GBR, delay critical GBR, ...)	
QoS Priority Level	M		INTEGER (1..8, ...)	For details see TS 23.501 [21].
Packet Delay Budget	M		9.3.1.51	For details see TS 23.501 [21].
Packet Error Rate	M		9.3.1.52	For details see TS 23.501 [21].
Averaging Window	C-ifGBRflow		9.3.1.53	For details see TS 23.501 [21].
Maximum Data Burst Volume	O		9.3.1.54	For details see TS 23.501 [21]. This IE shall be included if the <i>Delay Critical</i> IE is set to "delay critical" and is ignored otherwise.

Condition	Explanation
ifGBRflow	This IE shall be present if the <i>PC5 QoS Flow Bit Rates</i> IE is present in the <i>PC5 QoS parameters</i> IE.

9.3.1.128 TNL Capacity Indicator

The *TNL Capacity Indicator* IE indicates the offered and available capacity of the Transport Network experienced by the gNB-DU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
DL TNL Offered Capacity	M		INTEGER (1..16777216,...)	Maximum capacity offered by the transport portion of the gNB-DU – gNB-CU in kbps
DL TNL Available Capacity	M		INTEGER (0..100,...)	Available capacity over the transport portion serving the node in percentage. Value 100 corresponds to the offered capacity
UL TNL Offered Capacity	M		INTEGER (1..16777216,...)	Maximum capacity offered by the transport portion of the gNB-DU – gNB-CU in kbps
UL TNL Available Capacity	M		INTEGER (0..100,...)	Available capacity over the transport portion serving the node in percentage. Value 100 corresponds to the offered capacity

9.3.1.129 Radio Resource Status

The *Radio Resource Status* IE indicates the usage of the PRBs per cell for MIMO, per SSB area and per slice for all traffic in Downlink and Uplink and the usage of PDCCH CCEs for Downlink and Uplink scheduling.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
SSB Area Radio Resource Status List		1			-	
>SSB Area Radio Resource Status Item		1..<maxno ofSSBAreas>			-	
>>SSB Index	M		INTEGER (0..63)		-	
>>SSB Area DL GBR PRB usage	M		INTEGER (0..100)	Per SSB area DL GBR PRB usage in percentage of the cell total PRB number.	-	
>>SSB Area UL GBR PRB usage	M		INTEGER (0..100)	Per SSB area UL GBR PRB usage in percentage of the cell total PRB number.	-	
>>SSB Area DL non-GBR PRB usage	M		INTEGER (0..100)	Per SSB area DL non-GBR PRB usage in percentage of the cell total PRB number.	-	
>>SSB Area UL non-GBR PRB usage	M		INTEGER (0..100)	Per SSB area UL non-GBR PRB usage in percentage of the cell total PRB number.	-	
>>SSB Area DL Total PRB usage	M		INTEGER (0..100)	Per SSB area DL Total PRB usage in percentage of the cell total PRB number.	-	
>>SSB Area UL Total PRB usage	M		INTEGER (0..100)	Per SSB area UL Total PRB usage in percentage of the cell total PRB number.	-	
>>DL scheduling PDCCH CCE usage	O		INTEGER (0..100)		-	
>>UL scheduling PDCCH CCE usage	O		INTEGER (0..100)		-	
Slice Radio Resource List		0..1			YES	ignore
>Slice Radio Resource Item		1..<maxno ofB PLMNsNR>			-	
>>PLMN Identity	M		9.3.1.14	Broadcast PLMN	-	
>>S-NSSAI Radio Resource Status List		1			-	
>>>S-NSSAI Radio Resource Status Item		1..<maxno ofSliceltems>			-	
>>>>S-NSSAI	M		9.3.1.38		-	
>>>>S-NSSAI DL GBR PRB usage	M		INTEGER (0..100)	Per slice DL GBR PRB usage in percentage of the cell total PRB number.	-	
>>>>S-NSSAI UL GBR PRB usage	M		INTEGER (0..100)	Per slice UL GBR PRB usage for this slice in percentage of the cell total	-	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				PRB number.		
>>>>S-NSSAI DL non-GBR PRB usage	M		INTEGER (0..100)	Per slice DL non-GBR PRB usage for this slice in percentage of the cell total PRB number.	-	
>>>>S-NSSAI UL non-GBR PRB usage	M		INTEGER (0..100)	Per slice UL non-GBR PRB usage for this slice in percentage of the cell total PRB number.	-	
>>>>Slice DL Total PRB allocation	M		INTEGER (0..100)	Total amount of DL PRBs available per cell for this slice if all the resources the slice could access were usable.	-	
>>>>Slice UL Total PRB allocation	M		INTEGER (0..100)	Total amount of UL PRBs available per cell for this slice if all the resources the slice could access were usable.	-	
MIMO PRB usage Information	O				YES	ignore
>DL GBR PRB usage for MIMO	M		INTEGER (0..100)	Per cell DL GBR PRB usage for MIMO in percentage of the cell total PRB number as defined in TS 38.314 [32].	-	
>UL GBR PRB usage for MIMO	M		INTEGER (0..100)	Per cell UL GBR PRB usage for MIMO in percentage of the cell total PRB number as defined in TS 38.314 [32].	-	
>DL non-GBR PRB usage for MIMO	M		INTEGER (0..100)	Per cell DL non-GBR PRB usage for MIMO in percentage of the cell total PRB number as defined in TS 38.314 [32].	-	
>UL non-GBR PRB usage for MIMO	M		INTEGER (0..100)	Per cell UL non-GBR PRB usage for MIMO in percentage of the cell total PRB number as defined in TS 38.314 [32].	-	
>DL Total PRB usage for MIMO	M		INTEGER (0..100)	Per cell DL Total PRB usage for MIMO in percentage of the cell total PRB number as defined in TS 38.314 [32].	-	
>UL Total PRB usage for MIMO	M		INTEGER (0..100)	Per cell UL Total PRB usage for	-	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				MIMO in percentage of the cell total PRB number as defined in TS 38.314 [32].		

Range bound	Explanation
maxnoofSSBAreas	Maximum no. SSB Areas that can be served by a cell. Value is 64.
maxnoofSliceltems	Maximum no. of signalled slice support items. Value is 1024.
maxnoofBPLMNsNR	Maximum no. of PLMN Ids.broadcast in a cell. Value is 12.

9.3.1.130 Composite Available Capacity Group

The *Composite Available Capacity Group* IE indicates the overall available resource level per cell and per SSB area in the cell in Downlink and Uplink.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Composite Available Capacity Downlink	M		Composite Available Capacity 9.3.1.131	For the Downlink	-	
Composite Available Capacity Uplink	M		Composite Available Capacity 9.3.1.131	For the Uplink, including both NUL and SUL (if available)	-	
Composite Available Capacity Supplementary Uplink	O		Composite Available Capacity 9.3.1.131	For the SUL	YES	ignore

9.3.1.131 Composite Available Capacity

The *Composite Available Capacity* IE indicates the overall available resource level in the cell in either Downlink or Uplink.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Cell Capacity Class Value	O		9.3.1.132	
Capacity Value	M		9.3.1.133	'0' indicates no resource is available, Measured on a linear scale.

9.3.1.132 Cell Capacity Class Value

The *Cell Capacity Class Value* IE indicates the value that classifies the cell capacity with regards to the other cells. The *Cell Capacity Class Value* IE only indicates resources that are configured for traffic purposes.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Capacity Class Value	M		INTEGER (1..100,...)	Value 1 shall indicate the minimum cell capacity, and 100 shall indicate the maximum cell capacity. There should be a linear relation between cell capacity and Cell Capacity Class Value.

9.3.1.133 Capacity Value

The *Capacity Value* IE indicates the amount of resources per cell and per SSB area that are available relative to the total gNB-DU resources. The capacity value should be measured and reported so that the minimum gNB-DU resource usage of existing services is reserved according to implementation. The *Capacity Value* IE can be weighted according to the ratio of cell capacity class values, if available.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Capacity Value	M		INTEGER (0..100)	Value 0 shall indicate no available capacity, and 100 shall indicate maximum available capacity with respect to the whole cell. Capacity Value should be measured on a linear scale.
SSB Area Capacity Value List		<i>0..1</i>		
>SSB Area Capacity Value Item		<i>1..<maxnoofS SBAreas></i>		
>>SSB Index	M		INTEGER (0..63)	
>>SSB Area Capacity Value	M		INTEGER (0..100)	Value 0 shall indicate no available capacity, and 100 shall indicate maximum available capacity . SSB Area Capacity Value should be measured on a linear scale.

Range bound	Explanation
maxnoofSSBAreas	Maximum no. SSB Areas that can be served by a cell. Value is 64.

9.3.1.134 Slice Available Capacity

The *Slice Available Capacity* IE indicates the amount of resources per network slice that are available per cell relative to the total gNB-DU resources per cell. The *Slice Available Capacity Value Downlink* IE and the *Slice Available Capacity Value Uplink* IE can be weighted according to the ratio of the corresponding cell capacity class values contained in the *Composite Available Capacity Group* IE, if available.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Slice Available Capacity List		<i>1</i>		
>Slice Available Capacity Item		<i>1..< maxnoofBPLM NsNR ></i>		
>>PLMN Identity	M		9.3.1.14	Broadcast PLMN
>>S-NSSAI Available Capacity List		<i>1</i>		
>>>S-NSSAI Available Capacity Item	M	<i>1 .. < maxnoofSlicelt ems></i>		
>>>>S-NSSAI			9.3.1.38	
>>>>Slice Available Capacity Value Downlink	O		INTEGER (0..100)	Value 0 shall indicate no available capacity, and 100 shall indicate maximum available capacity . Slice Available Capacity Value Downlink should be measured on a linear scale.
>>>>Slice Available Capacity Value Uplink	O		INTEGER (0..100)	Value 0 shall indicate no available capacity, and 100 shall indicate maximum available capacity . Slice Available Capacity Value Uplink should be measured on a linear scale.

Range bound	Explanation
maxnoofSliceltems	Maximum no. of signalled slice support items. Value is 1024.
maxnoofBPLMNsNR	Maximum no. of PLMN Ids.broadcast in a cell. Value is 12.

9.3.1.135 Number of Active UEs

The *Number of Active UEs* IE indicates the mean number of active UEs as defined in TS 38.314 [32].

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Mean number of Active UEs	M		INTEGER (0..16777215, ...)	As defined in TS 38.314 [32] and where value "1" is equivalent to 0.1 Active UEs, value "2" is equivalent to 0.2 Active UEs, value n is equivalent to $n/10$ Active UEs.

9.3.1.136 Hardware Load Indicator

The *Hardware Load Indicator* IE indicates the status of the Hardware Load.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
DL Hardware Load Indicator	M		INTEGER (0..100)	This indicates the load in percent
UL Hardware Load Indicator	M		INTEGER (0..100)	This indicates the load in percent

9.3.1.137 NR Carrier List

This IE indicates the SCS-specific carriers per TDD, per DL, per UL or per SUL of an NR cell.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
NR Carrier Item		<i>1..<maxnoofNRSCSS></i>		
>NR SCS	M		ENUMERATED (scs15, scs30, scs60, scs120, ..., scs480, scs960)	SCS for the corresponding carrier.
>Offset to Carrier	M		INTEGER (0..2199, ...)	Offset in frequency domain between Point A (lowest subcarrier of common RB 0) and the lowest usable subcarrier on this carrier in number of PRBs (using the <i>NR SCS</i> IE defined for this carrier). The maximum value corresponds to $275 \times 8 - 1$. See TS 38.211 [33], clause 4.4.2.
>Carrier Bandwidth	M		INTEGER (1..maxnoofPhysicalResourceBlocks, ...)	Width of this carrier in number of PRBs (using the <i>NR SCS</i> IE defined for this carrier). See TS 38.211 [33], clause 4.4.2.

Range bound	Explanation
maxnoofNRSCSS	Maximum no. of SCS-specific carriers per TDD, per DL, per UL or per SUL of an NR cell. Value is 5.
maxnoofPhysicalResourceBlocks	Maximum no. of Physical Resource Blocks. Value is 275.

9.3.1.138 SSB Positions In Burst

Indicates the time domain positions of the transmitted SS-blocks in a half frame with SS/PBCH blocks as defined in TS 38.213 [31], clause 4.1.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
CHOICE <i>ssb-PositionsInBurst</i>	M			The first/ leftmost bit corresponds to SS/PBCH block index 0, the second bit corresponds to SS/PBCH block index 1, and so on. Value 0 in the bitmap indicates that the corresponding SS/PBCH block is not transmitted while value 1 indicates that the corresponding SS/PBCH block is transmitted.
> <i>ShortBitmap</i>				
>>ShortBitmap	M		BIT STRING (SIZE(4))	
> <i>MediumBitmap</i>				
>>MediumBitmap	M		BIT STRING (SIZE(8))	
> <i>LongBitmap</i>				
>>LongBitmap	M		BIT STRING (SIZE(64))	

9.3.1.139 NR PRACH Configuration

This IE indicates the PRACH resources by a NR cell.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
UL PRACH Configuration	M		NR PRACH Configuration List 9.3.1.140	
SUL PRACH Configuration	O		NR PRACH Configuration List 9.3.1.140	

9.3.1.140 NR PRACH Configuration List

This IE indicates the PRACH resources used or reserved in the UL carrier(s) or SUL carrier(s) of the current NR cell.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
NR PRACH Configuration Item		<i>0..<maxnoofPrachConfiguration></i>		Length=0 means releasing of all NR PRACH Configuration Items for this UL or SUL.	-	
>NR SCS	M		ENUMERATED (scs15, scs30, scs60, scs120, ..., scs480, scs960)	The SCS of the carrier to which this <i>PRACH Configuration Item</i> relates, i.e. Δf in Section 5.3.2 in TS 38.211 [33]. The values scs15, scs30, scs60,	-	

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
				scs120, scs 480, and scs960 corresponds to the sub carrier spacing in TS 38.104 [17]. NOTE: Its value may not be identical to the SCS of PRACH.		
>PRACH Frequency Start from Carrier	M		INTEGER (0..maxNrofPhysicalResourceBlocks-1, ...)	Lowest number of resource blocks which can be used to deliver MSG1 or the preamble part of MSGA, counting from the start number of the corresponding carrier. Identical to RB_{start_i} in Section 5.1.2.2.2 in TS 38.214 [34] plus <i>msg1-FrequencyStart</i> or <i>msgA-RO-FrequencyStart-r16</i> in TS 38.331 [8].	-	
>PRACH-FDM	M		ENUMERATED (one, two, four, eight, ...)	<i>M</i> in Section 6.3.3.2 in TS 38.211 [33].	-	
>PRACH Configuration Index	M		INTEGER (0..255, ..., 256..262)	See Section 6.3.3.2 in TS 38.211 [33].	-	
>SSB per RACH Occasion	M		ENUMERATED (oneEighth, oneFourth, oneHalf, one, two, four, eight, sixteen, ...)	Number of SSBs per RACH occasion. Value <i>oneEight</i> corresponds to one SSB associated with 8 RACH occasions, value <i>oneFourth</i> corresponds to one SSB associated with 4 RACH occasions, and so on.	-	
>CHOICE <i>FreqDomainLength</i>	M			For the case of PRACH resources reserved for BFR or MSG1-based SI Request, <i>L139</i> is always used.	-	
>>L839						
>>>L839 Info		1			-	
>>>>Root Sequence Index	M		INTEGER (0..837)	See Section 6.3.3.1 in TS 38.211 [33].	-	
>>>>Restricted Set Config	M		ENUMERATED (unrestrictedSet, restrictedSetTy	See Section 6.3.3.1 in TS 38.211 [33].	-	

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
			peA, restrictedSetTy peB, ...)			
>>L139						
>>>L139 Info		1			-	
>>>>PRACH SCS	M		ENUMERATED (scs15, scs30, scs60, scs120, ..., scs480, scs960)	Subcarrier Spacing of PRACH, i.e. Δf_{RA} in Section 5.3.2 in TS 38.211 [33].	-	
>>>>Root Sequence Index	O		INTEGER (0..137)	See Section 6.3.3.1 in TS 38.211 [33].	-	
>>L571					YES	reject
>>>L571 Info		1			-	
>>>>PRACH SCS for L571	M		ENUMERATED (scs30, scs120, ... , scs480)	Subcarrier Spacing of PRACH, i.e. Δf_{RA} in Section 5.3.2 in TS 38.211 [33].	-	
>>>>Root Sequence Index	M		INTEGER (0..569)	See Section 6.3.3.1 in TS 38.211 [33].	-	
>>L1151					YES	reject
>>>L1151 Info		1			-	
>>>>PRACH SCS for L1151	M		ENUMERATED (scs15, scs120, ...)	Subcarrier Spacing of PRACH, i.e. Δf_{RA} in Section 5.3.2 in TS 38.211 [33].	-	
>>>>Root Sequence Index	M		INTEGER (0..1149)	See Section 6.3.3.1 in TS 38.211 [33].	-	
>Zero Correlation Zone Config	M		INTEGER (0..15)	See Section 6.3.3.1 in TS 38.211 [33].	-	

Range bound	Explanation
maxnoofPhysicalResourceBlocks-1	Maximum no. of Physical Resource Blocks minus 1. Value is 274.
maxnoofPrachConfiguration	Maximum no. of PRACH Configuration. Value is 16.

9.3.1.141 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 9.3.1.142	
TSC Assistance Information Uplink	O		TSC Assistance Information 9.3.1.142	

9.3.1.142 TSC Assistance Information

This IE provides the TSC assistance information for a TSC QoS flow in the uplink or downlink (see TS 23.501 [21]).

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Periodicity	M		9.3.1.143	Periodicity as specified in TS 23.501 [21].	-	
Burst Arrival Time	O		9.3.1.144	Burst Arrival Time as specified in TS 23.501 [21].	-	
Survival Time	O		9.3.1.231		YES	ignore

9.3.1.143 Periodicity

This IE indicates the Periodicity as defined in TS 23.501 [21].

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Periodicity	M		INTEGER (0..640000, ...)	Periodicity expressed in units of 1 us.

9.3.1.144 Burst Arrival Time

This IE indicates the Burst Arrival Time as defined in TS 23.501 [21].

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Burst Arrival Time	M		OCTET STRING	Encoded in the same format as the <i>ReferenceTime</i> IE as defined in TS 38.331 [8]. The value is provided with 1 us accuracy.

9.3.1.145 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.

9.3.1.146 RLC Duplication Information

The IE contains the RLC duplication information in case that the indicated DRB is configured with more than two RLC entities as specified in TS 38.331 [8].

IE/Group Name	Presence	Range	IE type and reference	Semantics description
RLC Duplication State List		<i>1</i>		
>RLC Duplication State Items		<i>1 .. <maxnoofRLC DuplicationState></i>		Each position in the list represents a secondary RLC entity in ascending order by the logical channel ID in the order of MCG and SCG.
>>Duplication State	M		ENUMERATED (Active, Inactive, ...)	
Primary Path Indication	O		ENUMERATED (True, False,...)	Indicates whether the primary path is located at the gNB-DU for DC based PDCP duplication.

Range bound	Explanation
maxnoofRLCDuplicationState	Maximum no of Secondary RLC entities. Value is 3.

9.3.1.147 Reporting Request Type

This IE indicates the type of accurate reference time information reporting to be handled by the gNB-DU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Event Type	M		ENUMERATED (on demand, periodic, stop, ...)	
Report Periodicity Value	C- ifEventTyp eisPeriodi c		INTEGER (0..512, ...)	Indicates the periodicity of accurate reference time information report, Unit in radio frame.

Condition	Explanation
ifEventTypeisPeriodic	This IE shall be present if the <i>Event Type</i> IE is set to "periodic".

9.3.1.148 Time Reference Information

This IE contains the time reference information.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Reference Time	M		9.3.1.149	
Reference SFN	M		INTEGER (0..1023)	Corresponds to the <i>referenceSFN</i> contained in the <i>ReferenceTimeInfo</i> IE, as defined in TS 38.331 [8]
Uncertainty	O		INTEGER (0..32767, ...)	Corresponds to the <i>uncertainty</i> contained in the <i>ReferenceTimeInfo</i> IE, as defined in TS 38.331 [8].
Time Information Type	O		ENUMERATED (localClock)	Corresponds to the <i>timeInfoType</i> contained in the <i>ReferenceTimeInfo</i> IE, as defined in TS 38.331 [8].

9.3.1.149 Reference Time

This IE provides the accurate Reference Time information.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Reference Time	M		OCTET STRING	Includes the <i>ReferenceTime</i> IE contained in the <i>ReferenceTimeInfo</i> IE as defined in TS 38.331 [8].

9.3.1.150 MDT Configuration

The IE defines the 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, ...)	
Measurements to Activate	M		BITSTRING (SIZE(8))	Each position in the bitmap indicates a MDT measurement, as defined in TS 37.320 [35]. Second Bit = M2, Fifth Bit = M5, 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 3, bit 4 and bit 6.
M2 Configuration	C-ifM2		ENUMERATED (true, ...)	
M5 Configuration	C-ifM5		9.3.1.152	
M6 Configuration	C-ifM6		9.3.1.153	
M7 Configuration	C-ifM7		9.3.1.154	

Condition	Explanation
ifM2	This IE shall be present if the <i>Measurements to Activate</i> IE has the second bit set to "1".
ifM5	This IE shall be present if the <i>Measurements to Activate</i> IE has the fifth bit set to "1".
ifM6	This IE shall be present if the <i>Measurements to Activate</i> IE has the seventh bit set to "1".
ifM7	This IE shall be present if the <i>Measurements to Activate</i> IE has the eighth bit set to "1".

9.3.1.151 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		PLMN ID 9.3.1.14	

Range bound	Explanation
maxnoofMDTPLMNs	Maximum no. of PLMNs in the MDT PLMN list. Value is 16.

9.3.1.152 M5 Configuration

This IE defines the parameters for M5 measurement collection.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
M5 Collection Period	M		ENUMERATED (ms1024, ms2048, ms5120,		-	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
			ms10240, min1, ...)			
M5 Links to log	M		ENUMERATED (uplink, downlink, both-uplink-and-downlink, ...)		-	
M5 Report Amount	O		ENUMERATED (1, 2, 4, 8, 16, 32, 64, infinity...)	Number of reports.	YES	ignore

9.3.1.153 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, ms640, ms1024, ms2048, ms5120, ms10240, ms20480, ms40960, min1,min6, min12, min30,..., ms480)		-	
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

9.3.1.154 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, ...)	Unit: minutes	-	
M7 Links to log	M		ENUMERATED (downlink, ...)		-	
M7 Report Amount	O		ENUMERATED (1, 2, 4, 8, 16, 32, 64, infinity...)	Number of reports.	YES	ignore

9.3.1.155 NID

This IE is used to identify (together with a PLMN identifier) a Stand-alone Non-Public Network. 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))	

9.3.1.156 NPN Support Information

This IE contains NPN related information associated with Network Slicing information.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
CHOICE <i>NPN Support Information</i>	M			
>SNPN Information				
>>NID	M		9.3.1.155	

9.3.1.157 NPN Broadcast Information

This IE contains NPN related broadcast information.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
CHOICE <i>NPN Broadcast Information per PLMN</i>	M			
>SNPN Information				
>>Broadcast SNPN ID List	M		9.3.1.158	
>PNI-NPN Information				
>>Broadcast PNI-NPN ID List	M		9.3.1.162	

9.3.1.158 Broadcast SNPN ID List

This IE contains SNPN related broadcast information associated with a set of PLMNs.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Broadcast SNPN ID List		<i>1..<maxnoofNIDs></i>		
>PLMN Identity	M		9.3.1.14	
>Broadcast NID List	M		9.3.1.159	

Range bound	Explanation
maxnoofNIDs	Maximum no. of NIDs broadcast in a cell. Value is 12.

9.3.1.159 Broadcast NID List

This IE contains a list of NIDs.

IE/Group Name	Presence	RangeNIDsupported	IE type and reference	Semantics description
Broadcast NID		<i>1..<maxnoofNIDsupported></i>		
>NID	M		9.3.1.155	

Range bound	Explanation
maxnoofNIDsupported	Maximum no. of NIDs broadcast in a cell. Value is 12.

9.3.1.160 Broadcast CAG-Identifier List

This IE contains a list of CAG-Identifiers.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Broadcast CAG-Identifier List		<i>1..<maxnoofCAGsupported></i>		
>CAG ID	M		9.3.1.161	

Range bound	Explanation
maxnoofCAGsupported	Maximum no. of CAG-Identifiers broadcast in a cell. Value is 12.

9.3.1.161 CAG ID

This IE is used to identify (together with a PLMN identifier) a Public Network Integrated NPN, as defined in TS 23.003 [23].

IE/Group Name	Presence	Range	IE type and reference	Semantics description
CAG ID	M		BIT STRING (SIZE (32))	Closed Access Group ID used in NR.

9.3.1.162 Broadcast PNI-NPN ID Information

This IE contains a list of PNI-NPN IDs.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Broadcast PNI-NPN ID Information		<i>1..<maxnoofBPLMNs></i>		Broadcast PLMNs
>PLMN Identity	M		9.3.1.14	
>Broadcast CAG-Identifier List	M		9.3.1.160	

Range bound	Explanation
maxnoofBPLMNs	Maximum no. of broadcast PLMNs by a cell. Value is 12.

9.3.1.163 Available SNPN ID List

This IE indicates the list of available SNPN ID.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Available SNPN ID List		<i>1..<maxnoofNIDs></i>		
>PLMN Identity	M		9.3.1.14	
>Available NID List	M		Broadcast NID List 9.3.1.159	

Range bound	Explanation
maxnoofNIDs	Maximum no. of NIDs broadcast in a cell. Value is 12.

9.3.1.164 Void

9.3.1.165 Extended Slice Support List

This IE indicates a list of supported slices.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Slice Support Item IEs		<i>1..<maxnoofExtSliceItems></i>		
>S-NSSAI	M		9.3.1.38	

Range bound	Explanation
maxnoofExtSliceItems	Maximum no. of signalled slice support items. Value is 65535.

9.3.1.166 Positioning Measurement Result

The purpose of this information element is to provide the measurement result(s).

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
Positioning Measured Result Item		<i>1 .. <maxnoofPosMeas></i>			-	
>CHOICE Measured Results Value	M				-	
>>UL Angle of Arrival						
>>>UL Angle of Arrival	M		9.3.1.167		-	
>>UL SRS-RSRP						
>>>UL SRS-RSRP	M		INTEGER (0..126)		-	
>>UL RTOA						
>>>UL RTOA	M		UL RTOA Measurement 9.3.1.168		-	
>>gNB Rx-Tx Time Difference						
>>>gNB Rx-Tx Time Difference	M		9.3.1.170		-	
>>Zenith Angle of Arrival Information					YES	reject
>>>Zenith Angle of Arrival Information	M		9.3.1.239		-	
>>Multiple UL AoA					YES	reject
>>>Multiple UL AoA	M		9.3.1.245		-	
>>UL SRS-RSRPP					YES	reject
>>>UL SRS-RSRPP	M		9.3.1.246		-	
>Time Stamp	M		9.3.1.171		-	
>Measurement Quality	O		TRP Measurement Quality 9.3.1.172		-	
>Measurement Beam Information	O		9.3.1.173		-	
>ARP ID	O		9.3.1.244		YES	ignore
>SRS Resource type	O		9.3.1.247		YES	ignore
>LoS/NLoS Information	O		9.3.1.249		YES	ignore

Range bound	Explanation
maxnoofPosMeas	Maximum no. of measured quantities that can be configured and reported with one message. Value is 16384.

9.3.1.167 UL Angle of Arrival

This information element contains the uplink Angle of Arrival measurement.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
Azimuth Angle of Arrival	M		INTEGER(0..3599)	TS 38.133 [38]
Zenith Angle of Arrival	O		INTEGER(0..1799)	TS 38.133 [38]
LCS to GCS Translation AoA	O		9.3.1.241	If absent, the azimuth and zenith are provided in GCS.

9.3.1.168 UL RTOA Measurement

This information element contains the uplink RTOA measurement.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
CHOICE <i>UL RTOA Measurement</i>	M				-	
>k0						
>>k0	M		INTEGER (0..1970049)	TS 38.133 [38]	-	
>k1						
>>k1	M		INTEGER (0..985025)	TS 38.133 [38]	-	
>k2						
>>k2	M		INTEGER (0..492513)	TS 38.133 [38]	-	
>k3						
>>k3	M		INTEGER (0..246257)	TS 38.133 [38]	-	
>k4						
>>k4	M		INTEGER (0..123129)	TS 38.133 [38]	-	
>k5						
>>k5	M		INTEGER (0..61565)	TS 38.133 [38]	-	
Additional Path List	O		9.3.1.169	This IE is ignored if the <i>Extended Additional Path List</i> IE is included	-	
Extended Additional Path List	O		9.3.1.248		YES	ignore
TRP Rx TEG Information	O		9.3.1.280		YES	ignore

9.3.1.169 Additional Path List

This information element contains the additional path results of time measurement.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
Additional Path Item		1..<maxno ofPath>			-	
>CHOICE <i>Relative Path Delay</i>	M				-	
>>k0						
>>>k0	M		INTEGER(0..16351)		-	
>>k1						
>>>k1	M		INTEGER(0..81)		-	

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
			76)			
>>k2						
>>>k2	M		INTEGER(0..4088)		-	
>>k3						
>>>k3	M		INTEGER(0..2044)		-	
>>k4						
>>>k4	M		INTEGER(0..1022)		-	
>>k5						
>>>k5	M		INTEGER(0..511)		-	
>Path Quality	O		TRP Measurement Quality 9.3.1.172		-	
>Multiple UL AoA	O		9.3.1.245		YES	ignore
>Path Power	O		UL SRS-RSRPP 9.3.1.246		YES	ignore

Range bound	Explanation
maxnoofPath	Maximum no. of additional path measurements. Value is 2.

9.3.1.170 gNB Rx-Tx Time Difference

This information element contains the gNB Rx-Tx Time Difference measurement.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
CHOICE <i>gNB Rx-Tx Time Difference Measurement</i>	M				-	
>k0						
>>k0	M		INTEGER (0..1970049)	TS 38.133 [38]	-	
>k1						
>>k1	M		INTEGER (0..985025)	TS 38.133 [38]	-	
>k2						
>>k2	M		INTEGER (0..492513)	TS 38.133 [38]	-	
>k3						
>>k3	M		INTEGER (0..246257)	TS 38.133 [38]	-	
>k4						
>>k4	M		INTEGER (0..123129)	TS 38.133 [38]	-	
>k5						
>>k5	M		INTEGER (0..61565)	TS 38.133 [38]	-	
Additional Path List	O		9.3.1.169		-	
Extended Additional Path List	O		9.3.1.248		YES	ignore
TRP TEG Information	O		9.3.1.253		YES	ignore

9.3.1.171 Time Stamp

This information element contains the time stamp associated with the measurement.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
System Frame Number	M		INTEGER(0..1023)		-	
CHOICE <i>Slot Index</i>	M				-	
>SCS-15						
>>SCS-15	M		INTEGER(0..9)		-	
>SCS-30						
>>SCS-30	M		INTEGER(0..19)		-	
>SCS-60						
>>SCS-60	M		INTEGER(0..39)		-	
>SCS-120						
>>SCS-120	M		INTEGER(0..79)		-	
>SCS-480						
>>SCS-480	M		INTEGER(0..319)		YES	reject
>SCS-960					-	
>>SCS-960	M		INTEGER(0..639)		YES	reject
Measurement Time	O		Relative Time 1900 9.3.1.183		-	

9.3.1.172 TRP Measurement Quality

This information element contains the TRP's best estimate of the quality of the measurement.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
CHOICE <i>TRP Measurement Quality</i>	M			
> <i>Timing Measurement Quality</i>				
>>Measurement Quality	M		INTEGER(0..31)	TS 37.355 [39]
>>Resolution	M		ENUMERATED(0.1m, 1m, 10m, 30m, ...)	TS 37.355 [39]
> <i>Angle Measurement Quality</i>				
>>Azimuth Quality	M		INTEGER(0..255)	
>>Zenith Quality	O		INTEGER(0..255)	
>>Resolution	M		ENUMERATED(0.1deg, ...)	

9.3.1.173 Measurement Beam Information

This information element contains the receiving beam information when measuring UL signals.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
PRS Resource ID	O		INTEGER(0..63)	
PRS Resource Set ID	O		INTEGER(0..7)	
SSB Index	O		INTEGER(0..63)	

9.3.1.174 NG-RAN Access Point Position

This IE is used to identify the geographical position of an NG-RAN Access Point / TRP / TRP Antenna Reference Points. It is expressed as ellipsoid point with altitude and uncertainty ellipsoid according to TS 23.032 [36].

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
Latitude Sign	M		ENUMERATED (North, South)	
Degrees Of Latitude	M		INTEGER (0..2 ²³ -1)	The IE value (N) is derived by this formula: $N \leq 2^{23} \times X / 90 < N+1$ X being the latitude in degrees (0°.. 90°).
Degrees Of Longitude	M		INTEGER (-2 ²³ ..2 ²³ -1)	The IE value (N) is derived by this formula: $N \leq 2^{24} \times X / 360 < N+1$ X being the longitude in degrees (-180°..+180°).
Direction of Altitude	M		ENUMERATED (Height, Depth)	
Altitude	M		INTEGER (0..2 ¹⁵ -1)	The relation between the value (N) and the altitude (a) in meters it describes is $N \leq a < N+1$, except for $N=2^{15}-1$ for which the range is extended to include all greater values of (a).
Uncertainty semi-major	M		INTEGER (0..127)	The uncertainty "r" is derived from the "uncertainty code" k by $r = 10 \times (1.1^k - 1)$.
Uncertainty semi-minor	M		INTEGER (0..127)	The uncertainty "r" is derived from the "uncertainty code" k by $r = 10 \times (1.1^k - 1)$.
Orientation of major axis	M		INTEGER (0..179)	
Uncertainty Altitude	M		INTEGER (0..127)	The uncertainty altitude "h" expressed in metres is derived from the "uncertainty code" k, by: $h = 45 \times (1.025^k - 1)$.
Confidence	M		INTEGER (0..100)	In percentage

9.3.1.175 Requested SRS Transmission Characteristics

This IE contains the requested SRS configuration for the UE for positioning purposes.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
Number Of Periodic Transmissions	C- ifResource TypePeriodic		INTEGER (0..500,...)	The number of periodic SRS transmissions requested. The value of '0' represents an infinite number of SRS transmissions.	-	
Resource Type	M		ENUMERATED (periodic, semi-persistent, aperiodic, ...)		-	
CHOICE Bandwidth SRS	M				-	
>FR1						
>>FR1 Bandwidth	M		ENUMERATED (5, 10, 20, 40, 50, 80, 100, ... , rel-18-dummy1, rel-18-dummy2, 15, 25, 30, 60, 35, 45, 70, 90)	The codepoints 'rel-18-dummy1' and 'rel-18-dummy2' are ignored.	-	

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
>FR2						
>>FR2 Bandwidth	M		ENUMERATED (50, 100, 200, 400,...,800,1600, 2000)		-	
SRS Resource Set List		<i>0.. 1</i>			-	
>SRS Resource Set Item		<i>1..<maxnoSRS-ResourceSets></i>			-	
>>Number of SRS Resources Per Set	O		INTEGER (1..16,...)	The number of SRS Resources per resource set for SRS transmission.	-	
>>Periodicity List		<i>0.. 1</i>			-	
>>>Periodicity List Item		<i>1..<maxnoSRS-ResourcePerSet></i>			-	
>>>>PeriodicitySRS	M		ENUMERATED (0.125, 0.25, 0.5, 0.625, 1, 1.25, 2, 2.5, 4, 5, 8, 10, 16, 20, 32, 40, 64, 80, 160, 320, 640, 1280, 2560, 5120, 10240, ...)	Milli-seconds	-	
>>Spatial Relation Information	O		9.3.1.181	This IE is ignored if the <i>Spatial Relation Information per SRS Resource</i> IE is present.	-	
>>Pathloss Reference Information	O		9.3.1.201		-	
>>Spatial Relation Information per SRS Resource	O		9.3.1.210		YES	ignore
SSB Information	O		9.3.1.202		-	
SRS Frequency	O		INTEGER(0..3279165)	NR ARFCN The carrier frequency of SRS transmission bandwidth.	YES	ignore

Condition	Explanation
ifResourceTypePeriodic	This IE shall be present if the <i>Resource Type</i> IE is set to the value "Periodic".

Range bound	Explanation
maxnoSRS-ResourceSets	Maximum no of requested SRS Resource Sets for SRS transmission. Value is 16.
maxnoSRS-ResourcePerSet	Maximum no of SRS Resources per set. Value is 16.

9.3.1.176 TRP Information

The *TRP Information* IE contains information for one TRP within a gNB-DU.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
TRP ID	M		9.3.1.197		-	
TRP Information Type Response List		1			-	
>TRP Information Type Response Item		1 .. <maxnoof TRPInfoTypes>			-	
>>CHOICE TRP Information Type Response Item	M				-	
>>>NR PCI						
>>>>NR PCI	M		INTEGER (0..1007)	NR Physical Cell ID	-	
>>>NR CGI						
>>>>NR CGI			9.3.1.12		-	
>>>NR ARFCN						
>>>>NR ARFCN	M		INTEGER (0..3279165)		-	
>>>PRS Configuration						
>>>>PRS Configuration	M		9.3.1.177		-	
>>>SSB Information						
>>>>SSB Information	M		9.3.1.202		-	
>>>SFN Initialisation Time						
>>>>SFN Initialisation Time	M		Relative Time 1900 9.3.1.183		-	
>>>Spatial Direction Information						
>>>>Spatial Direction Information	M		9.3.1.179		-	
>>>Geographical Coordinates						
>>>>Geographical Coordinates	M		9.3.1.184		-	
>>>TRP Type					YES	reject
>>>>TRP Type	M		ENUMERATED (prs-only-tp, srs-only-rp, tp, rp, trp...)	TS 38.305 [42]	-	
>>>On-demand PRS TRP Information					YES	reject
>>>>On-demand PRS TRP Information	M		9.3.1.240		-	
>>>TRP Tx TEG Association					YES	reject
>>>>TRP Tx TEG Association	M		9.3.1.252		-	
>>>TRP Beam Antenna					YES	reject
>>>>TRP Beam Antenna Information	M		9.3.1.256		-	

Range bound	Explanation
maxnoofTRPInfoTypes	Maximum no of TRP information types that can be requested and

reported with one message. Value is 64.

9.3.1.177 PRS Configuration

This information element contains the DL PRS configuration for the TRP.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
PRS Resource Set List	M	1..<maxnoofPRSresourceSets>		
>PRS Resource Set ID	M		INTEGER(0..7)	
>Subcarrier Spacing	M		ENUMERATED(kHz15, kHz30, kHz60, kHz120, ...)	
>PRS bandwidth	M		INTEGER(1..63)	24,28,...,272 PRBs
>Start PRB	M		INTEGER(0..2176)	Starting PRB to Point A
>Point A	M		INTEGER(0..3279165)	NR ARFCN
>Comb Size	M		ENUMERATED(2, 4, 6, 12, ...)	
>CP Type	M		ENUMERATED(normal, extended, ...)	
>Resource Set Periodicity	M		ENUMERATED(4,5, 8,10,16,20,32,40,64, 80,160,320,640,1280,2560,5120,10240, 20480,40960,81920, ..., 128, 256, 512)	Slots
>Resource Set Slot Offset	M		INTEGER(0..81919, ...)	
>Resource Repetition Factor	M		ENUMERATED(rf1,rf2,rf4,rf6,rf8,rf16,rf32, ...)	
>Resource Time Gap	M		ENUMERATED(tg1, tg2,tg4,tg8,tg16,tg32, ...)	
>Resource Number of Symbols	M		ENUMERATED(n2, n4,n6,n12,...)	
>PRS Muting	O			
>>Option1	O			
>>>Muting Pattern	M		DL-PRS Muting Pattern 9.3.1.178	Muting pattern option 1 is used to mute the whole PRS resource set (within a period)
>>>Muting Bit Repetition Factor	M		ENUMERATED(rf1,rf2,rf4,rf8,...)	
>>Option2	O			
>>>Muting Pattern	M		DL-PRS Muting Pattern 9.3.1.178	Muting pattern option 2 is used to mute the selected repetition of the resource set (within the period)
>PRS Resource Transmit Power	M		INTEGER(-60..50)	
>PRS Resource List	M	1..<maxnoofPRSresources>		NR-DL-PRS-Resource-r16 as defined in TS 37.355 [39]
>>PRS Resource ID	M		INTEGER(0..63)	
>>Sequence ID	M		INTEGER(0..4095)	
>>RE Offset	M		INTEGER(0..11, ...)	
>>Resource Slot Offset	M		INTEGER(0..511)	
>>Resource Symbol Offset	M		INTEGER(0..12)	
>>CHOICE QCL Info	O			
>>>SSB				
>>>>PCI	M		INTEGER (0..1007)	
>>>>SSB Index	O		INTEGER(0..63)	

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
>>>DL-PRS	O			
>>>>QCL Source PRS Resource Set ID	M		INTEGER(0..7)	
>>>>QCL Source PRS Resource ID	O		INTEGER(0..63)	If absent, the QCL source PRS resource ID is the same as the PRS resource ID

Range bound	Explanation
maxnoofPRSresourceSets	Maximum no of PRS resource sets. Value is 8.
maxnoofPRSresources	Maximum no of PRS resources per PRS resource set. Value is 64.

9.3.1.178 DL-PRS Muting Pattern

This information element contains the DL-PRS muting pattern.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
CHOICE DL-PRS Muting Pattern	M			
>Two				
>>Two	M		BIT STRING (SIZE(2))	
>Four				
>>Four	M		BIT STRING (SIZE(4))	
>Six				
>>Six	M		BIT STRING (SIZE(6))	
>Eight				
>>Eight	M		BIT STRING (SIZE(8))	
>Sixteen				
>>Sixteen	M		BIT STRING (SIZE(16))	
>Thirty-two				
>>Thirty-two	M		BIT STRING (SIZE(32))	

9.3.1.179 Spatial Direction Information

This information element contains the spatial direction information of the DL PRS resources for the TRP.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
NR-PRS Beam Information	M		9.3.1.198	The spatial directions of DL-PRS Resources for TRP

9.3.1.180 SRS Resource Set ID

This information element indicates a resource set in the UE for UL SRS transmission.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
SRS Resource Set ID	M		INTEGER (0..15)	According to TS 38.331 [8]

9.3.1.181 Spatial Relation Information

This information element indicates a spatial relation for transmission of UL SRS by a UE.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
Spatial Relation for Resource ID		1		According to TS 38.321 [16] and TS 38.331 [8]
>Spatial Relation for Resource ID Item		1..<maxnoSpatialRelations>		
>>CHOICE Reference Signal	M			
>>>NZP CSI-RS				
>>>>NZP CSI-RS Resource ID	M		INTEGER (0..191)	
>>>SSB				
>>>>PCI	M		INTEGER (0..1007)	
>>>>SSB Index	O		INTEGER (0..63)	
>>>SRS				
>>>>SRS Resource ID	M		INTEGER (0..63)	
>>>Positioning SRS				
>>>>Positioning SRS Resource ID	M		INTEGER (0..63)	
>>>DL-PRS				
>>>>DL-PRS ID	M		INTEGER (0..255)	
>>>>DL-PRS Resource Set ID	M		INTEGER (0..7)	
>>>>DL PRS Resource ID	O		INTEGER (0..63)	

Range bound	Explanation
maxnoSpatialRelations	Maximum no. of Spatial Relations that can be configured. Value is 64.

9.3.1.182 SRS Resource Trigger

This information element indicates a DCI code point according to a SRS resource set configuration.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
Aperiodic SRS Resource Trigger List		1..<maxnoSRS-TriggerStates>		According to TS 38.331 [8]
>Aperiodic SRS Resource Trigger			INTEGER (1..3)	

Range bound	Explanation
maxnoSRS-TriggerStates	Maximum no. of SRS trigger states. Value is 3.

9.3.1.183 Relative Time 1900

This information element indicates the initialisation time (e.g. SFN Initialisation Time for a cell, requested time for an action, etc).

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
Relative Time 1900	M		BIT STRING (SIZE(64))	Time in seconds relative to 00:00:00 on 1 January 1900 (calculated as continuous time without leap seconds and traceable to a common time reference) where binary

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
				encoding of the integer part is in the first 32 bits and binary encoding of the fraction part in the last 32 bits. The fraction part is expressed with a granularity of $1/2^{**32}$ second

9.3.1.184 Geographical Coordinates

This information element contains the geographical coordinates for the TRP and any associated ARP(s).

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
CHOICE TRP Position Definition Type	M				-	
>Direct						
>>CHOICE Accuracy	M				-	
>>>normal accuracy						
>>>>TRP Position	M		NG-RAN Access Point Position 9.3.1.174	The configured estimated geographical position of the antenna of the cell/TRP.	-	
>>>>high accuracy						
>>>>TRP High Accuracy Access Position	M		NG-RAN High Accuracy Access Point Position 9.3.1.190	The configured estimated geographical high accuracy position of the antenna of the cell/TRP.	-	
>Referenced						
>>Reference Point	M		9.3.1.188	The reference point is used to derive the TRP position	-	
>>CHOICE Type	M				-	
>>>Geodetic						
>>>>TRP Position Relative Geodetic	M		Relative Geodetic Location 9.3.1.186	The configured estimated relative geodetic coordinate of the antenna of the cell/TRP	-	
>>>>Cartesian						
>>>>TRP Position Relative Cartesian	M		Relative Cartesian Location 9.3.1.187	The configured estimated relative Cartesian coordinate of the antenna of the cell/TRP	-	
DL-PRS Resource Coordinates	O		9.3.1.185	DL-PRS Resource Coordinates relative to the TRP coordinate	-	
ARP Location Information	O		9.3.1.243		YES	ignore

9.3.1.185 DL-PRS Resource Coordinates

This information element contains the geographical coordinates of the antenna reference points (ARP) for the DL-PRS Resources of a TRP.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
DL-PRS Resource Set ARP List	M	$1..<maxnoofP$ <i>RS-ResourceSets</i> >		
>DL-PRS Resource Set ID	M		INTEGER (0..7)	
>CHOICE <i>DL-PRS Resource Set ARP Location</i>	M			Relative to the geographical coordinates for the TRP. If this IE is absent, the Relative Location is zero for the indicated DL-PRS Resource Set ID.
>> <i>Geodetic</i>				
>>>Relative Geodetic Location	M		Relative Geodetic Location 9.3.1.186	
>> <i>Cartesian</i>				
>>>Relative Cartesian Location	M		Relative Cartesian Location 9.3.1.187	
>DL-PRS Resource ARP List	M	$1..<maxnoofP$ <i>RS-ResourcesPerSet</i> >		
>>DL-PRS Resource ID	M		INTEGER (0..63)	
>>CHOICE <i>DL-PRS Resource ARP Location</i>	M			Relative to the DL-PRS Resource Set ARP Location. If this IE is absent, the Relative Location is zero for the indicated DL-PRS Resource ID.
>> <i>Geodetic</i>				
>>>Relative Geodetic Location	O		Relative Geodetic Location 9.3.1.186	
>> <i>Cartesian</i>				
>>>Relative Cartesian Location	O		Relative Cartesian Location 9.3.1.187	

Range bound	Explanation
maxnoofPRS-ResourceSets	Maximum no of DL-PRS resource sets per TRP. Value is 2.
maxnoofPRS-ResourcesPerSet	Maximum no of DL-PRS resources of the DL-PRS resource set of the TRP. Value is 64.

9.3.1.186 Relative Geodetic Location

This information element provides a location relative to some known reference location in a relative geodetic coordinate system.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
Milli-Arc-Second Units	M		ENUMERATED (0.03, 0.3, 3, ...)	Units and scale factor for the delta-latitude and delta-longitude fields, TS 37.355 [39].
Height Units	M		ENUMERATED (mm, cm, m, ...)	Units and scale factor for the delta-height field, TS 37.355 [39].
Delta Latitude	M		INTEGER (-1024..1023)	Delta value in latitude in the unit provided in Milli-Arc-Second Units, TS 37.355 [39].
Delta Longitude	M		INTEGER (-1024..1023)	Delta value in longitude in the unit provided in Milli-Arc-Second Units, TS 37.355 [39].
Delta Height	M		INTEGER (-1024..1023)	Delta value in ellipsoidal height in the unit provided in Height Units, TS 37.355 [39].

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
Location uncertainty	M		9.3.1.189	

9.3.1.187 Relative Cartesian Location

This information element provides a location relative to some known reference location in a relative Cartesian coordinate.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
XYZ unit	M		ENUMERATED (mm, cm, dm,...)	
X value	M		INTEGER (-2 ¹⁶ .. 2 ¹⁶ -1)	Positive value represents easting from reference point, in units of <i>XYZ Unit</i> IE.
Y value	M		INTEGER (-2 ¹⁶ .. 2 ¹⁶ -1)	Positive value represents northing from reference point in units of <i>XYZ Unit</i> IE.
Z value	M		INTEGER (-2 ¹⁵ .. 2 ¹⁵ -1)	Height with respect to reference point in units of <i>XYZ Unit</i> IE, where the XY-plane is horizontal and the Z-axis points up.
Location uncertainty	M		9.3.1.189	

9.3.1.188 Reference Point

This information element provides a reference point location information.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
CHOICE <i>ReferencePoint</i>	M			Reference point to which relative location information is related to
> <i>Coordinate ID</i>				
>>Coordinate ID	M		INTEGER(0.. 2 ⁹ -1,...)	Referential ID mapped via OAM
> <i>Reference Point Coordinates</i>				
>>Reference Point Position	M		NG-RAN Access Point Position 9.3.1.174	
> <i>Reference Point Coordinates High Accuracy</i>				
>>Reference Point High Accuracy Access Position	M		NG-RAN High Accuracy Access Point Position 9.3.1.190	

9.3.1.189 Location Uncertainty

This information element provides the location uncertainty information.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
Horizontal Uncertainty	M		INTEGER (0..255)	Horizontal uncertainty of the ARP latitude/longitude. Corresponds to the encoded high accuracy uncertainty as defined in TS 23.032 [36]
Horizontal Confidence	M		INTEGER (0..100)	Corresponds to confidence as defined in TS 23.032 [36].

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
Vertical Uncertainty	M		INTEGER (0..255)	Vertical uncertainty of the ARP altitude. Corresponds to the encoded high accuracy uncertainty as defined in TS 23.032 [36]
Vertical Confidence	M		INTEGER (0..100)	Corresponds to confidence as defined in TS 23.032 [36].

9.3.1.190 NG-RAN High Accuracy Access Point Position

The *NG-RAN High Accuracy Access Point Position* IE is used to identify the geographical position of an NG-RAN Access Point. It is expressed as High Accuracy Ellipsoid point with altitude and uncertainty ellipsoid according to TS 23.032 [36].

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
Degrees of Latitude	M		INTEGER(-2147483648..2147483647)	
Degrees of Longitude	M		INTEGER(-2147483648..2147483647)	
Altitude	M		INTEGER(-64000..1280000)	
Uncertainty Semi Major	M		INTEGER (0..255)	
Uncertainty Semi Minor	M		INTEGER (0..255)	
Orientation Major Axis	M		INTEGER (0..179)	
Horizontal Confidence	M		INTEGER (0..100)	
Uncertainty Altitude	M		INTEGER (0..255)	
Vertical Confidence	M		INTEGER (0..100)	

9.3.1.191 Positioning Broadcast Cells

This IE is used to indicate the cells that are requested to broadcast, or failed to broadcast, the associated posSIB(s).

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Positioning Broadcast Cells		1 .. <maxnoBcast Cell>		
>NR CGI	M		9.3.1.12	

Range bound	Explanation
maxnoBcastCells	Maximum no. of cells broadcasting a posSIB in a NB-DU. Value is 16384.

9.3.1.192 SRS Configuration

This information element contains the SRS configuration configured by the gNB-CU for the UE.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
SRS Carrier List		1..<maxnoSRS-Carriers>		
>Point A	M		INTEGER (0..3279165)	NR ARFCN
>Uplink Channel BW-PerSCS-List		1..<maxnoSCS s>		SCS-SpecificCarrier TS 38.331 [8]

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
>>Offset To Carrier	M		INTEGER(0..2199, ...)	First usable RB to Point A in the number of PRBs
>>Subcarrier Spacing	M		ENUMERATED(kHz 15, kHz30, kHz60, kHz120,..., kHz480, kHz960)	
>>Carrier Bandwidth	M		INTEGER(1..275,...)	
>Active UL BWP	M			Only the configuration in the active UL BWP is needed.
>>Location And Bandwidth	M		INTEGER(0..37949, ...)	BWP TS 38.331 [8]
>>Subcarrier Spacing	M		ENUMERATED(kHz 15, kHz30, kHz60, kHz120,..., kHz480, kHz960)	
>>Cyclic Prefix	M		ENUMERATED(Normal, Extended)	
>>Tx Direct Current Location	M		INTEGER(0..3301, ...)	
>>Shift7dot5kHz	O		ENUMERATED(true, ...)	
>>SRS Config	M			<i>SRS-Config</i> as defined in TS 38.331 [8]
>>>SRS Resource List		0..<maxnoSRS-Resources>		
>>>>SRS Resource	M		9.3.1.193	<i>SRS-Resource</i> as defined in TS 38.331 [8]
>>>Positioning SRS Resource List		0..<maxnoSRS-PosResources>		
>>>>Positioning SRS Resource	M		9.3.1.194	<i>SRS-PosResource-r16</i> as defined in TS 38.331 [8]
>>>SRS Resource Set List		0..<maxnoSRS-ResourceSets>		
>>>>SRS Resource Set	M		9.3.1.195	<i>SRS-ResourceSet</i> as defined in TS 38.331 [8]
>>>Positioning SRS Resource Set List		0..<maxnoSRS-PosResourceSets>		
>>>>Positioning SRS Resource Set	M		9.3.1.196	<i>SRS-PosResourceSet-r16</i> as defined in TS 38.331 [8]
>PCI	O		INTEGER (0..1007)	Physical Cell ID of the cell that contains the SRS carrier

Range bound	Explanation
maxnoSRS-Carriers	Maximum no of carriers for SRS. Value is 32.
maxnoSCSs	Maximum no of SCS spacings for a carrier. Value is 5.
maxnoSRS-Resources	Maximum no of SRS resources per UL BWP. Value is 64.
maxnoSRS-PosResources	Maximum no of positioning SRS resources per UL BWP. Value is 64.
maxnoSRS-ResourceSets	Maximum no of SRS resource sets. Value is 16.
maxnoSRS-PosResourceSets	Maximum no of positioning SRS resource sets per UL BWP. Value is 16.

9.3.1.193 SRS Resource

This information element contains the SRS resource.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
SRS Resource ID	M		INTEGER (0..63, ...)		-	
Number of Ports	M		ENUMERATED (ports1, ports2, ports4)		-	
CHOICE <i>Transmission Comb</i>	M				-	
> <i>Comb Two</i>						
>> <i>Comb Offset</i>	M		INTEGER(0..1)		-	
>> <i>Cyclic Shift</i>	M		INTEGER(0..7)		-	
> <i>Comb Four</i>						
>> <i>Comb Offset</i>	M		INTEGER(0..3)		-	
>> <i>Cyclic Shift</i>	M		INTEGER(0..11)		-	
> <i>Comb Eight</i>	M				YES	reject
>> <i>Comb Offset</i>	M		INTEGER(0..7)		-	-
>> <i>Cyclic Shift</i>	M		INTEGER(0..5)		-	-
Start Position	M		INTEGER(0..13)		-	
Number of Symbols	M		ENUMERATED (1,2,4)	This IE is ignored if the <i>Number of Symbols Extended</i> IE is included.	-	
Repetition Factor	M		ENUMERATED (1,2,4)	This IE is ignored if the <i>Repetition Factor Extended</i> IE is included.	-	
Frequency Domain Position	M		INTEGER(0..67)		-	
Frequency Domain Shift	M		INTEGER(0..26 8)		-	
C-SRS	M		INTEGER(0..63)		-	
B-SRS	M		INTEGER(0..3)		-	
B-Hop	M		INTEGER(0..3)		-	
Group or Sequence Hopping	M		ENUMERATED (Neither, groupHopping, sequenceHopping)		-	
CHOICE <i>Resource Type</i>	M				-	
> <i>Periodic</i>						
>> <i>Periodicity</i>	M		ENUMERATED (slot1, slot2, slot4, slot5, slot8, slot10, slot16, slot20, slot32, slot40, slot64, slot80, slot160, slot320, slot640, slot1280, slot2560, ...)		-	
>> <i>Offset</i>	M		INTEGER(0..25 59, ...)		-	
> <i>Semi-persistent</i>						
>> <i>Periodicity</i>	M		ENUMERATED (slot1, slot2, slot4, slot5, slot8, slot10, slot16, slot20, slot32, slot40, slot64, slot80,		-	

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
			slot160, slot320, slot640, slot1280, slot2560, ...)			
>>Offset	M		INTEGER(0..2559, ...)		-	
>Aperiodic						
>>Aperiodic Resource Type	M		ENUMERATED (true,...)		-	
Sequence ID	M		INTEGER(0..1023)		-	
Number of Symbols Extended	O		ENUMERATED (n8,n10,n12, n14, ...)		YES	ignore
Repetition Factor Extended	O		ENUMERATED (r3, r5, r6, r7, r8, r10, r12, r14, ...)		YES	ignore
Start RB Hopping	O		ENUMERATED (enable)		YES	ignore
CHOICE Start RB Index	O				YES	ignore
>FreqScalingFactor2			INTEGER (0..1)		-	-
>FreqScalingFactor4			INTEGER (0..3)		-	-

9.3.1.194 Positioning SRS Resource

This information element contains the SRS resource for positioning.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
Positioning SRS Resource ID	M		INTEGER (0..63)	
CHOICE <i>Transmission Comb Positioning</i>	M			
>Comb Two				
>>Comb Offset	M		INTEGER(0..1)	
>>Cyclic Shift	M		INTEGER(0..7)	
>Comb Four				
>>Comb Offset	M		INTEGER(0..3)	
>>Cyclic Shift	M		INTEGER(0..11)	
>Comb Eight				
>>Comb Offset	M		INTEGER(0..7)	
>>Cyclic Shift	M		INTEGER(0..5)	
Start Position	M		INTEGER(0..13)	
Number of Symbols	M		ENUMERATED(1,2, 4,8,12)	
Frequency Domain Shift	M		INTEGER(0..268)	
C-SRS	M		INTEGER(0..63)	
Group or Sequence Hopping	M		ENUMERATED(Neither, groupHopping, sequenceHopping)	
CHOICE <i>Resource Type Positioning</i>	M			
>Periodic				
>>Periodicity	M		ENUMERATED(slot 1, slot2, slot4, slot5, slot8, slot10, slot16, slot20, slot32, slot40, slot64, slot80, slot160, slot320, slot640, slot1280, slot2560,	

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
			slot5120, slot10240, slot40960, slot81920,..., slot128, slot256, slot512, slot20480)	
>>Offset	M		INTEGER(0..81919, ...)	
> <i>Semi-persistent</i>				
>>Periodicity	M		ENUMERATED(slot 1, slot2, slot4, slot5, slot8, slot10, slot16, slot20, slot32, slot40, slot64, slot80, slot160, slot320, slot640, slot1280, slot2560, slot5120, slot10240, slot20480, slot40960, slot81920,..., slot128, slot256, slot512, slot20480)	
>>Offset	M		INTEGER(0..81919, ...)	
> <i>Aperiodic</i>				
>>Slot offset	M		INTEGER(0..32)	
Sequence ID	M		INTEGER(0..65535)	
CHOICE <i>Spatial Relation Positioning</i>	O			
> <i>SSB</i>				
>>PCI	M		INTEGER (0..1007)	
>>SSB index	O		INTEGER(0..63)	
> <i>PRS</i>				
>>PRS ID	M		INTEGER(0..255)	
>>PRS Resource Set ID	M		INTEGER(0..7)	
>>PRS Resource ID	O		INTEGER(0..63)	

9.3.1.195 SRS Resource Set

This information element indicates a SRS resource set in the UE for UL SRS transmission.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
SRS Resource Set ID	M		INTEGER(0..15)	
SRS Resource ID List		1..<maxnoSRS - ResourcePerSet>		
>SRS Resource ID	M		INTEGER (0..63, ...)	
CHOICE <i>Resource Set Type</i>	M			
> <i>Periodic</i>				
>>PeriodicSet	M		ENUMERATED(true, ...)	
> <i>Semi-persistent</i>				
>>Semi-persistentSet	M		ENUMERATED(true, ...)	
> <i>Aperiodic</i>				
>>SRS Resource Trigger List	M		INTEGER(1..3)	
>>Slot offset	M		INTEGER(0..32)	

Range bound	Explanation
maxnoSRS-ResourcePerSet	Maximum no of SRS resources per SRS resource set. Value is 16.

9.3.1.196 Positioning SRS Resource Set

This information element indicates a positioning SRS resource set in the UE for UL SRS transmission.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
Positioning SRS Resource Set ID	M		INTEGER(0..15)	
Positioning SRS Resource ID List		$1..<maxnoSRS - PosResourcePerSet>$		
>Positioning SRS Resource ID	M		INTEGER (0..63, ...)	
CHOICE <i>Resource Type</i>	M			
> <i>Periodic</i>				
>>PosperiodicSet	M		ENUMERATED(true,...)	
> <i>Semi-persistent</i>				
>>Possemi-persistentSet	M		ENUMERATED(true,...)	
> <i>Aperiodic</i>				
>>SRS Resource Trigger List	M		INTEGER(1..3)	

Range bound	Explanation
maxnoSRS-PosResourcePerSet	Maximum no of positioning SRS resources per positioning SRS resource set. Value is 16.

9.3.1.197 TRP ID

The *TRP ID* IE is used to identify a TRP uniquely within a gNB-CU.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
TRP Identifier	M		INTEGER (1..65535,...)	Identifies a TRP within an gNB-CU

9.3.1.198 NR-PRS Beam Information

This IE contains spatial direction information of the DL-PRS Resources.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
NR-PRS Beam Information List		1			-	
>NR-PRS Beam Information Item		$1.. < maxnoofPRS-ResourceSets >$			-	
>>PRS Resource Set ID	M		INTEGER (0..7)	The resource set in which the resources are associated with the angle.	-	
>>PRS Angle List		1			-	
>>>PRS Angle		$1..<$			-	

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
Item		<i>maxnoofPRS-ResourcesPerSet</i> >				
>>>>NR PRS Azimuth	M		INTEGER (0..359)		-	
>>>>NR PRS Azimuth fine	O		INTEGER (0..9)	Fine angles	-	
>>>>NR PRS Elevation	O		INTEGER (0..180)		-	
>>>>NR PRS Elevation fine	O		INTEGER (0..9)	Fine angles	-	
>>>>PRS Resource ID	O		INTEGER(0..63)		YES	ignore
LCS to GCS Translation List		0..1		If absent, the azimuth and elevation are provided in GCS.	-	
>LCS to GCS Translation		1 .. < <i>maxnooflcs-gcs-translation</i> >			-	
>>Alpha	M		INTEGER (0..359)		-	
>>Alpha-fine	O		INTEGER (0..9)	Fine angles	-	
>>Beta	M		INTEGER (0..359)		-	
>>Beta-fine	O		INTEGER (0..9)	Fine angles	-	
>>Gamma	M		INTEGER (0..359)		-	
>>Gamma-fine	O		INTEGER (0..9)	Fine angles	-	

Range bound	Explanation
maxnoofPRS-ResourceSets	Maximum no of DL-PRS resource sets per TRP. Value is 2.
maxnoofPRS-ResourcesPerSet	Maximum no of DL-PRS resources of the DL-PRS resource set of the TRP. Value is 64.
maxnooflcs-gcs-translation	Maximum no. of LCS-GS-Translation-Parameters that can reported with one message. Value is 3. The current version of the specification supports 1.

9.3.1.199 E-CID Measurement Result

The purpose of this IE is to provide the E-CID measurement result.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
Geographical Coordinates	O		9.3.1.184	The configured estimated geographical position of the antenna of the cell.	-	
Measured Results List		0..1				
>E-CID Measured Results Item		1 .. < <i>maxnoMeasE-CID</i> >				
>>CHOICE Measured Results Value	M					
>>>Value Angle of						

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
<i>Arrival NR</i>						
>>>>Value Angle of Arrival NR	M		UL Angle of Arrival 9.3.1.167		-	
>>>>Value Timing Advance NR						
>>>>Value Timing Advance NR	M		INTEGER (0..7690)	As defined in TS 38.215 [43]	YES	ignore

Range bound	Explanation
maxnoMeasE-CID	Maximum no. of measured quantities that can be configured and reported with one message. Value is 64.

9.3.1.200 Cell Portion ID

This IE gives the current Cell Portion associated with the target UE. The Cell Portion ID is the unique identifier for a cell portion within a cell.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Cell Portion ID	M		INTEGER (0..4095, ...)	

9.3.1.201 Pathloss Reference Information

This information element indicates a pathloss reference for transmission of UL SRS by a UE.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
CHOICE <i>Pathloss Reference Signal</i>	M			
>SSB				
>>PCI	M		INTEGER (0..1007)	
>>SSB Index	O		INTEGER (0..63)	
>DL-PRS				
>>DL-PRS ID	M		INTEGER (0..255)	
>>DL-PRS Resource Set ID	M		INTEGER (0..7)	
>>DL PRS Resource ID	O		INTEGER (0..63)	

9.3.1.202 SSB Information

This information element contains the SSB time/frequency information for the TRPs.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
SSB Information List		1		
>SSB Information Item		1...<maxNoSSBs>		
>>SSB Configuration	M		SSB Time/Frequency Configuration 9.3.1.203	
>>PCI	M		INTEGER (0..1007)	

Range bound	Explanation
maxNoSSBs	Maximum no of SSBs for which the configuration can be provided. Value is

	255.

9.3.1.203 SSB Time/Frequency Configuration

This information element contains the time and frequency configuration of an SSB.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
SSB frequency	M		INTEGER (0..3279165)	ARFCN
SSB subcarrier spacing	M		ENUMERATED(kHz 15, kHz30, kHz60, kHz120, kHz240,... , kHz480, kHz960)	The value 60kHz is not supported in this version of the specification.
SSB Transmit power	M		INTEGER (-60..50)	EPRE of SSS
SSB periodicity	M		ENUMERATED(ms 5, ms10, ms20, ms40, ms80, ms160, ...)	
SSB half frame index	M		INTEGER(0..1)	
SSB SFN offset	M		INTEGER(0..15)	
CHOICE SSB Position in Burst	O			
>Short				
>>Short Bitmap			BIT STRING (SIZE(4))	
>Medium				
>>Medium Bitmap			BIT STRING (SIZE(8))	
>Long				
>>Long Bitmap			BIT STRING (SIZE(64))	
SFN Initialisation Time	O		Relative Time 1900 9.3.1.183	

9.3.1.204 Search Window Information

This information element contains search window information for the TRP.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
Expected Propagation Delay	M		INTEGER (-3841..3841,...)	Indicates when the SRS is expected to arrive in time at the TRP relative to the UL RTOA Reference Time. The UL RTOA Reference Time for a target SRS is defined as $T_0 + t_{\text{SRS}}$, where - T_0 is the SFN Initialisation Time - $t_{\text{SRS}} = (10n_f + n_{\text{sf}}) \times 10^{-3}$, where n_f and n_{sf} are the system frame number and the subframe number of the SRS, respectively. Granularity 4Ts, where $T_s = 1/(15 \cdot 10^3 \cdot 2048)$ seconds. Centre of the search window.
Delay Uncertainty	M		INTEGER (1..246,...)	Indicates the uncertainty of the expected SRS arrival time at the TRP Granularity 4Ts, where $T_s = 1/(15 \cdot 10^3 \cdot 2048)$ seconds. Single-sided search window.

9.3.1.205 Extended gNB-DU Name

This IE provides extended human readable name of the gNB-DU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
gNB-DU Name Visible	O		VisibleString (SIZE(1..150, ...))	
gNB-DU Name UTF8	O		UTF8String (SIZE(1..150, ...))	

9.3.1.206 Extended gNB-CU Name

This IE provides extended human readable name of the gNB-CU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
gNB-CU Name Visible	O		VisibleString (SIZE(1..150, ...))	
gNB-CU Name UTF8	O		UTF8String (SIZE(1..150, ...))	

9.3.1.207 F1-C Transfer Path

This IE indicates the transmission path of the F1-C traffic.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
F1-C Path NSA	M		ENUMERATED (lte, nr, both)	This IE indicates the transmission path of the F1-C traffic in EN-DC.

9.3.1.208 SFN Offset

This IE contains the time offset between an absolute time reference and the SFN0 start. The IE is calculated assuming that the SFN transmission started at the absolute time reference. The absolute time reference chosen is the 1980-01-06 T00:00:19 International Atomic Time (TAI).

IE/Group Name	Presence	Range	IE type and reference	Semantics description
SFN Time Offset	M		BIT STRING (SIZE(24))	Time offset in microseconds between the absolute time reference "1980-01-06 T00:00:19 International Atomic Time (TAI)" and the SFN0 start. The maximum usable value is $(1024 \times 10^4 - 1)$. Values higher than the maximum are discarded.

9.3.1.209 Transmission Stop Indicator

This IE indicates to stop the data transmission at gNB-DU side for an DRB not subject to DAPS Handover.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Transmission Stop Indicator	M		ENUMERATED (true, ...)	

9.3.1.210 Spatial Relation Information per SRS Resource

This information element indicates a spatial relation for transmission of each UL SRS resource recommended by LMF.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
Spatial Relation per SRS Resource List		1		
>Spatial Relation per SRS Resource Item		1..<maxnoSRS - ResourcePerSet>		
>CHOICE Reference Signal	M			
>>NRP CSI-RS				
>>>NRP CSI-RS Resource ID	M		INTEGER (0..191)	
>>SSB				
>>>NR PCI	M		INTEGER (0..1007)	
>>>SSB Index	O		INTEGER (0..63)	
>>SRS				
>>>SRS Resource ID	M		INTEGER (0..63)	
>>Positioning SRS				
>>>Positioning SRS Resource ID	M		INTEGER (0..63)	
>>DL-PRS				
>>>DL-PRS ID	M		INTEGER (0..255)	
>>>DL-PRS Resource Set ID	M		INTEGER (0..7)	
>>>DL-PRS Resource ID	O		INTEGER (0..63)	

Range bound	Explanation
maxnoSRS-ResourcePerSet	Maximum no of SRS resources per SRS resource set. Value is 16.

9.3.1.211 CCO Assistance Information

This IE indicates the Capacity and Coverage (CCO) actions for specific CCO issues detected.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
CCO issue detection	O		ENUMERATED (coverage, cell edge capacity ...)	Indicates the type of CCO issue detected
Affected Cells and Beams	O		9.3.1.212	

9.3.1.212 Affected Cells and Beams

This IE includes a list of cells and/or SS/PBCH block indexes affected by the detected CCO issue.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Affected Cell List		1 .. <maxAffectedCells>		
>NR CGI	M		9.3.1.12	
>Affected SSB List		0..<maxnoofSSBAreas>		
>>SSB Index	M		INTEGER (0..63)	

Range bound	Explanation

maxAffectedCells	Maximum numbers of cells affected by a CCO issue. Value is 32.
maxnoofSSBAreas	Maximum no. SSB Areas that can be served by a NG-RAN node cell. Value is 64.

9.3.1.213 Coverage Modification Notification

This IE includes a list of cells and/or SS/PBCH block indexes with the corresponding coverage configuration selected by the gNB-DU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Coverage Modification List		1		
>Coverage Modification Item		1 .. <maxCellingNBDU>		
>>NR CGI	M		9.3.1.12	
>>Cell Coverage State			INTEGER (0..63, ...)	Value '0' indicates that the cell is inactive. Other values Indicates that the cell is active and also indicates the coverage configuration of the concerned cell.
>>SSB Coverage Modification List		0..1		
>>>SSB Coverage Modification Item		1..<maxnoofSSBAreas>		
>>>>SSB Index	M		INTEGER (0..63)	
>>>>SSB Coverage State	M		INTEGER (0..15, ...)	Value '0' indicates that the SS/PBCH block is inactive. Other values Indicates that the SS/PBCH block is active and also indicates the coverage configuration of the concerned SS/PBCH block.

Range bound	Explanation
maxCellingNBDU	Maximum numbers of cells that can be served by a gNB-DU. Value is 512.
maxnoofSSBAreas	Maximum no. SSB Areas that can be served by a NG-RAN node cell. Value is 64.

9.3.1.214 Cells for SON List

This IE contains a list of served cells in potential PRACH conflict and it may contain neighbour cell PRACH configuration.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
Cells for SON Item		1 .. <maxServedCellforSON>		
>NR CGI	M		9.3.1.12	
>Neighbour NR Cells for SON List	O		9.3.1.215	

Range bound	Explanation
maxServedCellforSON	Maximum numbers of served cells where PRACH conflict is possible. Value is 256.

9.3.1.215 Neighbour NR Cells for SON List

This IE contains the configuration of NR neighbour cells which the gNB-DU may take into consideration for SON purposes.

NOTE: If multiple served cells share a common neighbour cell and thus multiple copies of *Neighbour NR Cells for SON Item* IE for the neighbour cell are needed to be contained in an F1AP message, IEs other than the *NR CGI* IE may be omitted in the copies other than the first one present in the message.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
Neighbour NR Cells for SON Item		<i>1 .. <maxNeighbourCellforSON></i>		
>NR CGI	M		9.3.1.12	
>NR Mode Info Rel16	O		9.3.1.216	
>SSB Positions In Burst	O		9.3.1.138	
>NR Cell PRACH Configuration	O		9.3.1.139	

Range bound	Explanation
maxNeighbourCellforSON	Maximum numbers of neighbour cells which the gNB-DU may take into consideration for SON purposes on a given served cell. Value is 32.

9.3.1.216 NR Mode Info Rel16

This IE contains the information of a NR cell which needs to be encoded differently for FDD and TDD.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
CHOICE <i>NR-Mode-Info-Rel16</i>	M			
> <i>FDD</i>				
>> FDD Info Rel16		<i>1</i>		
>>>UL Frequency Info	O		Frequency Info Rel16 9.3.1.217	
>>>SUL Frequency Info	O		Frequency Info Rel16 9.3.1.217	
> <i>TDD</i>				
>> TDD Info Rel16		<i>1</i>		
>>>TDD Frequency Info	O		Frequency Info Rel16 9.3.1.217	
>>>SUL Frequency Info	O		Frequency Info Rel16 9.3.1.217	
>>>TDD DL-UL Configuration Common NR	O		OCTET STRING	Includes the <i>tdd-UL-DL-ConfigurationCommon</i> contained in the <i>ServingCellConfigCommon</i> IE as defined in TS 38.331 [8]

9.3.1.217 Frequency Info Rel16

This IE contains the information of a NR cell which should be encoded separately among FDD NDL, FDD NUL, TDD NDL+NUL and SUL.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
NR ARFCN	O		INTEGER (0..	RF Reference Frequency as

IE/Group Name	Presence	Range	IE type and reference	Semantics description
			maxNRARFCN)	defined in TS 38.104 [17] section 5.4.2.1. The frequency provided in this IE identifies the absolute frequency position of the reference resource block (Common RB 0) of the carrier. Its lowest subcarrier is also known as Point A.
Frequency Shift 7p5khz	O		ENUMERATED (false, true, ...)	Indicate whether the value of Δ_{shift} is 0kHz or 7.5kHz when calculating $F_{\text{REF,shift}}$ as defined in Section 5.4.2.1 of TS 38.104 [17].
Carrier List	O		NR Carrier List 9.3.1.137	

Range bound	Explanation
maxNRARFCN	Maximum value of NR ARFCNs. Value is 3279165.

9.3.1.218 MBS Session ID

This IE indicates the MBS Session ID uniquely identifies an MBS session.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
TMGI	M		OCTET STRING (SIZE(6))	Coded as Temporary Mobile Group Identity (TMGI) defined in TS 23.003 [23].
NID	O		9.3.1.155	

9.3.1.219 gNB-CU MBS F1AP ID

The gNB-CU MBS F1AP ID uniquely identifies the MBS association over the F1 interface within the gNB-CU.

NOTE: If F1-C signalling transport is shared among multiple interface instances, the value of the gNB-CU MBS F1AP ID is allocated so that it can be associated with the corresponding F1-C interface instance.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
gNB-CU MBS F1AP ID	M		INTEGER (0 .. $2^{32} - 1$)	

9.3.1.220 gNB-DU MBS F1AP ID

The gNB-DU MBS F1AP ID uniquely identifies the MBS association over the F1 interface within the gNB-DU.

NOTE: If F1-C signalling transport is shared among multiple interface instances, the value of the gNB-DU MBS F1AP ID is allocated so that it can be associated with the corresponding F1-C interface instance.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
gNB-DU MBS F1AP ID	M		INTEGER (0 .. $2^{32} - 1$)	

9.3.1.221 MBS Area Session ID

This IE indicates the Area Session ID for MBS Session with location dependent context.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
MBS Area Session ID	M		INTEGER (0 .. 65535, ...)	

9.3.1.222 MBS Service Area

This IE contains the MBS service area.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
CHOICE <i>Session Type</i>	M			
> <i>location independent</i>				
>>MBS Service Area Information	M		9.3.1.223	
> <i>location dependent</i>				
>>MBS Service Area Information Location Dependent List		1.. <i>maxnoofMBSServiceAreaInformation</i>		
>>>MBS Area Session ID	M		9.3.1.221	
>>>MBS Service Area Information	M		9.3.1.223	

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

9.3.1.223 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.. <i>maxnoofCellsforMBS</i>		
>NR CGI	M		9.3.1.12	
MBS Service Area TAI List		0.. <i>maxnoofTAIforMBS</i>		
>PLMN-Identity	M		9.3.1.14	
>5GS TAC	M		9.3.1.29	

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.

9.3.1.224 MRB ID

This IE indicates the MRB ID as specified in TS 38.401 [4].

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

9.3.1.225 MBS CU to DU RRC Information

This IE indicates the MBS CU to DU RRC Information.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
MBS Broadcast Cell List	M			
>MBS Broadcast Cell Item		1 .. <maxCellingNBDU>		
>>NR CGI	M		NR CGI 9.3.1.12	
>>mtch-neighbourCell	O		OCTET STRING	Includes the <i>mtch-neighbourCell</i> contained in the <i>MBS-SessionInfoList</i> IE, as defined in TS 38.331[8]
MBS Broadcast MRB List		1		
>MBS Broadcast MRB Item		1 .. <maxnoofMRBs>		
>>MRB ID	M		9.3.1.224	
>>MRB PDCP Config Broadcast	M		OCTET STRING	Includes the <i>MRB-PDCP-ConfigBroadcast</i> IE, as defined in TS 38.331[8].

Range bound	Explanation
maxCellingNBDU	Maximum no. cells that can be served by a gNB-DU. Value is 512.
maxnoofMRBs	Maximum no. MRBs allowed to be setup for one MBS session, the maximum value is 32.

9.3.1.226 MBS Broadcast Neighbour Cell List

This IE indicates a list of neighbour cells where ongoing MBS sessions provided via broadcast MRB in the current cells are also provided.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
MBS Broadcast Neighbour Cell List	M		OCTET STRING	Includes the <i>MBS-NeighbourCellList</i> IE, as defined in TS 38.331[8]

9.3.1.227 IAB Congestion Indication

This IE contains the IAB downlink congestion indication. This IE is only applicable if the gNB-DU is an IAB-DU or IAB-donor-DU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
IAB Congestion Indication List		1		
>IAB Congestion Indication Item		1.. <maxnoofIABConglnd>		
>>Child Node Identifier	M		BAP Address 9.3.1.111	This IE identifies the child node, the link to which is congested.
>>BH RLC CH List		0..1		
>>>BH RLC CH Item		1.. <maxnoofBHR LCChannels>		
>>>>BH RLC CH ID	M		BH RLC Channel ID 9.3.1.113	This IE identifies the congested BH RLC channel over the link towards the node identified by the <i>Child Node Identifier</i> IE.

Range bound	Explanation
maxnoofIABConglnd	Maximum no. of congestion indications, the maximum value is 1024.

maxnoofBHRLCChannels	Maximum no. of BH RLC channels allowed towards one IAB-node, the maximum value is 65536.

9.3.1.228 F1-C Transfer Path NRDC

This IE indicates the transmission path of the F1-C traffic in NR-DC. This IE is only applicable if the UE is an IAB-MT.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
F1-C Path NRDC	M		ENUMERATED (mcg, scg, both)	This IE indicates the transmission path of the F1-C traffic in NR-DC.

9.3.1.229 IAB TNL Address Exception

This IE indicates the list of TNL addresses, pertaining to the packets to be forwarded via the inter-IAB-donor-DU tunnel by the IAB-donor-DU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
IAB TNL Address List		1		
>IAB IAB TNL Address Item		1.. <maxnoofTLAs IAB>		
>>IAB TNL Address	M		9.3.1.102	

Range bound	Explanation
maxnoofTLAsIAB	Maximum no. of individual IPv4/IPv6 addresses or IPv6 address prefixes in one procedure execution. The value is 1024.

9.3.1.230 RB Set Configuration

This IE contains the RB Set Configuration. The IE is only applicable if the gNB-DU is an IAB-DU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Subcarrier Spacing	M		ENUMERATED (kHz15, kHz30, kHz60, kHz120, kHz240, spare3, spare2, spare1, ...)	Subcarrier spacing used as reference for the RB set configuration.
RB Set Size	M		ENUMERATED (rb2, rb4, rb8, rb16, rb32, rb64)	Number of PRBs in each RB set. If the RB sets of IAB-DU H/S/NA resource configuration do not cover the entire carrier bandwidth, the remaining RBs not part of an RB set configuration are considered as included in the last RB set.
Number of RB Sets	M		INTEGER(1.. maxnoofRBsetsPer Cell)	Number of configured RB sets. The RB sets are contiguous and non-overlapping. If <i>NR Carrier List</i> IE(9.3.1.137) is provided, the start RB index of the first RB set is the RB index of the lowest common RB with the SCS provided by <i>RB Set Configuration</i> IE, which overlaps with the lowest usable RB across all SCS-specific carriers provided

IE/Group Name	Presence	Range	IE type and reference	Semantics description
				by the <i>NR Carrier List</i> IE for the IAB-DU cell. Otherwise, the start RB of the first RB set is aligned with point A for the IAB-DU cell.

Range bound	Explanation
maxnoofRBsetsPerCell	Maximum no. of RB sets per IAB-DU cell. Value is 8.

9.3.1.231 Survival Time

This IE indicates the Survival Time of the TSC QoS flow as defined in TS 23.501 [21].

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Survival Time	M		INTEGER (0..1920000, ...)	Expressed in units of 1 us.

9.3.1.232 PDC Measurement Result

The purpose of this IE is to provide the PDC measurement result.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
PDC Measured Results List		1		
>PDC Measured Results Item		1 .. <maxnoMeasPDC>		
>>CHOICE <i>Measured Results Value</i>	M			
>>>NR <i>PDC Timing Advance</i>				
>>>>NR <i>PDC Timing Advance</i>	M		INTEGER (0..62500, ...)	Value is expressed in unit of $[64 \cdot T_c]$ ns
>>>>PDC <i>gNB Rx-Tx Time Difference</i>				
>>>>PDC <i>gNB Rx-Tx Time Difference</i>	M		INTEGER (0..61565, ...)	Report mapping as defined in TS 38.133 [38]

Range bound	Explanation
maxnoMeasPDC	Maximum no. of measured quantities that can be configured and reported with one message. Value is 16. Maximum is 1 in this release.

9.3.1.233 SCG Activation Request

This IE indicates whether the SCG resources are required to be activated or deactivated.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
SCG Activation Request	M		ENUMERATED (activate SCG, deactivate SCG, ...)	

9.3.1.234 SCG Activation Status

This 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, ...)	

9.3.1.235 Requested DL PRS Transmission Characteristics

This IE contains the requested PRS configuration for transmission by the gNB-CU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Requested DL-PRS Resource Set List		<i>1</i>		
>Requested DL-PRS Resource Set Item		<i>1..<maxnoofPRSresourceSets></i>		
>>PRS bandwidth	O		INTEGER(1..63)	24,28,...,272 PRBs
>>Comb Size	O		ENUMERATED(2, 4, 6, 12, ...)	
>>Resource Set Periodicity	O		ENUMERATED(4,5, 8,10,16,20,32,40,64, 80,160,320,640,1280,2560,5120,10240, 20480,40960,81920, ..., 128, 256, 512)	Slots
>>Resource Repetition Factor	O		ENUMERATED(rf1,rf2,rf4,rf6,rf8,rf16,rf32,...)	
>>Resource Number of Symbols	O		ENUMERATED(n2, n4,n6,n12,...)	
>>Requested DL-PRS Resource List	O		9.3.1.250	
>>Resource Set Start Time and Duration	O		Start Time and Duration 9.3.1.236	This IE is ignored if the <i>Start Time and Duration</i> IE is present
Number of Frequency Layers	O		INTEGER(1..4)	
Start Time and Duration	O		9.3.1.236	

Range bound	Explanation
maxnoofPRSresourceSets	Maximum no of PRS resources set. Value is 8.

9.3.1.236 Start Time and Duration

This IE contains the start time and/or duration for the on-demand DL-PRS.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Start Time	O		Relative Time 1900 9.3.1.183	
Duration	O		INTEGER (0..90060, ...)	Unit: seconds

9.3.1.237 PRS Transmission Off Information

This IE contains the information to turn off particular PRS transmissions.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
CHOICE <i>level</i>	M			
>TRP <i>level</i>			NULL	
>PRS <i>resource set level</i>				
>>PRS Resource Set List		1		
>>>PRS Resource Set Item		1..<maxnoofP RSresourceSet >		
>>>>PRS Resource Set ID	M		INTEGER(0..7)	
>PRS <i>resource level</i>				
>>PRS Resource Set List		1		
>>>PRS Resource Set Item		1..<maxnoofP RSresourceSet >		
>>>>PRS Resource Set ID	M		INTEGER(0..7)	
>>>>PRS Resource List		1		
>>>>>PRS Resource Item		1..<maxnoofP RSresource>		
>>>>>>PRS Resource ID	M		INTEGER(0..63)	

Range bound	Explanation
maxnoofPRSresourceSet	Maximum no of PRS resources set. Value is 8.
maxnoofPRSresource	Maximum no of PRS resources per PRS resource set. Value is 64.

9.3.1.238 UL-AoA Assistance Information

This information element contains the expected uplink Angle of Arrival and uncertainty range.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
CHOICE <i>AngleMeasurement</i>	M			
>Expected UL Angle of Arrival				
>>Expected Azimuth AoA		1		Defined as $(\varphi_{AOA} - \Delta\varphi_{AOA}/2, \varphi_{AOA} + \Delta\varphi_{AOA}/2)$
>>Expected Azimuth AoA Value	M		INTEGER(0..3599)	φ_{AOA} component of Expected Azimuth AoA
>>Expected Azimuth AoA Uncertainty Range	M		INTEGER(0..3599)	$\Delta\varphi_{AOA}$ component of Expected Azimuth AoA
>>Expected Zenith AoA		0..1		Defined as $(\theta_{ZOA} - \Delta\theta_{ZOA}/2, \theta_{ZOA} + \Delta\theta_{ZOA}/2)$
>>Expected Zenith AoA Value	M		INTEGER(0..1799)	θ_{ZOA} component of Expected Zenith AoA
>>Expected Zenith AoA Uncertainty Range	M		INTEGER(0..1799)	$\Delta\theta_{ZOA}$ component of Expected Zenith AoA
>Expected UL Angle of Arrival Zenith Only				Defined as $(\theta_{ZOA} - \Delta\theta_{ZOA}/2, \theta_{ZOA} + \Delta\theta_{ZOA}/2)$
>>Expected Zenith AoA Value	M		INTEGER(0..1799)	θ_{ZOA} component of Expected Zenith AoA
>>Expected Zenith AoA Uncertainty Range	M		INTEGER(0..1799)	$\Delta\theta_{ZOA}$ component of Expected Zenith AoA
LCS to GCS Translation	O		9.3.1.241	If absent, the azimuth and zenith are provided in GCS. In case of zenith only, the z-axis of LCS is defined along the linear array axis.

9.3.1.239 Zenith Angle of Arrival Information

This information element contains the Zenith Angle of Arrival, which can correspond to linear array measurement.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
Zenith Angle of Arrival	M		INTEGER(0..1799)	TS 38.133 [38]
LCS to GCS Translation	O		9.3.1.241	If absent, the zenith is provided in GCS. the z-axis of LCS is defined along the linear array axis

9.3.1.240 On-demand PRS TRP Information

This IE contains on-demand PRS information for the TRP.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
On-demand PRS Request Allowed	M		BIT STRING (SIZE(16))	Each position in the bitmap represents an on-demand PRS transmission parameter: first bit: Resource Set Periodicity second bit: PRS Bandwidth third bit: Resource Repetition Factor fourth bit: Resource Number of Symbols fifth bit: Comb Size sixth bit: Number of Frequency Layers seventh bit: Start Time and Duration eighth bit: Off Indication ninth bit: QCL Information Other bits reserved for future use. Value '1' indicates 'request allowed', Value '0' indicates 'request not allowed'.
Allowed Resource Set Periodicity Values	O		BIT STRING (SIZE(24))	This IE applies only if the first bit of the <i>On-demand PRS Request Allowed</i> IE is set to '1'. Each position in the bitmap represents a value of the <i>Resource Set Periodicity</i> IE defined in subclause 9.2.x1, first bit = 4 and so on. Bit 24 is reserved for future use. Value '1' indicates 'request allowed', Value '0' indicates 'request not allowed'. If this IE is absent, all Resource Set Periodicity values are allowed to be requested.
Allowed PRS Bandwidth Values	O		BIT STRING (SIZE(64))	This IE applies only if the second bit of the <i>On-demand PRS Request Allowed</i> IE is set to '1'. Each position in the bitmap represents a value of the <i>PRS Bandwidth</i> IE defined in subclause 9.2.x1, first bit = 1 and so on. Bit 64 is reserved for future use. Value '1' indicates 'request allowed', Value '0'

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
				indicates 'request not allowed'. If this IE is absent, all PRS Bandwidth values are allowed to be requested.
Allowed Resource Repetition Factor Values	O		BIT STRING (SIZE(8))	This IE applies only if the third bit of the <i>On-demand PRS Request Allowed</i> IE is set to '1'. Each position in the bitmap represents a value of the <i>Resource Repetition Factor</i> IE defined in subclause 9.2.x1, first bit = rf1 and so on. Bit 8 is reserved for future use. Value '1' indicates 'request allowed', Value '0' indicates 'request not allowed'. If this IE is absent, all Resource Repetition Factor values are allowed to be requested.
Allowed Resource Number of Symbols Values	O		BIT STRING (SIZE(8))	This IE applies only if the fourth bit of the <i>On-demand PRS Request Allowed</i> IE is set to '1'. Each position in the bitmap represents a value of the <i>Resource Number of Symbols</i> IE defined in subclause 9.2.x1, first bit = n2 and so on. Bits 5-8 are reserved for future use. Value '1' indicates 'request allowed', Value '0' indicates 'request not allowed'. If this IE is absent, all Resource Number of Symbols values are allowed to be requested.
Allowed Comb Size Values	O		BIT STRING (SIZE(8))	This IE applies only if the fifth bit of the <i>On-demand PRS Request Allowed</i> IE is set to '1'. Each position in the bitmap represents a value of the <i>Comb Size</i> IE defined in subclause 9.2.x1, first bit = 2 and so on. Bits 5-8 are reserved for future use. Value '1' indicates 'request allowed', Value '0' indicates 'request not allowed'. If this IE is absent, all Comb Size values are allowed to be requested.

9.3.1.241 LCS to GCS Translation

This IE contains the LCS to GCS Translation information.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
Alpha	M		INTEGER (0..3599)	
Beta	M		INTEGER (0..3599)	
Gamma	M		INTEGER (0..3599)	

9.3.1.242 Response Time

This information element contains the response time of the measurement results reporting.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
Time	M		INTEGER(1..128, ...)	
Time Unit	M		ENUMERATED(sec ond, ten-seconds, ten-milliseconds, ...)	

9.3.1.243 ARP Location Information

This IE contains the relative position of ARP(s) to the TRP.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
ARP Location Information		<i>1</i>		
>ARP Location Information Item		<i>1..<maxnoARPs></i>		
>>ARP ID	M		9.3.1.244	
>>CHOICE ARP Location Type	M			
>>> <i>geodetic</i>				
>>>>ARP Position Relative Geodetic	M		Relative Geodetic Location 9.3.1.186	
>>>> <i>cartesian</i>				
>>>>ARP Position Relative Cartesian	M		Relative Cartesian Location 9.3.1.187	

Range bound	Explanation
maxnoARPs	Maximum no. of ARPs associated with a TRP. Value is 16.

9.3.1.244 ARP ID

This IE is used to uniquely identify an ARP associated with a TRP.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
ARP Identifier	M		INTEGER (1..16, ...)	

9.3.1.245 Multiple UL AoA

This information element contains the list of the multiple UL AOAs values.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
UL AoA List		<i>1</i>		
>UL AoA item		<i>1..<maxnoofULAoAs></i>		
>>CHOICE AngleMeasurement	M			
>>>UL Angle of Arrival				
>>>>UL Angle of Arrival	M		9.3.1.167	

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
>>>UL Zenith Angle of Arrival				
>>>>Zenith Angle of Arrival Information	M		9.3.1.239	

Range bound	Explanation
maxnoofULAoAs	Maximum no of UL-AOAs values (pair of AOA & ZOA values) that can be reported. Value is 8

9.3.1.246 UL SRS-RSRPP

This information element contains the UL SRS RSRPP measurement.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
First Path RSRP Power	M		INTEGER (0..126)	

9.3.1.247 SRS Resource type

This IE contains the SRS resource type.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
CHOICE <i>Reference Signal</i>	M				-	
>SRS						
>>SRS Resource ID	M		INTEGER(0..63)		-	
>Positioning SRS						
>>Positioning SRS Resource ID	M		INTEGER(0..63)		-	
SRS Port Index	O		ENUMERATED (id1000, id1001, id1002, id1003, ...)	This IE may be present if the <i>SRS Resource ID</i> IE is present, and is ignored otherwise.	YES	ignore

9.3.1.248 Extended Additional Path List

This IE contains the extended additional path results of time measurement.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
Additional Path Item		1..<maxNoPathExtended>		
>CHOICE <i>Relative Path Delay</i>	M			
>>k0				
>>>k0	M		INTEGER(0..16351)	
>>k1				
>>>k1	M		INTEGER(0..8176)	
>>k2				
>>>k2	M		INTEGER(0..4088)	
>>k3				
>>>k3	M		INTEGER(0..2044)	
>>k4				

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
>>>k4	M		INTEGER(0..1022)	
>>>k5				
>>>k5	M		INTEGER(0..511)	
>Path Quality	O		TRP Measurement Quality 9.3.1.172	
>Path Power	O		UL SRS-RSRPP 9.3.1.246	
>Multiple UL AoA	O		9.3.1.245	

Range bound	Explanation
maxNoPathExtended	Maximum no. of additional path measurement. Value is 8.

9.3.1.249 LoS/NLoS Information

This IE contains the LoS/NLoS information for UL measurement.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
CHOICE <i>LoS/NLoS Indicator</i>	M			
> <i>Soft Indicator</i>				
>>LoS/NLoS Indicator Soft	M		INTEGER (0..10)	Values provide the likelihood of a LOS propagation path in the range between 0 and 1 with 0.1 steps resolution. Value '0' indicates NLOS and value '1' indicates LOS.
> <i>Hard Indicator</i>				
>>LoS/NLoS Indicator Hard	M		ENUMERATED (NLoS, LoS)	

9.3.1.250 Requested DL-PRS Resource List

This IE contains the requested DL-PRS resource list.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
Requested DL-PRS Resource List		1		<i>NR-DL-PRS-Resource-r16</i> as defined in TS 37.355 [39]
> Requested DL-PRS Resource Item		1..<maxnoofPRSresource>		
>>CHOICE QCL Info	O			
>>>SSB				
>>>>NR PCI	M		INTEGER(0..1007)	
>>>>SSB Index	O		INTEGER(0..63)	
>>>>DL-PRS				
>>>>QCL Source PRS Resource Set ID	M		INTEGER(0..7)	
>>>>QCL Source PRS Resource ID	O		INTEGER(0..63)	

Range bound	Explanation
maxnoofPRSresource	Maximum no of PRS resources per PRS resource set. Value is 64.

9.3.1.251 Void

9.3.1.252 TRP Tx TEG Association

This information element contains the TRP Tx TEG information.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
TRP TEG item		<i>1 .. <maxnoTRPTEGs></i>		
>TRP Tx TEG Information	M		9.3.1.281	
>DL-PRS Resource Set ID	M		INTEGER (0..7)	
>DL-PRS Resource ID List		<i>0..1</i>		
>>DL-PRS Resource ID Item		<i>1..<maxnoofPRS-ResourcesPerSet></i>		
>>>DL-PRS Resource ID	M		INTEGER (0..63)	

Range bound	Explanation
maxnoTRPTEGs	Maximum no of reported TRP Tx TEG association. Value is 8.
maxnoofPRS-ResourcesPerSet	Maximum no of DL-PRS resources of the DL-PRS resource set of the TRP. Value is 64.

9.3.1.253 TRP TEG Information

This information element contains the TRP TEG information.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
CHOICE TRP TEG	M			
>RxTx TEG				
>>TRP RxTx TEG Information	M		9.3.1.282	
>>TRP Tx TEG Information	O		9.3.1.281	
>Rx TEG				
>>TRP Rx TEG Information	M		9.3.1.280	
>>TRP Tx TEG Information	M		9.3.1.281	

9.3.1.254 Measurement Characteristics Request Indicator

This IE contains the measurement characteristic information requested by the gNB-CU.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
Measurement characteristic request indicator	M		BIT STRING (SIZE(16))	Each position in the bitmap represents a requested measurement characteristic: first bit: Measurement Beam Information Second bit: Extended Additional Path List Third bit: Additional Path Power

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
				Fourth Bit: Multiple UL AoA of Additional Path Fifth bit: LoS/NLoS Information Sixth bit: TRP Rx TEG association for UL-TDOA Seventh bit: TRP RxTxTEG-ID information for DL+UL positioning. Eighth bit: SRS Resource Type Ninth bit: Multiple Measurement Instances Other bits reserved for future use. Value '1' indicates 'requested measurement characteristic', Value '0' indicates 'not requested'.

9.3.1.255 UE Reporting Information

This IE contains the UE Reporting Information.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Reporting Amount	M		ENUMERATED (0, 1, 2, 4, 8, 16, 32, 64)	Value 0 represents an infinite number of periodic reporting
Reporting Interval	M		ENUMERATED (none, 1, 2, 4, 8, 10, 16, 20, 32, 64)	Unit: seconds

9.3.1.256 TRP Beam Antenna Information

The IE provides the beam antenna information of the TRP. It includes either the explicit beam antenna information, or a reference to another TRP's signalled configuration, or the indication that no change has occurred with respect to previously signalled configuration.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
CHOICE <i>TRP Beam Antenna Info Item</i>	M			
>Reference				
>>Associated TRP ID	M		TRP ID 9.3.1.197	This IE specifies the <i>TRP ID</i> of the associated TRP from which the beam information parameters are adopted in Local Coordinate System (LCS).
>Explicit				
>>TRP Beam Antenna Angles	M		9.3.1.257	
>>LCS to GCS Translation	O		9.3.1.241	Included if the azimuth and elevation are not provided in GCS.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
>No Change			NULL	No change compared to previously signalled configuration for this TRP.

9.3.1.257 TRP Beam Antenna Angles

The IE provides the beam antenna information of the TRP.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
TRP Beam Antenna Angles Item		<i>1..<maxnoAzimuthAngles></i>		
>TRP Azimuth Angle	M		INTEGER (0..3599)	For GCS, the azimuth angle is measured counter-clockwise from geographical North. For LCS, the azimuth angle is measured counter-clockwise from the x-axis of the LCS.
>TRP Azimuth Angle fine	O		INTEGER (0..9)	Fine angle
>TRP Elevation Angle List		<i>1</i>		
>>TRP Elevation Angle Item		<i>1..<maxnoElevationAngles></i>		
>>>TRP Elevation Angle	M		INTEGER (0..1800)	For GCS, the elevation angle is measured relative to zenith and positive to the horizontal direction (elevation 0 deg. points to zenith, 90 deg to the horizon). For LCS, the elevation angle is measured relative to the z-axis of the LCS (elevation 0 deg. points to the z-axis, 90 deg to the x-y plane).
>>>TRP Elevation Angle fine	O		INTEGER (0..9)	Fine angle
>>>TRP Beam Power List		<i>1</i>		Relative power between DL-PRS Resources for the given Azimuth and Elevation Angle. The first Relative Power element in this list provides the peak power for this Azimuth/Elevation angle and is defined as 0dB power. All the remaining Relative Power Element's in this list provide the relative DL-PRS Resource power relative to this first element in the list.
>>>>TRP Beam Power Item		<i>2..<maxNumResourcesPerAngle></i>		
>>>>>PRS Resource Set ID	O		INTEGER (0..7)	DL-PRS Resource Set ID of the DL-PRS Resource for which the Relative Power is provided. If this field is absent, the DL-PRS Resource Set ID for this instance of the Beam Power List is the same as the DL-PRS Resource Set ID of the previous instance in the Beam Power List. This field

IE/Group Name	Presence	Range	IE type and reference	Semantics description
				shall be included at least in the first instance of the Beam Power List.
>>>>>PRS Resource ID	M		INTEGER (0..63)	DL-PRS Resource for which the Relative Power is provided.
>>>>>TRP Beam Relative Power	M		INTEGER (0..30)	The power values span from -30 to 0dB
>>>>>TRP Beam Relative Power "fine"	O		INTEGER (0..9)	Relative Power with 0.1dB resolution. The power spans from -0.9 to 0dB

Range bound	Explanation
maxNumResourcesPerAngle	Maximum number of DL-PRS Resources per angle per TRP. Value is 24.
maxnoAzimuthAngles	Maximum number of azimuth angles per TRP. Value is 3600.
maxnoElevationAngles	Maximum number of elevation angles per azimuth angle/TRP. Value is 1801.

9.3.1.258 NR Paging eDRX Information

This IE indicates the NR Paging eDRX parameters for RRC_IDLE as defined in TS 38.304 [24].

IE/Group Name	Presence	Range	IE type and reference	Semantics description
NR Paging eDRX Cycle Idle	M		ENUMERATED(hfquarter, hfhalf, hf1, hf2, hf4, hf8, hf16, hf32, hf64, hf128, hf256, hf512, hf1024, ...)	$T_{\text{eDRX,CN}}$ defined in TS 38.304 [24]. Unit: [number of hyperframes].
NR Paging Time Window	O		ENUMERATED(s1, s2, s3, s4, s5, s6, s7, s8, s9, s10, s11, s12, s13, s14, s15, s16, ..., s17, s18, s19, s20, s21, s22, s23, s24, s25, s26, s27, s28, s29, s30, s31, s32)	Unit: [1.28 second].

9.3.1.259 NR Paging eDRX Information for RRC INACTIVE

This IE indicates the NR Paging eDRX parameters for RRC_INACTIVE as defined in TS 38.304 [24].

IE/Group Name	Presence	Range	IE type and reference	Semantics description
NR Paging eDRX Cycle Inactive	M		ENUMERATED(hfquarter, hfhalf, hf1, ...)	$T_{\text{eDRX,RAN}}$ defined in TS 38.304 [24]. Unit: [number of hyperframes].

9.3.1.260 QoE Metrics

This IE provides the RAN visible QoE measurement report to gNB-DU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Application Layer Buffer Level List	O		OCTET STRING	As defined in TS 38.331 [8].

Playout Delay for Media Startup	O		OCTET STRING	As defined in TS 38.331 [8].

9.3.1.261 CG-SDT Session Info

This IE identifies an CG-SDT session for a UE.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
gNB-CU UE F1AP ID	M		9.3.1.4	
gNB-DU UE F1AP ID	M		9.3.1.5	

9.3.1.262 SDT Information

This IE is used to indicate an SDT transaction and to provide the assistant information from the UE.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
SDT Indicator	M		ENUMERATED (true,...)	
SDT Assistant Information	O		ENUMERATED (single packet, multiple packets, ...)	“single packet” indicates no subsequent SDT transmission is expected. “multiple packets” indicates subsequent SDT transmission is expected.

9.3.1.263 Path Switch Configuration

This IE provides information for switching to an indirect path from a direct path.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Target Relay UE ID	M		BIT STRING (SIZE(24))	Corresponds to the <i>targetRelayUE-Identity</i> contained in the <i>CellGroupConfig</i> IE, defined in TS 38.331 [8]
Remote UE Local ID	M		9.3.1.267	
T420	M		ENUMERATED (ms50, ms100, ms150, ms200, ms500, ms1000, ms2000, ms10000)	Corresponds to the <i>t420</i> contained in the <i>CellGroupConfig</i> IE, defined in TS 38.331 [8]

9.3.1.264 Sidelink Relay Configuration

This IE provides information of a U2N Remote UE when accessing the network via a U2N Relay UE.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
gNB-DU UE F1AP ID of Relay UE	M		gNB-DU UE F1AP ID 9.3.1.5	
Remote UE Local ID	M		9.3.1.267	
Sidelink Configuration Container	O		OCTET STRING	Includes the <i>SL-ConfigDedicatedNR</i> IE as defined in subclause 6.3.5 in TS 38.331 [8] to carry PC5 Relay RLC channel configuration for Remote UE's SRB1.

9.3.1.265 PC5 RLC Channel ID

This IE uniquely identifies a PC5 Relay RLC channel for a L2 U2N Remote UE or a L2 U2N Relay UE.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
PC5 RLC Channel ID	M		INTEGER (1.. 512, ...)	

9.3.1.266 Uu RLC Channel ID

This IE uniquely identifies a Uu Relay RLC channel for a L2 U2N Relay UE.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Uu RLC Channel ID	M		INTEGER (1..32)	Corresponds to information provided in the <i>Uu-RelayRLC-ChannelID</i> IE defined in 38.331 [8].

9.3.1.267 Remote UE Local ID

This IE uniquely identifies a L2 U2N Remote UE within the connected Relay UE.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Remote UE Local ID	M		INTEGER (0..255, ...)	Corresponds to the <i>sl-LocalIdentity</i> contained in the <i>SL-SRAP-Config</i> IE defined in TS 38.331 [8].

9.3.1.268 5G ProSe Authorized

This IE provides information on the authorization status of the UE for NR ProSe services.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
5G ProSe Direct Discovery	O		ENUMERATED (authorized, not authorized, ...)	Indicates whether the UE is authorized for 5G ProSe Direct Discovery
5G ProSe Direct Communication	O		ENUMERATED (authorized, not authorized, ...)	Indicates whether the UE is authorized for 5G ProSe Direct Communication
5G ProSe Layer-2 UE-to-Network Relay	O		ENUMERATED (authorized, not authorized, ...)	Indicates whether the UE is authorized for 5G ProSe Layer-2 UE-to-Network Relay
5G ProSe Layer-3 UE-to-Network Relay	O		ENUMERATED (authorized, not authorized, ...)	Indicates whether the UE is authorized for 5G ProSe Layer-3 UE-to-Network Relay
5G ProSe Layer-2 Remote UE	O		ENUMERATED (authorized, not authorized, ...)	Indicates whether the UE is authorized for 5G ProSe Layer-2 Remote UE

9.3.1.269 PEIPS Assistance Information

This IE provides the information related to CN paging subgrouping for a particular UE, as specified in TS 38.304 [24].

IE/Group Name	Presence	Range	IE type and	Semantics description

			reference	
CN Subgroup ID	M		INTEGER (0..7, ...)	

9.3.1.270 UE Paging Capability

This IE provides the UE Paging Capability information needed for paging.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
INACTIVE State PO-Determination	O		ENUMERATED(supported,...)	Corresponds to the <i>inactiveStatePO-Determination</i> contained in the <i>UERadioPagingInformation</i> IE defined in TS 38.331 [8].
RedCap Indication	O		ENUMERATED(true,...)	

9.3.1.271 gNB-DU UE Slice Maximum Bit Rate List

This IE contains the UE Slice Maximum Bit Rate List as specified in TS 23.501 [21].

IE/Group Name	Presence	Range	IE type and reference	Semantics description
UE Slice Maximum Bit Rate Item		<i>1..<maxnoofSMBRValues></i>		
>S-NSSAI	M		9.3.1.38	
>UE Slice Maximum Bit Rate Uplink	M		Bit Rate 9.3.1.22	This IE indicates the UE-Slice-MBR as specified in TS 23.501 [21] in the uplink direction.

Range bound	Explanation
maxnoofSMBRValues	Maximum no. of SLICE MAXIMUM BIT RATE values for a UE. Value is 8.

9.3.1.272 Multicast MBS Session List

This IE indicates the Multicast MBS Sessions the UE has joined.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Multicast MBS Session Item		<i>1..<maxnoofMBSSessionsofUE></i>		
>MBS Session ID	M		9.3.1.218	

Range bound	Explanation
maxnoofMBSSessionsofUE	Maximum no. of MBS sessions allowed towards one UE. Value is 256.

9.3.1.273 TAI NSAG Support List

This IE indicates the list of NSAGs configured at the gNB-DU and their associated S-NSSAIs as defined in TS 23.501 [21].

IE/Group Name	Presence	Range	IE type and reference	Semantics description
NSAG Support Item		<i>1..<maxnoofNSAGs></i>		
>NSAG ID	M		INTEGER (0.. 255,	

>NSAG Slice Support List	M		Extended Slice Support List 9.3.1.165	Indicates the list of slices which belong to the NSAG.

Range bound	Explanation
maxnoofNSAGs	Maximum no. of signalled NSAGs. Value is 256.

9.3.1.274 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		<i>0..<maxnoofMDTPLMNs></i>		An empty list indicates there is no PLMN allowed for MDT.
>PLMN Identity	M		9.3.1.14	

Range bound	Explanation
maxnoofMDTPLMNs	Maximum no. of PLMNs in the MDT PLMN list. Value is 16.

9.3.1.275 MRB RLC Configuration

This ID provides MRB RLC Configuration Information and is provided by the gNB-DU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
MRB RLC Configuration	M		ENUMERATED (rlc-um-ptp, rlc-am-ptp, rlc-um-dl-ptm, two-rlc-um-dl-ptp-and-dl-ptm, three-rlc-um-dl-ptp-ul-ptp-dl-ptm, two-rlc-am-ptp-um-dl-ptm, ...)	The various codepoints correspond to MRB configurations specified in TS 38.300 [6] as follows: "rlc-um-ptp ": Multicast MRB with DL only RLC-UM or bidirectional RLC-UM configuration for PTP transmission; "rlc-am-ptp " Multicast MRB with RLC-AM entity configuration for PTP transmission; " rlc-um-dl-ptm " Multicast MRB with DL only RLC-UM entity for PTM transmission; "two-rlc-um-dl-ptp-and-dl-ptm ": Multicast MRB with two RLC-UM entities, one DL only RLC-UM entity for PTP transmission and the other DL only RLC-UM entity for PTM transmission; "three-rlc-um-dl-ptp-ul-ptp-dl-ptm ": Multicast MRB with three RLC-UM entities, one DL RLC-UM entity and one UL RLC-UM entity for PTP transmission and the other DL only RLC-UM entity for PTM transmission; "two-rlc-am-ptp-um-dl-ptm "; Multicast MRB with two RLC entities, one RLC-AM entity for PTP transmission and the other DL only RLC-UM entity for PTM transmission;

9.3.1.276 Timing Error Margin

This information element contains the Timing error margin for the TRP Rx TEG, or TRP Tx TEG.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Timing Error Margin	M		ENUMERATED(Tc0, Tc2, Tc4, Tc6, Tc8, Tc12, Tc16, Tc20, Tc24, Tc32, Tc40, Tc48, Tc56, Tc64, Tc72, Tc80,...)	

9.3.1.277 SDT Bearer Configuration Info

This IE contains RLC bearer configuration of each SDT bearer.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
SDT Bearer Config List		<i>1</i>		
>SDT Bearer Config Item IEs		<i>1 .. <maxnoofSDTBearers></i>		
>>CHOICE SDT Bearer Type	M			
>>>SRB				
>>>>SRB ID	M		9.3.1.7	
>>>DRB				
>>>>DRB ID	M		9.3.1.8	
>>SDT RLC Bearer Configuration	M		OCTET STRING	Includes the <i>RLC-BearerConfig</i> IE defined in subclause 6.3.2 of TS 38.331 [8]

Range bound	Explanation
maxnoofSDTBearers	Maximum no. of SDT bearers. Value is the summation of maximum numbers of DRBs and SRBs, i.e., 72.

9.3.1.278 PosSIType List

This IE is used to indicate the list of positioning SI message to be broadcast.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
PosSI type item IEs		<i>1.. <maxnoofPosSITypes></i>		
>PosSI Type	M		INTEGER (1..32, ...)	Value "1" corresponds to the positioning SI message identified by the first SI message indicated in the <i>posSI-SchedulingInfo</i> IE in the <i>SIB1</i> message, value "2" to the positioning SI message identified by the second SI message indicated in the <i>posSI-SchedulingInfo</i> IE in the <i>SIB1</i> message, and so on, as defined in TS 38.331 [8].

Range bound	Explanation
maxnoofPosSITypes	Maximum no. of positioning SI types, the maximum value is 32.

9.3.1.279 IAB-DU Cell Resource Configuration-Mode-Info

This IE contains the IAB-DU Cell Resource Configuration-Mode-Info.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
CHOICE <i>IAB-DU Cell Resource Configuration-Mode-Info</i>	M				-	
> <i>FDD</i>						
>> FDD Info		1			-	
>>>gNB-DU Cell Resource Configuration-FDD-UL	M		gNB-DU Cell Resource Configuration 9.3.1.107	Contains FDD UL resource configuration of the gNB-DU cell. Only applicable if the gNB-DU is an IAB-DU or an IAB-donor-DU.	-	
>>>gNB-DU Cell Resource Configuration-FDD-DL	M		gNB-DU Cell Resource Configuration 9.3.1.107	Contains FDD DL resource configuration of the gNB-DU cell. Only applicable if the gNB-DU is an IAB-DU or an IAB-donor-DU.	-	
>>>UL Frequency Info	O		NR Frequency Info 9.3.1.17		YES	reject
>>>UL Transmission Bandwidth	O		Transmission Bandwidth 9.3.1.15		YES	reject
>>>UL Carrier List	O		NR Carrier List 9.3.1.137	If included, the <i>UL Transmission Bandwidth</i> IE shall be ignored.	YES	reject
>>>DL Frequency Info	O		NR Frequency Info 9.3.1.17		YES	reject
>>>DL Transmission Bandwidth	O		Transmission Bandwidth 9.3.1.15		YES	reject
>>>DL Carrier List	O		NR Carrier List 9.3.1.137	If included, the <i>DL Transmission Bandwidth</i> IE shall be ignored.	YES	reject
> <i>TDD</i>						
>> TDD Info		1			-	
>>>gNB-DU Cell Resource Configuration-TDD	M		gNB-DU Cell Resource Configuration 9.3.1.107	Contains TDD resource configuration of the gNB-DU cell. Only applicable if the gNB-DU is an IAB-DU or an IAB-donor-DU.	-	
>>>NR Frequency Info	O		NR Frequency Info 9.3.1.17		YES	reject
>>>Transmission Bandwidth	O		Transmission Bandwidth 9.3.1.15		YES	reject
>>>Carrier List	O		NR Carrier List 9.3.1.137	If included, the <i>Transmission</i>	YES	reject

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				<i>Bandwidth</i> IE shall be ignored.		

9.3.1.280 TRP Rx TEG Information

This information element contains the TRP Rx TEG information.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
TRP Rx TEG ID	M		INTEGER (0..31)	
TRP Rx Timing Error Margin	M		Timing Error Margin 9.3.1.276	Timing error margin associated to the TRP Rx TEG ID.

9.3.1.281 TRP Tx TEG Information

This information element contains the TRP Tx TEG information.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
TRP Tx TEG ID	M		INTEGER (0..7)	
TRP Tx Timing Error Margin	M		Timing Error Margin 9.3.1.276	Timing error margin associated to the TRP Tx TEG ID.

9.3.1.282 TRP RxTx TEG Information

This information element contains the TRP RxTx TEG information.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
TRP RxTx TEG ID	M		INTEGER (0..255)	
TRP RxTx Timing Error Margin	M		ENUMERATED(Tc0 dot5, Tc1, Tc2, Tc4, Tc8, Tc12, Tc16, Tc20, Tc24, Tc32, Tc40, Tc48, Tc64, Tc80, Tc96, Tc128, ...)	Timing error margin associated to the TRP RxTx TEG ID.

9.3.1.283 Uplink TxDirectCurrentTwoCarrierList Information

This IE contains the Uplink TxDirectCurrentTwoCarrierList information that is configured by the UE.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Uplink TxDirectCurrentTwoCarrierList Information	M		OCTET STRING	Includes the <i>UplinkTxDirectCurrentTwoCarrierList</i> IE as defined in TS 38.331 [8].

9.3.1.284 Uplink TxDirectCurrentMoreCarrierList Information

This IE contains the Uplink TxDirectCurrentMoreCarrierList information that is configured by the UE.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Uplink TxDirectCurrentMoreCarrier	M		OCTET STRING	Includes the <i>UplinkTxDirectCurrentMoreCarrier</i>

List Information				<i>erList</i> IE as defined in TS 38.331 [8].

9.3.1.285 Extended UE Identity Index Value

This IE is used by the gNB-DU to calculate the Paging Frame and Paging Occasion for eDRX, and the UE_ID based subgroup ID as specified in TS 38.304 [24].

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Extended UE Identity Index Value	M		BIT STRING (SIZE(16))	

9.3.1.286 Hashed UE Identity Index Value

This IE is the 13 Most Significant Bits (MSBs) of the Hashed ID defined in TS 38.304 [24].

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Hashed UE Identity Index Value	M		BIT STRING (SIZE(13, ...))	

9.3.1.287 Broadcast Area Scope

This IE contains the Broadcast Area where the broadcast session is delivered.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
CHOICE <i>BroadcastAreaScope</i>	M			
> <i>CompleteSuccess</i>			NULL	
> <i>PartialSuccess</i>				
>> Broadcast Cell List		1		
>>> Broadcast Cell Item		1 .. < <i>maxcellingNB DU</i> >		
>>>>Cell ID	M		NR CGI 9.3.1.12	Identifier of the cells that establish the broadcast service successfully.

Range bound	Explanation
<i>maxcellingNB DU</i>	Maximum no. of cells which establish the MRBs successfully in one DU, the maximum value is 512.

9.3.2 Transport Network Layer Related IEs

9.3.2.1 UP Transport Layer Information

The *UP Transport Layer Information* IE identifies an F1 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 F1 user plane transport. The GTP Tunnel Endpoint Identifier is to be used for the user plane transport between gNB-CU and gNB-DU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
CHOICE Transport Layer Information	M			
> <i>GTP Tunnel</i>				

>>Transport Layer Address	M		9.3.2.3	
>>GTP-TEID	M		9.3.2.2	

9.3.2.2 GTP-TEID

The *GTP-TEID* IE is the GTP Tunnel Endpoint Identifier to be used for the user plane transport between the gNB-CU and gNB-DU.

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 [18].

9.3.2.3 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 [19].

9.3.2.4 CP Transport Layer Information

This IE is used to provide the F1 control plane transport layer information associated with a gNB-CU – gNB-DU.

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 9.3.2.3		-	
>Endpoint-IP-address-and-port						
>>Endpoint IP address	M		Transport Layer Address 9.3.2.3		-	
>>Port Number	M		BIT STRING (SIZE(16))		YES	reject

9.3.2.5 Transport Layer Address Info

This IE is used for signalling TNL Configuration information for IPsec tunnel over which GTP traffic is transmitted.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Transport UP Layer Address Info to Add List		0..1		
>Transport UP Layer Address Info to Add Item		1..<maxnoofTLAs>		
>>IP-Sec Transport Layer Address	M		Transport Layer Address 9.3.2.3	Transport Layer Address for IP-Sec endpoint.
>>GTP Transport Layer		0..1		

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Address To Add List				
>>>GTP Transport Layer Address To Add Item		1..<maxnoofGTPTLAs>		
>>>>GTP Transport Layer Address Info	M		Transport Layer Address 9.3.2.3	GTP Transport Layer Address for GTP end-points.
Transport UP Layer Address Info to Remove List		0..1		
>Transport UP Layer Address Info to Remove Item		1..<maxnoofTLAs>		
>>IP-Sec Transport Layer Address	M		Transport Layer Address 9.3.2.3	Transport Layer Address for IP-Sec endpoint.
>>GTP Transport Layer Address To Remove List		0..1		
>>>>GTP Transport Layer Address To Remove Item		1..<maxnoofGTPTLAs>		
>>>>GTP Transport Layer Address Info	M		Transport Layer Address 9.3.2.3	GTP Transport Layer Address for GTP end-points.

Range bound	Explanation
maxnoofTLAs	Maximum no. of F1 Transport Layer Address in the message. Value is 16.
maxnoofGTPTLAs	Maximum no. of F1 GTP Transport Layer Address for a GTP end-point in the message. Value is 16.

9.3.2.6 URI

This IE is an URI.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
URI	M		VisibleString	String representing URI (Uniform Resource Identifier)

9.3.2.7 BC Bearer Context F1-U TNL Info

This IE contains F1-U TNL information for an MBS Session. In case of location dependent MBS sessions, it also contains per Area Session ID F1-U TNL information.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
<i>CHOICE MBS Session Type</i>	M			
>location independent				
>>MBS F1-U Information	M		UP Transport Layer Information 9.3.2.1	
>location dependent				
>>Location dependent MBS F1-U Information		1..<maxnoofMBSAreaSessionIDs>		
>>>MBS Area Session ID	M		9.3.1.221	
>>>>MBS F1-U	M		UP Transport Layer	

Information			Information 9.3.2.1	

Range bound	Explanation
maxnoofMBSAreaSessionIDs	Maximum no. of MBS Area Session IDs. Value is 256.

9.3.2.8 MBS Multicast F1-U Context Descriptor

This IE contains a reference to a Multicast F1-U Context, information about the usage of the MBS Multicast F1-U Context and may contain an MBS Area Session ID.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Multicast F1-U Context Reference F1	M		9.3.2.11	
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		9.3.1.221	

9.3.2.9 Void

Void

9.3.2.10 MBS PTP Retransmission Tunnel Required

This IE indicates the request to establishment of a PTP Retransmission F1-U Tunnel for retransmitting user data for a multicast MBS Session.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
MBS PTP Retransmission Tunnel Required	M		ENUMERATED (true, ...)	

9.3.2.11 Multicast F1-U Context Reference F1

This IE contains a reference to a Multicast F1-U Context associated with an MBS Session context in a gNB-DU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Multicast F1-U Bearer Context Reference	M		OCTET STRING (SIZE(4))	This value is allocated to uniquely denote an Multicast F1-U Context within an MBS-associated logical F1-connection.

9.3.2.12 MRB Progress Information

This IE contains the MRB progress Information.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
CHOICE <i>MRB Progress Information</i>	M			
>12bits				
>>PDCP SN Length 12	M		INTEGER (0..4095)	
>18bits				
>>PDCP SN Length 18	M		INTEGER (0..262143)	

9.3.2.13 Multicast F1-U Context Reference CU

This IE contains a reference to a Multicast F1-U Context associated with MBS session resources allocated in the gNB-CU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Multicast F1-U Bearer Context Reference CU	M		OCTET STRING (SIZE(4))	This value is allocated to uniquely denote a Multicast F1-U Context associated with multicast MBS session resources allocated in the gNB-CU. NOTE: If E1 is deployed, the <i>Multicast F1-U Bearer Context Reference CU</i> IE refers to the <i>Multicast F1-U Context ReferenceE1</i> IE as specified in TS 37.483 [47].

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

9.4.1 General

F1AP ASN.1 definition conforms to ITU-T Recommendation X.691 [5], ITU-T Recommendation X.680 [12] and ITU-T Recommendation X.681 [13].

The ASN.1 definition specifies the structure and content of F1AP messages. F1AP 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 F1AP 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 F1AP 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
-- *****
--
-- Elementary Procedure definitions
--
-- *****

F1AP-PDU-Descriptions {
itu-t (0) identified-organization (4) etsi (0) mobileDomain (0)
ngran-access (22) modules (3) f1ap (3) version1 (1) f1ap-PDU-Descriptions (0)}

DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

-- *****
--
-- IE parameter types from other modules.
--
-- *****

IMPORTS
    Criticality,
    ProcedureCode

FROM F1AP-CommonDataTypes
    Reset,
    ResetAcknowledge,
    F1SetupRequest,
    F1SetupResponse,
    F1SetupFailure,
    GNBDCUConfigurationUpdate,
    GNBDCUConfigurationUpdateAcknowledge,
    GNBDCUConfigurationUpdateFailure,
    GNBCUCUConfigurationUpdate,
    GNBCUCUConfigurationUpdateAcknowledge,
    GNBCUCUConfigurationUpdateFailure,
    UEContextSetupRequest,
    UEContextSetupResponse,
    UEContextSetupFailure,
    UEContextReleaseCommand,
    UEContextReleaseComplete,
    UEContextModificationRequest,
    UEContextModificationResponse,
    UEContextModificationFailure,
    UEContextModificationRequired,
    UEContextModificationConfirm,
    ErrorIndication,
    UEContextReleaseRequest,
    DLRRCTransfer,
    ULRRCTransfer,
```

GNBDUResourceCoordinationRequest,
GNBDUResourceCoordinationResponse,
PrivateMessage,
UEInactivityNotification,
InitialULRRCMMessageTransfer,
SystemInformationDeliveryCommand,
Paging,
Notify,
WriteReplaceWarningRequest,
WriteReplaceWarningResponse,
PWSCancelRequest,
PWSCancelResponse,
PWSRestartIndication,
PWSFailureIndication,
GNBDUStatusIndication,
RRCDeliveryReport,
UEContextModificationRefuse,
F1RemovalRequest,
F1RemovalResponse,
F1RemovalFailure,
NetworkAccessRateReduction,
TraceStart,
DeactivateTrace,
DUCURadioInformationTransfer,
CUDURadioInformationTransfer,
BAPMappingConfiguration,
BAPMappingConfigurationAcknowledge,
BAPMappingConfigurationFailure,
GNBDUResourceConfiguration,
GNBDUResourceConfigurationAcknowledge,
GNBDUResourceConfigurationFailure,
IABTNLAddressRequest,
IABTNLAddressResponse,
IABTNLAddressFailure,
IABUPConfigurationUpdateRequest,
IABUPConfigurationUpdateResponse,
IABUPConfigurationUpdateFailure,
ResourceStatusRequest,
ResourceStatusResponse,
ResourceStatusFailure,
ResourceStatusUpdate,
AccessAndMobilityIndication,
ReferenceTimeInformationReportingControl,
ReferenceTimeInformationReport,
AccessSuccess,
CellTrafficTrace,
PositioningMeasurementRequest,
PositioningMeasurementResponse,
PositioningMeasurementFailure,
PositioningAssistanceInformationControl,
PositioningAssistanceInformationFeedback,
PositioningMeasurementReport,
PositioningMeasurementAbort,
PositioningMeasurementFailureIndication,

PositioningMeasurementUpdate,
TRPInformationRequest,
TRPInformationResponse,
TRPInformationFailure,
PositioningInformationRequest,
PositioningInformationResponse,
PositioningInformationFailure,
PositioningActivationRequest,
PositioningActivationResponse,
PositioningActivationFailure,
PositioningDeactivation,
PositioningInformationUpdate,
E-CIDMeasurementInitiationRequest,
E-CIDMeasurementInitiationResponse,
E-CIDMeasurementInitiationFailure,
E-CIDMeasurementFailureIndication,
E-CIDMeasurementReport,
E-CIDMeasurementTerminationCommand,
BroadcastContextSetupRequest,
BroadcastContextSetupResponse,
BroadcastContextSetupFailure,
BroadcastContextReleaseCommand,
BroadcastContextReleaseComplete,
BroadcastContextReleaseRequest,
BroadcastContextModificationRequest,
BroadcastContextModificationResponse,
BroadcastContextModificationFailure,
MulticastGroupPaging,
MulticastContextSetupRequest,
MulticastContextSetupResponse,
MulticastContextSetupFailure,
MulticastContextReleaseCommand,
MulticastContextReleaseComplete,
MulticastContextReleaseRequest,
MulticastContextModificationRequest,
MulticastContextModificationResponse,
MulticastContextModificationFailure,
MulticastDistributionSetupRequest,
MulticastDistributionSetupResponse,
MulticastDistributionSetupFailure,
MulticastDistributionReleaseCommand,
MulticastDistributionReleaseComplete,
PDCMeasurementInitiationRequest,
PDCMeasurementInitiationResponse,
PDCMeasurementInitiationFailure,
PDCMeasurementReport,
PDCMeasurementTerminationCommand,
PDCMeasurementFailureIndication,
PRSConfigurationRequest,
PRSConfigurationResponse,
PRSConfigurationFailure,
MeasurementPreconfigurationRequired,
MeasurementPreconfigurationConfirm,
MeasurementPreconfigurationRefuse,

MeasurementActivation,
QoEInformationTransfer,
PosSystemInformationDeliveryCommand

FROM F1AP-PDU-Contents

id-Reset,
id-F1Setup,
id-gNBDCUConfigurationUpdate,
id-gNBCUConfigurationUpdate,
id-UEContextSetup,
id-UEContextRelease,
id-UEContextModification,
id-UEContextModificationRequired,
id-ErrorIndication,
id-UEContextReleaseRequest,
id-DLRRCMessagesTransfer,
id-ULRRCMessagesTransfer,
id-GNBDUResourceCoordination,
id-privateMessage,
id-UEInactivityNotification,
id-InitialULRRCMessagesTransfer,
id-SystemInformationDeliveryCommand,
id-Paging,
id-Notify,
id-WriteReplaceWarning,
id-PWSCancel,
id-PWSRestartIndication,
id-PWSFailureIndication,
id-GNBDUStatusIndication,
id-RRCDeliveryReport,
id-F1Removal,
id-NetworkAccessRateReduction,
id-TraceStart,
id-DeactivateTrace,
id-DUCURadioInformationTransfer,
id-CUDURadioInformationTransfer,
id-BAPMappingConfiguration,
id-GNBDUResourceConfiguration,
id-IABTNLAddressAllocation,
id-IABUPConfigurationUpdate,
id-resourceStatusReportingInitiation,
id-resourceStatusReporting,
id-accessAndMobilityIndication,
id-ReferenceTimeInformationReportingControl,
id-ReferenceTimeInformationReport,
id-accessSuccess,
id-cellTrafficTrace,
id-PositioningMeasurementExchange,
id-PositioningAssistanceInformationControl,
id-PositioningAssistanceInformationFeedback,
id-PositioningMeasurementReport,

```

id-PositioningMeasurementAbort,
id-PositioningMeasurementFailureIndication,
id-PositioningMeasurementUpdate,
id-TRPInformationExchange,
id-PositioningInformationExchange,
id-PositioningActivation,
id-PositioningDeactivation,
id-PositioningInformationUpdate,
id-E-CIDMeasurementInitiation,
id-E-CIDMeasurementFailureIndication,
id-E-CIDMeasurementReport,
id-E-CIDMeasurementTermination,
id-BroadcastContextSetup,
id-BroadcastContextRelease,
id-BroadcastContextReleaseRequest,
id-BroadcastContextModification,
id-MulticastGroupPaging,
id-MulticastContextSetup,
id-MulticastContextRelease,
id-MulticastContextReleaseRequest,
id-MulticastContextModification,
id-MulticastDistributionSetup,
id-MulticastDistributionRelease,
id-PDCMeasurementInitiation,
id-PDCMeasurementInitiationRequest,
id-PDCMeasurementInitiationResponse,
id-PDCMeasurementInitiationFailure,
id-PDCMeasurementTerminationCommand,
id-PDCMeasurementFailureIndication,
id-PDCMeasurementReport,
id-pRSConfigurationExchange,
id-measurementPreconfiguration,
id-measurementActivation,
id-QoEInformationTransfer,
id-PosSystemInformationDeliveryCommand

```

FROM F1AP-Constants

```

ProtocolIE-SingleContainer{},
F1AP-PROTOCOL-IES

```

FROM F1AP-Containers;

```

-- *****
--
-- Interface Elementary Procedure Class
--
-- *****

```

```

F1AP-ELEMENTARY-PROCEDURE ::= CLASS {
    &InitiatingMessage
    &SuccessfulOutcome
    OPTIONAL,

```

```

        &UnsuccessfulOutcome      OPTIONAL,
        &procedureCode            UNIQUE,
        &criticality              DEFAULT ignore
    }
    WITH SYNTAX {
        INITIATING MESSAGE      &InitiatingMessage
        [SUCCESSFUL OUTCOME     &SuccessfulOutcome]
        [UNSUCCESSFUL OUTCOME   &UnsuccessfulOutcome]
        PROCEDURE CODE          &procedureCode
        [CRITICALITY            &criticality]
    }

-- *****
--
-- Interface PDU Definition
--
-- *****

F1AP-PDU ::= CHOICE {
    initiatingMessage      InitiatingMessage,
    successfulOutcome      SuccessfulOutcome,
    unsuccessfulOutcome    UnsuccessfulOutcome,
    choice-extension      ProtocolIE-SingleContainer { { F1AP-PDU-ExtIEs } }
}

F1AP-PDU-ExtIEs F1AP-PROTOCOL-IES ::= { -- this extension is not used
    ...
}

InitiatingMessage ::= SEQUENCE {
    procedureCode      F1AP-ELEMENTARY-PROCEDURE.&procedureCode      ({F1AP-ELEMENTARY-PROCEDURES}),
    criticality        F1AP-ELEMENTARY-PROCEDURE.&criticality        ({F1AP-ELEMENTARY-PROCEDURES}{@procedureCode}),
    value              F1AP-ELEMENTARY-PROCEDURE.&InitiatingMessage  ({F1AP-ELEMENTARY-PROCEDURES}{@procedureCode})
}

SuccessfulOutcome ::= SEQUENCE {
    procedureCode      F1AP-ELEMENTARY-PROCEDURE.&procedureCode      ({F1AP-ELEMENTARY-PROCEDURES}),
    criticality        F1AP-ELEMENTARY-PROCEDURE.&criticality        ({F1AP-ELEMENTARY-PROCEDURES}{@procedureCode}),
    value              F1AP-ELEMENTARY-PROCEDURE.&SuccessfulOutcome  ({F1AP-ELEMENTARY-PROCEDURES}{@procedureCode})
}

UnsuccessfulOutcome ::= SEQUENCE {
    procedureCode      F1AP-ELEMENTARY-PROCEDURE.&procedureCode      ({F1AP-ELEMENTARY-PROCEDURES}),
    criticality        F1AP-ELEMENTARY-PROCEDURE.&criticality        ({F1AP-ELEMENTARY-PROCEDURES}{@procedureCode}),
    value              F1AP-ELEMENTARY-PROCEDURE.&UnsuccessfulOutcome ({F1AP-ELEMENTARY-PROCEDURES}{@procedureCode})
}

-- *****
--
-- Interface Elementary Procedure List
--
-- *****

F1AP-ELEMENTARY-PROCEDURES F1AP-ELEMENTARY-PROCEDURE ::= {

```

```

F1AP-ELEMENTARY-PROCEDURES-CLASS-1      |
F1AP-ELEMENTARY-PROCEDURES-CLASS-2,
...
}

F1AP-ELEMENTARY-PROCEDURES-CLASS-1 F1AP-ELEMENTARY-PROCEDURE ::= {
    reset                               |
    f1Setup                             |
    gNBDCUConfigurationUpdate           |
    gNBCUCUConfigurationUpdate          |
    uEContextSetup                     |
    uEContextRelease                   |
    uEContextModification               |
    uEContextModificationRequired       |
    writeReplaceWarning                 |
    pWSCancel                           |
    gNBDCUResourceCoordination          |
    f1Removal                           |
    bAPMappingConfiguration             |
    gNBDCUResourceConfiguration         |
    iABTNLAddressAllocation             |
    iABUPConfigurationUpdate           |
    resourceStatusReportingInitiation   |
    positioningMeasurementExchange      |
    trpInformationExchange              |
    positioningInformationExchange      |
    positioningActivation               |
    e-CIDMeasurementInitiation          |
    broadcastContextSetup               |
    broadcastContextRelease             |
    broadcastContextModification        |
    multicastContextSetup               |
    multicastContextRelease             |
    multicastContextModification        |
    multicastDistributionSetup           |
    multicastDistributionRelease         |
    pDCMeasurementInitiation            |
    pRSConfigurationExchange            |
    measurementPreconfiguration ,
    ...
}

F1AP-ELEMENTARY-PROCEDURES-CLASS-2 F1AP-ELEMENTARY-PROCEDURE ::= {
    errorIndication                     |
    uEContextReleaseRequest             |
    dLRRCMesageTransfer                 |
    uLRRCMesageTransfer                 |
    uEInactivityNotification            |
    privateMessage                      |
    initialULRRCMesageTransfer          |
    systemInformationDelivery            |
    paging                              |
    notify                              |

```



```

    pWSRestartIndication
    pWSFailureIndication
    gNBStatusIndication
    rRCDeliveryReport
    networkAccessRateReduction
    traceStart
    deactivateTrace
    dUCURadioInformationTransfer
    cUDURadioInformationTransfer
    resourceStatusReporting
    accessAndMobilityIndication
    referenceTimeInformationReportingControl
    referenceTimeInformationReport
    accessSuccess
    cellTrafficTrace
    positioningAssistanceInformationControl
    positioningAssistanceInformationFeedback
    positioningMeasurementReport
    positioningMeasurementAbort
    positioningMeasurementFailureIndication
    positioningMeasurementUpdate
    positioningDeactivation
    e-CIDMeasurementFailureIndication
    e-CIDMeasurementReport
    e-CIDMeasurementTermination
    positioningInformationUpdate
    multicastGroupPaging
    broadcastContextReleaseRequest
    multicastContextReleaseRequest
    pDCMeasurementReport
    pDCMeasurementTerminationCommand
    pDCMeasurementFailureIndication
    measurementActivation
    qoEInformationTransfer
    posSystemInformationDelivery,
    ...
}
-- *****
--
-- Interface Elementary Procedures
--
-- *****

reset F1AP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE      Reset
    SUCCESSFUL OUTCOME      ResetAcknowledge
    PROCEDURE CODE          id-Reset
    CRITICALITY              reject
}

f1Setup F1AP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE      F1SetupRequest
    SUCCESSFUL OUTCOME      F1SetupResponse
    UNSUCCESSFUL OUTCOME    F1SetupFailure
}

```

```
    PROCEDURE CODE      id-F1Setup
    CRITICALITY          reject
}

gNBDCUConfigurationUpdate F1AP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE   GNBDCUConfigurationUpdate
    SUCCESSFUL OUTCOME   GNBDCUConfigurationUpdateAcknowledge
    UNSUCCESSFUL OUTCOME GNBDCUConfigurationUpdateFailure
    PROCEDURE CODE       id-gNBDCUConfigurationUpdate
    CRITICALITY           reject
}

gNBCUCUConfigurationUpdate F1AP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE   GNBCUCUConfigurationUpdate
    SUCCESSFUL OUTCOME   GNBCUCUConfigurationUpdateAcknowledge
    UNSUCCESSFUL OUTCOME GNBCUCUConfigurationUpdateFailure
    PROCEDURE CODE       id-gNBCUCUConfigurationUpdate
    CRITICALITY           reject
}

UEContextSetup F1AP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE   UEContextSetupRequest
    SUCCESSFUL OUTCOME   UEContextSetupResponse
    UNSUCCESSFUL OUTCOME UEContextSetupFailure
    PROCEDURE CODE       id-UEContextSetup
    CRITICALITY           reject
}

UEContextRelease F1AP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE   UEContextReleaseCommand
    SUCCESSFUL OUTCOME   UEContextReleaseComplete
    PROCEDURE CODE       id-UEContextRelease
    CRITICALITY           reject
}

UEContextModification F1AP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE   UEContextModificationRequest
    SUCCESSFUL OUTCOME   UEContextModificationResponse
    UNSUCCESSFUL OUTCOME UEContextModificationFailure
    PROCEDURE CODE       id-UEContextModification
    CRITICALITY           reject
}

UEContextModificationRequired F1AP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE   UEContextModificationRequired
    SUCCESSFUL OUTCOME   UEContextModificationConfirm
    UNSUCCESSFUL OUTCOME UEContextModificationRefuse
    PROCEDURE CODE       id-UEContextModificationRequired
    CRITICALITY           reject
}

writeReplaceWarning F1AP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE   WriteReplaceWarningRequest
    SUCCESSFUL OUTCOME   WriteReplaceWarningResponse
}
```

```
    PROCEDURE CODE      id-WriteReplaceWarning
    CRITICALITY          reject
  }

  PWSCancel F1AP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE   PWSCancelRequest
    SUCCESSFUL OUTCOME   PWSCancelResponse
    PROCEDURE CODE       id-PWSCancel
    CRITICALITY          reject
  }

  errorIndication F1AP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE   ErrorIndication
    PROCEDURE CODE       id-ErrorIndication
    CRITICALITY          ignore
  }

  UEContextReleaseRequest F1AP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE   UEContextReleaseRequest
    PROCEDURE CODE       id-UEContextReleaseRequest
    CRITICALITY          ignore
  }

  initialULRRCTestMessageTransfer F1AP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE   InitialULRRCTestMessageTransfer
    PROCEDURE CODE       id-InitialULRRCTestMessageTransfer
    CRITICALITY          ignore
  }

  dLRRCTestMessageTransfer F1AP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE   DLRRCTestMessageTransfer
    PROCEDURE CODE       id-DLRRCTestMessageTransfer
    CRITICALITY          ignore
  }

  uLRRCTestMessageTransfer F1AP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE   ULRRCTestMessageTransfer
    PROCEDURE CODE       id-ULRRCTestMessageTransfer
    CRITICALITY          ignore
  }

  UEInactivityNotification F1AP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE   UEInactivityNotification
    PROCEDURE CODE       id-UEInactivityNotification
    CRITICALITY          ignore
  }

  gNBDRResourceCoordination F1AP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE   gNBDRResourceCoordinationRequest
    SUCCESSFUL OUTCOME   gNBDRResourceCoordinationResponse
    PROCEDURE CODE       id-gNBDRResourceCoordination
    CRITICALITY          reject
  }
```

```
}

privateMessage F1AP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE      PrivateMessage
    PROCEDURE CODE          id-privateMessage
    CRITICALITY              ignore
}

systemInformationDelivery F1AP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE      SystemInformationDeliveryCommand
    PROCEDURE CODE          id-SystemInformationDeliveryCommand
    CRITICALITY              ignore
}

paging F1AP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE      Paging
    PROCEDURE CODE          id-Paging
    CRITICALITY              ignore
}

notify F1AP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE      Notify
    PROCEDURE CODE          id-Notify
    CRITICALITY              ignore
}

networkAccessRateReduction F1AP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE      NetworkAccessRateReduction
    PROCEDURE CODE          id-NetworkAccessRateReduction
    CRITICALITY              ignore
}

pwsRestartIndication F1AP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE      PwsRestartIndication
    PROCEDURE CODE          id-PwsRestartIndication
    CRITICALITY              ignore
}

pwsFailureIndication F1AP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE      PwsFailureIndication
    PROCEDURE CODE          id-PwsFailureIndication
    CRITICALITY              ignore
}

gnbDUsStatusIndication F1AP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE      GnbDUsStatusIndication
    PROCEDURE CODE          id-GnbDUsStatusIndication
    CRITICALITY              ignore
}

rrcDeliveryReport F1AP-ELEMENTARY-PROCEDURE ::= {
```

```
INITIATING MESSAGE      RRCDeliveryReport
PROCEDURE CODE          id-RRCDeliveryReport
CRITICALITY             ignore
}

f1Removal F1AP-ELEMENTARY-PROCEDURE ::= {
  INITIATING MESSAGE      F1RemovalRequest
  SUCCESSFUL OUTCOME      F1RemovalResponse
  UNSUCCESSFUL OUTCOME    F1RemovalFailure
  PROCEDURE CODE          id-F1Removal
  CRITICALITY             reject
}

traceStart F1AP-ELEMENTARY-PROCEDURE ::= {
  INITIATING MESSAGE      TraceStart
  PROCEDURE CODE          id-TraceStart
  CRITICALITY             ignore
}

deactivateTrace F1AP-ELEMENTARY-PROCEDURE ::= {
  INITIATING MESSAGE      DeactivateTrace
  PROCEDURE CODE          id-DeactivateTrace
  CRITICALITY             ignore
}

dUCURadioInformationTransfer F1AP-ELEMENTARY-PROCEDURE ::= {
  INITIATING MESSAGE      DUCURadioInformationTransfer
  PROCEDURE CODE          id-DUCURadioInformationTransfer
  CRITICALITY             ignore
}

cUDURadioInformationTransfer F1AP-ELEMENTARY-PROCEDURE ::= {
  INITIATING MESSAGE      CUDURadioInformationTransfer
  PROCEDURE CODE          id-CUDURadioInformationTransfer
  CRITICALITY             ignore
}

bAPMappingConfiguration F1AP-ELEMENTARY-PROCEDURE ::= {
  INITIATING MESSAGE      BAPMappingConfiguration
  SUCCESSFUL OUTCOME      BAPMappingConfigurationAcknowledge
  UNSUCCESSFUL OUTCOME    BAPMappingConfigurationFailure
  PROCEDURE CODE          id-BAPMappingConfiguration
  CRITICALITY             reject
}

gNBDRResourceConfiguration F1AP-ELEMENTARY-PROCEDURE ::= {
  INITIATING MESSAGE      GNBDRResourceConfiguration
  SUCCESSFUL OUTCOME      GNBDRResourceConfigurationAcknowledge
  UNSUCCESSFUL OUTCOME    GNBDRResourceConfigurationFailure
  PROCEDURE CODE          id-GNBDRResourceConfiguration
  CRITICALITY             reject
}

iABTNLAddressAllocation F1AP-ELEMENTARY-PROCEDURE ::= {
```

```
INITIATING MESSAGE      IABTNLAddressRequest
SUCCESSFUL OUTCOME      IABTNLAddressResponse
UNSUCCESSFUL OUTCOME    IABTNLAddressFailure
PROCEDURE CODE          id-IABTNLAddressAllocation
CRITICALITY             reject
}

iABUPConfigurationUpdate F1AP-ELEMENTARY-PROCEDURE ::= {
  INITIATING MESSAGE      IABUPConfigurationUpdateRequest
  SUCCESSFUL OUTCOME      IABUPConfigurationUpdateResponse
  UNSUCCESSFUL OUTCOME    IABUPConfigurationUpdateFailure
  PROCEDURE CODE          id-IABUPConfigurationUpdate
  CRITICALITY             reject
}

resourceStatusReportingInitiation F1AP-ELEMENTARY-PROCEDURE ::= {
  INITIATING MESSAGE      ResourceStatusRequest
  SUCCESSFUL OUTCOME      ResourceStatusResponse
  UNSUCCESSFUL OUTCOME    ResourceStatusFailure
  PROCEDURE CODE          id-resourceStatusReportingInitiation
  CRITICALITY             reject
}

resourceStatusReporting F1AP-ELEMENTARY-PROCEDURE ::= {
  INITIATING MESSAGE      ResourceStatusUpdate
  PROCEDURE CODE          id-resourceStatusReporting
  CRITICALITY             ignore
}

accessAndMobilityIndication F1AP-ELEMENTARY-PROCEDURE ::= {
  INITIATING MESSAGE      AccessAndMobilityIndication
  PROCEDURE CODE          id-accessAndMobilityIndication
  CRITICALITY             ignore
}

referenceTimeInformationReportingControl F1AP-ELEMENTARY-PROCEDURE ::= {
  INITIATING MESSAGE      ReferenceTimeInformationReportingControl
  PROCEDURE CODE          id-ReferenceTimeInformationReportingControl
  CRITICALITY             ignore
}

referenceTimeInformationReport F1AP-ELEMENTARY-PROCEDURE ::= {
  INITIATING MESSAGE      ReferenceTimeInformationReport
  PROCEDURE CODE          id-ReferenceTimeInformationReport
  CRITICALITY             ignore
}

accessSuccess F1AP-ELEMENTARY-PROCEDURE ::= {
  INITIATING MESSAGE      AccessSuccess
  PROCEDURE CODE          id-accessSuccess
  CRITICALITY             ignore
}

cellTrafficTrace F1AP-ELEMENTARY-PROCEDURE ::= {
```

```
INITIATING MESSAGE    CellTrafficTrace
PROCEDURE CODE        id-cellTrafficTrace
CRITICALITY           ignore
}

positioningAssistanceInformationControl F1AP-ELEMENTARY-PROCEDURE ::= {
  INITIATING MESSAGE    PositioningAssistanceInformationControl
  PROCEDURE CODE        id-PositioningAssistanceInformationControl
  CRITICALITY           ignore
}

positioningAssistanceInformationFeedback F1AP-ELEMENTARY-PROCEDURE ::= {
  INITIATING MESSAGE    PositioningAssistanceInformationFeedback
  PROCEDURE CODE        id-PositioningAssistanceInformationFeedback
  CRITICALITY           ignore
}

positioningMeasurementExchange F1AP-ELEMENTARY-PROCEDURE ::= {
  INITIATING MESSAGE    PositioningMeasurementRequest
  SUCCESSFUL OUTCOME    PositioningMeasurementResponse
  UNSUCCESSFUL OUTCOME  PositioningMeasurementFailure
  PROCEDURE CODE        id-PositioningMeasurementExchange
  CRITICALITY           reject
}

positioningMeasurementReport F1AP-ELEMENTARY-PROCEDURE ::= {
  INITIATING MESSAGE    PositioningMeasurementReport
  PROCEDURE CODE        id-PositioningMeasurementReport
  CRITICALITY           ignore
}

positioningMeasurementAbort F1AP-ELEMENTARY-PROCEDURE ::= {
  INITIATING MESSAGE    PositioningMeasurementAbort
  PROCEDURE CODE        id-PositioningMeasurementAbort
  CRITICALITY           ignore
}

positioningMeasurementFailureIndication F1AP-ELEMENTARY-PROCEDURE ::= {
  INITIATING MESSAGE    PositioningMeasurementFailureIndication
  PROCEDURE CODE        id-PositioningMeasurementFailureIndication
  CRITICALITY           ignore
}

positioningMeasurementUpdate F1AP-ELEMENTARY-PROCEDURE ::= {
  INITIATING MESSAGE    PositioningMeasurementUpdate
  PROCEDURE CODE        id-PositioningMeasurementUpdate
  CRITICALITY           ignore
}

trpInformationExchange F1AP-ELEMENTARY-PROCEDURE ::= {
  INITIATING MESSAGE    TRPInformationRequest
  SUCCESSFUL OUTCOME    TRPInformationResponse
  UNSUCCESSFUL OUTCOME  TRPInformationFailure
}
```

```
    PROCEDURE CODE      id-TRPInformationExchange
    CRITICALITY          reject
}

positioningInformationExchange F1AP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE   PositioningInformationRequest
    SUCCESSFUL OUTCOME   PositioningInformationResponse
    UNSUCCESSFUL OUTCOME PositioningInformationFailure
    PROCEDURE CODE       id-PositioningInformationExchange
    CRITICALITY          reject
}

positioningActivation F1AP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE   PositioningActivationRequest
    SUCCESSFUL OUTCOME   PositioningActivationResponse
    UNSUCCESSFUL OUTCOME PositioningActivationFailure
    PROCEDURE CODE       id-PositioningActivation
    CRITICALITY          reject
}

positioningDeactivation F1AP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE   PositioningDeactivation
    PROCEDURE CODE       id-PositioningDeactivation
    CRITICALITY          ignore
}

e-CIDMeasurementInitiation F1AP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE   E-CIDMeasurementInitiationRequest
    SUCCESSFUL OUTCOME   E-CIDMeasurementInitiationResponse
    UNSUCCESSFUL OUTCOME E-CIDMeasurementInitiationFailure
    PROCEDURE CODE       id-E-CIDMeasurementInitiation
    CRITICALITY          reject
}

e-CIDMeasurementFailureIndication F1AP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE   E-CIDMeasurementFailureIndication
    PROCEDURE CODE       id-E-CIDMeasurementFailureIndication
    CRITICALITY          ignore
}

e-CIDMeasurementReport F1AP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE   E-CIDMeasurementReport
    PROCEDURE CODE       id-E-CIDMeasurementReport
    CRITICALITY          ignore
}

e-CIDMeasurementTermination F1AP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE   E-CIDMeasurementTerminationCommand
    PROCEDURE CODE       id-E-CIDMeasurementTermination
    CRITICALITY          ignore
}

positioningInformationUpdate F1AP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE   PositioningInformationUpdate
}
```



```
    PROCEDURE CODE      id-PositioningInformationUpdate
    CRITICALITY          ignore
}

broadcastContextSetup F1AP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE   BroadcastContextSetupRequest
    SUCCESSFUL OUTCOME   BroadcastContextSetupResponse
    UNSUCCESSFUL OUTCOME BroadcastContextSetupFailure
    PROCEDURE CODE       id-BroadcastContextSetup
    CRITICALITY          reject
}

broadcastContextRelease F1AP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE   BroadcastContextReleaseCommand
    SUCCESSFUL OUTCOME   BroadcastContextReleaseComplete
    PROCEDURE CODE       id-BroadcastContextRelease
    CRITICALITY          reject
}

broadcastContextReleaseRequest F1AP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE   BroadcastContextReleaseRequest
    PROCEDURE CODE       id-BroadcastContextReleaseRequest
    CRITICALITY          reject
}

broadcastContextModification F1AP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE   BroadcastContextModificationRequest
    SUCCESSFUL OUTCOME   BroadcastContextModificationResponse
    UNSUCCESSFUL OUTCOME BroadcastContextModificationFailure
    PROCEDURE CODE       id-BroadcastContextModification
    CRITICALITY          reject
}

multicastGroupPaging F1AP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE   MulticastGroupPaging
    PROCEDURE CODE       id-MulticastGroupPaging
    CRITICALITY          ignore
}

multicastContextSetup F1AP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE   MulticastContextSetupRequest
    SUCCESSFUL OUTCOME   MulticastContextSetupResponse
    UNSUCCESSFUL OUTCOME MulticastContextSetupFailure
    PROCEDURE CODE       id-MulticastContextSetup
    CRITICALITY          reject
}

multicastContextRelease F1AP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE   MulticastContextReleaseCommand
    SUCCESSFUL OUTCOME   MulticastContextReleaseComplete
    PROCEDURE CODE       id-MulticastContextRelease
    CRITICALITY          reject
}
```

```
multicastContextReleaseRequest F1AP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE      MulticastContextReleaseRequest
    PROCEDURE CODE          id-MulticastContextReleaseRequest
    CRITICALITY              reject
}

multicastContextModification F1AP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE      MulticastContextModificationRequest
    SUCCESSFUL OUTCOME      MulticastContextModificationResponse
    UNSUCCESSFUL OUTCOME    MulticastContextModificationFailure
    PROCEDURE CODE          id-MulticastContextModification
    CRITICALITY              reject
}

multicastDistributionSetup F1AP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE      MulticastDistributionSetupRequest
    SUCCESSFUL OUTCOME      MulticastDistributionSetupResponse
    UNSUCCESSFUL OUTCOME    MulticastDistributionSetupFailure
    PROCEDURE CODE          id-MulticastDistributionSetup
    CRITICALITY              reject
}

multicastDistributionRelease F1AP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE      MulticastDistributionReleaseCommand
    SUCCESSFUL OUTCOME      MulticastDistributionReleaseComplete
    PROCEDURE CODE          id-MulticastDistributionRelease
    CRITICALITY              reject
}

pDCMeasurementInitiation F1AP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE      PDCMeasurementInitiationRequest
    SUCCESSFUL OUTCOME      PDCMeasurementInitiationResponse
    UNSUCCESSFUL OUTCOME    PDCMeasurementInitiationFailure
    PROCEDURE CODE          id-PDCMeasurementInitiation
    CRITICALITY              reject
}

pDCMeasurementReport F1AP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE      PDCMeasurementReport
    PROCEDURE CODE          id-PDCMeasurementReport
    CRITICALITY              ignore
}

pDCMeasurementTerminationCommand F1AP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE      PDCMeasurementTerminationCommand
    PROCEDURE CODE          id-PDCMeasurementTerminationCommand
    CRITICALITY              ignore
}

pDCMeasurementFailureIndication F1AP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE      PDCMeasurementFailureIndication
    PROCEDURE CODE          id-PDCMeasurementFailureIndication
}
```

```

    CRITICALITY          ignore
}

pRSConfigurationExchange F1AP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE    PRSConfigurationRequest
    SUCCESSFUL OUTCOME    PRSConfigurationResponse
    UNSUCCESSFUL OUTCOME  PRSConfigurationFailure
    PROCEDURE CODE        id-pRSConfigurationExchange
    CRITICALITY           reject
}

measurementPreconfiguration F1AP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE    MeasurementPreconfigurationRequired
    SUCCESSFUL OUTCOME    MeasurementPreconfigurationConfirm
    UNSUCCESSFUL OUTCOME  MeasurementPreconfigurationRefuse
    PROCEDURE CODE        id-measurementPreconfiguration
    CRITICALITY           reject
}

measurementActivation      F1AP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE    MeasurementActivation
    PROCEDURE CODE        id-measurementActivation
    CRITICALITY           ignore
}

qoEInformationTransfer F1AP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE    QoEInformationTransfer
    PROCEDURE CODE        id-QoEInformationTransfer
    CRITICALITY           ignore
}

posSystemInformationDelivery F1AP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE    PosSystemInformationDeliveryCommand
    PROCEDURE CODE        id-PosSystemInformationDeliveryCommand
    CRITICALITY           ignore
}

END
-- ASN1STOP

```

9.4.4 PDU Definitions

```

-- ASN1START
-- *****
--
-- PDU definitions for F1AP.
--
-- *****

F1AP-PDU-Contents {
itu-t (0) identified-organization (4) etsi (0) mobileDomain (0)

```

```
nggran-access (22) modules (3) flap (3) version1 (1) flap-PDU-Contents (1) }
```

```
DEFINITIONS AUTOMATIC TAGS ::=
```

```
BEGIN
```

```
-- *****  
--  
-- IE parameter types from other modules.  
--  
-- *****
```

```
IMPORTS
```

```
    BroadcastMRBs-FailedToBeModified-Item,  
    BroadcastMRBs-FailedToBeSetup-Item,  
    BroadcastMRBs-FailedToBeSetupMod-Item,  
    BroadcastMRBs-Modified-Item,  
    BroadcastMRBs-Setup-Item,  
    BroadcastMRBs-SetupMod-Item,  
    BroadcastMRBs-ToBeModified-Item,  
    BroadcastMRBs-ToBeReleased-Item,  
    BroadcastMRBs-ToBeSetup-Item,  
    BroadcastMRBs-ToBeSetupMod-Item,  
    Candidate-SpCell-Item,  
    Cause,  
    Cells-Failed-to-be-Activated-List-Item,  
    Cells-Status-Item,  
    Cells-to-be-Activated-List-Item,  
    Cells-to-be-Deactivated-List-Item,  
    CellULConfigured,  
    CriticalityDiagnostics,  
    C-RNTI,  
    CutoDURRCInformation,  
    DRB-Activity-Item,  
    DRBID,  
    DRBs-FailedToBeModified-Item,  
    DRBs-FailedToBeSetup-Item,  
    DRBs-FailedToBeSetupMod-Item,  
    DRB-Notify-Item,  
    DRBs-ModifiedConf-Item,  
    DRBs-Modified-Item,  
    DRBs-Required-ToBeModified-Item,  
    DRBs-Required-ToBeReleased-Item,  
    DRBs-Setup-Item,  
    DRBs-SetupMod-Item,  
    DRBs-ToBeModified-Item,  
    DRBs-ToBeReleased-Item,  
    DRBs-ToBeSetup-Item,  
    DRBs-ToBeSetupMod-Item,  
    DRXCycle,  
    DRXConfigurationIndicator,  
    DutoCURRCInformation,  
    EUTRANQoS,  
    ExecuteDuplication,
```

FullConfiguration,
GNB-CU-MBS-F1AP-ID,
GNB-CU-UE-F1AP-ID,
GNB-DU-MBS-F1AP-ID,
GNB-DU-UE-F1AP-ID,
GNB-DU-ID,
GNB-DU-Served-Cells-Item,
GNB-DU-System-Information,
GNB-CU-Name,
GNB-DU-Name,
InactivityMonitoringRequest,
InactivityMonitoringResponse,
LowerLayerPresenceStatusChange,
MBS-Area-Session-ID,
MBS-CUtoDURRCInformation,
MBSMulticastF1UContextDescriptor,
MBS-Session-ID,
MBS-ServiceArea,
MulticastF1UContextReferenceCU,
MulticastF1UContext-ToBeSetup-Item,
MulticastF1UContext-Setup-Item,
MulticastF1UContext-FailedToBeSetup-Item,
MulticastMBSSessionList,
MulticastMRBs-ToBeSetup-Item,
MulticastMRBs-Setup-Item,
MulticastMRBs-FailedToBeSetup-Item,
MulticastMRBs-ToBeSetupMod-Item,
MulticastMRBs-ToBeModified-Item,
MulticastMRBs-ToBeReleased-Item,
MulticastMRBs-SetupMod-Item,
MulticastMRBs-FailedToBeSetupMod-Item,
MulticastMRBs-Modified-Item,
MulticastMRBs-FailedToBeModified-Item,
BroadcastAreaScope,
NotificationControl,
NRCGI,
NRPCI,
UEContextNotRetrievable,
Potential-SpCell-Item,
RAT-FrequencyPriorityInformation,
RequestedSRSTransmissionCharacteristics,
ResourceCoordinationTransferContainer,
RRCContainer,
RRCContainer-RRCSetupComplete,
RRCReconfigurationCompleteIndicator,
SCellIndex,
SCell-ToBeRemoved-Item,
SCell-ToBeSetup-Item,
SCell-ToBeSetupMod-Item,
SCell-FailedtoSetup-Item,
SCell-FailedtoSetupMod-Item,
ServCellIndex,
Served-Cell-Information,
Served-Cells-To-Add-Item,

Served-Cells-To-Delete-Item,
Served-Cells-To-Modify-Item,
ServingCellMO,
SNSSAI,
SRBID,
SRBs-FailedToBeSetup-Item,
SRBs-FailedToBeSetupMod-Item,
SRBs-Required-ToBeReleased-Item,
SRBs-ToBeReleased-Item,
SRBs-ToBeSetup-Item,
SRBs-ToBeSetupMod-Item,
SRBs-Modified-Item,
SRBs-Setup-Item,
SRBs-SetupMod-Item,
TimeToWait,
TransactionID,
TransmissionActionIndicator,
UE-associatedLogicalF1-ConnectionItem,
UEIdentity-List-For-Paging-Item,
DUtoCURRCCContainer,
PagingCell-Item,
Sitype-List,
UEIdentityIndexValue,
GNB-CU-TNL-Association-Setup-Item,
GNB-CU-TNL-Association-Failed-To-Setup-Item,
GNB-CU-TNL-Association-To-Add-Item,
GNB-CU-TNL-Association-To-Remove-Item,
GNB-CU-TNL-Association-To-Update-Item,
MaskedIMEISV,
PagingDRX,
PagingPriority,
PagingIdentity,
Cells-to-be-Barred-Item,
PWSSystemInformation,
Broadcast-To-Be-Cancelled-Item,
Cells-Broadcast-Cancelled-Item,
NR-CGI-List-For-Restart-Item,
PWS-Failed-NR-CGI-Item,
RepetitionPeriod,
NumberOfBroadcastRequest,
Cells-To-Be-Broadcast-Item,
Cells-Broadcast-Completed-Item,
Cancel-all-Warning-Messages-Indicator,
EUTRA-NR-CellResourceCoordinationReq-Container,
EUTRA-NR-CellResourceCoordinationReqAck-Container,
RequestType,
PLMN-Identity,
RLCFailureIndication,
UplinkTxDirectCurrentListInformation,
SULAccessIndication,
Protected-EUTRA-Resources-Item,
GNB-DUConfigurationQuery,
BitRate,
RRC-Version,

GNBDUOverloadInformation,
RRCDeliveryStatusRequest,
NeedforGap,
RRCDeliveryStatus,
ResourceCoordinationTransferInformation,
Dedicated-SIDelivery-NeededUE-Item,
Associated-SCell-Item,
IgnoreResourceCoordinationContainer,
PagingOrigin,
UAC-Assistance-Info,
RANUEID,
GNB-DU-TNL-Association-To-Remove-Item,
NotificationInformation,
TraceActivation,
TraceID,
Neighbour-Cell-Information-Item,
SymbolAllocInSlot,
NumDLULSymbols,
AdditionalRRMPriorityIndex,
DUCURadioInformationType,
CUDURadioInformationType,
Transport-Layer-Address-Info,
BHChannels-ToBeSetup-Item,
BHChannels-Setup-Item,
BHChannels-FailedToBeSetup-Item,
BHChannels-ToBeModified-Item,
BHChannels-ToBeReleased-Item,
BHChannels-ToBeSetupMod-Item,
BHChannels-FailedToBeModified-Item,
BHChannels-FailedToBeSetupMod-Item,
BHChannels-Modified-Item,
BHChannels-SetupMod-Item,
BHChannels-Required-ToBeReleased-Item,
BAPAddress,
BAPPathID,
BAPRoutingID,
BH-Routing-Information-Added-List-Item,
BH-Routing-Information-Removed-List-Item,
Child-Nodes-List,
Child-Nodes-List-Item,
Child-Node-Cells-List,
Child-Node-Cells-List-Item,
Activated-Cells-to-be-Updated-List,
Activated-Cells-to-be-Updated-List-Item,
UL-BH-Non-UP-Traffic-Mapping,
IABTNLAddressesRequested,
IABIPv6RequestType,
IAB-TNL-Addresses-To-Remove-Item,
IABTNLAddress,
IAB-Allocated-TNL-Address-Item,
IABv4AddressesRequested,
TrafficMappingInfo,
UL-UP-TNL-Information-to-Update-List-Item,
UL-UP-TNL-Address-to-Update-List-Item,

DL-UP-TNL-Address-to-Update-List-Item,
NRV2XServicesAuthorized,
LTEV2XServicesAuthorized,
NRUESidelinkAggregateMaximumBitrate,
LTEUESidelinkAggregateMaximumBitrate,
SLDRBs-SetupMod-Item,
SLDRBs-ModifiedConf-Item,
SLDRBID,
SLDRBs-FailedToBeModified-Item,
SLDRBs-FailedToBeSetup-Item,
SLDRBs-FailedToBeSetupMod-Item,
SLDRBs-Modified-Item,
SLDRBs-Required-ToBeModified-Item,
SLDRBs-Required-ToBeReleased-Item,
SLDRBs-Setup-Item,
SLDRBs-ToBeModified-Item,
SLDRBs-ToBeReleased-Item,
SLDRBs-ToBeSetup-Item,
SLDRBs-ToBeSetupMod-Item,
GNBCUMeasurementID,
GNBDUMeasurementID,
RegistrationRequest,
ReportCharacteristics,
CellToReportList,
HardwareLoadIndicator,
CellMeasurementResultList,
ReportingPeriodicity,
TNLCapacityIndicator,
RACHReportInformationList,
RLFReportInformationList,
ReportingRequestType,
TimeReferenceInformation,
ConditionalInterDUMobilityInformation,
ConditionalIntraDUMobilityInformation,
TargetCellList,
MDTPLMNList,
PrivacyIndicator,
TransportLayerAddress,
URI-address,
NID,
PosAssistance-Information,
PosBroadcast,
PositioningBroadcastCells,
RoutingID,
PosAssistanceInformationFailureList,
PosMeasurementQuantities,
PosMeasurementResultList,
PosReportCharacteristics,
TRPInformationTypeItem,
TRPInformationItem,
LMF-MeasurementID,
RAN-MeasurementID,
SDT-Termination-Request,
SRSResourceSetID,

SpatialRelationInfo,
SRSResourceTrigger,
SRSConfiguration,
TRPList,
E-CID-MeasurementQuantities,
MeasurementPeriodicity,
E-CID-MeasurementResult,
Cell-Portion-ID,
LMF-UE-MeasurementID,
RAN-UE-MeasurementID,
RelativeTime1900,
SystemFrameNumber,
SlotNumber,
AbortTransmission,
TRP-MeasurementRequestList,
MeasurementBeamInfoRequest,
E-CID-ReportCharacteristics,
Extended-GNB-CU-Name,
Extended-GNB-DU-Name,
F1CTransferPath,
SCGIndicator,
SpatialRelationPerSRSResource,
MeasurementPeriodicityExtended,
SuccessfulH0ReportInformationList,
Coverage-Modification-Notification,
CCO-Assistance-Information,
CellsForSON-List,
IABCongestionIndication,
IABConditionalRRCMessageDeliveryIndication,
F1CTransferPathNRDC,
BufferSizeThresh,
IAB-TNL-Addresses-Exception,
BAP-Header-Rewriting-Added-List-Item,
Re-routingEnableIndicator,
NonFilterterminatingTopologyIndicator,
EgressNonFilterterminatingTopologyIndicator,
IngressNonFilterterminatingTopologyIndicator,
Neighbour-Node-Cells-List,
Neighbour-Node-Cells-List-Item,
NA-Resource-Configuration-List,
NA-Resource-Configuration-Item,
Serving-Cells-List,
Serving-Cells-List-Item,
RBSetConfiguration,
PDCMeasurementPeriodicity,
PDCMeasurementQuantities,
PDCMeasurementResult,
PDCReportType,
RAN-UE-PDC-MeasID,
SCGActivationRequest,
SCGActivationStatus,
TRP-MeasurementUpdateList,
PRSTRPList,
PRSTransmissionTRPList,

ResponseTime,
TRP-PRS-Info-List,
PRS-Measurement-Info-List,
PRConfigRequestType,
MeasurementCharacteristicsRequestIndicator,
MeasurementTimeOccasion,
UEReportingInformation,
PosConextRevIndication,
NRRedCapUEIndication,
NRPagingeDRXInformation,
NRPagingeDRXInformationforRRCINACTIVE,
QoEInformation,
CG-SDTQueryIndication,
CG-SDTKeptIndicator,
CG-SDTSessionInfo,
SDTInformation,
FiveG-ProSeAuthorized,
UuRLCChannelToBeSetupList,
UuRLCChannelToBeModifiedList,
UuRLCChannelToBeReleasedList,
UuRLCChannelSetupList,
UuRLCChannelFailedToBeSetupList,
UuRLCChannelModifiedList,
UuRLCChannelFailedToBeModifiedList,
UuRLCChannelRequiredToBeModifiedList,
UuRLCChannelRequiredToBeReleasedList,
PC5RLCChannelToBeSetupList,
PC5RLCChannelToBeModifiedList,
PC5RLCChannelToBeReleasedList,
PC5RLCChannelSetupList,
PC5RLCChannelFailedToBeSetupList,
PC5RLCChannelFailedToBeModifiedList,
PC5RLCChannelRequiredToBeModifiedList,
PC5RLCChannelRequiredToBeReleasedList,
PC5RLCChannelModifiedList,
RemoteUELocalID,
PathSwitchConfiguration,
SidelinkRelayConfiguration,
PagingCause,
PEIPSAssistanceInfo,
UEPagingCapability,
GNBDUUESliceMaximumBitRateList,
MDTPollutedMeasurementIndicator,
UE-MulticastMRBs-ConfirmedToBeModified-Item,
UE-MulticastMRBs-RequiredToBeModified-Item,
UE-MulticastMRBs-RequiredToBeReleased-Item,
UE-MulticastMRBs-Setup-Item,
UE-MulticastMRBs-Setupnew-Item,
UE-MulticastMRBs-ToBeReleased-Item,
UE-MulticastMRBs-ToBeSetup-Item,
UE-MulticastMRBs-ToBeSetup-atModify-Item,
PosMeasurementAmount,
BAP-Header-Rewriting-Removed-List-Item,
SLDRXCycleList,

MDTPLMNModificationList,
ActivationRequestType,
PosMeasGapPreConfigList,
PosMeasurementPeriodicityNR-AoA,
SRSPoSRRRCInactiveConfig,
SDTBearerConfigurationQueryIndication,
SDTBearerConfigurationInfo,
ServingCellLM0-List-Item,
ServingCellLM0-encoded-in-CGC-List,
PosSITypeList,
DAPS-HO-Status,
UuRLCChannelID,
UplinkTxDirectCurrentTwoCarrierListInfo,
SRSPoSRRRCInactiveQueryIndication,
MC-PagingCell-Item,
ULTxDirectCurrentMoreCarrierInformation,
CPACMCGInformation,
ExtendedUEIdentityIndexValue,
HashedUEIdentityIndexValue,
DedicatedSIDeliveryIndication,
Configured-BWP-List

FROM F1AP-IES

PrivateIE-Container{},
ProtocolExtensionContainer{},
ProtocolIE-Container{},
ProtocolIE-ContainerPair{},
ProtocolIE-SingleContainer{},
F1AP-PRIVATE-IES,
F1AP-PROTOCOL-EXTENSION,
F1AP-PROTOCOL-IES,
F1AP-PROTOCOL-IES-PAIR

FROM F1AP-Containers

id-BroadcastMRBs-FailedToBeModified-List,
id-BroadcastMRBs-FailedToBeModified-Item,
id-BroadcastMRBs-FailedToBeSetup-List,
id-BroadcastMRBs-FailedToBeSetup-Item,
id-BroadcastMRBs-FailedToBeSetupMod-List,
id-BroadcastMRBs-FailedToBeSetupMod-Item,
id-BroadcastMRBs-Modified-List,
id-BroadcastMRBs-Modified-Item,
id-BroadcastMRBs-Setup-List,
id-BroadcastMRBs-Setup-Item,
id-BroadcastMRBs-SetupMod-List,
id-BroadcastMRBs-SetupMod-Item,
id-BroadcastMRBs-ToBeModified-List,
id-BroadcastMRBs-ToBeModified-Item,
id-BroadcastMRBs-ToBeReleased-List,
id-BroadcastMRBs-ToBeReleased-Item,

id-BroadcastMRBs-ToBeSetup-List,
id-BroadcastMRBs-ToBeSetup-Item,
id-BroadcastMRBs-ToBeSetupMod-List,
id-BroadcastMRBs-ToBeSetupMod-Item,
id-Candidate-SpCell-Item,
id-Candidate-SpCell-List,
id-Cause,
id-Cancel-all-Warning-Messages-Indicator,
id-Cells-Failed-to-be-Activated-List,
id-Cells-Failed-to-be-Activated-List-Item,
id-Cells-Status-Item,
id-Cells-Status-List,
id-Cells-to-be-Activated-List,
id-Cells-to-be-Activated-List-Item,
id-Cells-to-be-Deactivated-List,
id-Cells-to-be-Deactivated-List-Item,
id-ConfirmedUEID,
id-CriticalityDiagnostics,
id-C-RNTI,
id-CUtoDURRCInformation,
id-DRB-Activity-Item,
id-DRB-Activity-List,
id-DRBs-FailedToBeModified-Item,
id-DRBs-FailedToBeModified-List,
id-DRBs-FailedToBeSetup-Item,
id-DRBs-FailedToBeSetup-List,
id-DRBs-FailedToBeSetupMod-Item,
id-DRBs-FailedToBeSetupMod-List,
id-DRBs-ModifiedConf-Item,
id-DRBs-ModifiedConf-List,
id-DRBs-Modified-Item,
id-DRBs-Modified-List,
id-DRB-Notify-Item,
id-DRB-Notify-List,
id-DRBs-Required-ToBeModified-Item,
id-DRBs-Required-ToBeModified-List,
id-DRBs-Required-ToBeReleased-Item,
id-DRBs-Required-ToBeReleased-List,
id-DRBs-Setup-Item,
id-DRBs-Setup-List,
id-DRBs-SetupMod-Item,
id-DRBs-SetupMod-List,
id-DRBs-ToBeModified-Item,
id-DRBs-ToBeModified-List,
id-DRBs-ToBeReleased-Item,
id-DRBs-ToBeReleased-List,
id-DRBs-ToBeSetup-Item,
id-DRBs-ToBeSetup-List,
id-DRBs-ToBeSetupMod-Item,
id-DRBs-ToBeSetupMod-List,
id-DRXCycle,
id-DUtoCURRCInformation,
id-ExecuteDuplication,
id-FullConfiguration,

id-gNB-CU-MBS-F1AP-ID,
id-gNB-CU-UE-F1AP-ID,
id-gNB-DU-MBS-F1AP-ID,
id-gNB-DU-UE-F1AP-ID,
id-gNB-DU-ID,
id-GNB-DU-Served-Cells-Item,
id-gNB-DU-Served-Cells-List,
id-gNB-CU-Name,
id-gNB-DU-Name,
id-Extended-GNB-CU-Name,
id-Extended-GNB-DU-Name,
id-InactivityMonitoringRequest,
id-InactivityMonitoringResponse,
id-MBS-Area-Session-ID,
id-MBS-CUtoDURRCInformation,
id-MBS-Session-ID,
id-MBS-ServiceArea,
id-MBSMulticastF1UContextDescriptor,
id-MC-PagingCell-Item,
id-MC-PagingCell-List,
id-MulticastF1UContextReferenceCU,
id-MulticastMBSSessionSetupList,
id-MulticastMBSSessionRemoveList,
id-MulticastMRBs-FailedToBeModified-List,
id-MulticastMRBs-FailedToBeModified-Item,
id-MulticastMRBs-FailedToBeSetup-List,
id-MulticastMRBs-FailedToBeSetup-Item,
id-MulticastMRBs-FailedToBeSetupMod-List,
id-MulticastMRBs-FailedToBeSetupMod-Item,
id-MulticastMRBs-Modified-List,
id-MulticastMRBs-Modified-Item,
id-MulticastMRBs-Setup-List,
id-MulticastMRBs-Setup-Item,
id-MulticastMRBs-SetupMod-List,
id-MulticastMRBs-SetupMod-Item,
id-MulticastMRBs-ToBeModified-List,
id-MulticastMRBs-ToBeModified-Item,
id-MulticastMRBs-ToBeReleased-List,
id-MulticastMRBs-ToBeReleased-Item,
id-MulticastMRBs-ToBeSetup-List,
id-MulticastMRBs-ToBeSetup-Item,
id-MulticastMRBs-ToBeSetupMod-List,
id-MulticastMRBs-ToBeSetupMod-Item,
id-MulticastF1UContext-ToBeSetup-List,
id-MulticastF1UContext-ToBeSetup-Item,
id-MulticastF1UContext-Setup-List,
id-MulticastF1UContext-Setup-Item,
id-MulticastF1UContext-FailedToBeSetup-List,
id-MulticastF1UContext-FailedToBeSetup-Item,
id-BroadcastAreaScope,
id-new-gNB-CU-UE-F1AP-ID,
id-new-gNB-DU-UE-F1AP-ID,
id-oldgNB-DU-UE-F1AP-ID,
id-PLMNAssistanceInfoForNetShar,

id-Potential-SpCell-Item,
id-Potential-SpCell-List,
id-RAT-FrequencyPriorityInformation,
id-RedirectedRRCmessage,
id-ResetType,
id-RequestedSRSTransmissionCharacteristics,
id-ResourceCoordinationTransferContainer,
id-RRCContainer,
id-RRCContainer-RRCSetupComplete,
id-RRCReconfigurationCompleteIndicator,
id-SCell-FailedtoSetup-List,
id-SCell-FailedtoSetup-Item,
id-SCell-FailedtoSetupMod-List,
id-SCell-FailedtoSetupMod-Item,
id-SCell-ToBeRemoved-Item,
id-SCell-ToBeRemoved-List,
id-SCell-ToBeSetup-Item,
id-SCell-ToBeSetup-List,
id-SCell-ToBeSetupMod-Item,
id-SCell-ToBeSetupMod-List,
id-SDT-Termination-Request,
id-SelectedPLMNID,
id-Served-Cells-To-Add-Item,
id-Served-Cells-To-Add-List,
id-Served-Cells-To-Delete-Item,
id-Served-Cells-To-Delete-List,
id-Served-Cells-To-Modify-Item,
id-Served-Cells-To-Modify-List,
id-ServCellIndex,
id-ServingCellMO,
id-SNSSAI,
id-SpCell-ID,
id-SpCellULConfigured,
id-SRBID,
id-SRBs-FailedToBeSetup-Item,
id-SRBs-FailedToBeSetup-List,
id-SRBs-FailedToBeSetupMod-Item,
id-SRBs-FailedToBeSetupMod-List,
id-SRBs-Required-ToBeReleased-Item,
id-SRBs-Required-ToBeReleased-List,
id-SRBs-ToBeReleased-Item,
id-SRBs-ToBeReleased-List,
id-SRBs-ToBeSetup-Item,
id-SRBs-ToBeSetup-List,
id-SRBs-ToBeSetupMod-Item,
id-SRBs-ToBeSetupMod-List,
id-SRBs-Modified-Item,
id-SRBs-Modified-List,
id-SRBs-Setup-Item,
id-SRBs-Setup-List,
id-SRBs-SetupMod-Item,
id-SRBs-SetupMod-List,
id-TimeToWait,
id-TransactionID,

id-TransmissionActionIndicator,
id-UEContextNotRetrievable,
id-UE-associatedLogicalF1-ConnectionItem,
id-UE-associatedLogicalF1-ConnectionListResAck,
id-UEIdentity-List-For-Paging-List,
id-UEIdentity-List-For-Paging-Item,
id-UE-MulticastMRBs-ConfirmedToBeModified-List,
id-UE-MulticastMRBs-ConfirmedToBeModified-Item,
id-UE-MulticastMRBs-RequiredToBeModified-List,
id-UE-MulticastMRBs-RequiredToBeModified-Item,
id-UE-MulticastMRBs-RequiredToBeReleased-List,
id-UE-MulticastMRBs-RequiredToBeReleased-Item,
id-UE-MulticastMRBs-Setup-List,
id-UE-MulticastMRBs-Setup-Item,
id-UE-MulticastMRBs-Setupnew-List,
id-UE-MulticastMRBs-Setupnew-Item,
id-UE-MulticastMRBs-ToBeReleased-List,
id-UE-MulticastMRBs-ToBeReleased-Item,
id-UE-MulticastMRBs-ToBeSetup-atModify-List,
id-UE-MulticastMRBs-ToBeSetup-atModify-Item,
id-UE-MulticastMRBs-ToBeSetup-List,
id-UE-MulticastMRBs-ToBeSetup-Item,
id-DUtoCURRCCContainer,
id-NRCGI,
id-PagingCell-Item,
id-PagingCell-List,
id-PagingDRX,
id-PagingPriority,
id-SItype-List,
id-UEIdentityIndexValue,
id-GNB-CU-TNL-Association-Setup-List,
id-GNB-CU-TNL-Association-Setup-Item,
id-GNB-CU-TNL-Association-Failed-To-Setup-List,
id-GNB-CU-TNL-Association-Failed-To-Setup-Item,
id-GNB-CU-TNL-Association-To-Add-Item,
id-GNB-CU-TNL-Association-To-Add-List,
id-GNB-CU-TNL-Association-To-Remove-Item,
id-GNB-CU-TNL-Association-To-Remove-List,
id-GNB-CU-TNL-Association-To-Update-Item,
id-GNB-CU-TNL-Association-To-Update-List,
id-MaskedIMEISV,
id-PagingIdentity,
id-Cells-to-be-Barred-List,
id-Cells-to-be-Barred-Item,
id-PWSSystemInformation,
id-RepetitionPeriod,
id-NumberOfBroadcastRequest,
id-Cells-To-Be-Broadcast-List,
id-Cells-To-Be-Broadcast-Item,
id-Cells-Broadcast-Completed-List,
id-Cells-Broadcast-Completed-Item,
id-Broadcast-To-Be-Cancelled-List,
id-Broadcast-To-Be-Cancelled-Item,
id-Cells-Broadcast-Cancelled-List,

id-Cells-Broadcast-Cancelled-Item,
id-NR-CGI-List-For-Restart-List,
id-NR-CGI-List-For-Restart-Item,
id-PWS-Failed-NR-CGI-List,
id-PWS-Failed-NR-CGI-Item,
id-EUTRA-NR-CellResourceCoordinationReq-Container,
id-EUTRA-NR-CellResourceCoordinationReqAck-Container,
id-Protected-EUTRA-Resources-List,
id-RequestType,
id-ServingPLMN,
id-DRXConfigurationIndicator,
id-RLCFailureIndication,
id-UplinkTXDirectCurrentListInformation,
id-SULAccessIndication,
id-Protected-EUTRA-Resources-Item,
id-GNB-DUConfigurationQuery,
id-GNB-DU-UE-AMBR-UL,
id-GNB-CU-RRC-Version,
id-GNB-DU-RRC-Version,
id-GNB-DUOverloadInformation,
id-NeedforGap,
id-RRCDeliveryStatusRequest,
id-RRCDeliveryStatus,
id-Dedicated-SIDelivery-NeededUE-List,
id-Dedicated-SIDelivery-NeededUE-Item,
id-ResourceCoordinationTransferInformation,
id-Associated-SCell-List,
id-Associated-SCell-Item,
id-IgnoreResourceCoordinationContainer,
id-UAC-Assistance-Info,
id-RANUEID,
id-PagingOrigin,
id-GNB-DU-TNL-Association-To-Remove-Item,
id-GNB-DU-TNL-Association-To-Remove-List,
id-NotificationInformation,
id-TraceActivation,
id-TraceID,
id-Neighbour-Cell-Information-List,
id-Neighbour-Cell-Information-Item,
id-SymbolAllocInSlot,
id-NumDLULSymbols,
id-AdditionalRRMPriorityIndex,
id-DUCURadioInformationType,
id-CUDURadioInformationType,
id-LowerLayerPresenceStatusChange,
id-Transport-Layer-Address-Info,
id-BHChannels-ToBeSetup-List,
id-BHChannels-ToBeSetup-Item,
id-BHChannels-Setup-List,
id-BHChannels-Setup-Item,
id-BHChannels-ToBeModified-Item,
id-BHChannels-ToBeModified-List,
id-BHChannels-ToBeReleased-Item,
id-BHChannels-ToBeReleased-List,

id-BHChannels-ToBeSetupMod-Item,
id-BHChannels-ToBeSetupMod-List,
id-BHChannels-FailedToBeSetup-Item,
id-BHChannels-FailedToBeSetup-List,
id-BHChannels-FailedToBeModified-Item,
id-BHChannels-FailedToBeModified-List,
id-BHChannels-FailedToBeSetupMod-Item,
id-BHChannels-FailedToBeSetupMod-List,
id-BHChannels-Modified-Item,
id-BHChannels-Modified-List,
id-BHChannels-SetupMod-Item,
id-BHChannels-SetupMod-List,
id-BHChannels-Required-ToBeReleased-Item,
id-BHChannels-Required-ToBeReleased-List,
id-BAPAddress,
id-ConfiguredBAPAddress,
id-BH-Routing-Information-Added-List,
id-BH-Routing-Information-Added-List-Item,
id-BH-Routing-Information-Removed-List,
id-BH-Routing-Information-Removed-List-Item,
id-UL-BH-Non-UP-Traffic-Mapping,
id-Child-Nodes-List,
id-Activated-Cells-to-be-Updated-List,
id-IABIPv6RequestType,
id-IAB-TNL-Addresses-To-Remove-List,
id-IAB-TNL-Addresses-To-Remove-Item,
id-IAB-Allocated-TNL-Address-List,
id-IAB-Allocated-TNL-Address-Item,
id-IABv4AddressesRequested,
id-TrafficMappingInformation,
id-UL-UP-TNL-Information-to-Update-List,
id-UL-UP-TNL-Information-to-Update-List-Item,
id-UL-UP-TNL-Address-to-Update-List,
id-UL-UP-TNL-Address-to-Update-List-Item,
id-DL-UP-TNL-Address-to-Update-List,
id-DL-UP-TNL-Address-to-Update-List-Item,
id-NRV2XServicesAuthorized,
id-LTEV2XServicesAuthorized,
id-NRUESidelinkAggregateMaximumBitrate,
id-LTEUESidelinkAggregateMaximumBitrate,
id-PC5LinkAMBR,
id-SLDRBs-FailedToBeModified-Item,
id-SLDRBs-FailedToBeModified-List,
id-SLDRBs-FailedToBeSetup-Item,
id-SLDRBs-FailedToBeSetup-List,
id-SLDRBs-Modified-Item,
id-SLDRBs-Modified-List,
id-SLDRBs-Required-ToBeModified-Item,
id-SLDRBs-Required-ToBeModified-List,
id-SLDRBs-Required-ToBeReleased-Item,
id-SLDRBs-Required-ToBeReleased-List,
id-SLDRBs-Setup-Item,
id-SLDRBs-Setup-List,
id-SLDRBs-ToBeModified-Item,

id-SLDRBs-ToBeModified-List,
id-SLDRBs-ToBeReleased-Item,
id-SLDRBs-ToBeReleased-List,
id-SLDRBs-ToBeSetup-Item,
id-SLDRBs-ToBeSetup-List,
id-SLDRBs-ToBeSetupMod-Item,
id-SLDRBs-ToBeSetupMod-List,
id-SLDRBs-SetupMod-List,
id-SLDRBs-FailedToBeSetupMod-List,
id-SLDRBs-SetupMod-Item,
id-SLDRBs-FailedToBeSetupMod-Item,
id-SLDRBs-ModifiedConf-List,
id-SLDRBs-ModifiedConf-Item,
id-gNBCUMeasurementID,
id-gNBDUMeasurementID,
id-RegistrationRequest,
id-ReportCharacteristics,
id-CellToReportList,
id-CellMeasurementResultList,
id-HardwareLoadIndicator,
id-ReportingPeriodicity,
id-TNLCapacityIndicator,
id-RACHReportInformationList,
id-RLFReportInformationList,
id-ReportingRequestType,
id-TimeReferenceInformation,
id-ConditionalInterDUMobilityInformation,
id-ConditionalIntraDUMobilityInformation,
id-targetCellsToCancel,
id-requestedTargetCellGlobalID,
id-TraceCollectionEntityIPAddress,
id-ManagementBasedMDTPLMNList,
id-PrivacyIndicator,
id-TraceCollectionEntityURI,
id-ServingNID,
id-PosAssistance-Information,
id-PosBroadcast,
id-PositioningBroadcastCells,
id-RoutingID,
id-PosAssistanceInformationFailureList,
id-PosMeasurementQuantities,
id-PosMeasurementResultList,
id-PosMeasurementPeriodicity,
id-PosReportCharacteristics,
id-TRPInformationTypeListTRPReq,
id-TRPInformationTypeItem,
id-TRPInformationListTRPResp,
id-TRPInformationItem,
id-LMF-MeasurementID,
id-RAN-MeasurementID,
id-SRSType,
id-ActivationTime,
id-AbortTransmission,
id-SRSConfiguration,

id-TRPList,
id-E-CID-MeasurementQuantities,
id-E-CID-MeasurementPeriodicity,
id-E-CID-MeasurementResult,
id-Cell-Portion-ID,
id-LMF-UE-MeasurementID,
id-RAN-UE-MeasurementID,
id-SFNInitialisationTime,
id-SystemFrameNumber,
id-SlotNumber,
id-TRP-MeasurementRequestList,
id-MeasurementBeamInfoRequest,
id-E-CID-ReportCharacteristics,
id-F1CTransferPath,
id-SCGIndicator,
id-SRSSpatialRelationPerSRSResource,
id-PosMeasurementPeriodicityExtended,
id-SuccessfulHOREportInformationList,
id-Coverage-Modification-Notification,
id-CCO-Assistance-Information,
id-CellsForSON-List,
id-IABCongestionIndication,
id-IABConditionalRRCMessageDeliveryIndication,
id-F1CTransferPathNRDC,
id-BufferSizeThresh,
id-IAB-TNL-Addresses-Exception,
id-BAP-Header-Rewriting-Added-List,
id-BAP-Header-Rewriting-Added-List-Item,
id-Re-routingEnableIndicator,
id-NonF1terminatingTopologyIndicator,
id-EgressNonF1terminatingTopologyIndicator,
id-IngressNonF1terminatingTopologyIndicator,
id-Neighbour-Node-Cells-List,
id-Serving-Cells-List,
id-MDTPollutedMeasurementIndicator,
id-PDCMeasurementPeriodicity,
id-PDCMeasurementQuantities,
id-PDCMeasurementResult,
id-PDCReportType,
id-RAN-UE-PDC-MeasID,
id-SCGActivationRequest,
id-SCGActivationStatus,
id-TRP-MeasurementUpdateList,
id-PRSTRPList,
id-PRSTransmissionTRPList,
id-ResponseTime,
id-TRP-PRS-Info-List,
id-PRS-Measurement-Info-List,
id-PRSConfigRequestType,
id-MeasurementCharacteristicsRequestIndicator,
id-MeasurementTimeOccasion,
id-UEReportingInformation,
id-PosConextRevIndication,
id-NRRedCapUEIndication,

id-RANUEPagingDRX,
id-CNUEPagingDRX,
id-NRPagingDRXInformation,
id-NRPagingDRXInformationforRRCINACTIVE,
id-QoEInformation,
id-CG-SDTQueryIndication,
id-CG-SDTKeptIndicator,
id-CG-SDTSessionInfoOld,
id-SDTInformation,
id-FiveG-ProSeAuthorized,
id-FiveG-ProSePC5LinkAMBR,
id-FiveG-ProSeUEPC5AggregateMaximumBitrate,
id-UuRLCChannelToBeSetupList,
id-UuRLCChannelToBeModifiedList,
id-UuRLCChannelToBeReleasedList,
id-UuRLCChannelSetupList,
id-UuRLCChannelFailedToBeSetupList,
id-UuRLCChannelModifiedList,
id-UuRLCChannelFailedToBeModifiedList,
id-UuRLCChannelRequiredToBeModifiedList,
id-UuRLCChannelRequiredToBeReleasedList,
id-PC5RLCChannelToBeSetupList,
id-PC5RLCChannelToBeModifiedList,
id-PC5RLCChannelToBeReleasedList,
id-PC5RLCChannelSetupList,
id-PC5RLCChannelFailedToBeSetupList,
id-PC5RLCChannelModifiedList,
id-PC5RLCChannelFailedToBeModifiedList,
id-PC5RLCChannelRequiredToBeModifiedList,
id-PC5RLCChannelRequiredToBeReleasedList,
id-SidelinkRelayConfiguration,
id-UpdatedRemoteUELocalID,
id-PathSwitchConfiguration,
id-PagingCause,
id-PEIPSAssistanceInfo,
id-UEPagingCapability,
id-GNBDUUESliceMaximumBitRateList,
id-PosMeasurementAmount,
id-BAP-Header-Rewriting-Removed-List,
id-BAP-Header-Rewriting-Removed-List-Item,
id-SLDRXCycleList,
id-ManagementBasedMDTPLMNModificationList,
id-ActivationRequestType,
id-PosMeasGapPreConfigList,
id-PosMeasurementPeriodicityNR-AoA,
id-SRSPosRRCInactiveConfig,
id-SDTBearerConfigurationQueryIndication,
id-SDTBearerConfigurationInfo,
id-ServingCellMO-List,
id-ServingCellMO-List-Item,
id-ServingCellMO-encoded-in-CGC-List,
id-PosSITypeList,
id-DAPS-HO-Status,
id-SRBMappingInfo,

id-UplinkTxDirectCurrentTwoCarrierListInfo,
id-SRSPosRRRCInactiveQueryIndication,
id-ULTxDirectCurrentMoreCarrierInformation,
id-CPACMCGInformation,
id-ExtendedUEIdentityIndexValue,
id-HashedUEIdentityIndexValue,
id-DedicatedSIDeliveryIndication,
id-Configured-BWP-List,
maxCellingNBDU,
maxnoofCandidateSpCells,
maxnoofDRBs,
maxnoofErrors,
maxnoofIndividualF1ConnectionsToReset,
maxnoofPotentialSpCells,
maxnoofSCells,
maxnoofSRBs,
maxnoofPagingCells,
maxnoofTNLAssociations,
maxCelllineNB,
maxnoofUEIDs,
maxnoofBHRLCChannels,
maxnoofRoutingEntries,
maxnoofChildIABNodes,
maxnoofServedCellsIAB,
maxnoofTLAsIAB,
maxnoofULUPTNLInformationforIAB,
maxnoofUPTNLAddresses,
maxnoofSLDRBs,
maxnoofTRPInfoTypes,
maxnoofTRPs,
maxnoofMRBs,
maxnoofUEIDforPaging,
maxnoofNeighbourNodeCellsIAB,
maxnoofMRBsforUE,
maxnoofServingCellMOs

FROM F1AP-Constants;

```
-- *****  
--  
-- RESET ELEMENTARY PROCEDURE  
--  
-- *****  
  
-- *****  
--  
-- Reset  
--  
-- *****
```

```

Reset ::= SEQUENCE {
    protocolIEs          ProtocolIE-Container    { {ResetIEs} },
    ...
}

ResetIEs F1AP-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 {
    f1-Interface              ResetAll,
    partOfF1-Interface        UE-associatedLogicalF1-ConnectionListRes,
    choice-extension          ProtocolIE-SingleContainer { { ResetType-ExtIEs} }
}

ResetType-ExtIEs F1AP-PROTOCOL-IES ::= {
    ...
}

ResetAll ::= ENUMERATED {
    reset-all,
    ...
}

UE-associatedLogicalF1-ConnectionListRes ::= SEQUENCE (SIZE(1.. maxnoofIndividualF1ConnectionsToReset)) OF ProtocolIE-SingleContainer { { UE-associatedLogicalF1-ConnectionItemRes } }

UE-associatedLogicalF1-ConnectionItemRes F1AP-PROTOCOL-IES ::= {
    { ID id-UE-associatedLogicalF1-ConnectionItem  CRITICALITY reject  TYPE UE-associatedLogicalF1-ConnectionItem  PRESENCE mandatory},
    ...
}

-- *****
--
-- Reset Acknowledge
--
-- *****

ResetAcknowledge ::= SEQUENCE {
    protocolIEs          ProtocolIE-Container    { {ResetAcknowledgeIEs} },
    ...
}

ResetAcknowledgeIEs F1AP-PROTOCOL-IES ::= {
    { ID id-TransactionID          CRITICALITY reject  TYPE TransactionID          PRESENCE
mandatory }|
    { ID id-UE-associatedLogicalF1-ConnectionListResAck  CRITICALITY ignore   TYPE UE-associatedLogicalF1-ConnectionListResAck  PRESENCE
optional }|
    { ID id-CriticalityDiagnostics  CRITICALITY ignore   TYPE CriticalityDiagnostics          PRESENCE optional },

```

```

    ...
}

UE-associatedLogicalF1-ConnectionListResAck ::= SEQUENCE (SIZE(1.. maxnoofIndividualF1ConnectionsToReset)) OF ProtocolIE-SingleContainer { { UE-
associatedLogicalF1-ConnectionItemResAck } }

UE-associatedLogicalF1-ConnectionItemResAck F1AP-PROTOCOL-IES ::= {
    { ID id-UE-associatedLogicalF1-ConnectionItem CRITICALITY ignore TYPE UE-associatedLogicalF1-ConnectionItem PRESENCE mandatory },
    ...
}

-- *****
--
-- ERROR INDICATION ELEMENTARY PROCEDURE
-- *****

-- *****
--
-- Error Indication
-- *****

ErrorIndication ::= SEQUENCE {
    protocolIES ProtocolIE-Container {{ErrorIndicationIEs}},
    ...
}

ErrorIndicationIEs F1AP-PROTOCOL-IES ::= {
    { ID id-TransactionID CRITICALITY reject TYPE TransactionID PRESENCE mandatory}|
    { ID id-gNB-CU-UE-F1AP-ID CRITICALITY ignore TYPE GNB-CU-UE-F1AP-ID PRESENCE optional}|
    { ID id-gNB-DU-UE-F1AP-ID CRITICALITY ignore TYPE GNB-DU-UE-F1AP-ID PRESENCE optional}|
    { ID id-Cause CRITICALITY ignore TYPE Cause PRESENCE optional}|
    { ID id-CriticalityDiagnostics CRITICALITY ignore TYPE CriticalityDiagnostics PRESENCE optional},
    ...
}

-- *****
--
-- F1 SETUP ELEMENTARY PROCEDURE
-- *****

-- *****
--
-- F1 Setup Request
-- *****

F1SetupRequest ::= SEQUENCE {
    protocolIES ProtocolIE-Container { {F1SetupRequestIEs} },
    ...
}

```

```

F1SetupRequestIES F1AP-PROTOCOL-IES ::= {
  { ID id-TransactionID          CRITICALITY reject TYPE TransactionID          PRESENCE mandatory }|
  { ID id-gNB-DU-ID              CRITICALITY reject TYPE GNB-DU-ID              PRESENCE mandatory }|
  { ID id-gNB-DU-Name            CRITICALITY ignore TYPE GNB-DU-Name            PRESENCE optional }|
  { ID id-gNB-DU-Served-Cells-List CRITICALITY reject TYPE GNB-DU-Served-Cells-List PRESENCE optional }|
  { ID id-gNB-DU-RRC-Version      CRITICALITY reject TYPE RRC-Version            PRESENCE mandatory }|
  { ID id-Transport-Layer-Address-Info CRITICALITY ignore TYPE Transport-Layer-Address-Info PRESENCE optional }|
  { ID id-BAPAddress             CRITICALITY ignore TYPE BAPAddress              PRESENCE optional }|
  { ID id-Extended-GNB-DU-Name    CRITICALITY ignore TYPE Extended-GNB-DU-Name    PRESENCE optional },
  ...
}

GNB-DU-Served-Cells-List ::= SEQUENCE (SIZE(1.. maxCellingNBDU)) OF ProtocolIE-SingleContainer { { GNB-DU-Served-Cells-ItemIES } }

GNB-DU-Served-Cells-ItemIES F1AP-PROTOCOL-IES ::= {
  { ID id-gNB-DU-Served-Cells-Item CRITICALITY reject TYPE GNB-DU-Served-Cells-Item PRESENCE mandatory },
  ...
}

-- *****
--
-- F1 Setup Response
--
-- *****

F1SetupResponse ::= SEQUENCE {
  protocolIES          ProtocolIE-Container      { {F1SetupResponseIES} },
  ...
}

F1SetupResponseIES F1AP-PROTOCOL-IES ::= {
  { ID id-TransactionID          CRITICALITY reject TYPE TransactionID          PRESENCE mandatory }|
  { ID id-gNB-CU-Name            CRITICALITY ignore TYPE GNB-CU-Name            PRESENCE optional }|
  { ID id-Cells-to-be-Activated-List CRITICALITY reject TYPE Cells-to-be-Activated-List PRESENCE optional }|
  { ID id-gNB-CU-RRC-Version      CRITICALITY reject TYPE RRC-Version            PRESENCE mandatory }|
  { ID id-Transport-Layer-Address-Info CRITICALITY ignore TYPE Transport-Layer-Address-Info PRESENCE optional }|
  { ID id-UL-BH-Non-UP-Traffic-Mapping CRITICALITY reject TYPE UL-BH-Non-UP-Traffic-Mapping PRESENCE optional }|
  { ID id-BAPAddress             CRITICALITY ignore TYPE BAPAddress              PRESENCE optional }|
  { ID id-Extended-GNB-CU-Name    CRITICALITY ignore TYPE Extended-GNB-CU-Name    PRESENCE optional },
  ...
}

Cells-to-be-Activated-List ::= SEQUENCE (SIZE(1.. maxCellingNBDU)) OF ProtocolIE-SingleContainer { { Cells-to-be-Activated-List-ItemIES } }

Cells-to-be-Activated-List-ItemIES F1AP-PROTOCOL-IES ::= {
  { ID id-Cells-to-be-Activated-List-Item CRITICALITY reject TYPE Cells-to-be-Activated-List-Item PRESENCE mandatory},
  ...
}

```



```
-- *****
--
-- F1 Setup Failure
--
-- *****
```

```
F1SetupFailure ::= SEQUENCE {
    protocolIEs          ProtocolIE-Container    { {F1SetupFailureIEs} },
    ...
}
```

```
F1SetupFailureIEs F1AP-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-DU CONFIGURATION UPDATE ELEMENTARY PROCEDURE
--
-- *****
--
-- *****
--
-- GNB-DU CONFIGURATION UPDATE
--
-- *****
```

```
GNBDUConfigurationUpdate ::= SEQUENCE {
    protocolIEs          ProtocolIE-Container    { {GNBDUConfigurationUpdateIEs} },
    ...
}
```

```
GNBDUConfigurationUpdateIEs F1AP-PROTOCOL-IES ::= {
    { ID id-TransactionID          CRITICALITY reject TYPE TransactionID          PRESENCE mandatory }|
    { ID id-Served-Cells-To-Add-List CRITICALITY reject TYPE Served-Cells-To-Add-List PRESENCE optional }|
    { ID id-Served-Cells-To-Modify-List CRITICALITY reject TYPE Served-Cells-To-Modify-List PRESENCE optional }|
    { ID id-Served-Cells-To-Delete-List CRITICALITY reject TYPE Served-Cells-To-Delete-List PRESENCE optional }|
    { ID id-Cells-Status-List       CRITICALITY reject TYPE Cells-Status-List       PRESENCE optional }|
    { ID id-Dedicated-SIDelivery-NeededUE-List CRITICALITY ignore TYPE Dedicated-SIDelivery-NeededUE-List PRESENCE optional }|
    { ID id-gNB-DU-ID               CRITICALITY reject TYPE GNB-DU-ID               PRESENCE optional }|
    { ID id-gNB-DU-TNL-Association-To-Remove-List CRITICALITY reject TYPE GNB-DU-TNL-Association-To-Remove-List PRESENCE optional }|
    { ID id-Transport-Layer-Address-Info CRITICALITY ignore TYPE Transport-Layer-Address-Info PRESENCE optional }|
    { ID id-Coverage-Modification-Notification CRITICALITY ignore TYPE Coverage-Modification-Notification PRESENCE optional }|
    { ID id-gNB-DU-Name             CRITICALITY ignore TYPE GNB-DU-Name             PRESENCE optional }|
    { ID id-Extended-GNB-DU-Name    CRITICALITY ignore TYPE Extended-GNB-DU-Name    PRESENCE optional },
    ...
}
```

```

Served-Cells-To-Add-List ::= SEQUENCE (SIZE(1.. maxCellingNBDU)) OF ProtocolIE-SingleContainer { { Served-Cells-To-Add-ItemIES } }
Served-Cells-To-Modify-List ::= SEQUENCE (SIZE(1.. maxCellingNBDU)) OF ProtocolIE-SingleContainer { { Served-Cells-To-Modify-ItemIES } }
Served-Cells-To-Delete-List ::= SEQUENCE (SIZE(1.. maxCellingNBDU)) OF ProtocolIE-SingleContainer { { Served-Cells-To-Delete-ItemIES } }
Cells-Status-List ::= SEQUENCE (SIZE(0.. maxCellingNBDU)) OF ProtocolIE-SingleContainer { { Cells-Status-ItemIES } }

```

```

Dedicated-SIDelivery-NeededUE-List ::= SEQUENCE (SIZE(1.. maxnoofUEIDs)) OF ProtocolIE-SingleContainer { { Dedicated-SIDelivery-NeededUE-ItemIES } }

```

```

GNB-DU-TNL-Association-To-Remove-List ::= SEQUENCE (SIZE(1.. maxnoofTNLAssociations)) OF ProtocolIE-SingleContainer { { GNB-DU-TNL-Association-To-Remove-ItemIES } }

```

```

Served-Cells-To-Add-ItemIES F1AP-PROTOCOL-IES ::= {
  { ID id-Served-Cells-To-Add-Item          CRITICALITY reject  TYPE      Served-Cells-To-Add-Item          PRESENCE mandatory },
  ...
}

```

```

Served-Cells-To-Modify-ItemIES F1AP-PROTOCOL-IES ::= {
  { ID id-Served-Cells-To-Modify-Item          CRITICALITY reject  TYPE      Served-Cells-To-Modify-Item          PRESENCE mandatory },
  ...
}

```

```

Served-Cells-To-Delete-ItemIES F1AP-PROTOCOL-IES ::= {
  { ID id-Served-Cells-To-Delete-Item          CRITICALITY reject  TYPE      Served-Cells-To-Delete-Item          PRESENCE mandatory },
  ...
}

```

```

Cells-Status-ItemIES F1AP-PROTOCOL-IES ::= {
  { ID id-Cells-Status-Item          CRITICALITY reject  TYPE      Cells-Status-Item          PRESENCE mandatory },
  ...
}

```

```

Dedicated-SIDelivery-NeededUE-ItemIES F1AP-PROTOCOL-IES ::= {
  { ID id-Dedicated-SIDelivery-NeededUE-Item          CRITICALITY ignore  TYPE      Dedicated-SIDelivery-NeededUE-Item          PRESENCE mandatory },
  ...
}

```

```

GNB-DU-TNL-Association-To-Remove-ItemIES F1AP-PROTOCOL-IES ::= {
  { ID id-GNB-DU-TNL-Association-To-Remove-Item          CRITICALITY reject  TYPE      GNB-DU-TNL-Association-To-Remove-Item          PRESENCE
mandatory },
  ...
}

```

```

-- *****
--
-- GNB-DU CONFIGURATION UPDATE ACKNOWLEDGE
--
-- *****

```

```

GNBDUConfigurationUpdateAcknowledge ::= SEQUENCE {
  protocolIES          ProtocolIE-Container      { {GNBDUConfigurationUpdateAcknowledgeIES} },
  ...
}

```

```

GNBDUConfigurationUpdateAcknowledgeIEs F1AP-PROTOCOL-IES ::= {
  { ID id-TransactionID          CRITICALITY reject TYPE TransactionID          PRESENCE mandatory }|
  { ID id-Cells-to-be-Activated-List CRITICALITY reject TYPE Cells-to-be-Activated-List PRESENCE optional }|
  { ID id-CriticalityDiagnostics    CRITICALITY ignore TYPE CriticalityDiagnostics    PRESENCE optional }|
  { ID id-Cells-to-be-Deactivated-List CRITICALITY reject TYPE Cells-to-be-Deactivated-List PRESENCE optional }|
  { ID id-Transport-Layer-Address-Info CRITICALITY ignore TYPE Transport-Layer-Address-Info PRESENCE optional }|
  { ID id-UL-BH-Non-UP-Traffic-Mapping CRITICALITY reject TYPE UL-BH-Non-UP-Traffic-Mapping PRESENCE optional }|
  { ID id-BAPAddress                CRITICALITY ignore TYPE BAPAddress                PRESENCE optional }|
  { ID id-CellsForSON-List           CRITICALITY ignore TYPE CellsForSON-List           PRESENCE optional },
  ...
}

-- *****
--
-- GNB-DU CONFIGURATION UPDATE FAILURE
--
-- *****

GNBDUConfigurationUpdateFailure ::= SEQUENCE {
  protocolIEs          ProtocolIE-Container    { {GNBDUConfigurationUpdateFailureIEs} },
  ...
}

GNBDUConfigurationUpdateFailureIEs F1AP-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 CONFIGURATION UPDATE ELEMENTARY PROCEDURE
--
-- *****

-- *****
--
-- GNB-CU CONFIGURATION UPDATE
--
-- *****

GNBCUConfigurationUpdate ::= SEQUENCE {
  protocolIEs          ProtocolIE-Container    { { GNBCUConfigurationUpdateIEs} },
  ...
}

GNBCUConfigurationUpdateIEs F1AP-PROTOCOL-IES ::= {
  { ID id-TransactionID          CRITICALITY reject TYPE TransactionID          PRESENCE mandatory }|
  { ID id-Cells-to-be-Activated-List CRITICALITY reject TYPE Cells-to-be-Activated-List PRESENCE optional }|
  { ID id-Cells-to-be-Deactivated-List CRITICALITY reject TYPE Cells-to-be-Deactivated-List PRESENCE optional }|

```

{ ID id-GNB-CU-TNL-Association-To-Add-List	CRITICALITY ignore	TYPE	GNB-CU-TNL-Association-To-Add-List	PRESENCE optional }
{ ID id-GNB-CU-TNL-Association-To-Remove-List	CRITICALITY ignore	TYPE	GNB-CU-TNL-Association-To-Remove-List	PRESENCE optional }
{ ID id-GNB-CU-TNL-Association-To-Update-List	CRITICALITY ignore	TYPE	GNB-CU-TNL-Association-To-Update-List	PRESENCE optional }
{ ID id-Cells-to-be-Barred-List	CRITICALITY ignore	TYPE	Cells-to-be-Barred-List	PRESENCE optional }
{ ID id-Protected-EUTRA-Resources-List	CRITICALITY reject	TYPE	Protected-EUTRA-Resources-List	PRESENCE optional }
{ ID id-Neighbour-Cell-Information-List	CRITICALITY ignore	TYPE	Neighbour-Cell-Information-List	PRESENCE optional }
{ ID id-Transport-Layer-Address-Info	CRITICALITY ignore	TYPE	Transport-Layer-Address-Info	PRESENCE optional }
{ ID id-UL-BH-Non-UP-Traffic-Mapping	CRITICALITY reject	TYPE	UL-BH-Non-UP-Traffic-Mapping	PRESENCE optional }
{ ID id-BAPAddress	CRITICALITY ignore	TYPE	BAPAddress	PRESENCE optional }
{ ID id-CCO-Assistance-Information	CRITICALITY ignore	TYPE	CCO-Assistance-Information	PRESENCE optional }
{ ID id-CellsForSON-List	CRITICALITY ignore	TYPE	CellsForSON-List	PRESENCE optional }
{ ID id-gNB-CU-Name	CRITICALITY ignore	TYPE	GNB-CU-Name	PRESENCE optional }
{ ID id-Extended-GNB-CU-Name	CRITICALITY ignore	TYPE	Extended-GNB-CU-Name	PRESENCE optional },
...				
}				

Cells-to-be-Deactivated-List ::= SEQUENCE (SIZE(1.. maxCellingNBDU)) OF ProtocolIE-SingleContainer { { Cells-to-be-Deactivated-List-ItemIEs } }

GNB-CU-TNL-Association-To-Add-List ::= SEQUENCE (SIZE(1.. maxnoofTNLAssociations)) OF ProtocolIE-SingleContainer { { GNB-CU-TNL-Association-To-Add-ItemIEs } }

GNB-CU-TNL-Association-To-Remove-List ::= SEQUENCE (SIZE(1.. maxnoofTNLAssociations)) OF ProtocolIE-SingleContainer { { GNB-CU-TNL-Association-To-Remove-ItemIEs } }

GNB-CU-TNL-Association-To-Update-List ::= SEQUENCE (SIZE(1.. maxnoofTNLAssociations)) OF ProtocolIE-SingleContainer { { GNB-CU-TNL-Association-To-Update-ItemIEs } }

Cells-to-be-Barred-List ::= SEQUENCE(SIZE(1.. maxCellingNBDU)) OF ProtocolIE-SingleContainer { { Cells-to-be-Barred-ItemIEs } }

Cells-to-be-Deactivated-List-ItemIEs F1AP-PROTOCOL-IES ::= {

{ ID id-Cells-to-be-Deactivated-List-Item	CRITICALITY reject	TYPE	Cells-to-be-Deactivated-List-Item
PRESENCE mandatory },			
...			

}

GNB-CU-TNL-Association-To-Add-ItemIEs F1AP-PROTOCOL-IES ::= {

{ ID id-GNB-CU-TNL-Association-To-Add-Item	CRITICALITY ignore	TYPE	GNB-CU-TNL-Association-To-Add-Item	PRESENCE mandatory },
...				

}

GNB-CU-TNL-Association-To-Remove-ItemIEs F1AP-PROTOCOL-IES ::= {

{ ID id-GNB-CU-TNL-Association-To-Remove-Item	CRITICALITY ignore	TYPE	GNB-CU-TNL-Association-To-Remove-Item	PRESENCE
mandatory },				
...				

}

GNB-CU-TNL-Association-To-Update-ItemIEs F1AP-PROTOCOL-IES ::= {

{ ID id-GNB-CU-TNL-Association-To-Update-Item	CRITICALITY ignore	TYPE	GNB-CU-TNL-Association-To-Update-Item	PRESENCE
mandatory },				
...				

}

Cells-to-be-Barred-ItemIEs F1AP-PROTOCOL-IES ::= {

{ ID id-Cells-to-be-Barred-Item	CRITICALITY ignore	TYPE	Cells-to-be-Barred-Item	PRESENCE mandatory },
...				

}

```

Protected-EUTRA-Resources-List ::= SEQUENCE (SIZE(1.. maxCellineNB)) OF ProtocolIE-SingleContainer { { Protected-EUTRA-Resources-ItemIES } }
Protected-EUTRA-Resources-ItemIES F1AP-PROTOCOL-IES ::= {
    { ID id-Protected-EUTRA-Resources-Item          CRITICALITY reject TYPE Protected-EUTRA-Resources-Item          PRESENCE
mandatory},
    ...
}

Neighbour-Cell-Information-List ::= SEQUENCE (SIZE(1.. maxCellingNBDU)) OF ProtocolIE-SingleContainer { { Neighbour-Cell-Information-ItemIES } }
Neighbour-Cell-Information-ItemIES F1AP-PROTOCOL-IES ::= {
    { ID id-Neighbour-Cell-Information-Item          CRITICALITY ignore TYPE Neighbour-Cell-Information-Item          PRESENCE
mandatory},
    ...
}

-- *****
--
-- GNB-CU CONFIGURATION UPDATE ACKNOWLEDGE
--
-- *****

GNBCUConfigurationUpdateAcknowledge ::= SEQUENCE {
    protocolIES          ProtocolIE-Container    { { GNBCUConfigurationUpdateAcknowledgeIES } },
    ...
}

GNBCUConfigurationUpdateAcknowledgeIES F1AP-PROTOCOL-IES ::= {
    { ID id-TransactionID          CRITICALITY reject TYPE TransactionID          PRESENCE mandatory }|
    { ID id-Cells-Failed-to-be-Activated-List          CRITICALITY reject TYPE Cells-Failed-to-be-Activated-List          PRESENCE optional}|
    { ID id-CriticalityDiagnostics          CRITICALITY ignore TYPE CriticalityDiagnostics          PRESENCE optional
}|
    { ID id-GNB-CU-TNL-Association-Setup-List          CRITICALITY ignore TYPE GNB-CU-TNL-Association-Setup-List          PRESENCE optional }|
    { ID id-GNB-CU-TNL-Association-Failed-To-Setup-List          CRITICALITY ignore TYPE GNB-CU-TNL-Association-Failed-To-Setup-List          PRESENCE optional }|
    { ID id-Dedicated-SIDelivery-NeededUE-List          CRITICALITY ignore TYPE Dedicated-SIDelivery-NeededUE-List          PRESENCE optional
}|
    { ID id-Transport-Layer-Address-Info          CRITICALITY ignore TYPE Transport-Layer-Address-Info          PRESENCE optional },
    ...
}

Cells-Failed-to-be-Activated-List ::= SEQUENCE (SIZE(1.. maxCellingNBDU)) OF ProtocolIE-SingleContainer { { Cells-Failed-to-be-Activated-List-
ItemIES } }
GNB-CU-TNL-Association-Setup-List ::= SEQUENCE (SIZE(1.. maxnoofTNLAssociations)) OF ProtocolIE-SingleContainer { { GNB-CU-TNL-Association-Setup-
ItemIES } }
GNB-CU-TNL-Association-Failed-To-Setup-List ::= SEQUENCE (SIZE(1.. maxnoofTNLAssociations)) OF ProtocolIE-SingleContainer { { GNB-CU-TNL-
Association-Failed-To-Setup-ItemIES } }

Cells-Failed-to-be-Activated-List-ItemIES F1AP-PROTOCOL-IES ::= {
    { ID id-Cells-Failed-to-be-Activated-List-Item          CRITICALITY reject TYPE Cells-Failed-to-be-Activated-List-Item          PRESENCE mandatory },
    ...
}

GNB-CU-TNL-Association-Setup-ItemIES F1AP-PROTOCOL-IES ::= {
    { ID id-GNB-CU-TNL-Association-Setup-Item          CRITICALITY ignore TYPE          GNB-CU-TNL-Association-Setup-Item          PRESENCE mandatory },

```

```

    ...
}

GNB-CU-TNL-Association-Failed-To-Setup-ItemIES F1AP-PROTOCOL-IES ::= {
  { ID id-GNB-CU-TNL-Association-Failed-To-Setup-Item      CRITICALITY ignore  TYPE      GNB-CU-TNL-Association-Failed-To-Setup-Item      PRESENCE
mandatory },
  ...
}

-- *****
--
-- GNB-CU CONFIGURATION UPDATE FAILURE
--
-- *****

GNBCUConfigurationUpdateFailure ::= SEQUENCE {
  protocolIES      ProtocolIE-Container      { { GNBCUConfigurationUpdateFailureIES} },
  ...
}

GNBCUConfigurationUpdateFailureIES F1AP-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-DU RESOURCE COORDINATION REQUEST
--
-- *****

GNBDUResourceCoordinationRequest ::= SEQUENCE {
  protocolIES      ProtocolIE-Container      {{GNBDUResourceCoordinationRequest-IES}},
  ...
}

GNBDUResourceCoordinationRequest-IES F1AP-PROTOCOL-IES ::= {
  { ID id-TransactionID      CRITICALITY reject  TYPE TransactionID      PRESENCE mandatory }|
  { ID id-RequestType        CRITICALITY reject  TYPE RequestType        PRESENCE mandatory }|
  { ID id-EUTRA-NR-CellResourceCoordinationReq-Container CRITICALITY reject  TYPE EUTRA-NR-CellResourceCoordinationReq-Container PRESENCE
mandatory }|
  { ID id-IgnoreResourceCoordinationContainer      CRITICALITY reject  TYPE IgnoreResourceCoordinationContainer      PRESENCE optional },
  ...
}

-- *****
--

```

```

-- GNB-DU RESOURCE COORDINATION RESPONSE
--
-- *****

GNBDUResourceCoordinationResponse ::= SEQUENCE {
    protocolIES      ProtocolIE-Container      {{GNBDUResourceCoordinationResponse-IEs}},
    ...
}

GNBDUResourceCoordinationResponse-IEs F1AP-PROTOCOL-IES ::= {
    { ID id-TransactionID                CRITICALITY reject TYPE TransactionID                PRESENCE mandatory }|
    { ID id-EUTRA-NR-CellResourceCoordinationReqAck-Container CRITICALITY reject TYPE EUTRA-NR-CellResourceCoordinationReqAck-Container PRESENCE mandatory },
    ...
}

-- *****
--
-- UE Context Setup ELEMENTARY PROCEDURE
--
-- *****

-- *****
--
-- UE CONTEXT SETUP REQUEST
--
-- *****

UEContextSetupRequest ::= SEQUENCE {
    protocolIES      ProtocolIE-Container      { { UEContextSetupRequestIEs} },
    ...
}

UEContextSetupRequestIEs F1AP-PROTOCOL-IES ::= {
    { ID id-gNB-CU-UE-F1AP-ID                CRITICALITY reject TYPE GNB-CU-UE-F1AP-ID                PRESENCE mandatory }|
    { ID id-gNB-DU-UE-F1AP-ID                CRITICALITY ignore TYPE GNB-DU-UE-F1AP-ID                PRESENCE optional }|
    { ID id-SpCell-ID                        CRITICALITY reject TYPE NRCGI                        PRESENCE mandatory }|
    { ID id-ServCellIndex                    CRITICALITY reject TYPE ServCellIndex                    PRESENCE mandatory }|
    { ID id-SpCellULConfigured                CRITICALITY ignore TYPE CellULConfigured                PRESENCE optional }|
    { ID id-CutoDURRCInformation              CRITICALITY reject TYPE CutoDURRCInformation              PRESENCE mandatory }|
    { ID id-Candidate-SpCell-List             CRITICALITY ignore TYPE Candidate-SpCell-List             PRESENCE optional }|
    { ID id-DRXCycle                         CRITICALITY ignore TYPE DRXCycle                         PRESENCE optional }|
    { ID id-ResourceCoordinationTransferContainer CRITICALITY ignore TYPE ResourceCoordinationTransferContainer PRESENCE optional }|
    { ID id-SCell-ToBeSetup-List              CRITICALITY ignore TYPE SCell-ToBeSetup-List              PRESENCE optional }|
    { ID id-SRBs-ToBeSetup-List               CRITICALITY reject TYPE SRBs-ToBeSetup-List               PRESENCE optional }|
    { ID id-DRBs-ToBeSetup-List               CRITICALITY reject TYPE DRBs-ToBeSetup-List               PRESENCE optional }|
    { ID id-InactivityMonitoringRequest        CRITICALITY reject TYPE InactivityMonitoringRequest        PRESENCE optional }|
    { ID id-RAT-FrequencyPriorityInformation    CRITICALITY reject TYPE RAT-FrequencyPriorityInformation    PRESENCE optional }|
    { ID id-RRCContainer                     CRITICALITY ignore TYPE RRCContainer                     PRESENCE optional }|
    { ID id-MaskedIMEISV                     CRITICALITY ignore TYPE MaskedIMEISV                     PRESENCE optional }|
    { ID id-ServingPLMN                      CRITICALITY ignore TYPE PLMN-Identity                      PRESENCE optional }|
    { ID id-gNB-DU-UE-AMBR-UL                 CRITICALITY ignore TYPE BitRate                           PRESENCE conditional }|
    { ID id-RRCDeliveryStatusRequest          CRITICALITY ignore TYPE RRCDeliveryStatusRequest          PRESENCE optional }|
    { ID id-ResourceCoordinationTransferInformation CRITICALITY ignore TYPE ResourceCoordinationTransferInformation PRESENCE optional }|
}

```

{ ID id-ServingCellMO	CRITICALITY ignore	TYPE ServingCellMO	PRESENCE optional }
{ ID id-new-gNB-CU-UE-F1AP-ID	CRITICALITY reject	TYPE GNB-DU-UE-F1AP-ID	PRESENCE optional }
{ ID id-RANUEID	CRITICALITY ignore	TYPE RANUEID	PRESENCE optional }
{ ID id-TraceActivation	CRITICALITY ignore	TYPE TraceActivation	PRESENCE optional }
{ ID id-AdditionalRRMPriorityIndex	CRITICALITY ignore	TYPE AdditionalRRMPriorityIndex	PRESENCE optional }
{ ID id-BHChannels-ToBeSetup-List	CRITICALITY reject	TYPE BHChannels-ToBeSetup-List	PRESENCE optional }
{ ID id-ConfiguredBAPAddress	CRITICALITY reject	TYPE BAPAddress	PRESENCE optional }
{ ID id-NRV2XServicesAuthorized	CRITICALITY ignore	TYPE NRV2XServicesAuthorized	PRESENCE optional }
{ ID id-LTEV2XServicesAuthorized	CRITICALITY ignore	TYPE LTEV2XServicesAuthorized	PRESENCE optional }
{ ID id-NRUESidelinkAggregateMaximumBitrate	CRITICALITY ignore	TYPE NRUESidelinkAggregateMaximumBitrate	PRESENCE optional }
{ ID id-LTEUESidelinkAggregateMaximumBitrate	CRITICALITY ignore	TYPE LTEUESidelinkAggregateMaximumBitrate	PRESENCE optional }
{ ID id-PC5LinkAMBR	CRITICALITY ignore	TYPE BitRate	PRESENCE optional }
{ ID id-SLDRBs-ToBeSetup-List	CRITICALITY reject	TYPE SLDRBs-ToBeSetup-List	PRESENCE optional }
{ ID id-ConditionalInterDUMobilityInformation	CRITICALITY reject	TYPE ConditionalInterDUMobilityInformation	PRESENCE optional }
{ ID id-ManagementBasedMDTPLMNList	CRITICALITY ignore	TYPE MDTPLMNList	PRESENCE optional }
{ ID id-ServingNID	CRITICALITY reject	TYPE NID	PRESENCE optional }
{ ID id-F1CTransferPath	CRITICALITY reject	TYPE F1CTransferPath	PRESENCE optional }
{ ID id-F1CTransferPathNRDC	CRITICALITY reject	TYPE F1CTransferPathNRDC	PRESENCE optional }
{ ID id-MDTPollutedMeasurementIndicator	CRITICALITY ignore	TYPE MDTPollutedMeasurementIndicator	PRESENCE optional }
{ ID id-SCGActivationRequest	CRITICALITY ignore	TYPE SCGActivationRequest	PRESENCE optional }
{ ID id-CG-SDTSessionInfoOld	CRITICALITY ignore	TYPE CG-SDTSessionInfo	PRESENCE optional }
{ ID id-FiveG-ProSeAuthorized	CRITICALITY ignore	TYPE FiveG-ProSeAuthorized	PRESENCE optional }
{ ID id-FiveG-ProSeUEPC5AggregateMaximumBitrate	CRITICALITY ignore	TYPE NRUESidelinkAggregateMaximumBitrate	PRESENCE optional }
{ ID id-FiveG-ProSePC5LinkAMBR	CRITICALITY ignore	TYPE BitRate	PRESENCE optional }
{ ID id-UuRLCChannelToBeSetupList	CRITICALITY reject	TYPE UuRLCChannelToBeSetupList	PRESENCE optional }
{ ID id-PC5RLCChannelToBeSetupList	CRITICALITY reject	TYPE PC5RLCChannelToBeSetupList	PRESENCE optional }
{ ID id-PathSwitchConfiguration	CRITICALITY ignore	TYPE PathSwitchConfiguration	PRESENCE optional }
{ ID id-GNBDUUESliceMaximumBitRateList	CRITICALITY ignore	TYPE GNBDUUESliceMaximumBitRateList	PRESENCE optional }
{ ID id-MulticastMBSSESessionSetupList	CRITICALITY reject	TYPE MulticastMBSSESessionList	PRESENCE optional }
{ ID id-UE-MulticastMRBs-ToBeSetup-List	CRITICALITY reject	TYPE UE-MulticastMRBs-ToBeSetup-List	PRESENCE optional }
{ ID id-ServingCellMO-List	CRITICALITY ignore	TYPE ServingCellMO-List	PRESENCE optional },
...			
}			

Candidate-SpCell-List ::= SEQUENCE (SIZE(1..maxnoofCandidateSpCells)) OF ProtocolIE-SingleContainer { { Candidate-SpCell-ItemIEs} }
 SCell-ToBeSetup-List ::= SEQUENCE (SIZE(1..maxnoofSCells)) OF ProtocolIE-SingleContainer { { SCell-ToBeSetup-ItemIEs} }
 SRBs-ToBeSetup-List ::= SEQUENCE (SIZE(1..maxnoofSRBs)) OF ProtocolIE-SingleContainer { { SRBs-ToBeSetup-ItemIEs} }
 DRBs-ToBeSetup-List ::= SEQUENCE (SIZE(1..maxnoofDRBs)) OF ProtocolIE-SingleContainer { { DRBs-ToBeSetup-ItemIEs} }
 BHChannels-ToBeSetup-List ::= SEQUENCE (SIZE(1..maxnoofBHRLCChannels)) OF ProtocolIE-SingleContainer { { BHChannels-ToBeSetup-ItemIEs} }
 SLDRBs-ToBeSetup-List ::= SEQUENCE (SIZE(1..maxnoofSLDRBs)) OF ProtocolIE-SingleContainer { { SLDRBs-ToBeSetup-ItemIEs} }
 UE-MulticastMRBs-ToBeSetup-List ::= SEQUENCE (SIZE(1..maxnoofMRBsforUE)) OF ProtocolIE-SingleContainer { { UE-MulticastMRBs-ToBeSetup-ItemIEs} }
 ServingCellMO-List ::= SEQUENCE (SIZE(1..maxnoofServingCellMOs)) OF ProtocolIE-SingleContainer { { ServingCellMO-List-ItemIEs} }

Candidate-SpCell-ItemIEs F1AP-PROTOCOL-IES ::= {
 { ID id-Candidate-SpCell-Item CRITICALITY ignore TYPE Candidate-SpCell-Item PRESENCE mandatory },
 ...
 }

SCell-ToBeSetup-ItemIEs F1AP-PROTOCOL-IES ::= {
 { ID id-SCell-ToBeSetup-Item CRITICALITY ignore TYPE SCell-ToBeSetup-Item PRESENCE mandatory },
 ...
 }


```

SRBs-ToBeSetup-ItemIES F1AP-PROTOCOL-IES ::= {
    { ID id-SRBs-ToBeSetup-Item      CRITICALITY reject      TYPE SRBs-ToBeSetup-Item      PRESENCE mandatory},
    ...
}

DRBs-ToBeSetup-ItemIES F1AP-PROTOCOL-IES ::= {
    { ID id-DRBs-ToBeSetup-Item      CRITICALITY reject      TYPE DRBs-ToBeSetup-Item      PRESENCE mandatory},
    ...
}

BHChannels-ToBeSetup-ItemIES F1AP-PROTOCOL-IES ::= {
    { ID id-BHChannels-ToBeSetup-Item      CRITICALITY reject      TYPE BHChannels-ToBeSetup-Item      PRESENCE mandatory},
    ...
}

SLDRBs-ToBeSetup-ItemIES F1AP-PROTOCOL-IES ::= {
    { ID id-SLDRBs-ToBeSetup-Item      CRITICALITY reject      TYPE SLDRBs-ToBeSetup-Item      PRESENCE mandatory},
    ...
}

UE-MulticastMRBs-ToBeSetup-ItemIES F1AP-PROTOCOL-IES ::= {
    { ID id-UE-MulticastMRBs-ToBeSetup-Item      CRITICALITY reject      TYPE UE-MulticastMRBs-ToBeSetup-Item      PRESENCE mandatory},
    ...
}

ServingCellMO-List-ItemIES F1AP-PROTOCOL-IES ::= {
    { ID id-ServingCellMO-List-Item      CRITICALITY reject      TYPE ServingCellMO-List-Item      PRESENCE mandatory},
    ...
}
-- *****
--
-- UE CONTEXT SETUP RESPONSE
--
-- *****

UEContextSetupResponse ::= SEQUENCE {
    protocolIES      ProtocolIE-Container      { { UEContextSetupResponseIES } },
    ...
}

UEContextSetupResponseIES F1AP-PROTOCOL-IES ::= {
    { ID id-gNB-CU-UE-F1AP-ID      CRITICALITY reject      TYPE GNB-CU-UE-F1AP-ID      PRESENCE mandatory }|
    { ID id-gNB-DU-UE-F1AP-ID      CRITICALITY reject      TYPE GNB-DU-UE-F1AP-ID      PRESENCE mandatory }|
    { ID id-DUtoCURRCInformation      CRITICALITY reject      TYPE DUtoCURRCInformation      PRESENCE mandatory }|
    { ID id-C-RNTI      CRITICALITY ignore      TYPE C-RNTI      PRESENCE optional }|
    { ID id-ResourceCoordinationTransferContainer      CRITICALITY ignore      TYPE ResourceCoordinationTransferContainer      PRESENCE optional }|
    { ID id-FullConfiguration      CRITICALITY reject      TYPE FullConfiguration      PRESENCE optional }|
    { ID id-DRBs-Setup-List      CRITICALITY ignore      TYPE DRBs-Setup-List      PRESENCE optional }|
    { ID id-SRBs-FailedToBeSetup-List      CRITICALITY ignore      TYPE SRBs-FailedToBeSetup-List      PRESENCE optional }|
    { ID id-DRBs-FailedToBeSetup-List      CRITICALITY ignore      TYPE DRBs-FailedToBeSetup-List      PRESENCE optional }|
    { ID id-SCell-FailedtoSetup-List      CRITICALITY ignore      TYPE SCell-FailedtoSetup-List      PRESENCE optional }|
    { ID id-InactivityMonitoringResponse      CRITICALITY reject      TYPE InactivityMonitoringResponse      PRESENCE optional }|
    { ID id-CriticalityDiagnostics      CRITICALITY ignore      TYPE CriticalityDiagnostics      PRESENCE optional }|
}

```

```

{ ID id-SRBs-Setup-List          CRITICALITY ignore TYPE SRBs-Setup-List          PRESENCE optional }|
{ ID id-BHChannels-Setup-List    CRITICALITY ignore TYPE BHChannels-Setup-List    PRESENCE optional }|
{ ID id-BHChannels-FailedToBeSetup-List CRITICALITY ignore TYPE BHChannels-FailedToBeSetup-List PRESENCE optional }|
{ ID id-SLDRBs-Setup-List        CRITICALITY ignore TYPE SLDRBs-Setup-List        PRESENCE optional }|
{ ID id-SLDRBs-FailedToBeSetup-List CRITICALITY ignore TYPE SLDRBs-FailedToBeSetup-List PRESENCE optional }|
{ ID id-requestedTargetCellGlobalID CRITICALITY reject TYPE NRCGI                PRESENCE optional }|
{ ID id-SCGActivationStatus      CRITICALITY ignore TYPE SCGActivationStatus    PRESENCE optional }|
{ ID id-UuRLCChannelSetupList    CRITICALITY ignore TYPE UuRLCChannelSetupList  PRESENCE optional }|
{ ID id-UuRLCChannelFailedToBeSetupList CRITICALITY ignore TYPE UuRLCChannelFailedToBeSetupList PRESENCE optional }|
{ ID id-PC5RLCChannelSetupList   CRITICALITY ignore TYPE PC5RLCChannelSetupList PRESENCE optional }|
{ ID id-PC5RLCChannelFailedToBeSetupList CRITICALITY ignore TYPE PC5RLCChannelFailedToBeSetupList PRESENCE optional }|
{ ID id-ServingCellMO-encoded-in-CGC-List CRITICALITY ignore TYPE ServingCellMO-encoded-in-CGC-List PRESENCE optional }|
{ ID id-UE-MulticastMRBs-Setupnew-List CRITICALITY reject TYPE UE-MulticastMRBs-Setupnew-List PRESENCE optional }|
{ ID id-DedicatedSIDeliveryIndication CRITICALITY ignore TYPE DedicatedSIDeliveryIndication PRESENCE optional }|
{ ID id-Configured-BWP-List      CRITICALITY ignore TYPE Configured-BWP-List    PRESENCE optional },
...
}

DRBs-Setup-List ::= SEQUENCE (SIZE(1..maxnoofDRBs)) OF ProtocolIE-SingleContainer { { DRBs-Setup-ItemIEs } }

SRBs-FailedToBeSetup-List ::= SEQUENCE (SIZE(1..maxnoofSRBs)) OF ProtocolIE-SingleContainer { { SRBs-FailedToBeSetup-ItemIEs } }
DRBs-FailedToBeSetup-List ::= SEQUENCE (SIZE(1..maxnoofDRBs)) OF ProtocolIE-SingleContainer { { DRBs-FailedToBeSetup-ItemIEs } }
SCell-FailedtoSetup-List ::= SEQUENCE (SIZE(1..maxnoofSCells)) OF ProtocolIE-SingleContainer { { SCell-FailedtoSetup-ItemIEs } }
SRBs-Setup-List ::= SEQUENCE (SIZE(1..maxnoofSRBs)) OF ProtocolIE-SingleContainer { { SRBs-Setup-ItemIEs } }
BHChannels-Setup-List ::= SEQUENCE (SIZE(1..maxnoofBHRLCChannels)) OF ProtocolIE-SingleContainer { { BHChannels-Setup-ItemIEs } }
BHChannels-FailedToBeSetup-List ::= SEQUENCE (SIZE(1..maxnoofBHRLCChannels)) OF ProtocolIE-SingleContainer { { BHChannels-FailedToBeSetup-ItemIEs } }
}

DRBs-Setup-ItemIEs F1AP-PROTOCOL-IES ::= {
  { ID id-DRBs-Setup-Item          CRITICALITY ignore TYPE DRBs-Setup-Item          PRESENCE mandatory},
  ...
}

SRBs-Setup-ItemIEs F1AP-PROTOCOL-IES ::= {
  { ID id-SRBs-Setup-Item          CRITICALITY ignore TYPE SRBs-Setup-Item          PRESENCE mandatory},
  ...
}

SRBs-FailedToBeSetup-ItemIEs F1AP-PROTOCOL-IES ::= {
  { ID id-SRBs-FailedToBeSetup-Item CRITICALITY ignore TYPE SRBs-FailedToBeSetup-Item PRESENCE mandatory},
  ...
}

DRBs-FailedToBeSetup-ItemIEs F1AP-PROTOCOL-IES ::= {
  { ID id-DRBs-FailedToBeSetup-Item CRITICALITY ignore TYPE DRBs-FailedToBeSetup-Item PRESENCE mandatory},
  ...
}

SCell-FailedtoSetup-ItemIEs F1AP-PROTOCOL-IES ::= {
  { ID id-SCell-FailedtoSetup-Item CRITICALITY ignore TYPE SCell-FailedtoSetup-Item PRESENCE mandatory},
  ...
}

```

```

BHChannels-Setup-ItemIES F1AP-PROTOCOL-IES ::= {
    { ID id-BHChannels-Setup-Item                CRITICALITY ignore  TYPE BHChannels-Setup-Item                PRESENCE mandatory},
    ...
}

BHChannels-FailedToBeSetup-ItemIES F1AP-PROTOCOL-IES ::= {
    { ID id-BHChannels-FailedToBeSetup-Item        CRITICALITY ignore  TYPE BHChannels-FailedToBeSetup-Item        PRESENCE mandatory},
    ...
}

SLDRBs-Setup-List ::= SEQUENCE (SIZE(1..maxnoofSLDRBs)) OF ProtocolIE-SingleContainer { { SLDRBs-Setup-ItemIES } }

SLDRBs-FailedToBeSetup-List ::= SEQUENCE (SIZE(1..maxnoofSLDRBs)) OF ProtocolIE-SingleContainer { { SLDRBs-FailedToBeSetup-ItemIES } }

SLDRBs-Setup-ItemIES F1AP-PROTOCOL-IES ::= {
    { ID id-SLDRBs-Setup-Item                CRITICALITY ignore  TYPE SLDRBs-Setup-Item                PRESENCE mandatory},
    ...
}

SLDRBs-FailedToBeSetup-ItemIES F1AP-PROTOCOL-IES ::= {
    { ID id-SLDRBs-FailedToBeSetup-Item        CRITICALITY ignore  TYPE SLDRBs-FailedToBeSetup-Item        PRESENCE mandatory},
    ...
}

UE-MulticastMRBs-Setupnew-List ::= SEQUENCE (SIZE(1..maxnoofMRBsforUE)) OF ProtocolIE-SingleContainer { { UE-MulticastMRBs-Setupnew-ItemIES } }

UE-MulticastMRBs-Setupnew-ItemIES F1AP-PROTOCOL-IES ::= {
    { ID id-UE-MulticastMRBs-Setupnew-Item        CRITICALITY reject  TYPE UE-MulticastMRBs-Setupnew-Item        PRESENCE mandatory},
    ...
}

-- *****
--
-- UE CONTEXT SETUP FAILURE
--
-- *****

UEContextSetupFailure ::= SEQUENCE {
    protocolIES          ProtocolIE-Container    { { UEContextSetupFailureIES } },
    ...
}

UEContextSetupFailureIES F1AP-PROTOCOL-IES ::= {
    { ID id-gNB-CU-UE-F1AP-ID                CRITICALITY reject  TYPE GNB-CU-UE-F1AP-ID                PRESENCE mandatory }|
    { ID id-gNB-DU-UE-F1AP-ID                CRITICALITY ignore  TYPE GNB-DU-UE-F1AP-ID                PRESENCE optional }|
    { ID id-Cause                            CRITICALITY ignore  TYPE Cause                            PRESENCE mandatory }|
    { ID id-CriticalityDiagnostics            CRITICALITY ignore  TYPE CriticalityDiagnostics          PRESENCE optional }|
    { ID id-Potential-SpCell-List            CRITICALITY ignore  TYPE Potential-SpCell-List          PRESENCE optional }|
    { ID id-requestedTargetCellGlobalID      CRITICALITY reject  TYPE NRCGI                          PRESENCE optional},
    ...
}

```

Potential-SpCell-List ::= SEQUENCE (SIZE(0..maxnoofPotentialSpCells)) OF ProtocolIE-SingleContainer { { Potential-SpCell-ItemIEs} }

Potential-SpCell-ItemIEs F1AP-PROTOCOL-IES ::= {
 { ID id-Potential-SpCell-Item CRITICALITY ignore TYPE Potential-SpCell-Item PRESENCE mandatory },
 ...
 }

-- *****
 --
 -- UE Context Release Request ELEMENTARY PROCEDURE
 -- *****

-- *****
 --
 -- UE Context Release Request
 -- *****

UEContextReleaseRequest ::= SEQUENCE {
 protocolIEs ProtocolIE-Container {{ UEContextReleaseRequestIEs}},
 ...
 }

UEContextReleaseRequestIEs F1AP-PROTOCOL-IES ::= {
 { ID id-gNB-CU-UE-F1AP-ID CRITICALITY reject TYPE GNB-CU-UE-F1AP-ID PRESENCE mandatory }|
 { ID id-gNB-DU-UE-F1AP-ID CRITICALITY reject TYPE GNB-DU-UE-F1AP-ID PRESENCE mandatory }|
 { ID id-Cause CRITICALITY ignore TYPE Cause PRESENCE mandatory }|
 { ID id-targetCellsToCancel CRITICALITY reject TYPE TargetCellList PRESENCE optional },
 ...
 }

-- *****
 --
 -- UE Context Release (gNB-CU initiated) ELEMENTARY PROCEDURE
 -- *****

-- *****
 --
 -- UE CONTEXT RELEASE COMMAND
 -- *****

UEContextReleaseCommand ::= SEQUENCE {
 protocolIEs ProtocolIE-Container { { UEContextReleaseCommandIEs} },
 ...
 }

UEContextReleaseCommandIEs F1AP-PROTOCOL-IES ::= {
 { ID id-gNB-CU-UE-F1AP-ID CRITICALITY reject TYPE GNB-CU-UE-F1AP-ID PRESENCE mandatory }|
 { ID id-gNB-DU-UE-F1AP-ID CRITICALITY reject TYPE GNB-DU-UE-F1AP-ID PRESENCE mandatory }|
 { ID id-Cause CRITICALITY ignore TYPE Cause PRESENCE mandatory }|
 }

```

    { ID id-RRCContainer          CRITICALITY ignore TYPE RRCContainer          PRESENCE optional }|
    { ID id-SRBID                 CRITICALITY ignore TYPE SRBID                 PRESENCE conditional }|
    { ID id-oldgNB-DU-UE-F1AP-ID  CRITICALITY ignore TYPE GNB-DU-UE-F1AP-ID        PRESENCE optional }|
    { ID id-ExecuteDuplication    CRITICALITY ignore TYPE ExecuteDuplication    PRESENCE optional }|
    { ID id-RRCDeliveryStatusRequest CRITICALITY ignore TYPE RRCDeliveryStatusRequest PRESENCE optional }|
    { ID id-targetCellsToCancel   CRITICALITY reject TYPE TargetCellList      PRESENCE optional }|
    { ID id-PosConextRevIndication CRITICALITY ignore TYPE PosConextRevIndication PRESENCE optional }|
    { ID id-CG-SDTKeptIndicator   CRITICALITY ignore TYPE CG-SDTKeptIndicator   PRESENCE optional },
    ...
}

-- *****
--
-- UE CONTEXT RELEASE COMPLETE
-- *****

UEContextReleaseComplete ::= SEQUENCE {
    protocolIES          ProtocolIE-Container    { { UEContextReleaseCompleteIES} },
    ...
}

UEContextReleaseCompleteIES F1AP-PROTOCOL-IES ::= {
    { ID id-gNB-CU-UE-F1AP-ID          CRITICALITY reject TYPE GNB-CU-UE-F1AP-ID          PRESENCE mandatory }|
    { ID id-gNB-DU-UE-F1AP-ID          CRITICALITY reject TYPE GNB-DU-UE-F1AP-ID          PRESENCE mandatory }|
    { ID id-CriticalityDiagnostics      CRITICALITY ignore TYPE CriticalityDiagnostics      PRESENCE optional },
    ...
}

-- *****
--
-- UE Context Modification ELEMENTARY PROCEDURE
-- *****

-- *****
--
-- UE CONTEXT MODIFICATION REQUEST
-- *****

UEContextModificationRequest ::= SEQUENCE {
    protocolIES          ProtocolIE-Container    { { UEContextModificationRequestIES} },
    ...
}

UEContextModificationRequestIES F1AP-PROTOCOL-IES ::= {
    { ID id-gNB-CU-UE-F1AP-ID          CRITICALITY reject TYPE GNB-CU-UE-F1AP-ID          PRESENCE mandatory }|
    { ID id-gNB-DU-UE-F1AP-ID          CRITICALITY reject TYPE GNB-DU-UE-F1AP-ID          PRESENCE mandatory }|
    { ID id-SpCell-ID                 CRITICALITY ignore TYPE NRCGI                 PRESENCE optional }|
    { ID id-ServCellIndex              CRITICALITY reject TYPE ServCellIndex              PRESENCE optional }|
    { ID id-SpCellULConfigured         CRITICALITY ignore TYPE CellULConfigured         PRESENCE optional }|
    { ID id-DRXCycle                   CRITICALITY ignore TYPE DRXCycle                   PRESENCE optional }|

```

{ ID id-CutoDURRCInformation	CRITICALITY reject	TYPE CutoDURRCInformation	PRESENCE optional }
{ ID id-TransmissionActionIndicator	CRITICALITY ignore	TYPE TransmissionActionIndicator	PRESENCE optional }
{ ID id-ResourceCoordinationTransferContainer	CRITICALITY ignore	TYPE ResourceCoordinationTransferContainer	PRESENCE optional }
{ ID id-RRCReconfigurationCompleteIndicator	CRITICALITY ignore	TYPE RRCReconfigurationCompleteIndicator	PRESENCE optional }
{ ID id-RRCContainer	CRITICALITY reject	TYPE RRCContainer	PRESENCE optional }
{ ID id-SCell-ToBeSetupMod-List	CRITICALITY ignore	TYPE SCell-ToBeSetupMod-List	PRESENCE optional }
{ ID id-SCell-ToBeRemoved-List	CRITICALITY ignore	TYPE SCell-ToBeRemoved-List	PRESENCE optional }
{ ID id-SRBs-ToBeSetupMod-List	CRITICALITY reject	TYPE SRBs-ToBeSetupMod-List	PRESENCE optional }
{ ID id-DRBs-ToBeSetupMod-List	CRITICALITY reject	TYPE DRBs-ToBeSetupMod-List	PRESENCE optional }
{ ID id-DRBs-ToBeModified-List	CRITICALITY reject	TYPE DRBs-ToBeModified-List	PRESENCE optional }
{ ID id-SRBs-ToBeReleased-List	CRITICALITY reject	TYPE SRBs-ToBeReleased-List	PRESENCE optional }
{ ID id-DRBs-ToBeReleased-List	CRITICALITY reject	TYPE DRBs-ToBeReleased-List	PRESENCE optional }
{ ID id-InactivityMonitoringRequest	CRITICALITY reject	TYPE InactivityMonitoringRequest	PRESENCE optional }
{ ID id-RAT-FrequencyPriorityInformation	CRITICALITY reject	TYPE RAT-FrequencyPriorityInformation	PRESENCE optional }
{ ID id-DRXConfigurationIndicator	CRITICALITY ignore	TYPE DRXConfigurationIndicator	PRESENCE optional }
{ ID id-RLCFailureIndication	CRITICALITY ignore	TYPE RLCFailureIndication	PRESENCE optional }
{ ID id-UplinkTxDirectCurrentListInformation	CRITICALITY ignore	TYPE UplinkTxDirectCurrentListInformation	PRESENCE optional }
{ ID id-GNB-DUConfigurationQuery	CRITICALITY reject	TYPE GNB-DUConfigurationQuery	PRESENCE optional }
{ ID id-GNB-DU-UE-AMBR-UL	CRITICALITY ignore	TYPE BitRate	PRESENCE optional }
{ ID id-ExecuteDuplication	CRITICALITY ignore	TYPE ExecuteDuplication	PRESENCE optional }
{ ID id-RRCDeliveryStatusRequest	CRITICALITY ignore	TYPE RRCDeliveryStatusRequest	PRESENCE optional }
{ ID id-ResourceCoordinationTransferInformation	CRITICALITY ignore	TYPE ResourceCoordinationTransferInformation	PRESENCE optional }
{ ID id-ServingCellMO	CRITICALITY ignore	TYPE ServingCellMO	PRESENCE optional }
{ ID id-NeedforGap	CRITICALITY ignore	TYPE NeedforGap	PRESENCE optional }
{ ID id-FullConfiguration	CRITICALITY reject	TYPE FullConfiguration	PRESENCE optional }
{ ID id-AdditionalRRMPriorityIndex	CRITICALITY ignore	TYPE AdditionalRRMPriorityIndex	PRESENCE optional }
{ ID id-LowerLayerPresenceStatusChange	CRITICALITY ignore	TYPE LowerLayerPresenceStatusChange	PRESENCE optional }
{ ID id-BHChannels-ToBeSetupMod-List	CRITICALITY reject	TYPE BHChannels-ToBeSetupMod-List	PRESENCE optional }
{ ID id-BHChannels-ToBeModified-List	CRITICALITY reject	TYPE BHChannels-ToBeModified-List	PRESENCE optional }
{ ID id-BHChannels-ToBeReleased-List	CRITICALITY reject	TYPE BHChannels-ToBeReleased-List	PRESENCE optional }
{ ID id-NRV2XServicesAuthorized	CRITICALITY ignore	TYPE NRV2XServicesAuthorized	PRESENCE optional }
{ ID id-LTEV2XServicesAuthorized	CRITICALITY ignore	TYPE LTEV2XServicesAuthorized	PRESENCE optional }
{ ID id-NRUESidelinkAggregateMaximumBitrate	CRITICALITY ignore	TYPE NRUESidelinkAggregateMaximumBitrate	PRESENCE optional }
{ ID id-LTEUESidelinkAggregateMaximumBitrate	CRITICALITY ignore	TYPE LTEUESidelinkAggregateMaximumBitrate	PRESENCE optional }
{ ID id-PC5LinkAMBR	CRITICALITY ignore	TYPE BitRate	PRESENCE optional }
{ ID id-SLDRBs-ToBeSetupMod-List	CRITICALITY reject	TYPE SLDRBs-ToBeSetupMod-List	PRESENCE optional }
{ ID id-SLDRBs-ToBeModified-List	CRITICALITY reject	TYPE SLDRBs-ToBeModified-List	PRESENCE optional }
{ ID id-SLDRBs-ToBeReleased-List	CRITICALITY reject	TYPE SLDRBs-ToBeReleased-List	PRESENCE optional }
{ ID id-ConditionalIntraDUMobilityInformation	CRITICALITY reject	TYPE ConditionalIntraDUMobilityInformation	PRESENCE optional }
{ ID id-F1CTransferPath	CRITICALITY reject	TYPE F1CTransferPath	PRESENCE optional }
{ ID id-SCGIndicator	CRITICALITY ignore	TYPE SCGIndicator	PRESENCE optional }
{ ID id-UplinkTxDirectCurrentTwoCarrierListInfo	CRITICALITY ignore	TYPE UplinkTxDirectCurrentTwoCarrierListInfo	PRESENCE optional }
{ ID id-IABConditionalRRCMessageDeliveryIndication	CRITICALITY reject	TYPE IABConditionalRRCMessageDeliveryIndication	PRESENCE optional }
{ ID id-F1CTransferPathNRDC	CRITICALITY reject	TYPE F1CTransferPathNRDC	PRESENCE optional }
{ ID id-MDTPollutedMeasurementIndicator	CRITICALITY ignore	TYPE MDTPollutedMeasurementIndicator	PRESENCE optional }
{ ID id-SCGActivationRequest	CRITICALITY ignore	TYPE SCGActivationRequest	PRESENCE optional }
{ ID id-CG-SDTQueryIndication	CRITICALITY ignore	TYPE CG-SDTQueryIndication	PRESENCE optional }
{ ID id-FiveG-ProSeAuthorized	CRITICALITY ignore	TYPE FiveG-ProSeAuthorized	PRESENCE optional }
{ ID id-FiveG-ProSeUEPC5AggregateMaximumBitrate	CRITICALITY ignore	TYPE NRUESidelinkAggregateMaximumBitrate	PRESENCE optional }
{ ID id-FiveG-ProSePC5LinkAMBR	CRITICALITY ignore	TYPE BitRate	PRESENCE optional }
{ ID id-UpdatedRemoteUELocalID	CRITICALITY ignore	TYPE RemoteUELocalID	PRESENCE optional }
{ ID id-UuRLCChannelToBeSetupList	CRITICALITY reject	TYPE UuRLCChannelToBeSetupList	PRESENCE optional }
{ ID id-UuRLCChannelToBeModifiedList	CRITICALITY reject	TYPE UuRLCChannelToBeModifiedList	PRESENCE optional }

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{ ID id-UuRLCChannelToBeReleasedList      CRITICALITY reject TYPE UuRLCChannelToBeReleasedList      PRESENCE optional }|
{ ID id-PC5RLCChannelToBeSetupList         CRITICALITY reject TYPE PC5RLCChannelToBeSetupList         PRESENCE optional }|
{ ID id-PC5RLCChannelToBeModifiedList       CRITICALITY reject TYPE PC5RLCChannelToBeModifiedList       PRESENCE optional }|
{ ID id-PC5RLCChannelToBeReleasedList       CRITICALITY reject TYPE PC5RLCChannelToBeReleasedList       PRESENCE optional }|
{ ID id-PathSwitchConfiguration            CRITICALITY ignore TYPE PathSwitchConfiguration            PRESENCE optional }|
{ ID id-GNBDUUESliceMaximumBitRateList     CRITICALITY ignore TYPE GNBDUUESliceMaximumBitRateList     PRESENCE optional }|
{ ID id-MulticastMBSSESSIONSetupList        CRITICALITY reject TYPE MulticastMBSSESSIONList        PRESENCE optional }|
{ ID id-MulticastMBSSESSIONRemoveList       CRITICALITY reject TYPE MulticastMBSSESSIONList        PRESENCE optional }|
{ ID id-UE-MulticastMRBs-ToBeSetup-atModify-List CRITICALITY reject TYPE UE-MulticastMRBs-ToBeSetup-atModify-List PRESENCE optional }|
{ ID id-UE-MulticastMRBs-ToBeReleased-List  CRITICALITY reject TYPE UE-MulticastMRBs-ToBeReleased-List  PRESENCE optional }|
{ ID id-SLDRXCycleList                     CRITICALITY ignore TYPE SLDRXCycleList                     PRESENCE optional }|
{ ID id-ManagementBasedMDTPLMNModificationList CRITICALITY ignore TYPE MDTPLMNModificationList         PRESENCE optional }|
{ ID id-SDTBearerConfigurationQueryIndication CRITICALITY ignore TYPE SDTBearerConfigurationQueryIndication PRESENCE optional }|
{ ID id-DAPS-HO-Status                     CRITICALITY ignore TYPE DAPS-HO-Status                     PRESENCE optional }|
{ ID id-ServingCellMO-List                 CRITICALITY ignore TYPE ServingCellMO-List                 PRESENCE optional }|
{ ID id-ULTxDirectCurrentMoreCarrierInformation CRITICALITY ignore TYPE ULTxDirectCurrentMoreCarrierInformation PRESENCE optional }|
{ ID id-CPACMCGInformation                  CRITICALITY ignore TYPE CPACMCGInformation                  PRESENCE optional },
...
}

SCell-ToBeSetupMod-List ::= SEQUENCE (SIZE(1..maxnoofSCells)) OF ProtocolIE-SingleContainer { { SCell-ToBeSetupMod-ItemIEs } }
SCell-ToBeRemoved-List ::= SEQUENCE (SIZE(1..maxnoofSCells)) OF ProtocolIE-SingleContainer { { SCell-ToBeRemoved-ItemIEs } }
SRBs-ToBeSetupMod-List ::= SEQUENCE (SIZE(1..maxnoofSRBs)) OF ProtocolIE-SingleContainer { { SRBs-ToBeSetupMod-ItemIEs } }
DRBs-ToBeSetupMod-List ::= SEQUENCE (SIZE(1..maxnoofDRBs)) OF ProtocolIE-SingleContainer { { DRBs-ToBeSetupMod-ItemIEs } }
BHChannels-ToBeSetupMod-List ::= SEQUENCE (SIZE(1..maxnoofBHRLCChannels)) OF ProtocolIE-SingleContainer { { BHChannels-ToBeSetupMod-ItemIEs } }

DRBs-ToBeModified-List ::= SEQUENCE (SIZE(1..maxnoofDRBs)) OF ProtocolIE-SingleContainer { { DRBs-ToBeModified-ItemIEs } }
BHChannels-ToBeModified-List ::= SEQUENCE (SIZE(1..maxnoofBHRLCChannels)) OF ProtocolIE-SingleContainer { { BHChannels-ToBeModified-ItemIEs } }
SRBs-ToBeReleased-List ::= SEQUENCE (SIZE(1..maxnoofSRBs)) OF ProtocolIE-SingleContainer { { SRBs-ToBeReleased-ItemIEs } }
DRBs-ToBeReleased-List ::= SEQUENCE (SIZE(1..maxnoofDRBs)) OF ProtocolIE-SingleContainer { { DRBs-ToBeReleased-ItemIEs } }
BHChannels-ToBeReleased-List ::= SEQUENCE (SIZE(1..maxnoofBHRLCChannels)) OF ProtocolIE-SingleContainer { { BHChannels-ToBeReleased-ItemIEs } }
UE-MulticastMRBs-ToBeSetup-atModify-List ::= SEQUENCE (SIZE(1..maxnoofMRBsforUE)) OF
    ProtocolIE-SingleContainer { { UE-MulticastMRBs-ToBeSetup-atModify-ItemIEs } }

UE-MulticastMRBs-ToBeReleased-List ::= SEQUENCE (SIZE(1..maxnoofMRBsforUE)) OF ProtocolIE-SingleContainer { { UE-MulticastMRBs-ToBeReleased-ItemIEs } }

SCell-ToBeSetupMod-ItemIEs F1AP-PROTOCOL-IES ::= {
    { ID id-SCell-ToBeSetupMod-Item          CRITICALITY ignore TYPE SCell-ToBeSetupMod-Item          PRESENCE mandatory },
    ...
}

SCell-ToBeRemoved-ItemIEs F1AP-PROTOCOL-IES ::= {
    { ID id-SCell-ToBeRemoved-Item          CRITICALITY ignore TYPE SCell-ToBeRemoved-Item          PRESENCE mandatory },
    ...
}

SRBs-ToBeSetupMod-ItemIEs F1AP-PROTOCOL-IES ::= {
    { ID id-SRBs-ToBeSetupMod-Item          CRITICALITY reject TYPE SRBs-ToBeSetupMod-Item          PRESENCE mandatory },
    ...
}

```

```

DRBs-ToBeSetupMod-ItemIES F1AP-PROTOCOL-IES ::= {
  { ID id-DRBs-ToBeSetupMod-Item      CRITICALITY reject  TYPE DRBs-ToBeSetupMod-Item      PRESENCE mandatory},
  ...
}

DRBs-ToBeModified-ItemIES F1AP-PROTOCOL-IES ::= {
  { ID id-DRBs-ToBeModified-Item      CRITICALITY reject  TYPE DRBs-ToBeModified-Item      PRESENCE mandatory},
  ...
}

SRBs-ToBeReleased-ItemIES F1AP-PROTOCOL-IES ::= {
  { ID id-SRBs-ToBeReleased-Item      CRITICALITY reject  TYPE SRBs-ToBeReleased-Item      PRESENCE mandatory},
  ...
}

DRBs-ToBeReleased-ItemIES F1AP-PROTOCOL-IES ::= {
  { ID id-DRBs-ToBeReleased-Item      CRITICALITY reject  TYPE DRBs-ToBeReleased-Item      PRESENCE mandatory},
  ...
}

BHChannels-ToBeSetupMod-ItemIES F1AP-PROTOCOL-IES ::= {
  { ID id-BHChannels-ToBeSetupMod-Item CRITICALITY reject  TYPE BHChannels-ToBeSetupMod-Item      PRESENCE mandatory},
  ...
}

BHChannels-ToBeModified-ItemIES F1AP-PROTOCOL-IES ::= {
  { ID id-BHChannels-ToBeModified-Item CRITICALITY reject  TYPE BHChannels-ToBeModified-Item      PRESENCE mandatory},
  ...
}

BHChannels-ToBeReleased-ItemIES F1AP-PROTOCOL-IES ::= {
  { ID id-BHChannels-ToBeReleased-Item CRITICALITY reject  TYPE BHChannels-ToBeReleased-Item      PRESENCE mandatory},
  ...
}

SLDRBs-ToBeSetupMod-List ::= SEQUENCE (SIZE(1..maxnoofSLDRBs)) OF ProtocolIE-SingleContainer { { SLDRBs-ToBeSetupMod-ItemIES } }
SLDRBs-ToBeModified-List ::= SEQUENCE (SIZE(1..maxnoofSLDRBs)) OF ProtocolIE-SingleContainer { { SLDRBs-ToBeModified-ItemIES } }
SLDRBs-ToBeReleased-List ::= SEQUENCE (SIZE(1..maxnoofSLDRBs)) OF ProtocolIE-SingleContainer { { SLDRBs-ToBeReleased-ItemIES } }

SLDRBs-ToBeSetupMod-ItemIES F1AP-PROTOCOL-IES ::= {
  { ID id-SLDRBs-ToBeSetupMod-Item      CRITICALITY reject  TYPE SLDRBs-ToBeSetupMod-Item      PRESENCE mandatory},
  ...
}

SLDRBs-ToBeModified-ItemIES F1AP-PROTOCOL-IES ::= {
  { ID id-SLDRBs-ToBeModified-Item      CRITICALITY reject  TYPE SLDRBs-ToBeModified-Item      PRESENCE mandatory},
  ...
}

SLDRBs-ToBeReleased-ItemIES F1AP-PROTOCOL-IES ::= {
  { ID id-SLDRBs-ToBeReleased-Item      CRITICALITY reject  TYPE SLDRBs-ToBeReleased-Item      PRESENCE mandatory},
  ...
}

```



```

UE-MulticastMRBs-ToBeSetup-atModify-ItemIES F1AP-PROTOCOL-IES ::= {
  { ID id-UE-MulticastMRBs-ToBeSetup-atModify-Item    CRITICALITY reject  TYPE UE-MulticastMRBs-ToBeSetup-atModify-Item    PRESENCE mandatory},
  ...
}

```

```

UE-MulticastMRBs-ToBeReleased-ItemIES F1AP-PROTOCOL-IES ::= {
  { ID id-UE-MulticastMRBs-ToBeReleased-Item    CRITICALITY reject  TYPE UE-MulticastMRBs-ToBeReleased-Item    PRESENCE mandatory},
  ...
}

```

```

-- *****
--
-- UE CONTEXT MODIFICATION RESPONSE
--
-- *****

```

```

UEContextModificationResponse ::= SEQUENCE {
  protocolIES          ProtocolIE-Container    { { UEContextModificationResponseIES} },
  ...
}

```

```

UEContextModificationResponseIES F1AP-PROTOCOL-IES ::= {
  { ID id-gNB-CU-UE-F1AP-ID          CRITICALITY reject  TYPE GNB-CU-UE-F1AP-ID          PRESENCE mandatory }|
  { ID id-gNB-DU-UE-F1AP-ID          CRITICALITY reject  TYPE GNB-DU-UE-F1AP-ID          PRESENCE mandatory }|
  { ID id-ResourceCoordinationTransferContainer CRITICALITY ignore TYPE ResourceCoordinationTransferContainer PRESENCE optional }|
  { ID id-DUtoCURRCInformation        CRITICALITY reject  TYPE DUtoCURRCInformation        PRESENCE optional }|
  { ID id-DRBs-SetupMod-List          CRITICALITY ignore TYPE DRBs-SetupMod-List          PRESENCE optional }|
  { ID id-DRBs-Modified-List          CRITICALITY ignore TYPE DRBs-Modified-List          PRESENCE optional }|
  { ID id-SRBs-FailedToBeSetupMod-List CRITICALITY ignore TYPE SRBs-FailedToBeSetupMod-List PRESENCE optional }|
  { ID id-DRBs-FailedToBeSetupMod-List CRITICALITY ignore TYPE DRBs-FailedToBeSetupMod-List PRESENCE optional }|
  { ID id-SCell-FailedtoSetupMod-List CRITICALITY ignore TYPE SCell-FailedtoSetupMod-List PRESENCE optional }|
  { ID id-DRBs-FailedToBeModified-List CRITICALITY ignore TYPE DRBs-FailedToBeModified-List PRESENCE optional }|
  { ID id-InactivityMonitoringResponse CRITICALITY reject  TYPE InactivityMonitoringResponse PRESENCE optional }|
  { ID id-CriticalityDiagnostics       CRITICALITY ignore TYPE CriticalityDiagnostics       PRESENCE optional }|
  { ID id-C-RNTI                      CRITICALITY ignore TYPE C-RNTI                      PRESENCE optional }|
  { ID id-Associated-SCell-List        CRITICALITY ignore TYPE Associated-SCell-List        PRESENCE optional }|
  { ID id-SRBs-SetupMod-List          CRITICALITY ignore TYPE SRBs-SetupMod-List          PRESENCE optional }|
  { ID id-SRBs-Modified-List          CRITICALITY ignore TYPE SRBs-Modified-List          PRESENCE optional }|
  { ID id-FullConfiguration           CRITICALITY reject  TYPE FullConfiguration           PRESENCE optional }|
  { ID id-BHChannels-SetupMod-List     CRITICALITY ignore TYPE BHChannels-SetupMod-List     PRESENCE optional }|
  { ID id-BHChannels-Modified-List     CRITICALITY ignore TYPE BHChannels-Modified-List     PRESENCE optional }|
  { ID id-BHChannels-FailedToBeSetupMod-List CRITICALITY ignore TYPE BHChannels-FailedToBeSetupMod-List PRESENCE optional }|
  { ID id-BHChannels-FailedToBeModified-List CRITICALITY ignore TYPE BHChannels-FailedToBeModified-List PRESENCE optional }|
  { ID id-SLDRBs-SetupMod-List         CRITICALITY ignore TYPE SLDRBs-SetupMod-List         PRESENCE optional }|
  { ID id-SLDRBs-Modified-List         CRITICALITY ignore TYPE SLDRBs-Modified-List         PRESENCE optional }|
  { ID id-SLDRBs-FailedToBeSetupMod-List CRITICALITY ignore TYPE SLDRBs-FailedToBeSetupMod-List PRESENCE optional }|
  { ID id-SLDRBs-FailedToBeModified-List CRITICALITY ignore TYPE SLDRBs-FailedToBeModified-List PRESENCE optional }|
  { ID id-requestedTargetCellGlobalID CRITICALITY reject  TYPE NRCGI                      PRESENCE optional }|
  { ID id-SCGActivationStatus          CRITICALITY ignore TYPE SCGActivationStatus          PRESENCE optional }|
  { ID id-UuRLCChannelSetupList       CRITICALITY ignore TYPE UuRLCChannelSetupList       PRESENCE optional }|
  { ID id-UuRLCChannelFailedToBeSetupList CRITICALITY ignore TYPE UuRLCChannelFailedToBeSetupList PRESENCE optional }|
}

```

{ ID id-UuRLCChannelModifiedList	CRITICALITY ignore	TYPE UuRLCChannelModifiedList	PRESENCE optional}}
{ ID id-UuRLCChannelFailedToBeModifiedList	CRITICALITY ignore	TYPE UuRLCChannelFailedToBeModifiedList	PRESENCE optional}}
{ ID id-PC5RLCChannelSetupList	CRITICALITY ignore	TYPE PC5RLCChannelSetupList	PRESENCE optional}}
{ ID id-PC5RLCChannelFailedToBeSetupList	CRITICALITY ignore	TYPE PC5RLCChannelFailedToBeSetupList	PRESENCE optional}}
{ ID id-PC5RLCChannelModifiedList	CRITICALITY ignore	TYPE PC5RLCChannelModifiedList	PRESENCE optional}}
{ ID id-PC5RLCChannelFailedToBeModifiedList	CRITICALITY ignore	TYPE PC5RLCChannelFailedToBeModifiedList	PRESENCE optional}}
{ ID id-SDTBearerConfigurationInfo	CRITICALITY ignore	TYPE SDTBearerConfigurationInfo	PRESENCE optional}}
{ ID id-UE-MulticastMRBs-Setup-List	CRITICALITY reject	TYPE UE-MulticastMRBs-Setup-List	PRESENCE optional}}
{ ID id-ServingCellMO-encoded-in-CGC-List	CRITICALITY ignore	TYPE ServingCellMO-encoded-in-CGC-List	PRESENCE optional}}
{ ID id-DedicatedSIDeliveryIndication	CRITICALITY ignore	TYPE DedicatedSIDeliveryIndication	PRESENCE optional}} { ID id-
Configured-BWP-List	CRITICALITY ignore	TYPE Configured-BWP-List	PRESENCE optional},
...			
}			

DRBs-SetupMod-List ::= SEQUENCE (SIZE(1..maxnoofDRBs)) OF ProtocolIE-SingleContainer { { DRBs-SetupMod-ItemIEs } }
 DRBs-Modified-List ::= SEQUENCE (SIZE(1..maxnoofDRBs)) OF ProtocolIE-SingleContainer { { DRBs-Modified-ItemIEs } }
 SRBs-SetupMod-List ::= SEQUENCE (SIZE(1..maxnoofSRBs)) OF ProtocolIE-SingleContainer { { SRBs-SetupMod-ItemIEs } }
 SRBs-Modified-List ::= SEQUENCE (SIZE(1..maxnoofSRBs)) OF ProtocolIE-SingleContainer { { SRBs-Modified-ItemIEs } }
 DRBs-FailedToBeModified-List ::= SEQUENCE (SIZE(1..maxnoofDRBs)) OF ProtocolIE-SingleContainer { { DRBs-FailedToBeModified-ItemIEs } }
 SRBs-FailedToBeSetupMod-List ::= SEQUENCE (SIZE(1..maxnoofSRBs)) OF ProtocolIE-SingleContainer { { SRBs-FailedToBeSetupMod-ItemIEs } }
 DRBs-FailedToBeSetupMod-List ::= SEQUENCE (SIZE(1..maxnoofDRBs)) OF ProtocolIE-SingleContainer { { DRBs-FailedToBeSetupMod-ItemIEs } }
 SCell-FailedtoSetupMod-List ::= SEQUENCE (SIZE(1..maxnoofSCells)) OF ProtocolIE-SingleContainer { { SCell-FailedtoSetupMod-ItemIEs } }
 BHChannels-SetupMod-List ::= SEQUENCE (SIZE(1..maxnoofBHRLCChannels)) OF ProtocolIE-SingleContainer { { BHChannels-SetupMod-ItemIEs } }
 BHChannels-Modified-List ::= SEQUENCE (SIZE(1..maxnoofBHRLCChannels)) OF ProtocolIE-SingleContainer { { BHChannels-Modified-ItemIEs } }
 BHChannels-FailedToBeModified-List ::= SEQUENCE (SIZE(1..maxnoofBHRLCChannels)) OF ProtocolIE-SingleContainer { { BHChannels-FailedToBeModified-ItemIEs } }
 BHChannels-FailedToBeSetupMod-List ::= SEQUENCE (SIZE(1..maxnoofBHRLCChannels)) OF ProtocolIE-SingleContainer { { BHChannels-FailedToBeSetupMod-ItemIEs } }

Associated-SCell-List ::= SEQUENCE (SIZE(1.. maxnoofSCells)) OF ProtocolIE-SingleContainer { { Associated-SCell-ItemIEs } }

DRBs-SetupMod-ItemIEs F1AP-PROTOCOL-IES ::= {
 { ID id-DRBs-SetupMod-Item CRITICALITY ignore TYPE DRBs-SetupMod-Item PRESENCE mandatory},
 ...
 }

DRBs-Modified-ItemIEs F1AP-PROTOCOL-IES ::= {
 { ID id-DRBs-Modified-Item CRITICALITY ignore TYPE DRBs-Modified-Item PRESENCE mandatory},
 ...
 }

SRBs-SetupMod-ItemIEs F1AP-PROTOCOL-IES ::= {
 { ID id-SRBs-SetupMod-Item CRITICALITY ignore TYPE SRBs-SetupMod-Item PRESENCE mandatory},
 ...
 }

SRBs-Modified-ItemIEs F1AP-PROTOCOL-IES ::= {
 { ID id-SRBs-Modified-Item CRITICALITY ignore TYPE SRBs-Modified-Item PRESENCE mandatory},
 ...
 }

```

SRBs-FailedToBeSetupMod-ItemIEs F1AP-PROTOCOL-IES ::= {
    { ID id-SRBs-FailedToBeSetupMod-Item          CRITICALITY ignore  TYPE SRBs-FailedToBeSetupMod-Item          PRESENCE mandatory},
    ...
}

DRBs-FailedToBeSetupMod-ItemIEs F1AP-PROTOCOL-IES ::= {
    { ID id-DRBs-FailedToBeSetupMod-Item          CRITICALITY ignore  TYPE DRBs-FailedToBeSetupMod-Item          PRESENCE mandatory},
    ...
}

DRBs-FailedToBeModified-ItemIEs F1AP-PROTOCOL-IES ::= {
    { ID id-DRBs-FailedToBeModified-Item          CRITICALITY ignore  TYPE DRBs-FailedToBeModified-Item          PRESENCE mandatory},
    ...
}

SCell-FailedtoSetupMod-ItemIEs F1AP-PROTOCOL-IES ::= {
    { ID id-SCell-FailedtoSetupMod-Item          CRITICALITY ignore  TYPE SCell-FailedtoSetupMod-Item          PRESENCE mandatory},
    ...
}

Associated-SCell-ItemIEs F1AP-PROTOCOL-IES ::= {
    { ID id-Associated-SCell-Item          CRITICALITY ignore  TYPE Associated-SCell-Item          PRESENCE mandatory},
    ...
}

BHChannels-SetupMod-ItemIEs F1AP-PROTOCOL-IES ::= {
    { ID id-BHChannels-SetupMod-Item          CRITICALITY ignore      TYPE BHChannels-SetupMod-Item          PRESENCE mandatory},
    ...
}

BHChannels-Modified-ItemIEs F1AP-PROTOCOL-IES ::= {
    { ID id-BHChannels-Modified-Item          CRITICALITY ignore  TYPE BHChannels-Modified-Item          PRESENCE mandatory},
    ...
}

BHChannels-FailedToBeSetupMod-ItemIEs F1AP-PROTOCOL-IES ::= {
    { ID id-BHChannels-FailedToBeSetupMod-Item          CRITICALITY ignore  TYPE BHChannels-FailedToBeSetupMod-Item          PRESENCE mandatory},
    ...
}

BHChannels-FailedToBeModified-ItemIEs F1AP-PROTOCOL-IES ::= {
    { ID id-BHChannels-FailedToBeModified-Item          CRITICALITY ignore  TYPE BHChannels-FailedToBeModified-Item          PRESENCE mandatory},
    ...
}

SLDRBs-SetupMod-List          ::= SEQUENCE (SIZE(1..maxnoofSLDRBs)) OF ProtocolIE-SingleContainer { { SLDRBs-SetupMod-ItemIEs } }
SLDRBs-Modified-List          ::= SEQUENCE (SIZE(1..maxnoofSLDRBs)) OF ProtocolIE-SingleContainer { { SLDRBs-Modified-ItemIEs } }
SLDRBs-FailedToBeModified-List ::= SEQUENCE (SIZE(1..maxnoofSLDRBs)) OF ProtocolIE-SingleContainer { { SLDRBs-FailedToBeModified-ItemIEs } }
SLDRBs-FailedToBeSetupMod-List ::= SEQUENCE (SIZE(1..maxnoofSLDRBs)) OF ProtocolIE-SingleContainer { { SLDRBs-FailedToBeSetupMod-ItemIEs } }

SLDRBs-SetupMod-ItemIEs F1AP-PROTOCOL-IES ::= {

```

```

    { ID id-SLDRBs-SetupMod-Item          CRITICALITY ignore    TYPE SLDRBs-SetupMod-Item    PRESENCE mandatory},
    ...
}

SLDRBs-Modified-ItemIEs F1AP-PROTOCOL-IES ::= {
    { ID id-SLDRBs-Modified-Item          CRITICALITY ignore    TYPE SLDRBs-Modified-Item    PRESENCE mandatory},
    ...
}

SLDRBs-FailedToBeSetupMod-ItemIEs F1AP-PROTOCOL-IES ::= {
    { ID id-SLDRBs-FailedToBeSetupMod-Item CRITICALITY ignore    TYPE SLDRBs-FailedToBeSetupMod-Item    PRESENCE mandatory},
    ...
}

SLDRBs-FailedToBeModified-ItemIEs F1AP-PROTOCOL-IES ::= {
    { ID id-SLDRBs-FailedToBeModified-Item CRITICALITY ignore    TYPE SLDRBs-FailedToBeModified-Item    PRESENCE mandatory},
    ...
}

UE-MulticastMRBs-Setup-List ::= SEQUENCE (SIZE(1..maxnoofMRBsforUE)) OF ProtocolIE-SingleContainer { { UE-MulticastMRBs-Setup-ItemIEs } }

UE-MulticastMRBs-Setup-ItemIEs F1AP-PROTOCOL-IES ::= {
    { ID id-UE-MulticastMRBs-Setup-Item    CRITICALITY reject    TYPE UE-MulticastMRBs-Setup-Item    PRESENCE mandatory},
    ...
}

-- *****
--
-- UE CONTEXT MODIFICATION FAILURE
--
-- *****

UEContextModificationFailure ::= SEQUENCE {
    protocolIEs          ProtocolIE-Container    { { UEContextModificationFailureIEs } },
    ...
}

UEContextModificationFailureIEs F1AP-PROTOCOL-IES ::= {
    { ID id-gNB-CU-UE-F1AP-ID              CRITICALITY reject    TYPE GNB-CU-UE-F1AP-ID              PRESENCE mandatory }|
    { ID id-gNB-DU-UE-F1AP-ID              CRITICALITY reject    TYPE GNB-DU-UE-F1AP-ID              PRESENCE mandatory }|
    { ID id-Cause                          CRITICALITY ignore    TYPE Cause                          PRESENCE mandatory }|
    { ID id-CriticalityDiagnostics          CRITICALITY ignore    TYPE CriticalityDiagnostics          PRESENCE optional }|
    { ID id-requestedTargetCellGlobalID     CRITICALITY reject    TYPE NRCGI                          PRESENCE optional},
    ...
}

-- *****
--
-- UE Context Modification Required (gNB-DU initiated) ELEMENTARY PROCEDURE
--
-- *****

```

```

-- *****
--
-- UE CONTEXT MODIFICATION REQUIRED
--
-- *****

UEContextModificationRequired ::= SEQUENCE {
    protocolIEs          ProtocolIE-Container    { { UEContextModificationRequiredIEs } },
    ...
}

UEContextModificationRequiredIEs F1AP-PROTOCOL-IES ::= {
    { ID id-gNB-CU-UE-F1AP-ID          CRITICALITY reject TYPE GNB-CU-UE-F1AP-ID          PRESENCE mandatory }|
    { ID id-gNB-DU-UE-F1AP-ID          CRITICALITY reject TYPE GNB-DU-UE-F1AP-ID          PRESENCE mandatory }|
    { ID id-ResourceCoordinationTransferContainer CRITICALITY ignore TYPE ResourceCoordinationTransferContainer PRESENCE optional }|
    { ID id-DUtoCURRCInformation        CRITICALITY reject TYPE DUtoCURRCInformation        PRESENCE optional }|
    { ID id-DRBs-Required-ToBeModified-List CRITICALITY reject TYPE DRBs-Required-ToBeModified-List PRESENCE optional }|
    { ID id-SRBs-Required-ToBeReleased-List CRITICALITY reject TYPE SRBs-Required-ToBeReleased-List PRESENCE optional }|
    { ID id-DRBs-Required-ToBeReleased-List CRITICALITY reject TYPE DRBs-Required-ToBeReleased-List PRESENCE optional }|
    { ID id-Cause                       CRITICALITY ignore TYPE Cause                       PRESENCE mandatory }|
    { ID id-BHChannels-Required-ToBeReleased-List CRITICALITY reject TYPE BHChannels-Required-ToBeReleased-List PRESENCE optional }|
    { ID id-SLDRBs-Required-ToBeModified-List CRITICALITY reject TYPE SLDRBs-Required-ToBeModified-List PRESENCE optional }|
    { ID id-SLDRBs-Required-ToBeReleased-List CRITICALITY reject TYPE SLDRBs-Required-ToBeReleased-List PRESENCE optional }|
    { ID id-targetCellsToCancel          CRITICALITY reject TYPE TargetCellList          PRESENCE optional }|
    { ID id-UuRLCChannelRequiredToBeModifiedList CRITICALITY reject TYPE UuRLCChannelRequiredToBeModifiedList PRESENCE optional }|
    { ID id-UuRLCChannelRequiredToBeReleasedList CRITICALITY reject TYPE UuRLCChannelRequiredToBeReleasedList PRESENCE optional }|
    { ID id-PC5RLCChannelRequiredToBeModifiedList CRITICALITY reject TYPE PC5RLCChannelRequiredToBeModifiedList PRESENCE optional }|
    { ID id-PC5RLCChannelRequiredToBeReleasedList CRITICALITY reject TYPE PC5RLCChannelRequiredToBeReleasedList PRESENCE optional }|
    { ID id-UE-MulticastMRBs-RequiredToBeModified-List CRITICALITY reject TYPE UE-MulticastMRBs-RequiredToBeModified-List PRESENCE optional }|
    { ID id-UE-MulticastMRBs-RequiredToBeReleased-List CRITICALITY reject TYPE UE-MulticastMRBs-RequiredToBeReleased-List PRESENCE optional }|
    ...
}

DRBs-Required-ToBeModified-List ::= SEQUENCE (SIZE(1..maxnoofDRBs)) OF ProtocolIE-SingleContainer { { DRBs-Required-ToBeModified-ItemIEs } }
DRBs-Required-ToBeReleased-List ::= SEQUENCE (SIZE(1..maxnoofDRBs)) OF ProtocolIE-SingleContainer { { DRBs-Required-ToBeReleased-ItemIEs } }

SRBs-Required-ToBeReleased-List ::= SEQUENCE (SIZE(1..maxnoofSRBs)) OF ProtocolIE-SingleContainer { { SRBs-Required-ToBeReleased-ItemIEs } }

BHChannels-Required-ToBeReleased-List ::= SEQUENCE (SIZE(1..maxnoofBHRLCChannels)) OF ProtocolIE-SingleContainer { { BHChannels-Required-ToBeReleased-ItemIEs } }

DRBs-Required-ToBeModified-ItemIEs F1AP-PROTOCOL-IES ::= {
    { ID id-DRBs-Required-ToBeModified-Item          CRITICALITY reject TYPE DRBs-Required-ToBeModified-Item          PRESENCE mandatory},
    ...
}

DRBs-Required-ToBeReleased-ItemIEs F1AP-PROTOCOL-IES ::= {
    { ID id-DRBs-Required-ToBeReleased-Item          CRITICALITY reject TYPE DRBs-Required-ToBeReleased-Item          PRESENCE mandatory},
    ...
}

SRBs-Required-ToBeReleased-ItemIEs F1AP-PROTOCOL-IES ::= {
    { ID id-SRBs-Required-ToBeReleased-Item          CRITICALITY reject TYPE SRBs-Required-ToBeReleased-Item          PRESENCE mandatory},
    ...
}

```

```

}

BHChannels-Required-ToBeReleased-ItemIEs F1AP-PROTOCOL-IES ::= {
  { ID id-BHChannels-Required-ToBeReleased-Item      CRITICALITY reject  TYPE BHChannels-Required-ToBeReleased-Item      PRESENCE mandatory},
  ...
}

SLDRBs-Required-ToBeModified-List ::= SEQUENCE (SIZE(1..maxnoofSLDRBs)) OF ProtocolIE-SingleContainer { { SLDRBs-Required-ToBeModified-ItemIEs } }
SLDRBs-Required-ToBeReleased-List ::= SEQUENCE (SIZE(1..maxnoofSLDRBs)) OF ProtocolIE-SingleContainer { { SLDRBs-Required-ToBeReleased-ItemIEs } }

SLDRBs-Required-ToBeModified-ItemIEs F1AP-PROTOCOL-IES ::= {
  { ID id-SLDRBs-Required-ToBeModified-Item          CRITICALITY reject  TYPE SLDRBs-Required-ToBeModified-Item          PRESENCE mandatory},
  ...
}

SLDRBs-Required-ToBeReleased-ItemIEs F1AP-PROTOCOL-IES ::= {
  { ID id-SLDRBs-Required-ToBeReleased-Item          CRITICALITY reject  TYPE SLDRBs-Required-ToBeReleased-Item          PRESENCE mandatory},
  ...
}

UE-MulticastMRBs-RequiredToBeModified-List ::= SEQUENCE (SIZE(1..maxnoofMRBsforUE)) OF
  ProtocolIE-SingleContainer { { UE-MulticastMRBs-RequiredToBeModified-ItemIEs } }

UE-MulticastMRBs-RequiredToBeModified-ItemIEs F1AP-PROTOCOL-IES ::= {
  { ID id-UE-MulticastMRBs-RequiredToBeModified-Item CRITICALITY reject  TYPE UE-MulticastMRBs-RequiredToBeModified-Item PRESENCE mandatory},
  ...
}

UE-MulticastMRBs-RequiredToBeReleased-List ::= SEQUENCE (SIZE(1..maxnoofMRBsforUE)) OF
  ProtocolIE-SingleContainer { { UE-MulticastMRBs-RequiredToBeReleased-ItemIEs } }

UE-MulticastMRBs-RequiredToBeReleased-ItemIEs F1AP-PROTOCOL-IES ::= {
  { ID id-UE-MulticastMRBs-RequiredToBeReleased-Item CRITICALITY reject  TYPE UE-MulticastMRBs-RequiredToBeReleased-Item PRESENCE
mandatory},
  ...
}

-- *****
--
-- UE CONTEXT MODIFICATION CONFIRM
--
-- *****

UEContextModificationConfirm ::= SEQUENCE {
  protocolIEs      ProtocolIE-Container      { { UEContextModificationConfirmIEs } },
  ...
}

UEContextModificationConfirmIEs F1AP-PROTOCOL-IES ::= {
  { ID id-gNB-CU-UE-F1AP-ID          CRITICALITY reject  TYPE GNB-CU-UE-F1AP-ID          PRESENCE mandatory }|
  { ID id-gNB-DU-UE-F1AP-ID          CRITICALITY reject  TYPE GNB-DU-UE-F1AP-ID          PRESENCE mandatory }|
  { ID id-ResourceCoordinationTransferContainer CRITICALITY ignore  TYPE ResourceCoordinationTransferContainer PRESENCE optional }|

```

```

{ ID id-DRBs-ModifiedConf-List          CRITICALITY ignore TYPE DRBs-ModifiedConf-List          PRESENCE optional }|
{ ID id-RRCContainer                    CRITICALITY ignore TYPE RRCContainer                    PRESENCE optional }|
{ ID id-CriticalityDiagnostics           CRITICALITY ignore TYPE CriticalityDiagnostics           PRESENCE optional }|
{ ID id-ExecuteDuplication               CRITICALITY ignore TYPE ExecuteDuplication               PRESENCE optional }|
{ ID id-ResourceCoordinationTransferInformation CRITICALITY ignore TYPE ResourceCoordinationTransferInformation PRESENCE optional }|
{ ID id-SLDRBs-ModifiedConf-List         CRITICALITY ignore TYPE SLDRBs-ModifiedConf-List         PRESENCE optional }|
{ ID id-UuRLCChannelModifiedList         CRITICALITY reject TYPE UuRLCChannelModifiedList         PRESENCE optional }|
{ ID id-PC5RLCChannelModifiedList        CRITICALITY reject TYPE PC5RLCChannelModifiedList        PRESENCE optional }|
{ ID id-UE-MulticastMRBs-ConfirmedToBeModified-List CRITICALITY reject TYPE UE-MulticastMRBs-ConfirmedToBeModified-List PRESENCE optional },
...
}

DRBs-ModifiedConf-List ::= SEQUENCE (SIZE(1..maxnoofDRBs)) OF ProtocolIE-SingleContainer { { DRBs-ModifiedConf-ItemIES } }

DRBs-ModifiedConf-ItemIES F1AP-PROTOCOL-IES ::= {
    { ID id-DRBs-ModifiedConf-Item          CRITICALITY ignore TYPE DRBs-ModifiedConf-Item          PRESENCE mandatory},
    ...
}

SLDRBs-ModifiedConf-List ::= SEQUENCE (SIZE(1..maxnoofSLDRBs)) OF ProtocolIE-SingleContainer { { SLDRBs-ModifiedConf-ItemIES } }

SLDRBs-ModifiedConf-ItemIES F1AP-PROTOCOL-IES ::= {
    { ID id-SLDRBs-ModifiedConf-Item        CRITICALITY ignore TYPE SLDRBs-ModifiedConf-Item        PRESENCE mandatory},
    ...
}

UE-MulticastMRBs-ConfirmedToBeModified-List ::= SEQUENCE (SIZE(1..maxnoofMRBsforUE)) OF
    ProtocolIE-SingleContainer { { UE-MulticastMRBs-ConfirmedToBeModified-ItemIES} }

UE-MulticastMRBs-ConfirmedToBeModified-ItemIES F1AP-PROTOCOL-IES ::= {
    { ID id-UE-MulticastMRBs-ConfirmedToBeModified-Item CRITICALITY reject TYPE UE-MulticastMRBs-ConfirmedToBeModified-Item PRESENCE mandatory},
    ...
}

-- *****
--
-- UE CONTEXT MODIFICATION REFUSE
--
-- *****

UEContextModificationRefuse ::= SEQUENCE {
    protocolIES          ProtocolIE-Container          { { UEContextModificationRefuseIES} },
    ...
}

UEContextModificationRefuseIES F1AP-PROTOCOL-IES ::= {
    { ID id-gNB-CU-UE-F1AP-ID          CRITICALITY reject TYPE GNB-CU-UE-F1AP-ID          PRESENCE mandatory }|
    { ID id-gNB-DU-UE-F1AP-ID          CRITICALITY reject TYPE GNB-DU-UE-F1AP-ID          PRESENCE mandatory }|
    { ID id-Cause                      CRITICALITY ignore TYPE Cause                      PRESENCE mandatory }|
    { ID id-CriticalityDiagnostics      CRITICALITY ignore TYPE CriticalityDiagnostics      PRESENCE optional },
    ...
}

```

```

-- *****
--
-- WRITE-REPLACE WARNING ELEMENTARY PROCEDURE
--
-- *****

-- *****
--
-- Write-Replace Warning Request
--
-- *****

WriteReplaceWarningRequest ::= SEQUENCE {
    protocolIEs ProtocolIE-Container { {WriteReplaceWarningRequestIEs} },
    ...
}

WriteReplaceWarningRequestIEs F1AP-PROTOCOL-IES ::= {
    { ID id-TransactionID                CRITICALITY reject TYPE TransactionID                PRESENCE mandatory }|
    { ID id-PWSSystemInformation          CRITICALITY reject TYPE PWSSystemInformation          PRESENCE mandatory }|
    { ID id-RepetitionPeriod              CRITICALITY reject TYPE RepetitionPeriod              PRESENCE mandatory }|
    { ID id-NumberOfBroadcastRequest      CRITICALITY reject TYPE NumberOfBroadcastRequest      PRESENCE mandatory }|
    { ID id-Cells-To-Be-Broadcast-List    CRITICALITY reject TYPE Cells-To-Be-Broadcast-List    PRESENCE optional },
    ...
}

Cells-To-Be-Broadcast-List ::= SEQUENCE (SIZE(1.. maxCellingNBDU)) OF ProtocolIE-SingleContainer { { Cells-To-Be-Broadcast-List-ItemIEs } }

Cells-To-Be-Broadcast-List-ItemIEs F1AP-PROTOCOL-IES ::= {
    { ID id-Cells-To-Be-Broadcast-Item    CRITICALITY reject TYPE Cells-To-Be-Broadcast-Item    PRESENCE mandatory },
    ...
}

-- *****
--
-- Write-Replace Warning Response
--
-- *****

WriteReplaceWarningResponse ::= SEQUENCE {
    protocolIEs ProtocolIE-Container { {WriteReplaceWarningResponseIEs} },
    ...
}

WriteReplaceWarningResponseIEs F1AP-PROTOCOL-IES ::= {
    { ID id-TransactionID                CRITICALITY reject TYPE TransactionID                PRESENCE mandatory }|
    { ID id-Cells-Broadcast-Completed-List CRITICALITY reject TYPE Cells-Broadcast-Completed-List PRESENCE optional }|
    { ID id-CriticalityDiagnostics        CRITICALITY ignore TYPE CriticalityDiagnostics        PRESENCE optional }|
    { ID id-Dedicated-SIDelivery-NeededUE-List CRITICALITY ignore TYPE Dedicated-SIDelivery-NeededUE-List PRESENCE optional },
    ...
}

```



```
Cells-Broadcast-Completed-List ::= SEQUENCE (SIZE(1.. maxCellingNBDU)) OF ProtocolIE-SingleContainer { { Cells-Broadcast-Completed-List-ItemIEs } }
```

```
Cells-Broadcast-Completed-List-ItemIEs F1AP-PROTOCOL-IES ::= {
  { ID id-Cells-Broadcast-Completed-Item CRITICALITY reject TYPE Cells-Broadcast-Completed-Item PRESENCE mandatory },
  ...
}
```

```
-- *****
--
-- PWS CANCEL ELEMENTARY PROCEDURE
--
-- *****
--
-- *****
--
-- PWS Cancel Request
--
-- *****
```

```
PWSCancelRequest ::= SEQUENCE {
  protocolIEs ProtocolIE-Container { {PWSCancelRequestIEs} },
  ...
}
```

```
PWSCancelRequestIEs F1AP-PROTOCOL-IES ::= {
  { ID id-TransactionID CRITICALITY reject TYPE TransactionID PRESENCE mandatory }|
  { ID id-NumberOfBroadcastRequest CRITICALITY reject TYPE NumberOfBroadcastRequest PRESENCE mandatory }|
  { ID id-Broadcast-To-Be-Cancelled-List CRITICALITY reject TYPE Broadcast-To-Be-Cancelled-List PRESENCE optional }|
  { ID id-Cancel-all-Warning-Messages-Indicator CRITICALITY reject TYPE Cancel-all-Warning-Messages-Indicator PRESENCE optional }|
  { ID id-NotificationInformation CRITICALITY reject TYPE NotificationInformation PRESENCE optional},
  ...
}
```

```
Broadcast-To-Be-Cancelled-List ::= SEQUENCE (SIZE(1.. maxCellingNBDU)) OF ProtocolIE-SingleContainer { { Broadcast-To-Be-Cancelled-List-ItemIEs } }
```

```
Broadcast-To-Be-Cancelled-List-ItemIEs F1AP-PROTOCOL-IES ::= {
  { ID id-Broadcast-To-Be-Cancelled-Item CRITICALITY reject TYPE Broadcast-To-Be-Cancelled-Item PRESENCE mandatory },
  ...
}
```

```
-- *****
--
-- PWS Cancel Response
--
-- *****
```

```
PWSCancelResponse ::= SEQUENCE {
  protocolIEs ProtocolIE-Container { {PWSCancelResponseIEs} },
  ...
}
```

```

PWSCancelResponseIEs F1AP-PROTOCOL-IES ::= {
  { ID id-TransactionID          CRITICALITY reject TYPE TransactionID          PRESENCE mandatory }|
  { ID id-Cells-Broadcast-Cancelled-List CRITICALITY reject TYPE Cells-Broadcast-Cancelled-List PRESENCE optional }|
  { ID id-CriticalityDiagnostics      CRITICALITY ignore TYPE CriticalityDiagnostics PRESENCE optional },
  ...
}

Cells-Broadcast-Cancelled-List ::= SEQUENCE (SIZE(1.. maxCellingNBDU)) OF ProtocolIE-SingleContainer { { Cells-Broadcast-Cancelled-List-ItemIEs } }

Cells-Broadcast-Cancelled-List-ItemIEs F1AP-PROTOCOL-IES ::= {
  { ID id-Cells-Broadcast-Cancelled-Item          CRITICALITY reject TYPE Cells-Broadcast-Cancelled-Item PRESENCE mandatory },
  ...
}

-- *****
--
-- UE Inactivity Notification ELEMENTARY PROCEDURE
--
-- *****

-- *****
--
-- UE Inactivity Notification
--
-- *****

UEInactivityNotification ::= SEQUENCE {
  protocolIEs          ProtocolIE-Container      {{ UEInactivityNotificationIEs}},
  ...
}

UEInactivityNotificationIEs F1AP-PROTOCOL-IES ::= {
  { ID id-gNB-CU-UE-F1AP-ID          CRITICALITY reject TYPE GNB-CU-UE-F1AP-ID          PRESENCE mandatory }|
  { ID id-gNB-DU-UE-F1AP-ID          CRITICALITY reject TYPE GNB-DU-UE-F1AP-ID          PRESENCE mandatory }|
  { ID id-DRB-Activity-List          CRITICALITY reject TYPE DRB-Activity-List          PRESENCE mandatory }|
  { ID id-SDT-Termination-Request    CRITICALITY ignore TYPE SDT-Termination-Request    PRESENCE optional },
  ...
}

DRB-Activity-List ::= SEQUENCE (SIZE(1..maxnoofDRBs)) OF ProtocolIE-SingleContainer { { DRB-Activity-ItemIEs } }

DRB-Activity-ItemIEs F1AP-PROTOCOL-IES ::= {
  { ID id-DRB-Activity-Item          CRITICALITY reject TYPE DRB-Activity-Item          PRESENCE mandatory},
  ...
}

-- *****
--
-- Initial UL RRC Message Transfer ELEMENTARY PROCEDURE
--
-- *****
--
-- *****
--

```

```

-- INITIAL UL RRC Message Transfer
--
-- *****

InitialULRRCTransfer ::= SEQUENCE {
    protocolIEs          ProtocolIE-Container    {{ InitialULRRCTransferIEs}},
    ...
}

InitialULRRCTransferIEs F1AP-PROTOCOL-IES ::= {
    { ID id-gNB-DU-UE-F1AP-ID          CRITICALITY reject TYPE GNB-DU-UE-F1AP-ID          PRESENCE mandatory }|
    { ID id-NRCGI                      CRITICALITY reject TYPE NRCGI                      PRESENCE mandatory }|
    { ID id-C-RNTI                     CRITICALITY reject TYPE C-RNTI                     PRESENCE mandatory }|
    { ID id-RRCContainer                CRITICALITY reject TYPE RRCContainer                PRESENCE mandatory }|
    { ID id-DUtoCURRContainer           CRITICALITY reject TYPE DUtoCURRContainer           PRESENCE optional }|
    { ID id-SULAccessIndication          CRITICALITY ignore TYPE SULAccessIndication          PRESENCE optional }|
    { ID id-TransactionID               CRITICALITY ignore TYPE TransactionID               PRESENCE mandatory }|
    { ID id-RANUEID                    CRITICALITY ignore TYPE RANUEID                    PRESENCE optional }|
    { ID id-RRCContainer-RRCSetupComplete CRITICALITY ignore TYPE RRCContainer-RRCSetupComplete PRESENCE optional }|
    { ID id-NRRedCapUEIndication         CRITICALITY ignore TYPE NRRedCapUEIndication         PRESENCE optional }|
    { ID id-SDTInformation               CRITICALITY ignore TYPE SDTInformation               PRESENCE optional }|
    { ID id-SidelinkRelayConfiguration   CRITICALITY ignore TYPE SidelinkRelayConfiguration   PRESENCE optional },
    ...
}

-- *****
--
-- DL RRC Message Transfer ELEMENTARY PROCEDURE
--
-- *****

-- *****
--
-- DL RRC Message Transfer
--
-- *****

DLRRCTransfer ::= SEQUENCE {
    protocolIEs          ProtocolIE-Container    {{ DLRRCTransferIEs}},
    ...
}

DLRRCTransferIEs F1AP-PROTOCOL-IES ::= {
    { ID id-gNB-CU-UE-F1AP-ID          CRITICALITY reject TYPE GNB-CU-UE-F1AP-ID          PRESENCE mandatory }|
    { ID id-gNB-DU-UE-F1AP-ID          CRITICALITY reject TYPE GNB-DU-UE-F1AP-ID          PRESENCE mandatory }|
    { ID id-oldgNB-DU-UE-F1AP-ID        CRITICALITY reject TYPE GNB-DU-UE-F1AP-ID          PRESENCE optional }|
    { ID id-SRBID                      CRITICALITY reject TYPE SRBID                      PRESENCE mandatory }|
    { ID id-ExecuteDuplication          CRITICALITY ignore TYPE ExecuteDuplication          PRESENCE optional }|
    { ID id-RRCContainer                CRITICALITY reject TYPE RRCContainer                PRESENCE mandatory }|
    { ID id-RAT-FrequencyPriorityInformation CRITICALITY reject TYPE RAT-FrequencyPriorityInformation PRESENCE optional }|
    { ID id-RRCDeliveryStatusRequest     CRITICALITY ignore TYPE RRCDeliveryStatusRequest     PRESENCE optional }|
    { ID id-UEContextNotRetrievable      CRITICALITY reject TYPE UEContextNotRetrievable      PRESENCE optional }|
    { ID id-RedirectedRRCTransfer        CRITICALITY reject TYPE OCTET STRING          PRESENCE optional }|
}

```

```

    { ID id-PLMNAssistanceInfoForNetShar          CRITICALITY ignore TYPE PLMN-Identity          PRESENCE optional }|
    { ID id-new-gNB-CU-UE-F1AP-ID                 CRITICALITY reject  TYPE GNB-CU-UE-F1AP-ID        PRESENCE optional }|
    { ID id-AdditionalRRMPriorityIndex             CRITICALITY ignore  TYPE AdditionalRRMPriorityIndex      PRESENCE optional }|
    { ID id-SRBMappingInfo                        CRITICALITY ignore  TYPE UuRLCChannelID                 PRESENCE optional },
    ...
}
-- *****
--
-- UL RRC Message Transfer ELEMENTARY PROCEDURE
--
-- *****
--
-- *****
--
-- UL RRC Message Transfer
--
-- *****

ULRRCTransfer ::= SEQUENCE {
    protocolIEs          ProtocolIE-Container    {{ ULRRCTransferIEs}},
    ...
}

ULRRCTransferIEs F1AP-PROTOCOL-IES ::= {
    { ID id-gNB-CU-UE-F1AP-ID          CRITICALITY reject TYPE GNB-CU-UE-F1AP-ID          PRESENCE mandatory }|
    { ID id-gNB-DU-UE-F1AP-ID          CRITICALITY reject TYPE GNB-DU-UE-F1AP-ID          PRESENCE mandatory }|
    { ID id-SRBID                      CRITICALITY reject TYPE SRBID                      PRESENCE mandatory }|
    { ID id-RRCTransferContainer        CRITICALITY reject TYPE RRCTransferContainer      PRESENCE mandatory }|
    { ID id-SelectedPLMNID              CRITICALITY reject TYPE PLMN-Identity              PRESENCE optional }|
    { ID id-new-gNB-DU-UE-F1AP-ID       CRITICALITY reject TYPE GNB-DU-UE-F1AP-ID         PRESENCE optional },
    ...
}
-- *****
--
-- PRIVATE MESSAGE
--
-- *****

PrivateMessage ::= SEQUENCE {
    privateIEs          PrivateIE-Container {{PrivateMessage-IEs}},
    ...
}

PrivateMessage-IEs F1AP-PRIVATE-IES ::= {
    ...
}
-- *****
--
-- System Information ELEMENTARY PROCEDURE
--
-- *****

```

```

-- *****
--
-- System information Delivery Command
--
-- *****

SystemInformationDeliveryCommand ::= SEQUENCE {
    protocolIEs          ProtocolIE-Container    {{ SystemInformationDeliveryCommandIEs}},
    ...
}

SystemInformationDeliveryCommandIEs F1AP-PROTOCOL-IES ::= {
    { ID id-TransactionID          CRITICALITY reject TYPE TransactionID          PRESENCE mandatory }|
    { ID id-NR CGI                 CRITICALITY reject TYPE NR CGI                 PRESENCE mandatory }|
    { ID id-SI type-List           CRITICALITY reject TYPE SI type-List           PRESENCE mandatory }|
    { ID id-ConfirmedUEID          CRITICALITY reject TYPE GNB-DU-UE-F1AP-ID       PRESENCE mandatory },
    ...
}

-- *****
--
-- Paging PROCEDURE
--
-- *****

-- *****
--
-- Paging
--
-- *****

Paging ::= SEQUENCE {
    protocolIEs          ProtocolIE-Container    {{ PagingIEs}},
    ...
}

PagingIEs F1AP-PROTOCOL-IES ::= {
    { ID id-UEIdentityIndexValue   CRITICALITY reject TYPE UEIdentityIndexValue   PRESENCE mandatory }|
    { ID id-PagingIdentity         CRITICALITY reject TYPE PagingIdentity         PRESENCE mandatory }|
    { ID id-PagingDRX              CRITICALITY ignore TYPE PagingDRX              PRESENCE optional }|
    { ID id-PagingPriority          CRITICALITY ignore TYPE PagingPriority          PRESENCE optional }|
    { ID id-PagingCell-List        CRITICALITY ignore TYPE PagingCell-list        PRESENCE mandatory }|
    { ID id-PagingOrigin           CRITICALITY ignore TYPE PagingOrigin           PRESENCE optional }|
    { ID id-RANUEPagingDRX         CRITICALITY ignore TYPE PagingDRX              PRESENCE optional }|
    { ID id-CNUEPagingDRX          CRITICALITY ignore TYPE PagingDRX              PRESENCE optional }|
    { ID id-NRPagingDRXInformation CRITICALITY ignore TYPE NRPagingDRXInformation PRESENCE optional }|
    { ID id-NRPagingDRXInformationforRRCINACTIVE CRITICALITY ignore TYPE NRPagingDRXInformationforRRCINACTIVE PRESENCE optional }|
    { ID id-PagingCause            CRITICALITY ignore TYPE PagingCause            PRESENCE optional }|
    { ID id-PEIPSAssistanceInfo     CRITICALITY ignore TYPE PEIPSAssistanceInfo     PRESENCE optional }|
    { ID id-UEPagingCapability      CRITICALITY ignore TYPE UEPagingCapability      PRESENCE optional }|
    { ID id-ExtendedUEIdentityIndexValue CRITICALITY ignore TYPE ExtendedUEIdentityIndexValue PRESENCE optional }|
    { ID id-HashedUEIdentityIndexValue CRITICALITY ignore TYPE HashedUEIdentityIndexValue PRESENCE optional },
}

```

```

    ...
}

PagingCell-list ::= SEQUENCE (SIZE(1.. maxnoofPagingCells)) OF ProtocolIE-SingleContainer { { PagingCell-ItemIEs } }

PagingCell-ItemIEs F1AP-PROTOCOL-IES ::= {
    { ID id-PagingCell-Item      CRITICALITY ignore  TYPE PagingCell-Item      PRESENCE mandatory},
    ...
}

-- *****
--
-- Notify
--
-- *****

Notify ::= SEQUENCE {
    protocolIEs      ProtocolIE-Container      {{ NotifyIEs}},
    ...
}

NotifyIEs F1AP-PROTOCOL-IES ::= {
    { ID id-gNB-CU-UE-F1AP-ID      CRITICALITY reject  TYPE GNB-CU-UE-F1AP-ID      PRESENCE mandatory }|
    { ID id-gNB-DU-UE-F1AP-ID      CRITICALITY reject  TYPE GNB-DU-UE-F1AP-ID      PRESENCE mandatory }|
    { ID id-DRB-Notify-List        CRITICALITY reject  TYPE DRB-Notify-List        PRESENCE mandatory },
    ...
}

DRB-Notify-List ::= SEQUENCE (SIZE(1.. maxnoofDRBs)) OF ProtocolIE-SingleContainer { { DRB-Notify-ItemIEs } }

DRB-Notify-ItemIEs F1AP-PROTOCOL-IES ::= {
    { ID id-DRB-Notify-Item        CRITICALITY reject  TYPE DRB-Notify-Item        PRESENCE mandatory},
    ...
}

-- *****
--
-- NETWORK ACCESS RATE REDUCTION ELEMENTARY PROCEDURE
--
-- *****

-- *****
--
-- Network Access Rate Reduction
--
-- *****

NetworkAccessRateReduction ::= SEQUENCE {
    protocolIEs      ProtocolIE-Container      {{ NetworkAccessRateReductionIEs }},
    ...
}

```

```

NetworkAccessRateReductionIES F1AP-PROTOCOL-IES ::= {
    { ID id-TransactionID                CRITICALITY reject TYPE TransactionID          PRESENCE mandatory }|
    { ID id-UAC-Assistance-Info          CRITICALITY reject TYPE UAC-Assistance-Info    PRESENCE mandatory },
    ...
}

-- *****
--
-- PWS RESTART INDICATION ELEMENTARY PROCEDURE
--
-- *****

-- *****
--
-- PWS Restart Indication
--
-- *****

PWSRestartIndication ::= SEQUENCE {
    protocolIES ProtocolIE-Container { { PWSRestartIndicationIES} },
    ...
}

PWSRestartIndicationIES F1AP-PROTOCOL-IES ::= {
    { ID id-TransactionID                CRITICALITY reject TYPE TransactionID          PRESENCE mandatory }|
    { ID id-NR-CGI-List-For-Restart-List CRITICALITY reject TYPE NR-CGI-List-For-Restart-List PRESENCE mandatory },
    ...
}

NR-CGI-List-For-Restart-List ::= SEQUENCE (SIZE(1.. maxCellingNBDU)) OF ProtocolIE-SingleContainer { { NR-CGI-List-For-Restart-List-ItemIES
} }

NR-CGI-List-For-Restart-List-ItemIES F1AP-PROTOCOL-IES ::= {
    { ID id-NR-CGI-List-For-Restart-Item CRITICALITY reject TYPE NR-CGI-List-For-Restart-Item PRESENCE mandatory },
    ...
}

-- *****
--
-- PWS FAILURE INDICATION ELEMENTARY PROCEDURE
--
-- *****

-- *****
--
-- PWS Failure Indication
--
-- *****

PWSFailureIndication ::= SEQUENCE {
    protocolIES ProtocolIE-Container { { PWSFailureIndicationIES} },
    ...
}

```

```

PWSFailureIndicationIES F1AP-PROTOCOL-IES ::= {
  { ID id-TransactionID          CRITICALITY reject TYPE TransactionID          PRESENCE mandatory }|
  { ID id-PWS-Failed-NR-CGI-List CRITICALITY reject TYPE PWS-Failed-NR-CGI-List PRESENCE optional },
  ...
}

PWS-Failed-NR-CGI-List ::= SEQUENCE (SIZE(1.. maxCellingNBDU)) OF ProtocolIE-SingleContainer { { PWS-Failed-NR-CGI-List-ItemIES } }

PWS-Failed-NR-CGI-List-ItemIES F1AP-PROTOCOL-IES ::= {
  { ID id-PWS-Failed-NR-CGI-Item CRITICALITY reject TYPE PWS-Failed-NR-CGI-Item PRESENCE mandatory },
  ...
}

-- *****
--
-- gNB-DU STATUS INDICATION ELEMENTARY PROCEDURE
--
-- *****

-- *****
--
-- gNB-DU Status Indication
--
-- *****

GNBDUStatusIndication ::= SEQUENCE {
  protocolIES          ProtocolIE-Container      { {GNBDUStatusIndicationIES} },
  ...
}

GNBDUStatusIndicationIES F1AP-PROTOCOL-IES ::= {
  { ID id-TransactionID          CRITICALITY reject TYPE TransactionID          PRESENCE mandatory }|
  { ID id-GNBDUOverloadInformation CRITICALITY reject TYPE GNBDUOverloadInformation PRESENCE mandatory }|
  { ID id-IABCongestionIndication CRITICALITY ignore TYPE IABCongestionIndication PRESENCE optional },
  ...
}

-- *****
--
-- RRC Delivery Report ELEMENTARY PROCEDURE
--
-- *****

-- *****
--
-- RRC Delivery Report
--
-- *****

RRCDeliveryReport ::= SEQUENCE {

```



```

    protocolIEs          ProtocolIE-Container    {{ RRCDeliveryReportIEs}},
    ...
}

RRCDeliveryReportIEs F1AP-PROTOCOL-IES ::= {
    { ID id-gNB-CU-UE-F1AP-ID    CRITICALITY reject  TYPE GNB-CU-UE-F1AP-ID  PRESENCE mandatory }|
    { ID id-gNB-DU-UE-F1AP-ID    CRITICALITY reject  TYPE GNB-DU-UE-F1AP-ID  PRESENCE mandatory }|
    { ID id-RRCDeliveryStatus    CRITICALITY ignore   TYPE RRCDeliveryStatus    PRESENCE mandatory }|
    { ID id-SRBID                CRITICALITY ignore   TYPE SRBID                PRESENCE mandatory },
    ...
}

-- *****
--
-- F1 Removal ELEMENTARY PROCEDURE
-- *****
--
-- *****
--
-- F1 Removal Request
--
-- *****

F1RemovalRequest ::= SEQUENCE {
    protocolIEs          ProtocolIE-Container    {{ F1RemovalRequestIEs }},
    ...
}

F1RemovalRequestIEs F1AP-PROTOCOL-IES ::= {
    { ID id-TransactionID        CRITICALITY reject  TYPE TransactionID        PRESENCE mandatory },
    ...
}

-- *****
--
-- F1 Removal Response
--
-- *****

F1RemovalResponse ::= SEQUENCE {
    protocolIEs          ProtocolIE-Container    {{ F1RemovalResponseIEs }},
    ...
}

F1RemovalResponseIEs F1AP-PROTOCOL-IES ::= {
    { ID id-TransactionID        CRITICALITY reject  TYPE TransactionID        PRESENCE mandatory }|
    { ID id-CriticalityDiagnostics CRITICALITY ignore TYPE CriticalityDiagnostics PRESENCE optional },
    ...
}

-- *****
--

```

```

-- F1 Removal Failure
--
-- *****

F1RemovalFailure ::= SEQUENCE {
    protocolIES      ProtocolIE-Container      {{ F1RemovalFailureIES }},
    ...
}

F1RemovalFailureIES F1AP-PROTOCOL-IES ::= {
    { ID id-TransactionID      CRITICALITY reject  TYPE TransactionID      PRESENCE mandatory }|
    { ID id-Cause              CRITICALITY ignore  TYPE Cause                  PRESENCE mandatory }|
    { ID id-CriticalityDiagnostics CRITICALITY ignore  TYPE CriticalityDiagnostics PRESENCE optional },
    ...
}

-- *****
--
-- TRACE ELEMENTARY PROCEDURES
--
-- *****

-- *****
--
-- TRACE START
--
-- *****

TraceStart ::= SEQUENCE {
    protocolIES      ProtocolIE-Container      { {TraceStartIES} },
    ...
}

TraceStartIES F1AP-PROTOCOL-IES ::= {
    { ID id-gNB-CU-UE-F1AP-ID      CRITICALITY reject  TYPE GNB-CU-UE-F1AP-ID      PRESENCE mandatory }|
    { ID id-gNB-DU-UE-F1AP-ID      CRITICALITY reject  TYPE GNB-DU-UE-F1AP-ID      PRESENCE mandatory }|
    { ID id-TraceActivation         CRITICALITY ignore  TYPE TraceActivation        PRESENCE mandatory },
    ...
}

-- *****
--
-- DEACTIVATE TRACE
--
-- *****

DeactivateTrace ::= SEQUENCE {
    protocolIES      ProtocolIE-Container      { {DeactivateTraceIES} },
    ...
}

DeactivateTraceIES F1AP-PROTOCOL-IES ::= {

```

```

    { ID id-gNB-CU-UE-F1AP-ID          CRITICALITY reject TYPE GNB-CU-UE-F1AP-ID          PRESENCE mandatory }|
    { ID id-gNB-DU-UE-F1AP-ID          CRITICALITY reject TYPE GNB-DU-UE-F1AP-ID          PRESENCE mandatory }|
    { ID id-TraceID                    CRITICALITY ignore TYPE TraceID                  PRESENCE mandatory },
    ...
}

-- *****
--
-- CELL TRAFFIC TRACE
--
-- *****

CellTrafficTrace ::= SEQUENCE {
    protocolIES      ProtocolIE-Container      { {CellTrafficTraceIEs} },
    ...
}

CellTrafficTraceIEs F1AP-PROTOCOL-IES ::= {
    { ID id-gNB-CU-UE-F1AP-ID          CRITICALITY reject TYPE GNB-CU-UE-F1AP-ID          PRESENCE mandatory }|
    { ID id-gNB-DU-UE-F1AP-ID          CRITICALITY reject TYPE GNB-DU-UE-F1AP-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-TraceCollectionEntityURI CRITICALITY ignore TYPE URI-address                PRESENCE optional },
    ...
}

-- *****
--
-- DU-CU Radio Information Transfer ELEMENTARY PROCEDURE
--
-- *****

-- *****
--
-- DU-CU Radio Information Transfer
--
-- *****

DUCURadioInformationTransfer ::= SEQUENCE {
    protocolIES      ProtocolIE-Container      {{ DUCURadioInformationTransferIEs}},
    ...
}

DUCURadioInformationTransferIEs F1AP-PROTOCOL-IES ::= {
    { ID id-TransactionID              CRITICALITY reject TYPE TransactionID              PRESENCE mandatory }|
    { ID id-DUCURadioInformationType    CRITICALITY ignore TYPE DUCURadioInformationType    PRESENCE mandatory },
    ...
}

-- *****
--

```

```

-- CU-DU Radio Information Transfer ELEMENTARY PROCEDURE
--
-- *****
--
-- *****
--
-- CU-DU Radio Information Transfer
--
-- *****

CUDURadioInformationTransfer ::= SEQUENCE {
    protocolIEs          ProtocolIE-Container    {{ CUDURadioInformationTransferIEs}},
    ...
}

CUDURadioInformationTransferIEs F1AP-PROTOCOL-IES ::= {
    { ID id-TransactionID          CRITICALITY reject TYPE TransactionID          PRESENCE mandatory }|
    { ID id-CUDURadioInformationType CRITICALITY ignore TYPE CUDURadioInformationType PRESENCE mandatory },
    ...
}

-- *****
--
-- IAB PROCEDURES
--
-- *****
--
-- *****
--
-- BAP Mapping Configuration ELEMENTARY PROCEDURE
--
-- *****
--
-- *****
--
-- BAP MAPPING CONFIGURATION
--
-- *****

BAPMappingConfiguration ::= SEQUENCE {
    protocolIEs          ProtocolIE-Container    { {BAPMappingConfiguration-IEs} },
    ...
}

BAPMappingConfiguration-IEs F1AP-PROTOCOL-IES ::= {
    { ID id-TransactionID          CRITICALITY reject TYPE TransactionID          PRESENCE mandatory}|
    { ID id-BH-Routing-Information-Added-List CRITICALITY ignore TYPE BH-Routing-Information-Added-List PRESENCE optional}|
    { ID id-BH-Routing-Information-Removed-List CRITICALITY ignore TYPE BH-Routing-Information-Removed-List PRESENCE optional}|
    { ID id-TrafficMappingInformation CRITICALITY ignore TYPE TrafficMappingInfo PRESENCE optional}|
    { ID id-BufferSizeThresh CRITICALITY ignore TYPE BufferSizeThresh PRESENCE optional}|
    { ID id-BAP-Header-Rewriting-Added-List CRITICALITY ignore TYPE BAP-Header-Rewriting-Added-List PRESENCE optional}|
    { ID id-Re-routingEnableIndicator CRITICALITY ignore TYPE Re-routingEnableIndicator PRESENCE optional}|
    { ID id-BAP-Header-Rewriting-Removed-List CRITICALITY ignore TYPE BAP-Header-Rewriting-Removed-List PRESENCE optional},
    ...
}

```

```

}

BH-Routing-Information-Added-List ::= SEQUENCE (SIZE(1.. maxnoofRoutingEntries)) OF ProtocolIE-SingleContainer { { BH-Routing-Information-Added-
List-ItemIEs } }
BH-Routing-Information-Removed-List ::= SEQUENCE (SIZE(1.. maxnoofRoutingEntries)) OF ProtocolIE-SingleContainer { { BH-Routing-Information-
Removed-List-ItemIEs } }

BH-Routing-Information-Added-List-ItemIEs F1AP-PROTOCOL-IES ::= {
  { ID id-BH-Routing-Information-Added-List-Item CRITICALITY ignore TYPE BH-Routing-Information-Added-List-Item
  PRESENCE mandatory},
  ...
}

BH-Routing-Information-Removed-List-ItemIEs F1AP-PROTOCOL-IES ::= {
  { ID id-BH-Routing-Information-Removed-List-Item CRITICALITY ignore TYPE BH-Routing-Information-Removed-List-Item
  PRESENCE mandatory},
  ...
}

BAP-Header-Rewriting-Added-List ::= SEQUENCE (SIZE(1.. maxnoofRoutingEntries)) OF ProtocolIE-SingleContainer { { BAP-Header-Rewriting-Added-List-
ItemIEs } }

BAP-Header-Rewriting-Added-List-ItemIEs F1AP-PROTOCOL-IES ::= {
  { ID id-BAP-Header-Rewriting-Added-List-Item CRITICALITY ignore TYPE BAP-Header-Rewriting-Added-List-Item PRESENCE mandatory},
  ...
}

BAP-Header-Rewriting-Removed-List ::= SEQUENCE (SIZE(1.. maxnoofRoutingEntries)) OF ProtocolIE-SingleContainer { { BAP-Header-Rewriting-Removed-
List-ItemIEs } }

BAP-Header-Rewriting-Removed-List-ItemIEs F1AP-PROTOCOL-IES ::= {
  { ID id-BAP-Header-Rewriting-Removed-List-Item CRITICALITY ignore TYPE BAP-Header-Rewriting-Removed-List-Item PRESENCE mandatory},
  ...
}

-- *****
--
-- BAP MAPPING CONFIGURATION ACKNOWLEDGE
--
-- *****

BAPMappingConfigurationAcknowledge ::= SEQUENCE {
  protocolIEs ProtocolIE-Container { {BAPMappingConfigurationAcknowledge-IEs} },
  ...
}

BAPMappingConfigurationAcknowledge-IEs F1AP-PROTOCOL-IES ::= {
  { ID id-TransactionID CRITICALITY reject TYPE TransactionID PRESENCE mandatory}|
  { ID id-CriticalityDiagnostics CRITICALITY ignore TYPE CriticalityDiagnostics PRESENCE optional},
  ...
}

-- *****
--

```

```

-- BAP MAPPING CONFIGURATION FAILURE
--
-- *****

BAPMappingConfigurationFailure ::= SEQUENCE {
    protocolIEs          ProtocolIE-Container      { { BAPMappingConfigurationFailureIEs} },
    ...
}

BAPMappingConfigurationFailureIEs F1AP-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-DU Configuration ELEMENTARY PROCEDURE
--
-- *****

-- *****
--
-- GNB-DU RESOURCE CONFIGURATION
--
-- *****

GNBDUResourceConfiguration ::= SEQUENCE {
    protocolIEs          ProtocolIE-Container      {{ GNBDUResourceConfigurationIEs}},
    ...
}

GNBDUResourceConfigurationIEs F1AP-PROTOCOL-IES ::= {
    { ID id-TransactionID          CRITICALITY reject TYPE TransactionID          PRESENCE mandatory }|
    { ID id-Activated-Cells-to-be-Updated-List CRITICALITY reject TYPE Activated-Cells-to-be-Updated-List PRESENCE optional }|
    { ID id-Child-Nodes-List       CRITICALITY reject TYPE Child-Nodes-List       PRESENCE optional }|
    { ID id-Neighbour-Node-Cells-List CRITICALITY reject TYPE Neighbour-Node-Cells-List PRESENCE optional }|
    { ID id-Serving-Cells-List     CRITICALITY reject TYPE Serving-Cells-List     PRESENCE optional },
    ...
}

-- *****
--
-- GNB-DU RESOURCE CONFIGURATION ACKNOWLEDGE
--
-- *****

```

```

GNBDUResourceConfigurationAcknowledge ::= SEQUENCE {
    protocolIES          ProtocolIE-Container      { { GNBDUResourceConfigurationAcknowledgeIES } },
    ...
}

GNBDUResourceConfigurationAcknowledgeIES F1AP-PROTOCOL-IES ::= {
    { ID id-TransactionID          CRITICALITY reject TYPE TransactionID          PRESENCE mandatory }|
    { ID id-CriticalityDiagnostics CRITICALITY ignore TYPE CriticalityDiagnostics PRESENCE optional },
    ...
}

-- *****
--
-- GNB-DU RESOURCE CONFIGURATION FAILURE
--
-- *****

GNBDUResourceConfigurationFailure ::= SEQUENCE {
    protocolIES          ProtocolIE-Container      { { GNBDUResourceConfigurationFailureIES } },
    ...
}

GNBDUResourceConfigurationFailureIES F1AP-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 },
    ...
}

-- *****
--
-- IAB TNL Address Allocation ELEMENTARY PROCEDURE
--
-- *****

-- *****
--
-- IAB TNL ADDRESS REQUEST
--
-- *****

IABTNLAddressRequest ::= SEQUENCE {
    protocolIES          ProtocolIE-Container      { { IABTNLAddressRequestIES } },
    ...
}

IABTNLAddressRequestIES F1AP-PROTOCOL-IES ::= {

```

```

    { ID id-TransactionID                CRITICALITY reject TYPE TransactionID                PRESENCE mandatory }|
    { ID id-IABv4AddressesRequested        CRITICALITY reject TYPE IABv4AddressesRequested    PRESENCE optional }|
    { ID id-IABIPv6RequestType             CRITICALITY reject TYPE IABIPv6RequestType        PRESENCE optional }|
    { ID id-IAB-TNL-Addresses-To-Remove-List CRITICALITY reject TYPE IAB-TNL-Addresses-To-Remove-List PRESENCE optional }|
    { ID id-IAB-TNL-Addresses-Exception    CRITICALITY reject TYPE IAB-TNL-Addresses-Exception    PRESENCE optional },
    ...
}

IAB-TNL-Addresses-To-Remove-List ::= SEQUENCE (SIZE(1..maxnoofTLAsIAB)) OF ProtocolIE-SingleContainer { { IAB-TNL-Addresses-To-Remove-ItemIEs }
}

IAB-TNL-Addresses-To-Remove-ItemIEs F1AP-PROTOCOL-IES ::= {
    { ID id-IAB-TNL-Addresses-To-Remove-Item                CRITICALITY reject TYPE IAB-TNL-Addresses-To-Remove-Item                PRESENCE mandatory},
    ...
}

-- *****
--
-- IAB TNL ADDRESS RESPONSE
--
-- *****

IABTNLAddressResponse ::= SEQUENCE {
    protocolIEs          ProtocolIE-Container          { {IABTNLAddressResponseIEs} },
    ...
}

IABTNLAddressResponseIEs F1AP-PROTOCOL-IES ::= {
    { ID id-TransactionID                CRITICALITY reject TYPE TransactionID                PRESENCE mandatory }|
    { ID id-IAB-Allocated-TNL-Address-List CRITICALITY reject TYPE IAB-Allocated-TNL-Address-List    PRESENCE mandatory },
    ...
}

IAB-Allocated-TNL-Address-List ::= SEQUENCE (SIZE(1.. maxnoofTLAsIAB)) OF ProtocolIE-SingleContainer { { IAB-Allocated-TNL-Address-List-ItemIEs }
}

IAB-Allocated-TNL-Address-List-ItemIEs F1AP-PROTOCOL-IES ::= {
    { ID id-IAB-Allocated-TNL-Address-Item                CRITICALITY reject TYPE IAB-Allocated-TNL-Address-Item                PRESENCE mandatory},
    ...
}

-- *****
--
-- IAB TNL ADDRESS FAILURE
--
-- *****

IABTNLAddressFailure ::= SEQUENCE {

```



```

    protocolIEs          ProtocolIE-Container      { { IABTNLAddressFailureIEs} },
    ...
}

IABTNLAddressFailureIEs F1AP-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 },
    ...
}

-- *****
--
-- IAB UP Configuration Update ELEMENTARY PROCEDURE
--
-- *****
--
-- *****
--
-- IAB UP Configuration Update Request
--
-- *****

IABUPConfigurationUpdateRequest ::= SEQUENCE {
    protocolIEs          ProtocolIE-Container      { { IABUPConfigurationUpdateRequestIEs} },
    ...
}

IABUPConfigurationUpdateRequestIEs F1AP-PROTOCOL-IES ::= {
    { ID id-TransactionID          CRITICALITY reject TYPE TransactionID          PRESENCE mandatory }|
    { ID id-UL-UP-TNL-Information-to-Update-List CRITICALITY ignore TYPE UL-UP-TNL-Information-to-Update-List PRESENCE optional }|
    { ID id-UL-UP-TNL-Address-to-Update-List     CRITICALITY ignore TYPE UL-UP-TNL-Address-to-Update-List     PRESENCE optional },
    ...
}

UL-UP-TNL-Information-to-Update-List ::= SEQUENCE (SIZE(1.. maxnoofULUPTNLInformationforIAB)) OF ProtocolIE-SingleContainer { { UL-UP-TNL-
Information-to-Update-List-ItemIEs } }

UL-UP-TNL-Information-to-Update-List-ItemIEs F1AP-PROTOCOL-IES ::= {
    { ID id-UL-UP-TNL-Information-to-Update-List-Item CRITICALITY ignore TYPE UL-UP-TNL-Information-to-Update-List-Item PRESENCE mandatory },
    ...
}

UL-UP-TNL-Address-to-Update-List ::= SEQUENCE (SIZE(1.. maxnoofUPTNLAddresses)) OF ProtocolIE-SingleContainer { { UL-UP-TNL-Address-to-Update-List-
ItemIEs } }

UL-UP-TNL-Address-to-Update-List-ItemIEs F1AP-PROTOCOL-IES ::= {
    { ID id-UL-UP-TNL-Address-to-Update-List-Item CRITICALITY ignore TYPE UL-UP-TNL-Address-to-Update-List-Item PRESENCE mandatory },
    ...
}

-- *****

```

```

--
-- IAB UP Configuration Update Response
--
-- *****

IABUPConfigurationUpdateResponse ::= SEQUENCE {
    protocolIEs          ProtocolIE-Container          { { IABUPConfigurationUpdateResponseIEs } },
    ...
}

IABUPConfigurationUpdateResponseIEs F1AP-PROTOCOL-IES ::= {
    { ID id-TransactionID          CRITICALITY reject TYPE TransactionID          PRESENCE mandatory }|
    { ID id-CriticalityDiagnostics CRITICALITY ignore TYPE CriticalityDiagnostics PRESENCE optional }|
    { ID id-DL-UP-TNL-Address-to-Update-List CRITICALITY reject TYPE DL-UP-TNL-Address-to-Update-List PRESENCE optional },
    ...
}

DL-UP-TNL-Address-to-Update-List ::= SEQUENCE (SIZE(1.. maxnoofUPTNLAddresses)) OF ProtocolIE-SingleContainer { { DL-UP-TNL-Address-to-Update-List-ItemIEs } }

DL-UP-TNL-Address-to-Update-List-ItemIEs F1AP-PROTOCOL-IES ::= {
    { ID id-DL-UP-TNL-Address-to-Update-List-Item CRITICALITY ignore TYPE DL-UP-TNL-Address-to-Update-List-Item PRESENCE mandatory },
    ...
}

-- *****
--
-- IAB UP Configuration Update Failure
--
-- *****

IABUPConfigurationUpdateFailure ::= SEQUENCE {
    protocolIEs          ProtocolIE-Container          { { IABUPConfigurationUpdateFailureIEs } },
    ...
}

IABUPConfigurationUpdateFailureIEs F1AP-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 },
    ...
}

-- *****
--
-- Resource Status Reporting Initiation ELEMENTARY PROCEDURE
--
-- *****

-- *****
--
-- Resource Status Request
--

```

```
-- *****

ResourceStatusRequest ::= SEQUENCE {
    protocolIES          ProtocolIE-Container      { {ResourceStatusRequestIES} },
    ...
}

ResourceStatusRequestIES F1AP-PROTOCOL-IES ::= {
    { ID id-TransactionID          CRITICALITY reject TYPE TransactionID          PRESENCE mandatory }|
    { ID id-gNBCUMeasurementID      CRITICALITY reject TYPE GNBCUMeasurementID      PRESENCE mandatory }|
    { ID id-gNBDMMeasurementID      CRITICALITY ignore TYPE GNBDMMeasurementID      PRESENCE conditional }|
    { ID id-RegistrationRequest      CRITICALITY ignore TYPE RegistrationRequest      PRESENCE mandatory }|
    { ID id-ReportCharacteristics    CRITICALITY ignore TYPE ReportCharacteristics    PRESENCE conditional }|
    { ID id-CellToReportList         CRITICALITY ignore TYPE CellToReportList         PRESENCE optional }|
    { ID id-ReportingPeriodicity     CRITICALITY ignore TYPE ReportingPeriodicity     PRESENCE optional },
    ...
}

-- *****
--
-- Resource Status Response
--
-- *****

ResourceStatusResponse ::= SEQUENCE {
    protocolIES          ProtocolIE-Container      { { ResourceStatusResponseIES} },
    ...
}

ResourceStatusResponseIES F1AP-PROTOCOL-IES ::= {
    { ID id-TransactionID          CRITICALITY reject TYPE TransactionID          PRESENCE mandatory }|
    { ID id-gNBCUMeasurementID      CRITICALITY reject TYPE GNBCUMeasurementID      PRESENCE mandatory }|
    { ID id-gNBDMMeasurementID      CRITICALITY ignore TYPE GNBDMMeasurementID      PRESENCE mandatory }|
    { ID id-CriticalityDiagnostics   CRITICALITY ignore TYPE CriticalityDiagnostics   PRESENCE optional },
    ...
}

-- *****
--
-- Resource Status Failure
--
-- *****

ResourceStatusFailure ::= SEQUENCE {
    protocolIES          ProtocolIE-Container      { { ResourceStatusFailureIES} },
    ...
}

ResourceStatusFailureIES F1AP-PROTOCOL-IES ::= {
    { ID id-TransactionID          CRITICALITY reject TYPE TransactionID          PRESENCE mandatory }|
    { ID id-gNBCUMeasurementID      CRITICALITY reject TYPE GNBCUMeasurementID      PRESENCE mandatory }|

```

```

    { ID id-gNBMeasurementID      CRITICALITY ignore TYPE GNBMeasurementID      PRESENCE mandatory }|
    { ID id-Cause                  CRITICALITY ignore TYPE Cause                  PRESENCE mandatory }|
    { ID id-CriticalityDiagnostics CRITICALITY ignore TYPE CriticalityDiagnostics PRESENCE optional },
    ...
}

-- *****
--
-- Resource Status Reporting ELEMENTARY PROCEDURE
--
-- *****

-- *****
--
-- Resource Status Update
--
-- *****

ResourceStatusUpdate ::= SEQUENCE {
    protocolIEs          ProtocolIE-Container    {{ ResourceStatusUpdateIEs}},
    ...
}

ResourceStatusUpdateIEs F1AP-PROTOCOL-IES ::= {
    { ID id-TransactionID          CRITICALITY reject TYPE TransactionID          PRESENCE mandatory }|
    { ID id-gNBCUMeasurementID      CRITICALITY reject TYPE GNBCUMeasurementID      PRESENCE mandatory }|
    { ID id-gNBMeasurementID        CRITICALITY ignore TYPE GNBMeasurementID        PRESENCE mandatory }|
    { ID id-HardwareLoadIndicator    CRITICALITY ignore TYPE HardwareLoadIndicator    PRESENCE optional }|
    { ID id-TNLCapacityIndicator     CRITICALITY ignore TYPE TNLCapacityIndicator     PRESENCE optional }|
    { ID id-CellMeasurementResultList CRITICALITY ignore TYPE CellMeasurementResultList PRESENCE optional },
    ...
}

-- *****
--
-- Access And Mobility Indication ELEMENTARY PROCEDURE
--
-- *****

-- *****
--
-- Access And Mobility Indication
--
-- *****

AccessAndMobilityIndication ::= SEQUENCE {
    protocolIEs          ProtocolIE-Container    { { AccessAndMobilityIndicationIEs} },
    ...
}

AccessAndMobilityIndicationIEs F1AP-PROTOCOL-IES ::= {
    { ID id-TransactionID          CRITICALITY reject TYPE TransactionID          PRESENCE mandatory }|
    { ID id-RACHReportInformationList CRITICALITY ignore TYPE RACHReportInformationList PRESENCE optional }|
    { ID id-RLFReportInformationList CRITICALITY ignore TYPE RLFReportInformationList PRESENCE optional }|

```

```

    { ID id-SuccessfulHOReportInformationList      CRITICALITY ignore  TYPE SuccessfulHOReportInformationList  PRESENCE optional },
    ...
}

```

```

-- *****
--
-- REFERENCE TIME INFORMATION REPORTING CONTROL
--
-- *****

```

```

ReferenceTimeInformationReportingControl ::= SEQUENCE {
    protocolIEs      ProtocolIE-Container      { { ReferenceTimeInformationReportingControlIEs } },
    ...
}

```

```

ReferenceTimeInformationReportingControlIEs F1AP-PROTOCOL-IES ::= {
    { ID id-TransactionID      CRITICALITY reject  TYPE TransactionID      PRESENCE mandatory }|
    { ID id-ReportingRequestType  CRITICALITY reject  TYPE ReportingRequestType  PRESENCE mandatory },
    ...
}

```

```

-- *****
--
-- REFERENCE TIME INFORMATION REPORT
--
-- *****

```

```

ReferenceTimeInformationReport ::= SEQUENCE {
    protocolIEs      ProtocolIE-Container      { { ReferenceTimeInformationReportIEs } },
    ...
}

```

```

ReferenceTimeInformationReportIEs F1AP-PROTOCOL-IES ::= {
    { ID id-TransactionID      CRITICALITY ignore  TYPE TransactionID      PRESENCE mandatory }|
    { ID id-TimeReferenceInformation  CRITICALITY ignore  TYPE TimeReferenceInformation  PRESENCE mandatory },
    ...
}

```

```

-- *****
--
-- Access Success
--
-- *****

```

```

AccessSuccess ::= SEQUENCE {
    protocolIEs      ProtocolIE-Container      {{ AccessSuccessIEs}},
    ...
}

```

```

AccessSuccessIEs F1AP-PROTOCOL-IES ::= {
    { ID id-gNB-CU-UE-F1AP-ID      CRITICALITY reject  TYPE GNB-CU-UE-F1AP-ID      PRESENCE mandatory }|

```

```

    { ID id-gNB-DU-UE-F1AP-ID          CRITICALITY reject TYPE GNB-DU-UE-F1AP-ID      PRESENCE mandatory }|
    { ID id-NRCGI                      CRITICALITY reject TYPE NRCGI                PRESENCE mandatory },
    ...
}

-- *****
--
-- POSITIONING ASSISTANCE INFORMATION CONTROL ELEMENTARY PROCEDURE
--
-- *****

-- *****
--
-- Positioning Assistance Information Control
--
-- *****

PositioningAssistanceInformationControl ::= SEQUENCE {
    protocolIES          ProtocolIE-Container    {{ PositioningAssistanceInformationControlIES}},
    ...
}

PositioningAssistanceInformationControlIES F1AP-PROTOCOL-IES ::= {
    { ID id-TransactionID          CRITICALITY reject TYPE TransactionID          PRESENCE mandatory }|
    { ID id-PosAssistance-Information CRITICALITY reject TYPE PosAssistance-Information PRESENCE optional}|
    { ID id-PosBroadcast           CRITICALITY reject TYPE PosBroadcast           PRESENCE optional}|
    { ID id-PositioningBroadcastCells CRITICALITY reject TYPE PositioningBroadcastCells PRESENCE optional}|
    { ID id-RoutingID              CRITICALITY reject TYPE RoutingID              PRESENCE optional},
    ...
}

-- *****
--
-- POSITIONING ASSISTANCE INFORMATION FEEDBACK ELEMENTARY PROCEDURE
--
-- *****

-- *****
--
-- Positioning Assistance Information Feedback
--
-- *****

PositioningAssistanceInformationFeedback ::= SEQUENCE {
    protocolIES          ProtocolIE-Container    {{ PositioningAssistanceInformationFeedbackIES}},
    ...
}

PositioningAssistanceInformationFeedbackIES F1AP-PROTOCOL-IES ::= {
    { ID id-TransactionID          CRITICALITY reject TYPE TransactionID          PRESENCE mandatory }|
    { ID id-PosAssistanceInformationFailureList CRITICALITY reject TYPE PosAssistanceInformationFailureList PRESENCE optional}|
    { ID id-PositioningBroadcastCells CRITICALITY reject TYPE PositioningBroadcastCells PRESENCE optional}|
    { ID id-RoutingID              CRITICALITY reject TYPE RoutingID              PRESENCE optional}|

```

```

    { ID id-CriticalityDiagnostics          CRITICALITY ignore  TYPE CriticalityDiagnostics          PRESENCE optional},
    ...
}

-- *****
--
-- POSITONING MEASUREMENT EXCHANGE ELEMENTARY PROCEDURE
--
-- *****

-- *****
--
-- Positioning Measurement Request
--
-- *****

PositioningMeasurementRequest ::= SEQUENCE {
    protocolIEs          ProtocolIE-Container    { { PositioningMeasurementRequestIEs} },
    ...
}

PositioningMeasurementRequestIEs F1AP-PROTOCOL-IES ::= {
    { ID id-TransactionID          CRITICALITY reject  TYPE TransactionID          PRESENCE mandatory}|
    { ID id-LMF-MeasurementID      CRITICALITY reject  TYPE LMF-MeasurementID      PRESENCE mandatory}|
    { ID id-RAN-MeasurementID      CRITICALITY reject  TYPE RAN-MeasurementID      PRESENCE mandatory}|
    { ID id-TRP-MeasurementRequestList CRITICALITY reject  TYPE TRP-MeasurementRequestList PRESENCE mandatory}|
    { ID id-PosReportCharacteristics CRITICALITY reject  TYPE PosReportCharacteristics PRESENCE mandatory}|
    { ID id-PosMeasurementPeriodicity CRITICALITY reject  TYPE MeasurementPeriodicity PRESENCE conditional }|
    -- The above IE shall be present if the PosReportCharacteristics IE is set to "periodic" --
    { ID id-PosMeasurementQuantities CRITICALITY reject  TYPE PosMeasurementQuantities PRESENCE mandatory}|
    { ID id-SFNInitialisationTime   CRITICALITY ignore  TYPE RelativeTime1900   PRESENCE optional }|
    { ID id-SRSConfiguration        CRITICALITY ignore  TYPE SRSConfiguration   PRESENCE optional}|
    { ID id-MeasurementBeamInfoRequest CRITICALITY ignore  TYPE MeasurementBeamInfoRequest PRESENCE optional }|
    { ID id-SystemFrameNumber       CRITICALITY ignore  TYPE SystemFrameNumber   PRESENCE optional}|
    { ID id-SlotNumber              CRITICALITY ignore  TYPE SlotNumber          PRESENCE optional}|
    { ID id-PosMeasurementPeriodicityExtended CRITICALITY reject  TYPE MeasurementPeriodicityExtended PRESENCE conditional }|
    -- The IE shall be present the MeasurementPeriodicity IE is set to the value "extended"

    { ID id-ResponseTime            CRITICALITY ignore  TYPE ResponseTime        PRESENCE optional}|
    { ID id-MeasurementCharacteristicsRequestIndicator CRITICALITY ignore  TYPE MeasurementCharacteristicsRequestIndicator PRESENCE optional}|
    { ID id-MeasurementTimeOccasion CRITICALITY ignore  TYPE MeasurementTimeOccasion PRESENCE optional }|
    { ID id-PosMeasurementAmount     CRITICALITY ignore  TYPE PosMeasurementAmount PRESENCE optional },
    ...
}

-- *****
--
-- Positioning Measurement Response
--
-- *****

PositioningMeasurementResponse ::= SEQUENCE {

```

```

    protocolIEs      ProtocolIE-Container    { { PositioningMeasurementResponseIEs } },
    ...
}

PositioningMeasurementResponseIEs F1AP-PROTOCOL-IES ::= {
    { ID id-TransactionID          CRITICALITY reject TYPE TransactionID          PRESENCE mandatory }|
    { ID id-LMF-MeasurementID      CRITICALITY reject TYPE LMF-MeasurementID      PRESENCE mandatory }|
    { ID id-RAN-MeasurementID      CRITICALITY reject TYPE RAN-MeasurementID      PRESENCE mandatory }|
    { ID id-PosMeasurementResultList CRITICALITY reject TYPE PosMeasurementResultList PRESENCE optional }|
    { ID id-CriticalityDiagnostics CRITICALITY ignore TYPE CriticalityDiagnostics PRESENCE optional },
    ...
}

-- *****
--
-- Positioning Measurement Failure
--
-- *****

PositioningMeasurementFailure ::= SEQUENCE {
    protocolIEs      ProtocolIE-Container    { { PositioningMeasurementFailureIEs } },
    ...
}

PositioningMeasurementFailureIEs F1AP-PROTOCOL-IES ::= {
    { ID id-TransactionID          CRITICALITY reject TYPE TransactionID          PRESENCE mandatory }|
    { ID id-LMF-MeasurementID      CRITICALITY reject TYPE LMF-MeasurementID      PRESENCE mandatory }|
    { ID id-RAN-MeasurementID      CRITICALITY reject TYPE RAN-MeasurementID      PRESENCE mandatory }|
    { ID id-Cause                  CRITICALITY ignore TYPE Cause                  PRESENCE mandatory }|
    { ID id-CriticalityDiagnostics CRITICALITY ignore TYPE CriticalityDiagnostics PRESENCE optional },
    ...
}

-- *****
--
-- POSITIONING MEASUREMENT REPORT ELEMENTARY PROCEDURE
--
-- *****

-- *****
--
-- Positioning Measurement Report
--
-- *****

PositioningMeasurementReport ::= SEQUENCE {
    protocolIEs      ProtocolIE-Container    { { PositioningMeasurementReportIEs } },
    ...
}

PositioningMeasurementReportIEs F1AP-PROTOCOL-IES ::= {

```



```

    { ID id-TransactionID          CRITICALITY reject TYPE TransactionID          PRESENCE mandatory }|
    { ID id-LMF-MeasurementID       CRITICALITY reject TYPE LMF-MeasurementID       PRESENCE mandatory }|
    { ID id-RAN-MeasurementID       CRITICALITY reject TYPE RAN-MeasurementID       PRESENCE mandatory }|
    { ID id-PosMeasurementResultList CRITICALITY reject TYPE PosMeasurementResultList PRESENCE mandatory },
    ...
}

-- *****
--
-- POSITIONING MEASUREMENT ABORT ELEMENTARY PROCEDURE
--
-- *****

-- *****
--
-- Positioning Measurement Abort
--
-- *****

PositioningMeasurementAbort ::= SEQUENCE {
    protocolIEs      ProtocolIE-Container      { { PositioningMeasurementAbortIEs} },
    ...
}

PositioningMeasurementAbortIEs F1AP-PROTOCOL-IES ::= {
    { ID id-TransactionID          CRITICALITY reject TYPE TransactionID          PRESENCE mandatory }|
    { ID id-LMF-MeasurementID       CRITICALITY reject TYPE LMF-MeasurementID       PRESENCE mandatory }|
    { ID id-RAN-MeasurementID       CRITICALITY reject TYPE RAN-MeasurementID       PRESENCE mandatory },
    ...
}

-- *****
--
-- POSITIONING MEASUREMENT FAILURE INDICATION ELEMENTARY PROCEDURE
--
-- *****

-- *****
--
-- Positioning Measurement Failure Indication
--
-- *****

PositioningMeasurementFailureIndication ::= SEQUENCE {
    protocolIEs      ProtocolIE-Container      { { PositioningMeasurementFailureIndicationIEs} },
    ...
}

PositioningMeasurementFailureIndicationIEs F1AP-PROTOCOL-IES ::= {
    { ID id-TransactionID          CRITICALITY reject TYPE TransactionID          PRESENCE mandatory }|
    { ID id-LMF-MeasurementID       CRITICALITY reject TYPE LMF-MeasurementID       PRESENCE mandatory }|
    { ID id-RAN-MeasurementID       CRITICALITY reject TYPE RAN-MeasurementID       PRESENCE mandatory }|
    { ID id-Cause                  CRITICALITY ignore  TYPE Cause                  PRESENCE mandatory },
    ...
}

```

```

}

-- *****
--
-- POSITIONING MEASUREMENT UPDATE ELEMENTARY PROCEDURE
--
-- *****

-- *****
--
-- Positioning Measurement Update
--
-- *****

PositioningMeasurementUpdate ::= SEQUENCE {
    protocolIEs      ProtocolIE-Container      { { PositioningMeasurementUpdateIEs } },
    ...
}

PositioningMeasurementUpdateIEs F1AP-PROTOCOL-IES ::= {
    { ID id-TransactionID          CRITICALITY reject TYPE TransactionID          PRESENCE mandatory }|
    { ID id-LMF-MeasurementID      CRITICALITY reject TYPE LMF-MeasurementID      PRESENCE mandatory }|
    { ID id-RAN-MeasurementID      CRITICALITY reject TYPE RAN-MeasurementID      PRESENCE mandatory }|
    { ID id-SRSConfiguration       CRITICALITY ignore TYPE SRSConfiguration       PRESENCE optional}|
    { ID id-TRP-MeasurementUpdateList CRITICALITY reject TYPE TRP-MeasurementUpdateList PRESENCE optional}|
    { ID id-MeasurementCharacteristicsRequestIndicator CRITICALITY ignore TYPE MeasurementCharacteristicsRequestIndicator PRESENCE optional}|
    { ID id-MeasurementTimeOccasion CRITICALITY ignore TYPE MeasurementTimeOccasion PRESENCE optional},
    ...
}

-- *****
--
-- TRP INFORMATION EXCHANGE ELEMENTARY PROCEDURE
--
-- *****

-- *****
--
-- TRP Information Request
--
-- *****

TRPInformationRequest ::= SEQUENCE {
    protocolIEs      ProtocolIE-Container      { { TRPInformationRequestIEs } },
    ...
}

TRPInformationRequestIEs F1AP-PROTOCOL-IES ::= {
    { ID id-TransactionID          CRITICALITY reject TYPE TransactionID          PRESENCE mandatory }|
    { ID id-TRPList                CRITICALITY ignore TYPE TRPList                PRESENCE optional }|
    { ID id-TRPInformationTypeListTRPReq CRITICALITY reject TYPE TRPInformationTypeListTRPReq PRESENCE mandatory },
    ...
}

```

```
TRPInformationTypeListTRPReq ::= SEQUENCE (SIZE(1.. maxnoofTRPInfoTypes)) OF ProtocolIE-SingleContainer { { TRPInformationTypeItemTRPReq } }
```

```
TRPInformationTypeItemTRPReq F1AP-PROTOCOL-IES ::= {
  { ID id-TRPInformationTypeItem CRITICALITY reject TYPE TRPInformationTypeItem PRESENCE mandatory },
  ...
}
```

```
-- *****
--
-- TRP Information Response
--
-- *****
```

```
TRPInformationResponse ::= SEQUENCE {
  protocolIES ProtocolIE-Container { { TRPInformationResponseIES } },
  ...
}
```

```
TRPInformationResponseIES F1AP-PROTOCOL-IES ::= {
  { ID id-TransactionID CRITICALITY reject TYPE TransactionID PRESENCE mandatory }|
  { ID id-TRPInformationListTRPResp CRITICALITY ignore TYPE TRPInformationListTRPResp PRESENCE mandatory }|
  { ID id-CriticalityDiagnostics CRITICALITY ignore TYPE CriticalityDiagnostics PRESENCE optional },
  ...
}
```

```
TRPInformationListTRPResp ::= SEQUENCE (SIZE(1.. maxnoofTRPs)) OF ProtocolIE-SingleContainer { { TRPInformationItemTRPResp } }
```

```
TRPInformationItemTRPResp F1AP-PROTOCOL-IES ::= {
  { ID id-TRPInformationItem CRITICALITY ignore TYPE TRPInformationItem PRESENCE mandatory },
  ...
}
```

```
-- *****
--
-- TRP Information Failure
--
-- *****
```

```
TRPInformationFailure ::= SEQUENCE {
  protocolIES ProtocolIE-Container { { TRPInformationFailureIES } },
  ...
}
```

```
TRPInformationFailureIES F1AP-PROTOCOL-IES ::= {
  { ID id-TransactionID CRITICALITY reject TYPE TransactionID PRESENCE mandatory }|
  { ID id-Cause CRITICALITY ignore TYPE Cause PRESENCE mandatory }|
  { ID id-CriticalityDiagnostics CRITICALITY ignore TYPE CriticalityDiagnostics PRESENCE optional },
  ...
}
```

```

-- *****
--
-- POSITIONING INFORMATION EXCHANGE ELEMENTARY PROCEDURE
--
-- *****
--
-- *****
--
-- Positioning Information Request
--
-- *****

PositioningInformationRequest ::= SEQUENCE {
    protocolIEs          ProtocolIE-Container    { { PositioningInformationRequestIEs} },
    ...
}

PositioningInformationRequestIEs F1AP-PROTOCOL-IES ::= {
    { ID id-gNB-CU-UE-F1AP-ID          CRITICALITY reject TYPE GNB-CU-UE-F1AP-ID          PRESENCE mandatory }|
    { ID id-gNB-DU-UE-F1AP-ID          CRITICALITY reject TYPE GNB-DU-UE-F1AP-ID          PRESENCE mandatory }|
    { ID id-RequestedSRSTransmissionCharacteristics CRITICALITY ignore TYPE RequestedSRSTransmissionCharacteristics PRESENCE optional}|
    { ID id-UEReportingInformation      CRITICALITY ignore TYPE UEReportingInformation      PRESENCE optional}|
    { ID id-SRSPosRRCTInactiveQueryIndication CRITICALITY ignore TYPE SRSPosRRCTInactiveQueryIndication PRESENCE optional},
    ...
}

-- *****
--
-- Positioning Information Response
--
-- *****

PositioningInformationResponse ::= SEQUENCE {
    protocolIEs          ProtocolIE-Container    { { PositioningInformationResponseIEs} },
    ...
}

PositioningInformationResponseIEs F1AP-PROTOCOL-IES ::= {
    { ID id-gNB-CU-UE-F1AP-ID          CRITICALITY reject TYPE GNB-CU-UE-F1AP-ID          PRESENCE mandatory }|
    { ID id-gNB-DU-UE-F1AP-ID          CRITICALITY reject TYPE GNB-DU-UE-F1AP-ID          PRESENCE mandatory }|
    { ID id-SRSConfiguration            CRITICALITY ignore TYPE SRSConfiguration            PRESENCE optional}|
    { ID id-SFNInitialisationTime       CRITICALITY ignore TYPE RelativeTime1900         PRESENCE optional}|
    { ID id-CriticalityDiagnostics       CRITICALITY ignore TYPE CriticalityDiagnostics       PRESENCE optional}|
    { ID id-SRSPosRRCTInactiveConfig    CRITICALITY ignore TYPE SRSPosRRCTInactiveConfig    PRESENCE optional},
    ...
}

-- *****
--
-- Positioning Information Failure
--

```

```

-- *****
PositioningInformationFailure ::= SEQUENCE {
    protocolIEs          ProtocolIE-Container    { { PositioningInformationFailureIEs} },
    ...
}

PositioningInformationFailureIEs F1AP-PROTOCOL-IES ::= {
    { ID id-gNB-CU-UE-F1AP-ID          CRITICALITY reject  TYPE GNB-CU-UE-F1AP-ID          PRESENCE mandatory }|
    { ID id-gNB-DU-UE-F1AP-ID          CRITICALITY reject  TYPE GNB-DU-UE-F1AP-ID          PRESENCE mandatory }|
    { ID id-Cause                      CRITICALITY ignore   TYPE Cause                      PRESENCE mandatory }|
    { ID id-CriticalityDiagnostics      CRITICALITY ignore   TYPE CriticalityDiagnostics      PRESENCE optional },
    ...
}

-- *****
--
-- POSITIONING ACTIVATION PROCEDURE
--
-- *****
--
-- *****
--
-- Positioning Activation Request
--
-- *****

PositioningActivationRequest ::= SEQUENCE {
    protocolIEs          ProtocolIE-Container    { { PositioningActivationRequestIEs} },
    ...
}

PositioningActivationRequestIEs F1AP-PROTOCOL-IES ::= {
    { ID id-gNB-CU-UE-F1AP-ID          CRITICALITY reject  TYPE GNB-CU-UE-F1AP-ID          PRESENCE mandatory }|
    { ID id-gNB-DU-UE-F1AP-ID          CRITICALITY reject  TYPE GNB-DU-UE-F1AP-ID          PRESENCE mandatory }|
    { ID id-SRSType                    CRITICALITY reject  TYPE SRSType                    PRESENCE mandatory }|
    { ID id-ActivationTime             CRITICALITY ignore  TYPE RelativeTime1900          PRESENCE optional },
    ...
}

SRSType ::= CHOICE {
    semipersistentSRS                SemipersistentSRS,
    aperiodicSRS                     AperiodicSRS,
    choice-extension                  ProtocolIE-SingleContainer { { SRSType-ExtIEs} }
}

SRSType-ExtIEs F1AP-PROTOCOL-IES ::= {
    ...
}

SemipersistentSRS ::= SEQUENCE {
    sRSResourceSetID                SRSResourceSetID,

```

```

    sRSSpatialRelation      SpatialRelationInfo OPTIONAL,
    iE-Extensions            ProtocolExtensionContainer { {SemipersistentSRS-ExtIEs} } OPTIONAL,
    ...
}

SemipersistentSRS-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    { ID id-SRSSpatialRelationPerSRSResource    CRITICALITY ignore  EXTENSION SpatialRelationPerSRSResource PRESENCE optional},
    ...
}

AperiodicSRS ::= SEQUENCE {
    aperiodic                ENUMERATED {true, ...},
    sRSResourceTrigger        SRSResourceTrigger    OPTIONAL,
    iE-Extensions            ProtocolExtensionContainer { {AperiodicSRS-ExtIEs} } OPTIONAL,
    ...
}

AperiodicSRS-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

-- *****
--
-- Positioning Activation Response
--
-- *****

PositioningActivationResponse ::= SEQUENCE {
    protocolIEs              ProtocolIE-Container    { { PositioningActivationResponseIEs} },
    ...
}

PositioningActivationResponseIEs F1AP-PROTOCOL-IES ::= {
    { ID id-gNB-CU-UE-F1AP-ID    CRITICALITY reject  TYPE GNB-CU-UE-F1AP-ID        PRESENCE mandatory }|
    { ID id-gNB-DU-UE-F1AP-ID    CRITICALITY reject  TYPE GNB-DU-UE-F1AP-ID        PRESENCE mandatory }|
    { ID id-SystemFrameNumber    CRITICALITY ignore   TYPE SystemFrameNumber        PRESENCE optional  }|
    { ID id-SlotNumber           CRITICALITY ignore   TYPE SlotNumber               PRESENCE optional  }|
    { ID id-CriticalityDiagnostics CRITICALITY ignore TYPE CriticalityDiagnostics    PRESENCE optional },
    ...
}

-- *****
--
-- Positioning Activation Failure
--
-- *****

PositioningActivationFailure ::= SEQUENCE {
    protocolIEs              ProtocolIE-Container    { { PositioningActivationFailureIEs} },

```

```

    ...
}

PositioningActivationFailureIEs F1AP-PROTOCOL-IES ::= {
    { ID id-gNB-CU-UE-F1AP-ID          CRITICALITY reject  TYPE GNB-CU-UE-F1AP-ID          PRESENCE mandatory }|
    { ID id-gNB-DU-UE-F1AP-ID          CRITICALITY reject  TYPE GNB-DU-UE-F1AP-ID          PRESENCE mandatory }|
    { ID id-Cause                       CRITICALITY ignore  TYPE Cause                       PRESENCE mandatory }|
    { ID id-CriticalityDiagnostics       CRITICALITY ignore  TYPE CriticalityDiagnostics       PRESENCE optional },
    ...
}

-- *****
--
-- POSITIONING DEACTIVATION PROCEDURE
--
-- *****
--
-- *****
--
-- Positioning Deactivation
--
-- *****

PositioningDeactivation ::= SEQUENCE {
    protocolIEs          ProtocolIE-Container      { { PositioningDeactivationIEs} },
    ...
}

PositioningDeactivationIEs F1AP-PROTOCOL-IES ::= {
    { ID id-gNB-CU-UE-F1AP-ID          CRITICALITY reject  TYPE GNB-CU-UE-F1AP-ID          PRESENCE mandatory }|
    { ID id-gNB-DU-UE-F1AP-ID          CRITICALITY reject  TYPE GNB-DU-UE-F1AP-ID          PRESENCE mandatory }|
    { ID id-AbortTransmission          CRITICALITY ignore  TYPE AbortTransmission          PRESENCE mandatory },
    ...
}

-- *****
--
-- POSITIONING INFORMATION UPDATE PROCEDURE
--
-- *****
--
-- *****
--
-- Positioning Information Update
--
-- *****

PositioningInformationUpdate ::= SEQUENCE {
    protocolIEs          ProtocolIE-Container      { { PositioningInformationUpdateIEs} },
    ...
}

```

```

PositioningInformationUpdateIEs F1AP-PROTOCOL-IES ::= {
  { ID id-gNB-CU-UE-F1AP-ID      CRITICALITY reject TYPE GNB-CU-UE-F1AP-ID      PRESENCE mandatory }|
  { ID id-gNB-DU-UE-F1AP-ID      CRITICALITY reject TYPE GNB-DU-UE-F1AP-ID      PRESENCE mandatory }|
  { ID id-SRSConfiguration        CRITICALITY ignore TYPE SRSConfiguration        PRESENCE optional }|
  { ID id-SFNInitialisationTime   CRITICALITY ignore TYPE RelativeTime1900       PRESENCE optional },
  ...
}

-- *****
--
-- E-CID MEASUREMENT PROCEDURE
--
-- *****

-- *****
--
-- E-CID Measurement Initiation Request
--
-- *****

E-CIDMeasurementInitiationRequest ::= SEQUENCE {
  protocolIEs      ProtocolIE-Container    {{E-CIDMeasurementInitiationRequest-IEs}},
  ...
}

E-CIDMeasurementInitiationRequest-IEs F1AP-PROTOCOL-IES ::= {
  { ID id-gNB-CU-UE-F1AP-ID      CRITICALITY reject TYPE GNB-CU-UE-F1AP-ID      PRESENCE mandatory }|
  { ID id-gNB-DU-UE-F1AP-ID      CRITICALITY reject TYPE GNB-DU-UE-F1AP-ID      PRESENCE mandatory }|
  { ID id-LMF-UE-MeasurementID    CRITICALITY reject TYPE LMF-UE-MeasurementID    PRESENCE mandatory }|
  { ID id-RAN-UE-MeasurementID    CRITICALITY reject TYPE RAN-UE-MeasurementID    PRESENCE mandatory }|
  { ID id-E-CID-ReportCharacteristics CRITICALITY reject TYPE E-CID-ReportCharacteristics PRESENCE mandatory }|
  { ID id-E-CID-MeasurementPeriodicity CRITICALITY reject TYPE MeasurementPeriodicity PRESENCE conditional }|
  -- The above IE shall be present if the E-CID-ReportCharacteristics IE is set to "periodic" --
  { ID id-E-CID-MeasurementQuantities CRITICALITY reject TYPE E-CID-MeasurementQuantities PRESENCE mandatory }|
  { ID id-PosMeasurementPeriodicityNR-AoA CRITICALITY reject TYPE PosMeasurementPeriodicityNR-AoA PRESENCE conditional },
  -- The IE shall be present if the E-CID-ReportCharacteristics IE is set to "periodic" and the E-CID-MeasurementQuantities-Item IE in the E-CID-
  MeasurementQuantities IE is set to the value "angleOfArrivalNR"--
  ...
}

-- *****
--
-- E-CID Measurement Initiation Response
--
-- *****

E-CIDMeasurementInitiationResponse ::= SEQUENCE {
  protocolIEs      ProtocolIE-Container    {{E-CIDMeasurementInitiationResponse-IEs}},
  ...
}

E-CIDMeasurementInitiationResponse-IEs F1AP-PROTOCOL-IES ::= {
  { ID id-gNB-CU-UE-F1AP-ID      CRITICALITY reject TYPE GNB-CU-UE-F1AP-ID      PRESENCE mandatory }|
  { ID id-gNB-DU-UE-F1AP-ID      CRITICALITY reject TYPE GNB-DU-UE-F1AP-ID      PRESENCE mandatory }|

```



```

    { ID id-LMF-UE-MeasurementID      CRITICALITY reject TYPE LMF-UE-MeasurementID      PRESENCE mandatory }|
    { ID id-RAN-UE-MeasurementID      CRITICALITY reject TYPE RAN-UE-MeasurementID      PRESENCE mandatory }|
    { ID id-E-CID-MeasurementResult    CRITICALITY ignore TYPE E-CID-MeasurementResult    PRESENCE optional }|
    { ID id-Cell-Portion-ID           CRITICALITY ignore TYPE Cell-Portion-ID           PRESENCE optional }|
    { ID id-CriticalityDiagnostics     CRITICALITY ignore TYPE CriticalityDiagnostics     PRESENCE optional },
    ...
}

-- *****
--
-- E-CID Measurement Initiation Failure
--
-- *****

E-CIDMeasurementInitiationFailure ::= SEQUENCE {
    protocolIES                ProtocolIE-Container    {{E-CIDMeasurementInitiationFailure-IEs}},
    ...
}

E-CIDMeasurementInitiationFailure-IEs F1AP-PROTOCOL-IES ::= {
    { ID id-gNB-CU-UE-F1AP-ID      CRITICALITY reject TYPE GNB-CU-UE-F1AP-ID      PRESENCE mandatory }|
    { ID id-gNB-DU-UE-F1AP-ID      CRITICALITY reject TYPE GNB-DU-UE-F1AP-ID      PRESENCE mandatory }|
    { ID id-LMF-UE-MeasurementID    CRITICALITY reject TYPE LMF-UE-MeasurementID    PRESENCE mandatory }|
    { ID id-RAN-UE-MeasurementID    CRITICALITY reject TYPE RAN-UE-MeasurementID    PRESENCE mandatory }|
    { ID id-Cause                  CRITICALITY ignore TYPE Cause                  PRESENCE mandatory }|
    { ID id-CriticalityDiagnostics  CRITICALITY ignore TYPE CriticalityDiagnostics  PRESENCE optional },
    ...
}

-- *****
--
-- E-CID MEASUREMENT FAILURE INDICATION PROCEDURE
--
-- *****

-- *****
--
-- E-CID Measurement Failure Indication
--
-- *****

E-CIDMeasurementFailureIndication ::= SEQUENCE {
    protocolIES                ProtocolIE-Container    {{E-CIDMeasurementFailureIndication-IEs}},
    ...
}

E-CIDMeasurementFailureIndication-IEs F1AP-PROTOCOL-IES ::= {
    { ID id-gNB-CU-UE-F1AP-ID      CRITICALITY reject TYPE GNB-CU-UE-F1AP-ID      PRESENCE mandatory }|
    { ID id-gNB-DU-UE-F1AP-ID      CRITICALITY reject TYPE GNB-DU-UE-F1AP-ID      PRESENCE mandatory }|
    { ID id-LMF-UE-MeasurementID    CRITICALITY reject TYPE LMF-UE-MeasurementID    PRESENCE mandatory }|
    { ID id-RAN-UE-MeasurementID    CRITICALITY reject TYPE RAN-UE-MeasurementID    PRESENCE mandatory }|
    { ID id-Cause                  CRITICALITY ignore TYPE Cause                  PRESENCE mandatory },

```

```

    ...
}

-- *****
--
-- E-CID MEASUREMENT REPORT PROCEDURE
--
-- *****

-- *****
--
-- E-CID Measurement Report
--
-- *****

E-CIDMeasurementReport ::= SEQUENCE {
    protocolIES                ProtocolIE-Container    {{E-CIDMeasurementReport-IEs}},
    ...
}

E-CIDMeasurementReport-IEs F1AP-PROTOCOL-IES ::= {
    { ID id-gNB-CU-UE-F1AP-ID      CRITICALITY reject TYPE GNB-CU-UE-F1AP-ID      PRESENCE mandatory }|
    { ID id-gNB-DU-UE-F1AP-ID      CRITICALITY reject TYPE GNB-DU-UE-F1AP-ID      PRESENCE mandatory }|
    { ID id-LMF-UE-MeasurementID    CRITICALITY reject TYPE LMF-UE-MeasurementID    PRESENCE mandatory }|
    { ID id-RAN-UE-MeasurementID    CRITICALITY reject TYPE RAN-UE-MeasurementID    PRESENCE mandatory }|
    { ID id-E-CID-MeasurementResult CRITICALITY ignore TYPE E-CID-MeasurementResult PRESENCE mandatory }|
    { ID id-Cell-Portion-ID         CRITICALITY ignore TYPE Cell-Portion-ID         PRESENCE optional},
    ...
}

-- *****
--
-- E-CID MEASUREMENT TERMINATION PROCEDURE
--
-- *****

-- *****
--
-- E-CID Measurement Termination Command
--
-- *****

E-CIDMeasurementTerminationCommand ::= SEQUENCE {
    protocolIES                ProtocolIE-Container    {{E-CIDMeasurementTerminationCommand-IEs}},
    ...
}

E-CIDMeasurementTerminationCommand-IEs F1AP-PROTOCOL-IES ::= {
    { ID id-gNB-CU-UE-F1AP-ID      CRITICALITY reject TYPE GNB-CU-UE-F1AP-ID      PRESENCE mandatory }|
    { ID id-gNB-DU-UE-F1AP-ID      CRITICALITY reject TYPE GNB-DU-UE-F1AP-ID      PRESENCE mandatory }|

```

```

    { ID id-LMF-UE-MeasurementID          CRITICALITY reject TYPE LMF-UE-MeasurementID          PRESENCE mandatory }|
    { ID id-RAN-UE-MeasurementID          CRITICALITY reject TYPE RAN-UE-MeasurementID          PRESENCE mandatory },
    ...
}

-- *****
--
-- BROADCAST CONTEXT SETUP ELEMENTARY PROCEDURE
--
-- *****

-- *****
--
-- BROADCAST CONTEXT SETUP REQUEST
--
-- *****

BroadcastContextSetupRequest ::= SEQUENCE {
    protocolIES          ProtocolIE-Container          { { BroadcastContextSetupRequestIES} },
    ...
}

BroadcastContextSetupRequestIES F1AP-PROTOCOL-IES ::= {
    { ID id-gNB-CU-MBS-F1AP-ID          CRITICALITY reject TYPE GNB-CU-MBS-F1AP-ID          PRESENCE mandatory }|
    { ID id-MBS-Session-ID              CRITICALITY reject TYPE MBS-Session-ID              PRESENCE mandatory }|
    { ID id-MBS-ServiceArea              CRITICALITY reject TYPE MBS-ServiceArea              PRESENCE optional }|
    { ID id-MBS-CUtoDURRCInformation      CRITICALITY reject TYPE MBS-CUtoDURRCInformation      PRESENCE mandatory }|
    { ID id-SNSSAI                      CRITICALITY reject TYPE SNSSAI                      PRESENCE mandatory }|
    { ID id-BroadcastMRBs-ToBeSetup-List CRITICALITY reject TYPE BroadcastMRBs-ToBeSetup-List PRESENCE mandatory },
    ...
}

BroadcastMRBs-ToBeSetup-List ::= SEQUENCE (SIZE(1..maxnoofMRBs)) OF ProtocolIE-SingleContainer { { BroadcastMRBs-ToBeSetup-ItemIES} }

BroadcastMRBs-ToBeSetup-ItemIES F1AP-PROTOCOL-IES ::= {
    { ID id-BroadcastMRBs-ToBeSetup-Item CRITICALITY reject TYPE BroadcastMRBs-ToBeSetup-Item PRESENCE mandatory },
    ...
}

-- *****
--
-- BROADCAST CONTEXT SETUP RESPONSE
--
-- *****

BroadcastContextSetupResponse ::= SEQUENCE {
    protocolIES          ProtocolIE-Container          { { BroadcastContextSetupResponseIES} },
    ...
}

BroadcastContextSetupResponseIES F1AP-PROTOCOL-IES ::= {
    { ID id-gNB-CU-MBS-F1AP-ID          CRITICALITY reject TYPE GNB-CU-MBS-F1AP-ID          PRESENCE mandatory }|

```

```

    { ID id-gNB-DU-MBS-F1AP-ID          CRITICALITY reject TYPE GNB-DU-MBS-F1AP-ID          PRESENCE mandatory }|
    { ID id-BroadcastMRBs-Setup-List     CRITICALITY reject TYPE BroadcastMRBs-Setup-List     PRESENCE mandatory }|
    { ID id-BroadcastMRBs-FailedToBeSetup-List CRITICALITY ignore TYPE BroadcastMRBs-FailedToBeSetup-List PRESENCE optional }|
    { ID id-BroadcastAreaScope           CRITICALITY ignore TYPE BroadcastAreaScope           PRESENCE optional }|
    { ID id-CriticalityDiagnostics        CRITICALITY ignore TYPE CriticalityDiagnostics        PRESENCE optional },
    ...
}

BroadcastMRBs-Setup-List ::= SEQUENCE (SIZE(1..maxnoofMRBs)) OF ProtocolIE-SingleContainer { { BroadcastMRBs-Setup-ItemIEs} }

BroadcastMRBs-FailedToBeSetup-List ::= SEQUENCE (SIZE(1..maxnoofMRBs)) OF ProtocolIE-SingleContainer { { BroadcastMRBs-FailedToBeSetup-ItemIEs} }

BroadcastMRBs-Setup-ItemIEs F1AP-PROTOCOL-IES ::= {
    { ID id-BroadcastMRBs-Setup-Item          CRITICALITY reject TYPE BroadcastMRBs-Setup-Item          PRESENCE mandatory},
    ...
}

BroadcastMRBs-FailedToBeSetup-ItemIEs F1AP-PROTOCOL-IES ::= {
    { ID id-BroadcastMRBs-FailedToBeSetup-Item CRITICALITY ignore TYPE BroadcastMRBs-FailedToBeSetup-Item PRESENCE mandatory}, ...
}

-- *****
--
-- BROADCAST CONTEXT SETUP FAILURE
--
-- *****

BroadcastContextSetupFailure ::= SEQUENCE {
    protocolIEs          ProtocolIE-Container          { { BroadcastContextSetupFailureIEs} },
    ...
}

BroadcastContextSetupFailureIEs F1AP-PROTOCOL-IES ::= {
    { ID id-gNB-CU-MBS-F1AP-ID          CRITICALITY reject TYPE GNB-CU-UE-F1AP-ID          PRESENCE mandatory }|
    { ID id-gNB-DU-MBS-F1AP-ID          CRITICALITY ignore TYPE GNB-DU-UE-F1AP-ID          PRESENCE optional }|
    { ID id-Cause                       CRITICALITY ignore TYPE Cause                       PRESENCE mandatory }|
    { ID id-CriticalityDiagnostics       CRITICALITY ignore TYPE CriticalityDiagnostics       PRESENCE optional },
    ...
}

-- *****
--
-- BROADCAST CONTEXT RELEASE ELEMENTARY PROCEDURE
--
-- *****

-- *****
--
-- BROADCAST CONTEXT RELEASE COMMAND
--
-- *****

BroadcastContextReleaseCommand ::= SEQUENCE {

```

```

    protocolIEs          ProtocolIE-Container    { { BroadcastContextReleaseCommandIEs} },
    ...
}

BroadcastContextReleaseCommandIEs F1AP-PROTOCOL-IES ::= {
    { ID id-gNB-CU-MBS-F1AP-ID          CRITICALITY reject TYPE GNB-CU-MBS-F1AP-ID          PRESENCE mandatory }|
    { ID id-gNB-DU-MBS-F1AP-ID          CRITICALITY reject TYPE GNB-DU-MBS-F1AP-ID          PRESENCE mandatory }|
    { ID id-Cause                        CRITICALITY ignore TYPE Cause                      PRESENCE mandatory },
    ...
}

-- *****
--
-- BROADCAST CONTEXT RELEASE COMPLETE
--
-- *****

BroadcastContextReleaseComplete ::= SEQUENCE {
    protocolIEs          ProtocolIE-Container    { { BroadcastContextReleaseCompleteIEs} },
    ...
}

BroadcastContextReleaseCompleteIEs F1AP-PROTOCOL-IES ::= {
    { ID id-gNB-CU-MBS-F1AP-ID          CRITICALITY reject TYPE GNB-CU-MBS-F1AP-ID          PRESENCE mandatory }|
    { ID id-gNB-DU-MBS-F1AP-ID          CRITICALITY reject TYPE GNB-DU-MBS-F1AP-ID          PRESENCE mandatory }|
    { ID id-CriticalityDiagnostics      CRITICALITY ignore TYPE CriticalityDiagnostics      PRESENCE optional },
    ...
}

-- *****
--
-- BROADCAST CONTEXT RELEASE REQUEST ELEMENTARY PROCEDURE
--
-- *****

-- *****
--
-- BROADCAST CONTEXT RELEASE REQUEST
--
-- *****

BroadcastContextReleaseRequest ::= SEQUENCE {
    protocolIEs          ProtocolIE-Container    {{ BroadcastContextReleaseRequestIEs}},
    ...
}

BroadcastContextReleaseRequestIEs F1AP-PROTOCOL-IES ::= {
    { ID id-gNB-CU-MBS-F1AP-ID          CRITICALITY reject TYPE GNB-CU-MBS-F1AP-ID          PRESENCE mandatory }|
    { ID id-gNB-DU-MBS-F1AP-ID          CRITICALITY reject TYPE GNB-DU-MBS-F1AP-ID          PRESENCE mandatory }|
    { ID id-Cause                        CRITICALITY ignore TYPE Cause                      PRESENCE mandatory },
    ...
}

```

```
-- *****
--
-- BROADCAST CONTEXT MODIFICATION ELEMENTARY PROCEDURE
--
-- *****
--
-- *****
--
-- BROADCAST CONTEXT MODIFICATION REQUEST
--
-- *****
```

```
BroadcastContextModificationRequest ::= SEQUENCE {
    protocolIES          ProtocolIE-Container    { { BroadcastContextModificationRequestIES} },
    ...
}
```

```
BroadcastContextModificationRequestIES F1AP-PROTOCOL-IES ::= {
    { ID id-gNB-CU-MBS-F1AP-ID          CRITICALITY reject TYPE GNB-CU-MBS-F1AP-ID          PRESENCE mandatory }|
    { ID id-gNB-DU-MBS-F1AP-ID          CRITICALITY reject TYPE GNB-DU-MBS-F1AP-ID          PRESENCE mandatory }|
    { ID id-MBS-ServiceArea              CRITICALITY reject TYPE MBS-ServiceArea              PRESENCE optional   }|
    { ID id-MBS-CUtoDURRCInformation     CRITICALITY reject TYPE MBS-CUtoDURRCInformation     PRESENCE mandatory   }|
    { ID id-BroadcastMRBs-ToBeSetupMod-List CRITICALITY reject TYPE BroadcastMRBs-ToBeSetupMod-List PRESENCE optional   }|
    { ID id-BroadcastMRBs-ToBeModified-List CRITICALITY reject TYPE BroadcastMRBs-ToBeModified-List PRESENCE optional   }|
    { ID id-BroadcastMRBs-ToBeReleased-List CRITICALITY reject TYPE BroadcastMRBs-ToBeReleased-List PRESENCE optional   },
    ...
}
```

```
BroadcastMRBs-ToBeSetupMod-List ::= SEQUENCE (SIZE(1..maxnoofMRBs)) OF ProtocolIE-SingleContainer { { BroadcastMRBs-ToBeSetupMod-ItemIES} }
BroadcastMRBs-ToBeModified-List ::= SEQUENCE (SIZE(1..maxnoofMRBs)) OF ProtocolIE-SingleContainer { { BroadcastMRBs-ToBeModified-ItemIES} }
BroadcastMRBs-ToBeReleased-List ::= SEQUENCE (SIZE(1..maxnoofMRBs)) OF ProtocolIE-SingleContainer { { BroadcastMRBs-ToBeReleased-ItemIES} }
```

```
BroadcastMRBs-ToBeSetupMod-ItemIES F1AP-PROTOCOL-IES ::= {
    { ID id-BroadcastMRBs-ToBeSetupMod-Item CRITICALITY reject TYPE BroadcastMRBs-ToBeSetupMod-Item PRESENCE mandatory},
    ...
}
```

```
BroadcastMRBs-ToBeModified-ItemIES F1AP-PROTOCOL-IES ::= {
    { ID id-BroadcastMRBs-ToBeModified-Item CRITICALITY reject TYPE BroadcastMRBs-ToBeModified-Item PRESENCE mandatory},
    ...
}
```

```
BroadcastMRBs-ToBeReleased-ItemIES F1AP-PROTOCOL-IES ::= {
    { ID id-BroadcastMRBs-ToBeReleased-Item CRITICALITY reject TYPE BroadcastMRBs-ToBeReleased-Item PRESENCE mandatory},
    ...
}
```

```
-- *****
--
-- BROADCAST CONTEXT MODIFICATION RESPONSE
--
-- *****
```

```

BroadcastContextModificationResponse ::= SEQUENCE {
    protocolIEs          ProtocolIE-Container    { { BroadcastContextModificationResponseIEs } },
    ...
}

BroadcastContextModificationResponseIEs F1AP-PROTOCOL-IES ::= {
    { ID id-gNB-CU-MBS-F1AP-ID          CRITICALITY reject TYPE GNB-CU-MBS-F1AP-ID          PRESENCE mandatory}|
    { ID id-gNB-DU-MBS-F1AP-ID          CRITICALITY reject TYPE GNB-DU-MBS-F1AP-ID          PRESENCE mandatory}|
    { ID id-BroadcastMRBs-SetupMod-List  CRITICALITY reject TYPE BroadcastMRBs-SetupMod-List  PRESENCE optional}|
    { ID id-BroadcastMRBs-FailedToBeSetupMod-List CRITICALITY ignore TYPE BroadcastMRBs-FailedToBeSetupMod-List PRESENCE optional}|
    { ID id-BroadcastMRBs-Modified-List   CRITICALITY reject TYPE BroadcastMRBs-Modified-List   PRESENCE optional}|
    { ID id-BroadcastMRBs-FailedToBeModified-List CRITICALITY ignore TYPE BroadcastMRBs-FailedToBeModified-List PRESENCE optional}|
    { ID id-CriticalityDiagnostics        CRITICALITY ignore TYPE CriticalityDiagnostics        PRESENCE optional}|
    { ID id-BroadcastAreaScope            CRITICALITY ignore TYPE BroadcastAreaScope            PRESENCE optional},
    ...
}

BroadcastMRBs-SetupMod-List ::= SEQUENCE (SIZE(1..maxnoofMRBs)) OF ProtocolIE-SingleContainer { { BroadcastMRBs-SetupMod-ItemIEs } }

BroadcastMRBs-FailedToBeSetupMod-List ::= SEQUENCE (SIZE(1..maxnoofMRBs)) OF ProtocolIE-SingleContainer { { BroadcastMRBs-FailedToBeSetupMod-ItemIEs } }

BroadcastMRBs-Modified-List ::= SEQUENCE (SIZE(1..maxnoofMRBs)) OF ProtocolIE-SingleContainer { { BroadcastMRBs-Modified-ItemIEs } }

BroadcastMRBs-FailedToBeModified-List ::= SEQUENCE (SIZE(1..maxnoofMRBs)) OF ProtocolIE-SingleContainer { { BroadcastMRBs-FailedToBeModified-ItemIEs } }

BroadcastMRBs-SetupMod-ItemIEs F1AP-PROTOCOL-IES ::= {
    { ID id-BroadcastMRBs-SetupMod-Item          CRITICALITY reject TYPE BroadcastMRBs-SetupMod-Item          PRESENCE mandatory},
    ...
}

BroadcastMRBs-FailedToBeSetupMod-ItemIEs F1AP-PROTOCOL-IES ::= {
    { ID id-BroadcastMRBs-FailedToBeSetupMod-Item CRITICALITY ignore TYPE BroadcastMRBs-FailedToBeSetupMod-Item PRESENCE mandatory},
    ...
}

BroadcastMRBs-Modified-ItemIEs F1AP-PROTOCOL-IES ::= {
    { ID id-BroadcastMRBs-Modified-Item          CRITICALITY reject TYPE BroadcastMRBs-Modified-Item          PRESENCE mandatory},
    ...
}

BroadcastMRBs-FailedToBeModified-ItemIEs F1AP-PROTOCOL-IES ::= {
    { ID id-BroadcastMRBs-FailedToBeModified-Item CRITICALITY ignore TYPE BroadcastMRBs-FailedToBeModified-Item PRESENCE mandatory},
    ...
}

-- *****
--
-- BROADCAST CONTEXT MODIFICATION FAILURE

```

```

--
-- *****
BroadcastContextModificationFailure ::= SEQUENCE {
    protocolIES          ProtocolIE-Container      { { BroadcastContextModificationFailureIES} },
    ...
}

BroadcastContextModificationFailureIES F1AP-PROTOCOL-IES ::= {
    { ID id-gNB-CU-MBS-F1AP-ID          CRITICALITY reject TYPE GNB-CU-MBS-F1AP-ID          PRESENCE mandatory }|
    { ID id-gNB-DU-MBS-F1AP-ID          CRITICALITY reject TYPE GNB-DU-MBS-F1AP-ID          PRESENCE mandatory }|
    { ID id-Cause                        CRITICALITY ignore TYPE Cause                      PRESENCE mandatory }|
    { ID id-CriticalityDiagnostics        CRITICALITY ignore TYPE CriticalityDiagnostics    PRESENCE optional },
    ...
}

-- *****
--
-- Multicast Group Paging PROCEDURE
--
-- *****

-- *****
--
-- Multicast Group Paging
--
-- *****

MulticastGroupPaging ::= SEQUENCE {
    protocolIES          ProtocolIE-Container      {{ MulticastGroupPagingIES}},
    ...
}

MulticastGroupPagingIES F1AP-PROTOCOL-IES ::= {
    { ID id-MBS-Session-ID          CRITICALITY reject TYPE MBS-Session-ID          PRESENCE mandatory }|
    { ID id-UEIdentity-List-For-Paging-List CRITICALITY ignore TYPE UEIdentity-List-For-Paging-List PRESENCE optional }|
    { ID id-MC-PagingCell-List      CRITICALITY ignore TYPE MC-PagingCell-list      PRESENCE optional },
    ...
}

UEIdentity-List-For-Paging-List ::= SEQUENCE (SIZE(1.. maxnoofUEIDforPaging)) OF ProtocolIE-SingleContainer { { UEIdentity-List-For-Paging-ItemIES } }

UEIdentity-List-For-Paging-ItemIES F1AP-PROTOCOL-IES ::= {
    { ID id-UEIdentity-List-For-Paging-Item CRITICALITY ignore TYPE UEIdentity-List-For-Paging-Item PRESENCE mandatory },
    ...
}

MC-PagingCell-list ::= SEQUENCE (SIZE(1.. maxnoofPagingCells)) OF ProtocolIE-SingleContainer { { MC-PagingCell-ItemIES } }

MC-PagingCell-ItemIES F1AP-PROTOCOL-IES ::= {

```



```

    { ID id-MC-PagingCell-Item      CRITICALITY ignore  TYPE MC-PagingCell-Item      PRESENCE mandatory} ,
    ...
}

-- *****
--
-- MULTICAST CONTEXT SETUP ELEMENTARY PROCEDURE
--
-- *****

-- *****
--
-- MULTICAST CONTEXT SETUP REQUEST
--
-- *****

MulticastContextSetupRequest ::= SEQUENCE {
    protocolIES          ProtocolIE-Container      {{ MulticastContextSetupRequestIES}},
    ...
}

MulticastContextSetupRequestIES F1AP-PROTOCOL-IES ::= {
    { ID id-gNB-CU-MBS-F1AP-ID      CRITICALITY reject  TYPE GNB-CU-MBS-F1AP-ID      PRESENCE mandatory }|
    { ID id-MBS-Session-ID          CRITICALITY reject  TYPE MBS-Session-ID        PRESENCE mandatory }|
    { ID id-MBS-ServiceArea          CRITICALITY reject  TYPE MBS-ServiceArea       PRESENCE optional   }|
    { ID id-SNSSAI                   CRITICALITY reject  TYPE SNSSAI                PRESENCE mandatory }|
    { ID id-MulticastMRBs-ToBeSetup-List CRITICALITY reject  TYPE MulticastMRBs-ToBeSetup-List PRESENCE mandatory },
    ...
}

MulticastMRBs-ToBeSetup-List ::= SEQUENCE (SIZE(1..maxnoofMRBs)) OF ProtocolIE-SingleContainer { { MulticastMRBs-ToBeSetup-ItemIES} }

MulticastMRBs-ToBeSetup-ItemIES F1AP-PROTOCOL-IES ::= {
    { ID id-MulticastMRBs-ToBeSetup-Item CRITICALITY reject  TYPE MulticastMRBs-ToBeSetup-Item PRESENCE mandatory },
    ...
}

-- *****
--
-- MULTICAST CONTEXT SETUP RESPONSE
--
-- *****

MulticastContextSetupResponse ::= SEQUENCE {
    protocolIES          ProtocolIE-Container      {{ MulticastContextSetupResponseIES}},
    ...
}

MulticastContextSetupResponseIES F1AP-PROTOCOL-IES ::= {

```

```

    { ID id-gNB-CU-MBS-F1AP-ID          CRITICALITY reject TYPE GNB-CU-MBS-F1AP-ID          PRESENCE mandatory }|
    { ID id-gNB-DU-MBS-F1AP-ID          CRITICALITY reject TYPE GNB-DU-MBS-F1AP-ID          PRESENCE mandatory }|
    { ID id-MulticastMRBs-Setup-List     CRITICALITY reject TYPE MulticastMRBs-Setup-List     PRESENCE mandatory }|
    { ID id-MulticastMRBs-FailedToBeSetup-List CRITICALITY ignore TYPE MulticastMRBs-FailedToBeSetup-List PRESENCE optional }|
    { ID id-CriticalityDiagnostics       CRITICALITY ignore TYPE CriticalityDiagnostics       PRESENCE optional },
    ...
}

MulticastMRBs-Setup-List ::= SEQUENCE (SIZE(1..maxnoofMRBs)) OF ProtocolIE-SingleContainer { { MulticastMRBs-Setup-ItemIEs} }

MulticastMRBs-FailedToBeSetup-List ::= SEQUENCE (SIZE(1..maxnoofMRBs)) OF ProtocolIE-SingleContainer { { MulticastMRBs-FailedToBeSetup-ItemIEs} }

MulticastMRBs-Setup-ItemIEs F1AP-PROTOCOL-IES ::= {
    { ID id-MulticastMRBs-Setup-Item          CRITICALITY reject TYPE MulticastMRBs-Setup-Item          PRESENCE mandatory},
    ...
}

MulticastMRBs-FailedToBeSetup-ItemIEs F1AP-PROTOCOL-IES ::= {
    { ID id-MulticastMRBs-FailedToBeSetup-Item          CRITICALITY ignore TYPE MulticastMRBs-FailedToBeSetup-Item          PRESENCE mandatory},
    ...
}

-- *****
--
-- MULTICAST CONTEXT SETUP FAILURE
--
-- *****

MulticastContextSetupFailure ::= SEQUENCE {
    protocolIEs          ProtocolIE-Container    {{ MulticastContextSetupFailureIEs}},
    ...
}

MulticastContextSetupFailureIEs F1AP-PROTOCOL-IES ::= {
    { ID id-gNB-CU-MBS-F1AP-ID          CRITICALITY reject TYPE GNB-CU-MBS-F1AP-ID          PRESENCE mandatory }|
    { ID id-gNB-DU-MBS-F1AP-ID          CRITICALITY ignore TYPE GNB-DU-MBS-F1AP-ID          PRESENCE optional }|
    { ID id-Cause                       CRITICALITY ignore TYPE Cause                       PRESENCE mandatory }|
    { ID id-CriticalityDiagnostics       CRITICALITY ignore TYPE CriticalityDiagnostics       PRESENCE optional },
    ...
}

-- *****
--
-- MULTICAST CONTEXT RELEASE ELEMENTARY PROCEDURE
--
-- *****

-- *****
--
-- MULTICAST CONTEXT RELEASE COMMAND
--

```

```

-- *****

MulticastContextReleaseCommand ::= SEQUENCE {
    protocolIES          ProtocolIE-Container      {{ MulticastContextReleaseCommandIES}},
    ...
}

MulticastContextReleaseCommandIES F1AP-PROTOCOL-IES ::= {
    { ID id-gNB-CU-MBS-F1AP-ID          CRITICALITY reject TYPE GNB-CU-MBS-F1AP-ID PRESENCE mandatory }|
    { ID id-gNB-DU-MBS-F1AP-ID          CRITICALITY reject TYPE GNB-DU-MBS-F1AP-ID PRESENCE mandatory }|
    { ID id-Cause                        CRITICALITY ignore TYPE Cause PRESENCE mandatory },
    ...
}

-- *****
--
-- MULTICAST CONTEXT RELEASE COMPLETE
--
-- *****

MulticastContextReleaseComplete ::= SEQUENCE {
    protocolIES          ProtocolIE-Container      {{ MulticastContextReleaseCompleteIES}},
    ...
}

MulticastContextReleaseCompleteIES F1AP-PROTOCOL-IES ::= {
    { ID id-gNB-CU-MBS-F1AP-ID          CRITICALITY reject TYPE GNB-CU-MBS-F1AP-ID PRESENCE mandatory }|
    { ID id-gNB-DU-MBS-F1AP-ID          CRITICALITY reject TYPE GNB-DU-MBS-F1AP-ID PRESENCE mandatory }|
    { ID id-CriticalityDiagnostics      CRITICALITY ignore TYPE CriticalityDiagnostics PRESENCE optional },
    ...
}

-- *****
--
-- MULTICAST CONTEXT RELEASE REQUEST ELEMENTARY PROCEDURE
--
-- *****

-- *****
--
-- MULTICAST CONTEXT RELEASE REQUEST
--
-- *****

MulticastContextReleaseRequest ::= SEQUENCE {
    protocolIES          ProtocolIE-Container      {{ MulticastContextReleaseRequestIES}},
    ...
}

MulticastContextReleaseRequestIES F1AP-PROTOCOL-IES ::= {
    { ID id-gNB-CU-MBS-F1AP-ID          CRITICALITY reject TYPE GNB-CU-MBS-F1AP-ID PRESENCE mandatory }|

```

```

    { ID id-gNB-DU-MBS-F1AP-ID          CRITICALITY reject TYPE GNB-DU-MBS-F1AP-ID      PRESENCE mandatory }|
    { ID id-Cause                        CRITICALITY ignore TYPE Cause                PRESENCE mandatory },
    ...
}

-- *****
--
-- MULTICAST CONTEXT MODIFICATION ELEMENTARY PROCEDURE
--
-- *****

-- *****
--
-- MULTICAST CONTEXT MODIFICATION REQUEST
--
-- *****

MulticastContextModificationRequest ::= SEQUENCE {
    protocolIES          ProtocolIE-Container    {{ MulticastContextModificationRequestIES}},
    ...
}

MulticastContextModificationRequestIES F1AP-PROTOCOL-IES ::= {
    { ID id-gNB-CU-MBS-F1AP-ID          CRITICALITY reject TYPE GNB-CU-MBS-F1AP-ID      PRESENCE mandatory }|
    { ID id-gNB-DU-MBS-F1AP-ID          CRITICALITY reject TYPE GNB-DU-MBS-F1AP-ID      PRESENCE mandatory }|
    { ID id-MBS-ServiceArea              CRITICALITY reject TYPE MBS-ServiceArea        PRESENCE optional  }|
    { ID id-MulticastMRBs-ToBeSetupMod-List CRITICALITY reject TYPE MulticastMRBs-ToBeSetupMod-List PRESENCE optional  }|
    { ID id-MulticastMRBs-ToBeModified-List CRITICALITY reject TYPE MulticastMRBs-ToBeModified-List PRESENCE optional  }|
    { ID id-MulticastMRBs-ToBeReleased-List CRITICALITY reject TYPE MulticastMRBs-ToBeReleased-List PRESENCE optional  },
    ...
}

MulticastMRBs-ToBeSetupMod-List ::= SEQUENCE (SIZE(1..maxnoofMRBs)) OF ProtocolIE-SingleContainer { { MulticastMRBs-ToBeSetupMod-ItemIES} }
MulticastMRBs-ToBeSetupMod-ItemIES F1AP-PROTOCOL-IES ::= {
    { ID id-MulticastMRBs-ToBeSetupMod-Item CRITICALITY reject TYPE MulticastMRBs-ToBeSetupMod-Item PRESENCE mandatory},
    ...
}

MulticastMRBs-ToBeModified-List ::= SEQUENCE (SIZE(1..maxnoofMRBs)) OF ProtocolIE-SingleContainer { { MulticastMRBs-ToBeModified-ItemIES} }
MulticastMRBs-ToBeModified-ItemIES F1AP-PROTOCOL-IES ::= {
    { ID id-MulticastMRBs-ToBeModified-Item CRITICALITY reject TYPE MulticastMRBs-ToBeModified-Item PRESENCE mandatory},
    ...
}

MulticastMRBs-ToBeReleased-List ::= SEQUENCE (SIZE(1..maxnoofMRBs)) OF ProtocolIE-SingleContainer { { MulticastMRBs-ToBeReleased-ItemIES} }
MulticastMRBs-ToBeReleased-ItemIES F1AP-PROTOCOL-IES ::= {
    { ID id-MulticastMRBs-ToBeReleased-Item CRITICALITY reject TYPE MulticastMRBs-ToBeReleased-Item PRESENCE mandatory},
    ...
}

```

```

-- *****
--
-- MULTICAST CONTEXT MODIFICATION RESPONSE
--
-- *****

MulticastContextModificationResponse ::= SEQUENCE {
    protocolIEs          ProtocolIE-Container    {{ MulticastContextModificationResponseIEs}},
    ...
}

MulticastContextModificationResponseIEs F1AP-PROTOCOL-IES ::= {
    { ID id-gNB-CU-MBS-F1AP-ID          CRITICALITY reject TYPE GNB-CU-MBS-F1AP-ID          PRESENCE mandatory }|
    { ID id-gNB-DU-MBS-F1AP-ID          CRITICALITY reject TYPE GNB-DU-MBS-F1AP-ID          PRESENCE mandatory }|
    { ID id-MulticastMRBs-SetupMod-List  CRITICALITY reject TYPE MulticastMRBs-SetupMod-List PRESENCE optional  }|
    { ID id-MulticastMRBs-FailedToBeSetupMod-List CRITICALITY ignore TYPE MulticastMRBs-FailedToBeSetupMod-List PRESENCE optional }|
    { ID id-MulticastMRBs-Modified-List   CRITICALITY reject TYPE MulticastMRBs-Modified-List PRESENCE optional }|
    { ID id-MulticastMRBs-FailedToBeModified-List CRITICALITY ignore TYPE MulticastMRBs-FailedToBeModified-List PRESENCE optional }|
    { ID id-CriticalityDiagnostics        CRITICALITY ignore TYPE CriticalityDiagnostics        PRESENCE optional },
    ...
}

MulticastMRBs-SetupMod-List ::= SEQUENCE (SIZE(1..maxnoofMRBs)) OF ProtocolIE-SingleContainer { { MulticastMRBs-SetupMod-ItemIEs } }
MulticastMRBs-SetupMod-ItemIEs F1AP-PROTOCOL-IES ::= {
    { ID id-MulticastMRBs-SetupMod-Item          CRITICALITY reject TYPE MulticastMRBs-SetupMod-Item          PRESENCE mandatory},
    ...
}

MulticastMRBs-FailedToBeSetupMod-List ::= SEQUENCE (SIZE(1..maxnoofMRBs)) OF ProtocolIE-SingleContainer { { MulticastMRBs-FailedToBeSetupMod-ItemIEs } }
MulticastMRBs-FailedToBeSetupMod-ItemIEs F1AP-PROTOCOL-IES ::= {
    { ID id-MulticastMRBs-FailedToBeSetupMod-Item CRITICALITY ignore TYPE MulticastMRBs-FailedToBeSetupMod-Item PRESENCE mandatory},
    ...
}

MulticastMRBs-Modified-List ::= SEQUENCE (SIZE(1..maxnoofMRBs)) OF ProtocolIE-SingleContainer { { MulticastMRBs-Modified-ItemIEs } }
MulticastMRBs-Modified-ItemIEs F1AP-PROTOCOL-IES ::= {
    { ID id-MulticastMRBs-Modified-Item          CRITICALITY reject TYPE MulticastMRBs-Modified-Item          PRESENCE mandatory},
    ...
}

MulticastMRBs-FailedToBeModified-List ::= SEQUENCE (SIZE(1..maxnoofMRBs)) OF ProtocolIE-SingleContainer { { MulticastMRBs-FailedToBeModified-ItemIEs } }
MulticastMRBs-FailedToBeModified-ItemIEs F1AP-PROTOCOL-IES ::= {
    { ID id-MulticastMRBs-FailedToBeModified-Item CRITICALITY ignore TYPE MulticastMRBs-FailedToBeModified-Item PRESENCE mandatory},
    ...
}

-- *****
--
-- MULTICAST CONTEXT MODIFICATION FAILURE
--
-- *****

```

```

MulticastContextModificationFailure ::= SEQUENCE {
    protocolIES          ProtocolIE-Container    {{ MulticastContextModificationFailureIEs}},
    ...
}

MulticastContextModificationFailureIEs F1AP-PROTOCOL-IES ::= {
    { ID id-gNB-CU-MBS-F1AP-ID          CRITICALITY reject TYPE GNB-CU-MBS-F1AP-ID          PRESENCE mandatory }|
    { ID id-gNB-DU-MBS-F1AP-ID          CRITICALITY reject TYPE GNB-DU-MBS-F1AP-ID          PRESENCE mandatory }|
    { ID id-Cause                        CRITICALITY ignore TYPE Cause                      PRESENCE mandatory }|
    { ID id-CriticalityDiagnostics        CRITICALITY ignore TYPE CriticalityDiagnostics    PRESENCE optional },
    ...
}

-- *****
--
-- MULTICAST DISTRIBUTION SETUP ELEMENTARY PROCEDURE
--
-- *****

-- *****
--
-- MULTICAST DISTRIBUTION SETUP REQUEST
--
-- *****

MulticastDistributionSetupRequest ::= SEQUENCE {
    protocolIES          ProtocolIE-Container    {{ MulticastDistributionSetupRequestIEs}},
    ...
}

MulticastDistributionSetupRequestIEs F1AP-PROTOCOL-IES ::= {
    { ID id-gNB-CU-MBS-F1AP-ID          CRITICALITY reject TYPE GNB-CU-MBS-F1AP-ID          PRESENCE mandatory }|
    { ID id-gNB-DU-MBS-F1AP-ID          CRITICALITY reject TYPE GNB-DU-MBS-F1AP-ID          PRESENCE mandatory }|
    { ID id-MBSMulticastF1UContextDescriptor CRITICALITY reject TYPE MBSMulticastF1UContextDescriptor PRESENCE mandatory }|
    { ID id-MulticastF1UContext-ToBeSetup-List CRITICALITY reject TYPE MulticastF1UContext-ToBeSetup-List PRESENCE mandatory },
    ...
}

MulticastF1UContext-ToBeSetup-List ::= SEQUENCE (SIZE(1..maxnoofMRBs)) OF
    ProtocolIE-SingleContainer { { MulticastF1UContext-ToBeSetup-ItemIEs} }

MulticastF1UContext-ToBeSetup-ItemIEs F1AP-PROTOCOL-IES ::= {
    { ID id-MulticastF1UContext-ToBeSetup-Item          CRITICALITY reject TYPE MulticastF1UContext-ToBeSetup-Item          PRESENCE
mandatory},
    ...
}

-- *****
--
-- MULTICAST DISTRIBUTION SETUP RESPONSE
--

```

```
-- *****

MulticastDistributionSetupResponse ::= SEQUENCE {
    protocolIES          ProtocolIE-Container    {{ MulticastDistributionSetupResponseIES}},
    ...
}

MulticastDistributionSetupResponseIES F1AP-PROTOCOL-IES ::= {
    { ID id-gNB-CU-MBS-F1AP-ID          CRITICALITY reject TYPE GNB-CU-MBS-F1AP-ID          PRESENCE mandatory}|
    { ID id-gNB-DU-MBS-F1AP-ID          CRITICALITY reject TYPE GNB-DU-MBS-F1AP-ID          PRESENCE mandatory}|
    { ID id-MBSMulticastF1UContextDescriptor CRITICALITY reject TYPE MBSMulticastF1UContextDescriptor PRESENCE mandatory}|
    { ID id-MulticastF1UContext-Setup-List CRITICALITY reject TYPE MulticastF1UContext-Setup-List PRESENCE mandatory}|
    { ID id-MulticastF1UContext-FailedToBeSetup-List CRITICALITY ignore TYPE MulticastF1UContext-FailedToBeSetup-List PRESENCE optional}|
    { ID id-CriticalityDiagnostics        CRITICALITY ignore TYPE CriticalityDiagnostics        PRESENCE optional }|
    { ID id-MulticastF1UContextReferenceCU CRITICALITY reject TYPE MulticastF1UContextReferenceCU PRESENCE mandatory},
    ...
}

MulticastF1UContext-Setup-List ::= SEQUENCE (SIZE(1..maxnoofMRBs)) OF ProtocolIE-SingleContainer { { MulticastF1UContext-Setup-ItemIES} }
MulticastF1UContext-Setup-ItemIES F1AP-PROTOCOL-IES ::= {
    { ID id-MulticastF1UContext-Setup-Item          CRITICALITY reject TYPE MulticastF1UContext-Setup-Item          PRESENCE mandatory},
    ...
}

MulticastF1UContext-FailedToBeSetup-List ::= SEQUENCE (SIZE(1..maxnoofMRBs)) OF
                                         ProtocolIE-SingleContainer { { MulticastF1UContext-FailedToBeSetup-ItemIES} }
MulticastF1UContext-FailedToBeSetup-ItemIES F1AP-PROTOCOL-IES ::= {
    { ID id-MulticastF1UContext-FailedToBeSetup-Item CRITICALITY ignore TYPE MulticastF1UContext-FailedToBeSetup-Item PRESENCE mandatory},
    ...
}

-- *****
--
-- MULTICAST DISTRIBUTION SETUP FAILURE
--
-- *****

MulticastDistributionSetupFailure ::= SEQUENCE {
    protocolIES          ProtocolIE-Container    {{ MulticastDistributionSetupFailureIES}},
    ...
}

MulticastDistributionSetupFailureIES F1AP-PROTOCOL-IES ::= {
    { ID id-gNB-CU-MBS-F1AP-ID          CRITICALITY reject TYPE GNB-CU-MBS-F1AP-ID          PRESENCE mandatory }|
    { ID id-gNB-DU-MBS-F1AP-ID          CRITICALITY ignore TYPE GNB-DU-MBS-F1AP-ID          PRESENCE optional }|
    { ID id-MBSMulticastF1UContextDescriptor CRITICALITY reject TYPE MBSMulticastF1UContextDescriptor PRESENCE mandatory }|
    { ID id-Cause                        CRITICALITY ignore TYPE Cause                        PRESENCE mandatory }|
    { ID id-CriticalityDiagnostics        CRITICALITY ignore TYPE CriticalityDiagnostics        PRESENCE optional },
    ...
}

-- *****
```

```

--
-- MULTICAST DISTRIBUTION RELEASE ELEMENTARY PROCEDURE
--
-- *****

-- *****

--
-- MULTICAST DISTRIBUTION RELEASE COMMAND
--
-- *****

MulticastDistributionReleaseCommand ::= SEQUENCE {
    protocolIES          ProtocolIE-Container    {{ MulticastDistributionReleaseCommandIES}},
    ...
}

MulticastDistributionReleaseCommandIES F1AP-PROTOCOL-IES ::= {
    { ID id-gNB-CU-MBS-F1AP-ID          CRITICALITY reject TYPE GNB-CU-MBS-F1AP-ID          PRESENCE mandatory }|
    { ID id-gNB-DU-MBS-F1AP-ID          CRITICALITY reject TYPE GNB-DU-MBS-F1AP-ID          PRESENCE mandatory }|
    { ID id-MBSMulticastF1UContextDescriptor CRITICALITY reject TYPE MBSMulticastF1UContextDescriptor PRESENCE mandatory }|
    { ID id-Cause                        CRITICALITY ignore TYPE Cause                        PRESENCE mandatory },
    ...
}

-- *****

--
-- MULTICAST DISTRIBUTION RELEASE COMPLETE
--
-- *****

MulticastDistributionReleaseComplete ::= SEQUENCE {
    protocolIES          ProtocolIE-Container    {{ MulticastDistributionReleaseCompleteIES}},
    ...
}

MulticastDistributionReleaseCompleteIES F1AP-PROTOCOL-IES ::= {
    { ID id-gNB-CU-MBS-F1AP-ID          CRITICALITY reject TYPE GNB-CU-MBS-F1AP-ID          PRESENCE mandatory }|
    { ID id-gNB-DU-MBS-F1AP-ID          CRITICALITY reject TYPE GNB-DU-MBS-F1AP-ID          PRESENCE mandatory }|
    { ID id-MBSMulticastF1UContextDescriptor CRITICALITY reject TYPE MBSMulticastF1UContextDescriptor PRESENCE mandatory }|
    { ID id-CriticalityDiagnostics      CRITICALITY ignore TYPE CriticalityDiagnostics      PRESENCE optional },
    ...
}

-- *****

--
-- PDC MEASUREMENT PROCEDURE
--
-- *****

-- *****

```



```

-- PDC Measurement Initiation Request
--
-- *****

PDCMeasurementInitiationRequest ::= SEQUENCE {
    protocolIEs      ProtocolIE-Container    {{PDCMeasurementInitiationRequest-IEs}},
    ...
}

PDCMeasurementInitiationRequest-IEs F1AP-PROTOCOL-IES ::= {
    { ID id-gNB-CU-UE-F1AP-ID          CRITICALITY reject TYPE GNB-CU-UE-F1AP-ID          PRESENCE mandatory }|
    { ID id-gNB-DU-UE-F1AP-ID          CRITICALITY reject TYPE GNB-DU-UE-F1AP-ID          PRESENCE mandatory }|
    { ID id-RAN-UE-PDC-MeasID          CRITICALITY reject TYPE RAN-UE-PDC-MeasID          PRESENCE mandatory }|
    { ID id-PDCReportType              CRITICALITY reject TYPE PDCReportType            PRESENCE mandatory }|
    { ID id-PDCMeasurementPeriodicity  CRITICALITY reject TYPE PDCMeasurementPeriodicity PRESENCE conditional }|
-- The above IE shall be present if the PDCReportType IE is set to "periodic" --
    { ID id-PDCMeasurementQuantities   CRITICALITY reject TYPE PDCMeasurementQuantities   PRESENCE mandatory },
    ...
}

-- *****
--
-- PDC Measurement Initiation Response
--
-- *****

PDCMeasurementInitiationResponse ::= SEQUENCE {
    protocolIEs      ProtocolIE-Container    {{PDCMeasurementInitiationResponse-IEs}},
    ...
}

PDCMeasurementInitiationResponse-IEs F1AP-PROTOCOL-IES ::= {
    { ID id-gNB-CU-UE-F1AP-ID          CRITICALITY reject TYPE GNB-CU-UE-F1AP-ID          PRESENCE mandatory }|
    { ID id-gNB-DU-UE-F1AP-ID          CRITICALITY reject TYPE GNB-DU-UE-F1AP-ID          PRESENCE mandatory }|
    { ID id-RAN-UE-PDC-MeasID          CRITICALITY reject TYPE RAN-UE-PDC-MeasID          PRESENCE mandatory }|
    { ID id-PDCMeasurementResult       CRITICALITY ignore TYPE PDCMeasurementResult       PRESENCE optional }|
    { ID id-CriticalityDiagnostics      CRITICALITY ignore TYPE CriticalityDiagnostics     PRESENCE optional },
    ...
}

-- *****
--
-- PDC Measurement Initiation Failure
--
-- *****

PDCMeasurementInitiationFailure ::= SEQUENCE {
    protocolIEs      ProtocolIE-Container    {{PDCMeasurementInitiationFailure-IEs}},
    ...
}

PDCMeasurementInitiationFailure-IEs F1AP-PROTOCOL-IES ::= {
    { ID id-gNB-CU-UE-F1AP-ID          CRITICALITY reject TYPE GNB-CU-UE-F1AP-ID          PRESENCE mandatory }|
    { ID id-gNB-DU-UE-F1AP-ID          CRITICALITY reject TYPE GNB-DU-UE-F1AP-ID          PRESENCE mandatory }|

```

```

    { ID id-RAN-UE-PDC-MeasID          CRITICALITY ignore TYPE RAN-UE-PDC-MeasID          PRESENCE mandatory }|
    { ID id-Cause                      CRITICALITY ignore TYPE Cause                      PRESENCE mandatory }|
    { ID id-CriticalityDiagnostics      CRITICALITY ignore TYPE CriticalityDiagnostics    PRESENCE optional  },
    ...
}

-- *****
--
-- PDC MEASUREMENT REPORT PROCEDURE
--
-- *****

-- *****
--
-- PDC Measurement Report
--
-- *****

PDCMeasurementReport ::= SEQUENCE {
    protocolIEs          ProtocolIE-Container          {{PDCMeasurementReport-IEs}},
    ...
}

PDCMeasurementReport-IEs F1AP-PROTOCOL-IES ::= {
    { ID id-gNB-CU-UE-F1AP-ID          CRITICALITY reject TYPE GNB-CU-UE-F1AP-ID          PRESENCE mandatory }|
    { ID id-gNB-DU-UE-F1AP-ID          CRITICALITY reject TYPE GNB-DU-UE-F1AP-ID          PRESENCE mandatory }|
    { ID id-RAN-UE-PDC-MeasID          CRITICALITY reject TYPE RAN-UE-PDC-MeasID          PRESENCE mandatory }|
    { ID id-PDCMeasurementResult      CRITICALITY ignore TYPE PDCMeasurementResult      PRESENCE mandatory },
    ...
}

-- *****
--
-- PDC MEASUREMENT TERMINATION PROCEDURE
--
-- *****

-- *****
--
-- PDC Measurement Termination
--
-- *****

PDCMeasurementTerminationCommand ::= SEQUENCE {
    protocolIEs          ProtocolIE-Container          { { PDCMeasurementTerminationCommand-IEs } },
    ...
}

PDCMeasurementTerminationCommand-IEs F1AP-PROTOCOL-IES ::= {
    { ID id-gNB-CU-UE-F1AP-ID          CRITICALITY reject TYPE GNB-CU-UE-F1AP-ID          PRESENCE mandatory }|
    { ID id-gNB-DU-UE-F1AP-ID          CRITICALITY reject TYPE GNB-DU-UE-F1AP-ID          PRESENCE mandatory }|
    { ID id-RAN-UE-PDC-MeasID          CRITICALITY ignore TYPE RAN-UE-PDC-MeasID          PRESENCE mandatory },
    ...
}

```

```

}

-- *****
--
-- PDC MEASUREMENT FAILURE INDICATION PROCEDURE
--
-- *****

-- *****
--
-- PDC Measurement Failure Indication
--
-- *****

PDCMeasurementFailureIndication ::= SEQUENCE {
    protocolIEs      ProtocolIE-Container      { { PDCMeasurementFailureIndication-IEs} },
    ...
}

PDCMeasurementFailureIndication-IEs F1AP-PROTOCOL-IES ::= {
    { ID id-gNB-CU-UE-F1AP-ID          CRITICALITY reject TYPE GNB-CU-UE-F1AP-ID          PRESENCE mandatory }|
    { ID id-gNB-DU-UE-F1AP-ID          CRITICALITY reject TYPE GNB-DU-UE-F1AP-ID          PRESENCE mandatory }|
    { ID id-RAN-UE-PDC-MeasID          CRITICALITY ignore TYPE RAN-UE-PDC-MeasID          PRESENCE mandatory }|
    { ID id-Cause                      CRITICALITY ignore TYPE Cause                    PRESENCE mandatory },
    ...
}

-- *****
--
-- PPS CONFIGURATION PROCEDURE
--
-- *****

-- *****
--
-- PRS CONFIGURATION REQUEST
--
-- *****

PRSConfigurationRequest ::= SEQUENCE {
    protocolIEs      ProtocolIE-Container      {{PRSConfigurationRequest-IEs}},
    ...
}

PRSConfigurationRequest-IEs F1AP-PROTOCOL-IES ::= {
    { ID id-TransactionID              CRITICALITY reject TYPE TransactionID              PRESENCE mandatory }|
    { ID id-PRSConfigRequestType        CRITICALITY reject TYPE PRSConfigRequestType        PRESENCE mandatory }|
    { ID id-PRSTRPList                 CRITICALITY ignore TYPE PRSTRPList                 PRESENCE mandatory },
    ...
}

-- *****

```

```

--
-- PRS CONFIGURATION RESPONSE
--
-- *****

PRSConfigurationResponse ::= SEQUENCE {
    protocolIEs      ProtocolIE-Container    {{ PRSConfigurationResponse-IEs}},
    ...
}

PRSConfigurationResponse-IEs F1AP-PROTOCOL-IES ::= {
    { ID id-TransactionID          CRITICALITY reject  TYPE TransactionID          PRESENCE mandatory}|
    { ID id-PRSTransmissionTRPList CRITICALITY ignore  TYPE PRSTransmissionTRPList      PRESENCE optional}|
    { ID id-CriticalityDiagnostics CRITICALITY ignore  TYPE CriticalityDiagnostics    PRESENCE optional},
    ...
}

-- *****
--
-- PRS CONFIGURATION FAILURE
--
-- *****

PRSConfigurationFailure ::= SEQUENCE {
    protocolIEs      ProtocolIE-Container    {{ PRSConfigurationFailure-IEs}},
    ...
}

PRSConfigurationFailure-IEs F1AP-PROTOCOL-IES ::= {
    { ID id-TransactionID          CRITICALITY reject  TYPE TransactionID          PRESENCE mandatory}|
    { ID id-Cause                  CRITICALITY ignore  TYPE Cause                  PRESENCE mandatory}|
    { ID id-CriticalityDiagnostics CRITICALITY ignore  TYPE CriticalityDiagnostics    PRESENCE optional},
    ...
}

-- *****
--
-- MEASUREMENT PRECONFIGURATION PROCEDURE
--
-- *****

-- *****
--
-- Positioning Preconfiguration Required
--
-- *****

MeasurementPreconfigurationRequired ::= SEQUENCE {
    protocolIEs      ProtocolIE-Container    {{ MeasurementPreconfigurationRequired-IEs}},
    ...
}

MeasurementPreconfigurationRequired-IEs F1AP-PROTOCOL-IES ::= {

```

```

    { ID id-gNB-CU-UE-F1AP-ID    CRITICALITY reject TYPE GNB-CU-UE-F1AP-ID PRESENCE mandatory }|
    { ID id-gNB-DU-UE-F1AP-ID    CRITICALITY reject TYPE GNB-DU-UE-F1AP-ID PRESENCE mandatory }|
    { ID id-TRP-PRS-Info-List     CRITICALITY ignore TYPE TRP-PRS-Info-List PRESENCE mandatory },
    ...
}

-- *****
--
-- Positioning Preconfiguration Confirm
--
-- *****

MeasurementPreconfigurationConfirm ::= SEQUENCE {
    protocolIES          ProtocolIE-Container    { { MeasurementPreconfigurationConfirm-IEs } },
    ...
}

MeasurementPreconfigurationConfirm-IEs F1AP-PROTOCOL-IES ::= {
    { ID id-gNB-CU-UE-F1AP-ID    CRITICALITY reject TYPE GNB-CU-UE-F1AP-ID PRESENCE mandatory }|
    { ID id-gNB-DU-UE-F1AP-ID    CRITICALITY reject TYPE GNB-DU-UE-F1AP-ID PRESENCE mandatory }|
    { ID id-PosMeasGapPreConfigList CRITICALITY ignore TYPE PosMeasGapPreConfigList PRESENCE optional }|
    { ID id-CriticalityDiagnostics CRITICALITY ignore TYPE CriticalityDiagnostics PRESENCE optional },
    ...
}

-- *****
--
-- Positioning Preconfiguration Refuse
--
-- *****

MeasurementPreconfigurationRefuse ::= SEQUENCE {
    protocolIES          ProtocolIE-Container    { { MeasurementPreconfigurationRefuse-IEs } },
    ...
}

MeasurementPreconfigurationRefuse-IEs F1AP-PROTOCOL-IES ::= {
    { ID id-gNB-CU-UE-F1AP-ID    CRITICALITY reject TYPE GNB-CU-UE-F1AP-ID PRESENCE mandatory }|
    { ID id-gNB-DU-UE-F1AP-ID    CRITICALITY reject TYPE GNB-DU-UE-F1AP-ID PRESENCE mandatory }|
    { ID id-Cause                CRITICALITY ignore TYPE Cause PRESENCE mandatory }|
    { ID id-CriticalityDiagnostics CRITICALITY ignore TYPE CriticalityDiagnostics PRESENCE optional },
    ...
}

-- *****
--
-- MEASUREMENT ACTIVATION PROCEDURE
--

```

```

-- *****
-- *****
--
-- Measurement Activation
--
-- *****

MeasurementActivation ::= SEQUENCE {
    protocolIES          ProtocolIE-Container      { { MeasurementActivation-IEs} },
    ...
}

MeasurementActivation-IEs F1AP-PROTOCOL-IES ::= {
    { ID id-gNB-CU-UE-F1AP-ID          CRITICALITY reject TYPE GNB-CU-UE-F1AP-ID          PRESENCE mandatory }|
    { ID id-gNB-DU-UE-F1AP-ID          CRITICALITY reject TYPE GNB-DU-UE-F1AP-ID          PRESENCE mandatory }|
    { ID id-ActivationRequestType      CRITICALITY reject TYPE ActivationRequestType      PRESENCE mandatory }|
    { ID id-PRS-Measurement-Info-List   CRITICALITY ignore TYPE PRS-Measurement-Info-List   PRESENCE optional },
    ...
}

-- *****
--
-- QOE INFORMATION TRANSFER
--
-- *****
-- *****
--
-- QoE Information Transfer
--
-- *****

QoEInformationTransfer ::= SEQUENCE {
    protocolIES          ProtocolIE-Container      {{QoEInformationTransfer-IEs}},
    ...
}

QoEInformationTransfer-IEs F1AP-PROTOCOL-IES ::= {
    { ID id-gNB-CU-UE-F1AP-ID          CRITICALITY reject TYPE GNB-CU-UE-F1AP-ID          PRESENCE mandatory }|
    { ID id-gNB-DU-UE-F1AP-ID          CRITICALITY reject TYPE GNB-DU-UE-F1AP-ID          PRESENCE mandatory }|
    { ID id-QoEInformation              CRITICALITY ignore TYPE QoEInformation            PRESENCE optional },
    ...
}

-- *****
--
-- Positioning System information Delivery Command
--
-- *****

PosSystemInformationDeliveryCommand ::= SEQUENCE {

```

```

        protocolIEs          ProtocolIE-Container    {{ PosSystemInformationDeliveryCommandIEs}},
        ...
    }

PosSystemInformationDeliveryCommandIEs F1AP-PROTOCOL-IES ::= {
    { ID id-TransactionID      CRITICALITY reject  TYPE TransactionID      PRESENCE mandatory }|
    { ID id-NR CGI             CRITICALITY reject  TYPE NR CGI             PRESENCE mandatory }|
    { ID id-PosSIttypeList     CRITICALITY reject  TYPE PosSIttypeList     PRESENCE mandatory }|
    { ID id-ConfirmedUEID      CRITICALITY reject  TYPE GNB-DU-UE-F1AP-ID  PRESENCE mandatory },
    ...
}

END
-- ASN1STOP

```

9.4.5 Information Element Definitions

```

-- ASN1START
-- *****
--
-- Information Element Definitions
--
-- *****

F1AP-IEs {
itu-t (0) identified-organization (4) etsi (0) mobileDomain (0)
ngran-access (22) modules (3) f1ap (3) version1 (1) f1ap-IEs (2) }

DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

IMPORTS
    id-gNB-CUSystemInformation,
    id-HandoverPreparationInformation,
    id-TAISliceSupportList,
    id-RANAC,
    id-BearerTypeChange,
    id-Cell-Direction,
    id-Cell-Type,
    id-CellGroupConfig,
    id-AvailablePLMNList,
    id-PDUSessionID,
    id-ULPDUSessionAggregateMaximumBitRate,
    id-DC-Based-Duplication-Configured,
    id-DC-Based-Duplication-Activation,
    id-Duplication-Activation,
    id-DLPDCPSNLength,
    id-ULPDCPSNLength,
    id-RLC-Status,
    id-MeasurementTimingConfiguration,
    id-DRB-Information,

```

id-QoSFlowMappingIndication,
id-ServingCellMO,
id-RLCMode,
id-ExtendedServedPLMNs-List,
id-ExtendedAvailablePLMN-List,
id-DRX-LongCycleStartOffset,
id-SelectedBandCombinationIndex,
id-SelectedFeatureSetEntryIndex,
id-Ph-InfoSCG,
id-latest-RRC-Version-Enhanced,
id-RequestedBandCombinationIndex,
id-RequestedFeatureSetEntryIndex,
id-DRX-Config,
id-UEAssistanceInformation,
id-PDCCH-BlindDetectionSCG,
id-Requested-PDCCH-BlindDetectionSCG,
id-BPLMN-ID-Info-List,
id-NotificationInformation,
id-TNLAssociationTransportLayerAddressgNBdu,
id-portNumber,
id-AdditionalSIBMessageList,
id-IgnorePRACHConfiguration,
id-CG-Config,
id-Ph-InfoMCG,
id-AggressorNBSetID,
id-VictimNBSetID,
id-MeasGapSharingConfig,
id-systemInformationAreaID,
id-areaScope,
id-IntendedTDD-DL-ULConfig,
id-QoSMonitoringRequest,
id-BHInfo,
id-IAB-Info-IAB-DU,
id-IAB-Info-IAB-donor-CU,
id-IAB-Barred,
id-SIB12-message,
id-SIB13-message,
id-SIB14-message,
id-UEAssistanceInformationEUTRA,
id-SL-PHY-MAC-RLC-Config,
id-SL-ConfigDedicatedEUTRA-Info,
id-AlternativeQoSParaSetList,
id-CurrentQoSParaSetIndex,
id-CarrierList,
id-ULCarrierList,
id-FrequencyShift7p5khz,
id-SSB-PositionsInBurst,
id-NRPRACHConfig,
id-TDD-UL-DLConfigCommonNR,
id-CNPacketDelayBudgetDownlink,
id-CNPacketDelayBudgetUplink,
id-ExtendedPacketDelayBudget,
id-TSCTrafficCharacteristics,
id-AdditionalPDCPDuplicationTNL-List,

id-RLCDuplicationInformation,
id-AdditionalDuplicationIndication,
id-mdtConfiguration,
id-TraceCollectionEntityURI,
id-NID,
id-NPNSupportInfo,
id-NPNBroadcastInformation,
id-AvailableSNPN-ID-List,
id-SIB10-message,
id-RequestedP-MaxFR2,
id-DLCarrierList,
id-ExtendedTAISliceSupportList,
id-E-CID-MeasurementQuantities-Item,
id-ConfiguredTACIndication,
id-NRCGI,
id-SFN-Offset,
id-TransmissionStopIndicator,
id-SrsFrequency,
id-EstimatedArrivalProbability,
id-Supported-MBS-FSA-ID-List,
id-TRPType,
id-SRSSpatialRelationPerSRSResource,
id-MBS-Broadcast-NeighbourCellList,
id-PDCPTerminatingNodeDLTNLAddrInfo,
id-ENBDLTNLAddress,
id-PRS-Resource-ID,
id-LocationMeasurementInformation,
id-SliceRadioResourceStatus,
id-CompositeAvailableCapacity-SUL,
id-NR-U,
id-NR-U-Channel-List,
id-MIMOPRUsageInformation,
id-IngressNonF1terminatingTopologyIndicator,
id-NonF1terminatingTopologyIndicator,
id-EgressNonF1terminatingTopologyIndicator,
id-rBSetConfiguration,
id-frequency-Domain-HSNA-Configuration-List,
id-child-IAB-Nodes-NA-Resource-List,
id-Parent-IAB-Nodes-NA-Resource-Configuration-List,
id-uL-FreqInfo,
id-uL-Transmission-Bandwidth,
id-dL-FreqInfo,
id-dL-Transmission-Bandwidth,
id-uL-NR-Carrier-List,
id-dL-NR-Carrier-List,
id-nRFreqInfo,
id-transmission-Bandwidth,
id-nR-Carrier-List,
id-permutation,
id-M5ReportAmount,
id-M6ReportAmount,
id-M7ReportAmount,
id-SurvivalTime,
id-PDCMeasurementQuantities-Item,

id-OnDemandPRS,
id-AoA-SearchWindow,
id-ZoAInformation,
id-ARPLocationInfo,
id-ARP-ID,
id-MultipleULAoA,
id-UL-SRS-RSRPP,
id-SRSResourcetype,
id-ExtendedAdditionalPathList,
id-LoS-NLoSInformation,
id-NumberOfTRPRxTEG,
id-NumberOfTRPRxTxTEG,
id-TRPTxTEGAssociation,
id-TRPTEGInformation,
id-TRPRx-TEGInformation,
id-TRPBeamAntennaInformation,
id-Redcap-Bcast-Information,
id-NR-TADV,
id-SDT-MAC-PHY-CG-Config,
id-CG-SDTindicatorSetup,
id-CG-SDTindicatorMod,
id-SDTRLCBearerConfiguration,
id-SRBMappingInfo,
id-DRBMappingInfo,
id-LastUsedCellIndication,
id-SIB17-message,
id-MUSIM-GapConfig,
id-SIB20-message,
id-pathPower,
id-DU-RX-MT-RX-Extend,
id-DU-TX-MT-TX-Extend,
id-DU-RX-MT-TX-Extend,
id-DU-TX-MT-RX-Extend,
id-TAINSAGSupportList,
id-SL-RLC-ChannelToAddModList,
id-SIB15-message,
id-InterFrequencyConfig-NoGap,
id-MBSInterestIndication,
id-L571Info,
id-L1151Info,
id-SCS-480,
id-SCS-960,
id-SRSPortIndex,
id-PEISubgroupingSupportIndication,
id-NeedForGapsInfoNR,
id-NeedForGapNCSGInfoNR,
id-NeedForGapNCSGInfoEUTRA,
id-Source-MRB-ID,
id-RedCapIndication,
id-UL-GapFR2-Config,
id-ConfigRestrictInfoDAPS,
id-MulticastF1UContextReferenceCU,
id-TwoPHRModeMCG,
id-TwoPHRModeSCG,

id-ncd-SSB-RedCapInitialBWP-SDT,
id-nrofSymbolsExtended,
id-repetitionFactorExtended,
id-startRBHopping,
id-startRBIndex,
id-transmissionCombn8,
id-ServCellInfoList,
id-Preconfigured-measurement-GAP-Request,
id-BWP-Id,
id-SL-PHY-MAC-RLC-ConfigExt,
id-Transmission-Bandwidth-asymmetric,
id-candidatePSCellsToCancel,
maxNRARFCN,
maxnoofErrors,
maxnoofBPLMNs,
maxnoofBPLMNSNR,
maxnoofDLUPTNLInformation,
maxnoofNrCellBands,
maxnoofULUPTNLInformation,
maxnoofQoSFlows,
maxnoofSliceItems,
maxnoofSIBTypes,
maxnoofSITypes,
maxCelllineNB,
maxnoofExtendedBPLMNs,
maxnoofAdditionalSIBs,
maxnoofUACPLMNs,
maxnoofUACperPLMN,
maxCellingNBDU,
maxnoofTLAs,
maxnoofGTPTLAs,
maxnoofslots,
maxnoofNonUPTrafficMappings,
maxnoofServingCells,
maxnoofServedCellsIAB,
maxnoofChildIABNodes,
maxnoofIABSTCInfo,
maxnoofSymbols,
maxnoofDUFSlots,
maxnoofHSNASlots,
maxnoofEgressLinks,
maxnoofMappingEntries,
maxnoofDSInfo,
maxnoofQoSParaSets,
maxnoofPC5QoSFlows,
maxnoofSSBAreas,
maxnoofNRSCSs,
maxnoofPhysicalResourceBlocks,
maxnoofPhysicalResourceBlocks-1,
maxnoofPRACHconfigs,
maxnoofRACHReports,
maxnoofRLFReports,
maxnoofAdditionalPDCPDuplicationTNL,
maxnoofRLCDuplicationState,

maxnoofCHOcells,
maxnoofMDTPLMNs,
maxnoofCAGsupported,
maxnoofNIDsupported,
maxnoofExtSliceItems,
maxnoofPosMeas,
maxnoofTRPInfoTypes,
maxnoofSRSTriggerStates,
maxnoofSpatialRelations,
maxnoBcastCell,
maxnoofTRPs,
maxnoofAngleInfo,
maxnooflcs-gcs-translation,
maxnoofPath,
maxnoofMeasE-CID,
maxnoofSSBs,
maxnoSRS-ResourceSets,
maxnoSRS-ResourcePerSet,
maxnoSRS-Carriers,
maxnoSCSs,
maxnoSRS-Resources,
maxnoSRS-PosResources,
maxnoSRS-PosResourceSets,
maxnoSRS-PosResourcePerSet,
maxnoofPRS-ResourceSets,
maxnoofPRS-ResourcesPerSet,
maxNoOfMeasTRPs,
maxnoofPRSresourceSets,
maxnoofPRSresources,
maxnoofSuccessfulH0Reports,
maxnoofNR-UChannelIDs,
maxServedCellforSON,
maxNeighbourCellforSON,
maxAffectedCells,
maxnoofMBSQoSFlows,
maxnoofMBSFSAs,
maxnoofMBSAreaSessionIDs,
maxnoofMBSServiceAreaInformation,
maxnoofTAIforMBS,
maxnoofCellsforMBS,
maxnoofIABCongInd,
maxnoofBHRLCChannels,
maxnoofTLAsIAB,
maxnoofRBsetsPerCell,
maxnoofRBsetsPerCell-1,
maxnoofNeighbourNodeCellsIAB,
maxnoofMeasPDC,
maxnoARPs,
maxnoofULAoAs,
maxNoPathExtended,
maxnoTRPTEGs,
maxFreqLayers,
maxNumResourcesPerAngle,
maxnoAzimuthAngles,

```

maxnoElevationAngles,
maxnoofPRSTRPs,
maxnoofQoEInformation,
maxnoofUuRLCChannels,
maxnoofPC5RLCChannels,
maxnoofSMBRValues,
maxnoofMBSSessionsofUE,
maxnoofSLdestinations,
maxnoofNSAGs,
maxnoofSDTBearers,
maxnoofPosSITypes,
maxnoofMRBs,
maxNrofBWPs

```

FROM F1AP-Constants

```

Criticality,
ProcedureCode,
ProtocolIE-ID,
TriggeringMessage

```

FROM F1AP-CommonDataTypes

```

ProtocolExtensionContainer{},
F1AP-PROTOCOL-EXTENSION,
ProtocolIE-SingleContainer{},
F1AP-PROTOCOL-IES

```

FROM F1AP-Containers;

-- A

```

AbortTransmission ::= CHOICE {
    SRSResourceSetID      SRSResourceSetID,
    releaseALL             NULL,
    choice-extension      ProtocolIE-SingleContainer { { AbortTransmission-ExtIEs } }
}

```

```

AbortTransmission-ExtIEs F1AP-PROTOCOL-IES ::= {
    ...
}

```

```

AccessPointPosition ::= SEQUENCE {
    latitudeSign          ENUMERATED {north, south},
    latitude              INTEGER (0..8388607),
    longitude             INTEGER (-8388608..8388607),
    directionOfAltitude   ENUMERATED {height, depth},
    altitude              INTEGER (0..32767),
    uncertaintySemi-major INTEGER (0..127),
    uncertaintySemi-minor INTEGER (0..127),
    orientationOfMajorAxis INTEGER (0..179),
    uncertaintyAltitude   INTEGER (0..127),
    confidence            INTEGER (0..100),
}

```

```

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

AccessPointPosition-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
  ...
}

Activated-Cells-to-be-Updated-List ::= SEQUENCE (SIZE(1..maxnoofServedCellsIAB)) OF Activated-Cells-to-be-Updated-List-Item

Activated-Cells-to-be-Updated-List-Item ::= SEQUENCE{
  nRCGI                      NRCGI,
  iAB-DU-Cell-Resource-Configuration-Mode-Info  IAB-DU-Cell-Resource-Configuration-Mode-Info,
  iE-Extensions              ProtocolExtensionContainer { { Activated-Cells-to-be-Updated-List-Item-ExtIEs } } OPTIONAL
}

Activated-Cells-to-be-Updated-List-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
  ...
}

ActivationRequestType ::= ENUMERATED {activate, deactivate, ...}

ActiveULBWP ::= SEQUENCE {
  locationAndBandwidth      INTEGER (0..37949,...),
  subcarrierSpacing         ENUMERATED {kHz15, kHz30, kHz60, kHz120,..., kHz480, kHz960},
  cyclicPrefix              ENUMERATED {normal, extended},
  txDirectCurrentLocation   INTEGER (0..3301,...),
  shift7dot5kHz             ENUMERATED {true, ...} OPTIONAL,
  sRSConfig                 SRSCONFIG,
  iE-Extensions             ProtocolExtensionContainer { { ActiveULBWP-ExtIEs } } OPTIONAL
}

ActiveULBWP-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
  ...
}

AdditionalDuplicationIndication ::= ENUMERATED {
  three,
  four,
  ...
}

AdditionalPath-List ::= SEQUENCE (SIZE(1..maxnoofPath)) OF AdditionalPath-Item

AdditionalPath-Item ::= SEQUENCE {
  relativePathDelay  RelativePathDelay,
  pathQuality        TRPMeasurementQuality OPTIONAL,
  iE-Extensions      ProtocolExtensionContainer { { AdditionalPath-Item-ExtIEs } } OPTIONAL
}

AdditionalPath-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
  { ID id-MultipleULAoA  CRITICALITY ignore EXTENSION MultipleULAoA  PRESENCE optional}|
  { ID id-pathPower      CRITICALITY ignore EXTENSION UL-SRS-RSRPP    PRESENCE optional},
  ...
}

```

```

}

ExtendedAdditionalPathList ::= SEQUENCE (SIZE (1.. maxNoPathExtended)) OF ExtendedAdditionalPathList-Item

ExtendedAdditionalPathList-Item ::= SEQUENCE {
    relativeTimeOfPath    RelativePathDelay,
    pathQuality            TRPMeasurementQuality    OPTIONAL,
    multipleULAoA          MultipleULAoA            OPTIONAL,
    pathPower              UL-SRS-RSRPP             OPTIONAL,
    iE-Extensions          ProtocolExtensionContainer { { ExtendedAdditionalPathList-Item-ExtIEs } } OPTIONAL,
    ...
}

ExtendedAdditionalPathList-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

AdditionalPDCPDuplicationTNL-List ::= SEQUENCE (SIZE(1..maxnoofAdditionalPDCPDuplicationTNL)) OF AdditionalPDCPDuplicationTNL-Item

AdditionalPDCPDuplicationTNL-Item ::=SEQUENCE {
    additionalPDCPDuplicationUPTNLInformation    UPTransportLayerInformation,
    iE-Extensions    ProtocolExtensionContainer { { AdditionalPDCPDuplicationTNL-ItemExtIEs } } OPTIONAL,
    ...
}

AdditionalPDCPDuplicationTNL-ItemExtIEs F1AP-PROTOCOL-EXTENSION ::= {
{ ID id-BHInfo    CRITICALITY ignore EXTENSION BHInfo    PRESENCE optional    },
    ...
}

AdditionalSIBMessageList ::= SEQUENCE (SIZE(1..maxnoofAdditionalSIBs)) OF AdditionalSIBMessageList-Item

AdditionalSIBMessageList-Item ::= SEQUENCE {
    additionalSIB            OCTET STRING,
    iE-Extensions            ProtocolExtensionContainer { { AdditionalSIBMessageList-Item-ExtIEs } } OPTIONAL
}

AdditionalSIBMessageList-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

AdditionalRRMPriorityIndex ::= BIT STRING (SIZE(32))

AffectedCellsAndBeams-List ::= SEQUENCE (SIZE (1.. maxAffectedCells)) OF AffectedCellsAndBeams-Item

AffectedCellsAndBeams-Item::= SEQUENCE {
    nRCGI                    NRCGI,
    affectedSSB-List          AffectedSSB-List OPTIONAL,
    iE-Extensions            ProtocolExtensionContainer { { AffectedCellsAndBeams-Item-ExtIEs } } OPTIONAL,
    ...
}

AffectedCellsAndBeams-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

```

}

AffectedSSB-List ::= SEQUENCE (SIZE (1..maxnoofSSBAreas)) OF AffectedSSB-Item

AffectedSSB-Item ::= SEQUENCE {
 sSB-Index INTEGER(0..63),
 iE-Extensions ProtocolExtensionContainer { { AffectedSSB-Item-ExtIEs } } OPTIONAL,
 ...
 }

AffectedSSB-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
 ...
 }

AggressorCellList ::= SEQUENCE (SIZE(1..maxCellingNBDU)) OF AggressorCellList-Item

AggressorCellList-Item ::= SEQUENCE {
 aggressorCell-ID NRCGI,
 iE-Extensions ProtocolExtensionContainer { { AggressorCellList-Item-ExtIEs } } OPTIONAL
 }

AggressorCellList-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
 ...
 }

AggressorGNBSetID ::= SEQUENCE {
 aggressorGNBSetID GNBSetID,
 iE-Extensions ProtocolExtensionContainer { { AggressorGNBSetID-ExtIEs } } OPTIONAL
 }

AggressorGNBSetID-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
 ...
 }

AllocationAndRetentionPriority ::= SEQUENCE {
 priorityLevel PriorityLevel,
 pre-emptionCapability Pre-emptionCapability,
 pre-emptionVulnerability Pre-emptionVulnerability,
 iE-Extensions ProtocolExtensionContainer { {AllocationAndRetentionPriority-ExtIEs} } OPTIONAL,
 ...
 }

AllocationAndRetentionPriority-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
 ...
 }

AlternativeQoSParaSetList ::= SEQUENCE (SIZE(1..maxnoofQoSParaSets)) OF AlternativeQoSParaSetItem

AlternativeQoSParaSetItem ::= SEQUENCE {
 alternativeQoSParaSetIndex QoSParaSetIndex,
 guaranteedFlowBitRateDL BitRate OPTIONAL,
 guaranteedFlowBitRateUL BitRate OPTIONAL,
 packetDelayBudget PacketDelayBudget OPTIONAL,
 }


```

    packetErrorRate          PacketErrorRate          OPTIONAL,
    iE-Extensions            ProtocolExtensionContainer { {AlternativeQoSParaSetItem-ExtIEs} } OPTIONAL,
    ...
}

AlternativeQoSParaSetItem-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

AngleMeasurementQuality ::= SEQUENCE {
    azimuthQuality  INTEGER(0..255),
    zenithQuality   INTEGER(0..255) OPTIONAL,
    resolution       ENUMERATED{deg0dot1,...},
    iE-Extensions   ProtocolExtensionContainer { { AngleMeasurementQuality-ExtIEs } } OPTIONAL
}

AngleMeasurementQuality-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

AperiodicSRSResourceTriggerList ::= SEQUENCE (SIZE(1..maxnoofSRSTriggerStates)) OF AperiodicSRSResourceTrigger
AperiodicSRSResourceTrigger ::= INTEGER (1..3)

Associated-SCell-Item ::= SEQUENCE {
    sCell-ID          NRCGI,
    iE-Extensions     ProtocolExtensionContainer { { Associated-SCell-ItemExtIEs } } OPTIONAL
}

Associated-SCell-ItemExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

AvailablePLMNList ::= SEQUENCE (SIZE(1..maxnoofBPLMNs)) OF AvailablePLMNList-Item

AvailablePLMNList-Item ::= SEQUENCE {
    plmnIdentity      PLMN-Identity,
    iE-Extensions     ProtocolExtensionContainer { { AvailablePLMNList-Item-ExtIEs } } OPTIONAL
}

AvailablePLMNList-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

AvailableSNPN-ID-List ::= SEQUENCE (SIZE(1..maxnoofNIDsupported)) OF AvailableSNPN-ID-List-Item

AvailableSNPN-ID-List-Item ::= SEQUENCE {
    plmn-Identity      PLMN-Identity,
    availableNIDList    BroadcastNIDList,
    iE-Extensions     ProtocolExtensionContainer { { AvailableSNPN-ID-List-ItemExtIEs } } OPTIONAL,
    ...
}

```

```

AvailableSNPN-ID-List-ItemExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

AveragingWindow ::= INTEGER (0..4095, ...)

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

AoA-AssistanceInfo ::= SEQUENCE {
    angleMeasurement          AngleMeasurementType,
    LCS-to-GCS-Translation   LCS-to-GCS-Translation OPTIONAL,
    IE-Extensions            ProtocolExtensionContainer { { AoA-AssistanceInfo-ExtIEs } } OPTIONAL,
    ...
}

AoA-AssistanceInfo-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

AngleMeasurementType ::= CHOICE {
    expected-ULAoA          Expected-UL-AoA,
    expected-ZoA            Expected-ZoA-only,
    choice-extension        ProtocolIE-SingleContainer { { AngleMeasurementType-ExtIEs } }
}

AngleMeasurementType-ExtIEs F1AP-PROTOCOL-IES ::= {
    ...
}

AppLayerBufferLevelList ::= OCTET STRING

ARP-ID ::= INTEGER (1..16, ...)

ARPLocationInformation ::= SEQUENCE (SIZE (1..maxnoARPs)) OF ARPLocationInformation-Item

ARPLocationInformation-Item ::= SEQUENCE {
    ARP-ID                  ARP-ID,
    ARPLocationType         ARPLocationType,
    IE-Extensions           ProtocolExtensionContainer { { ARPLocationInformation-ExtIEs } } OPTIONAL,
    ...
}

ARPLocationInformation-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

ARPLocationType ::= CHOICE {
    ARPPositionRelativeGeodetic      RelativeGeodeticLocation,
    ARPPositionRelativeCartesian     RelativeCartesianLocation,
    choice-extension                 ProtocolIE-SingleContainer { { ARPLocationType-ExtIEs } }
}

ARPLocationType-ExtIEs F1AP-PROTOCOL-IES ::= {

```

```

    ...
}

-- B

BAP-Header-Rewriting-Added-List-Item ::= SEQUENCE {
    ingressBAPRoutingID      BAPRoutingID,
    egressBAPRoutingID       BAPRoutingID,
    nonFlterminatingTopologyIndicator NonFlterminatingTopologyIndicator OPTIONAL,
    iE-Extensions            ProtocolExtensionContainer { { BAP-Header-Rewriting-Added-List-Item-ExtIEs} } OPTIONAL
}

BAP-Header-Rewriting-Added-List-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

BAP-Header-Rewriting-Removed-List-Item ::= SEQUENCE {
    ingressBAPRoutingID      BAPRoutingID,
    iE-Extensions            ProtocolExtensionContainer { { BAP-Header-Rewriting-Removed-List-Item-ExtIEs} } OPTIONAL
}

BAP-Header-Rewriting-Removed-List-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

BandwidthSRS ::= CHOICE {
    fR1                      FR1-Bandwidth,
    fR2                      FR2-Bandwidth,
    choice-extension         ProtocolIE-SingleContainer {{ BandwidthSRS-ExtIEs }}
}

BandwidthSRS-ExtIEs F1AP-PROTOCOL-IES ::= {
    ...
}

BAPAddress ::= BIT STRING (SIZE(10))

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

BAPlayerBHRLCchannelMappingInfo ::= SEQUENCE {
    bAPlayerBHRLCchannelMappingInfoToAdd      BAPlayerBHRLCchannelMappingInfoList OPTIONAL,
    bAPlayerBHRLCchannelMappingInfoToRemove   MappingInformationToRemove OPTIONAL,
    iE-Extensions                             ProtocolExtensionContainer { { BAPlayerBHRLCchannelMappingInfo-ExtIEs} } OPTIONAL,
    ...
}

BAPlayerBHRLCchannelMappingInfo-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

BAPlayerBHRLCchannelMappingInfoList ::= SEQUENCE (SIZE(1..maxnoofMappingEntries)) OF BAPlayerBHRLCchannelMappingInfo-Item

```

```

BAPlayerBHRLCchannelMappingInfo-Item ::= SEQUENCE {
    mappingInformationIndex      MappingInformationIndex,
    priorHopBAPAddress           BAPAddress      OPTIONAL,
    ingressBHRLCChannelID       BHRLCChannelID   OPTIONAL,
    nextHopBAPAddress           BAPAddress      OPTIONAL,
    egressBHRLCChannelID        BHRLCChannelID   OPTIONAL,
    iE-Extensions               ProtocolExtensionContainer { { BAPlayerBHRLCchannelMappingInfo-ItemExtIEs } } OPTIONAL,
    ...
}

BAPlayerBHRLCchannelMappingInfo-ItemExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    { ID id-IngressNonF1terminatingTopologyIndicator CRITICALITY ignore EXTENSION IngressNonF1terminatingTopologyIndicator PRESENCE optional}|
    { ID id-EgressNonF1terminatingTopologyIndicator CRITICALITY ignore EXTENSION EgressNonF1terminatingTopologyIndicator PRESENCE optional},
    ...
}

BAPPathID ::= BIT STRING (SIZE(10))

BAPRoutingID ::= SEQUENCE {
    bAPAddress      BAPAddress,
    bAPPathID       BAPPathID,
    iE-Extensions   ProtocolExtensionContainer { { BAPRoutingIDExtIEs } } OPTIONAL
}

BAPRoutingIDExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

BCBearerContextF1U-TNLInfo ::= CHOICE {
    locationindependent      MBSF1UInformation,
    locationdependent        LocationDependentMBSF1UInformation,
    choice-extension          ProtocolIE-SingleContainer {{BCBearerContextF1U-TNLInfo-ExtIEs}}
}

BCBearerContextF1U-TNLInfo-ExtIEs F1AP-PROTOCOL-IES ::= {
    ...
}

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

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

BHRLCChannelID ::= BIT STRING (SIZE(16))

BHChannels-FailedToBeModified-Item ::= SEQUENCE {
    bHRLCChannelID      BHRLCChannelID,
    cause               Cause      OPTIONAL,
    iE-Extensions       ProtocolExtensionContainer { { BHChannels-FailedToBeModified-ItemExtIEs } } OPTIONAL
}

BHChannels-FailedToBeModified-ItemExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

```

```

}

BHChannels-FailedToBeSetup-Item ::= SEQUENCE {
    bHRLCChannelID      BHRLCChannelID,
    cause Cause OPTIONAL,
    iE-Extensions ProtocolExtensionContainer { { BHChannels-FailedToBeSetup-ItemExtIEs } } OPTIONAL
}

BHChannels-FailedToBeSetup-ItemExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

BHChannels-FailedToBeSetupMod-Item ::= SEQUENCE {
    bHRLCChannelID      BHRLCChannelID,
    cause Cause OPTIONAL,
    iE-Extensions ProtocolExtensionContainer { { BHChannels-FailedToBeSetupMod-ItemExtIEs } } OPTIONAL
}

BHChannels-FailedToBeSetupMod-ItemExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

BHChannels-Modified-Item ::= SEQUENCE {
    bHRLCChannelID      BHRLCChannelID,
    iE-Extensions ProtocolExtensionContainer { { BHChannels-Modified-ItemExtIEs } } OPTIONAL
}

BHChannels-Modified-ItemExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

BHChannels-Required-ToBeReleased-Item ::= SEQUENCE {
    bHRLCChannelID      BHRLCChannelID,
    iE-Extensions ProtocolExtensionContainer { { BHChannels-Required-ToBeReleased-ItemExtIEs } } OPTIONAL
}

BHChannels-Required-ToBeReleased-ItemExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

BHChannels-Setup-Item ::= SEQUENCE {
    bHRLCChannelID      BHRLCChannelID,
    iE-Extensions ProtocolExtensionContainer { { BHChannels-Setup-ItemExtIEs } } OPTIONAL
}

BHChannels-Setup-ItemExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

BHChannels-SetupMod-Item ::= SEQUENCE {
    bHRLCChannelID      BHRLCChannelID,
    iE-Extensions ProtocolExtensionContainer { { BHChannels-SetupMod-ItemExtIEs } } OPTIONAL
}

```

```

BHChannels-SetupMod-ItemExtIEs  F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

BHChannels-ToBeModified-Item ::= SEQUENCE {
    bHRLCChannelID          BHRLCChannelID,
    bHQoSInformation        BHQoSInformation,
    rLCmode                 RLCmode OPTIONAL,
    bAPCtrlPDUChannel       BAPCtrlPDUChannel OPTIONAL,
    trafficMappingInfo       TrafficMappingInfo OPTIONAL,
    iE-Extensions           ProtocolExtensionContainer { { BHChannels-ToBeModified-ItemExtIEs } } OPTIONAL
}

BHChannels-ToBeModified-ItemExtIEs  F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

BHChannels-ToBeReleased-Item ::= SEQUENCE {
    bHRLCChannelID          BHRLCChannelID,
    iE-Extensions           ProtocolExtensionContainer { { BHChannels-ToBeReleased-ItemExtIEs } } OPTIONAL
}

BHChannels-ToBeReleased-ItemExtIEs  F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

BHChannels-ToBeSetup-Item ::= SEQUENCE {
    bHRLCChannelID          BHRLCChannelID,
    bHQoSInformation        BHQoSInformation,
    rLCmode                 RLCmode,
    bAPCtrlPDUChannel       BAPCtrlPDUChannel OPTIONAL,
    trafficMappingInfo       TrafficMappingInfo OPTIONAL,
    iE-Extensions           ProtocolExtensionContainer { { BHChannels-ToBeSetup-ItemExtIEs } } OPTIONAL
}

BHChannels-ToBeSetup-ItemExtIEs      F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

BHChannels-ToBeSetupMod-Item ::= SEQUENCE {
    bHRLCChannelID          BHRLCChannelID,
    bHQoSInformation        BHQoSInformation,
    rLCmode                 RLCmode,
    bAPCtrlPDUChannel       BAPCtrlPDUChannel OPTIONAL,
    trafficMappingInfo       TrafficMappingInfo OPTIONAL,
    iE-Extensions           ProtocolExtensionContainer { { BHChannels-ToBeSetupMod-ItemExtIEs } } OPTIONAL
}

BHChannels-ToBeSetupMod-ItemExtIEs  F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

BHInfo ::= SEQUENCE {
    bAProutingID            BAProutingID OPTIONAL,

```

```

    egressBHRLCCHList      EgressBHRLCCHList  OPTIONAL,
    iE-Extensions          ProtocolExtensionContainer { { BHInfo-ExtIEs} } OPTIONAL
}

BHInfo-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    { ID id-NonF1terminatingTopologyIndicator  CRITICALITY ignore  EXTENSION NonF1terminatingTopologyIndicator  PRESENCE optional },
    ...
}

BHQoSInformation ::= CHOICE {
    bHRLCCHQoS                QoSFlowLevelQoSParameters,
    eUTRANBHRLCCHQoS          EUTRANQoS,
    cPTrafficType              CPTrafficType,
    choice-extension           ProtocolIE-SingleContainer { { BHQoSInformation-ExtIEs} }
}

BHQoSInformation-ExtIEs F1AP-PROTOCOL-IES ::= {
    ...
}

BHRLCCHList ::= SEQUENCE (SIZE(1..maxnoofBHRLCChannels)) OF BHRLCCHItem

BHRLCCHItem ::= SEQUENCE {
    bHRLCChannelID            BHRLCChannelID,
    iE-Extensions             ProtocolExtensionContainer {{BHRLCCHItemExtIEs }}  OPTIONAL
}

BHRLCCHItemExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

BH-Routing-Information-Added-List-Item ::= SEQUENCE {
    bAPRoutingID              BAPRoutingID,
    nextHopBAPAddress          BAPAddress,
    iE-Extensions             ProtocolExtensionContainer { { BH-Routing-Information-Added-List-ItemExtIEs} }  OPTIONAL
}

BH-Routing-Information-Added-List-ItemExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    {ID id-NonF1terminatingTopologyIndicator  CRITICALITY ignore  EXTENSION  NonF1terminatingTopologyIndicator  PRESENCE optional},
    ...
}

BH-Routing-Information-Removed-List-Item ::= SEQUENCE {
    bAPRoutingID              BAPRoutingID,
    iE-Extensions             ProtocolExtensionContainer { { BH-Routing-Information-Removed-List-ItemExtIEs} }  OPTIONAL
}

BH-Routing-Information-Removed-List-ItemExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

BPLMN-ID-Info-List ::= SEQUENCE (SIZE(1..maxnoofBPLMNSNR)) OF BPLMN-ID-Info-Item

BPLMN-ID-Info-Item ::= SEQUENCE {

```

```

    pLMN-Identity-List      AvailablePLMNList,
    extended-PLMN-Identity-List ExtendedAvailablePLMN-List OPTIONAL,
    fiveGS-TAC              FiveGS-TAC          OPTIONAL,
    nr-cell-ID              NRCellIdentity,
    ranac                   RANAC                OPTIONAL,
    iE-Extensions           ProtocolExtensionContainer { { BPLMN-ID-Info-ItemExtIEs } } OPTIONAL,
    ...
}

BPLMN-ID-Info-ItemExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    { ID id-ConfiguredTACIndication      CRITICALITY ignore EXTENSION ConfiguredTACIndication PRESENCE optional }|
    { ID id-NPNBroadcastInformation      CRITICALITY reject EXTENSION NPNBroadcastInformation PRESENCE optional},
    ...
}

ServedPLMNs-List ::= SEQUENCE (SIZE(1..maxnoofBPLMNs)) OF ServedPLMNs-Item

ServedPLMNs-Item ::= SEQUENCE {
    pLMN-Identity      PLMN-Identity,
    iE-Extensions      ProtocolExtensionContainer { { ServedPLMNs-ItemExtIEs } } OPTIONAL,
    ...
}

ServedPLMNs-ItemExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    { ID id-TAISliceSupportList      CRITICALITY ignore EXTENSION SliceSupportList PRESENCE optional }|
    { ID id-NPNSupportInfo          CRITICALITY reject EXTENSION NPNSupportInfo PRESENCE optional }|
    { ID id-ExtendedTAISliceSupportList CRITICALITY reject EXTENSION ExtendedSliceSupportList PRESENCE optional }|
    { ID id-TAINSAGSupportList      CRITICALITY ignore EXTENSION NSAGSupportList PRESENCE optional},
    ...
}

BroadcastCAGList ::= SEQUENCE (SIZE(1..maxnoofCAGsupported)) OF CAGID

BroadcastMRBs-FailedToBeModified-Item ::= SEQUENCE {
    mRB-ID      MRB-ID,
    cause       Cause OPTIONAL,
    iE-Extensions ProtocolExtensionContainer { { BroadcastMRBs-FailedtoBeModified-Item-ExtIEs } } OPTIONAL,
    ...
}

BroadcastMRBs-FailedtoBeModified-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

BroadcastMRBs-FailedToBeSetup-Item ::= SEQUENCE {
    mRB-ID      MRB-ID,
    cause       Cause OPTIONAL,
    iE-Extensions ProtocolExtensionContainer { { BroadcastMRBs-FailedToBeSetup-Item-ExtIEs } } OPTIONAL,
    ...
}

BroadcastMRBs-FailedToBeSetup-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

```



```

}

BroadcastMRBs-FailedToBeSetupMod-Item ::= SEQUENCE {
    mRB-ID                MRB-ID,
    cause                  Cause OPTIONAL,
    iE-Extensions          ProtocolExtensionContainer { { BroadcastMRBs-FailedToBeSetupMod-Item-ExtIEs} } OPTIONAL,
    ...
}

BroadcastMRBs-FailedToBeSetupMod-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

BroadcastMRBs-Modified-Item ::= SEQUENCE {
    mRB-ID                MRB-ID,
    bcBearerCtxtF1U-TNLInfoatDU BCBearerContextF1U-TNLInfo OPTIONAL,
    iE-Extensions          ProtocolExtensionContainer { { BroadcastMRBs-Modified-Item-ExtIEs} } OPTIONAL,
    ...
}

BroadcastMRBs-Modified-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

BroadcastMRBs-Setup-Item ::= SEQUENCE {
    mRB-ID                MRB-ID,
    bcBearerCtxtF1U-TNLInfoatDU BCBearerContextF1U-TNLInfo,
    iE-Extensions          ProtocolExtensionContainer { { BroadcastMRBs-Setup-Item-ExtIEs} } OPTIONAL,
    ...
}

BroadcastMRBs-Setup-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

BroadcastMRBs-SetupMod-Item ::= SEQUENCE {
    mRB-ID                MRB-ID,
    bcBearerCtxtF1U-TNLInfoatDU BCBearerContextF1U-TNLInfo,
    iE-Extensions          ProtocolExtensionContainer { { BroadcastMRBs-SetupMod-Item-ExtIEs} } OPTIONAL,
    ...
}

BroadcastMRBs-SetupMod-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

BroadcastMRBs-ToBeModified-Item ::= SEQUENCE {
    mRB-ID                MRB-ID,
    mRB-QoSInformation     QoSFlowLevelQoSParameters OPTIONAL,
    mBS-Flows-Mapped-To-MRB-List MBS-Flows-Mapped-To-MRB-List OPTIONAL,
    bcBearerCtxtF1U-TNLInfoatCU BCBearerContextF1U-TNLInfo OPTIONAL,
    iE-Extensions          ProtocolExtensionContainer { { BroadcastMRBs-ToBeModified-Item-ExtIEs} } OPTIONAL,
    ...
}

```

```

BroadcastMRBs-ToBeModified-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

BroadcastMRBs-ToBeReleased-Item ::= SEQUENCE {
    mRB-ID MRB-ID,
    iE-Extensions ProtocolExtensionContainer { { BroadcastMRBs-ToBeReleased-ItemExtIEs } } OPTIONAL,
    ...
}

BroadcastMRBs-ToBeReleased-ItemExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

BroadcastMRBs-ToBeSetup-Item ::= SEQUENCE {
    mRB-ID MRB-ID,
    mRB-QoSInformation QoSFlowLevelQoSParameters,
    mBS-Flows-Mapped-To-MRB-List MBS-Flows-Mapped-To-MRB-List,
    bcBearerCtxtF1U-TNLInfoatCU BCBearerContextF1U-TNLInfo,
    iE-Extensions ProtocolExtensionContainer { { BroadcastMRBs-ToBeSetup-Item-ExtIEs } } OPTIONAL,
    ...
}

BroadcastMRBs-ToBeSetup-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

BroadcastMRBs-ToBeSetupMod-Item ::= SEQUENCE {
    mRB-ID MRB-ID,
    mRB-QoSInformation QoSFlowLevelQoSParameters,
    mBS-Flows-Mapped-To-MRB-List MBS-Flows-Mapped-To-MRB-List,
    bcBearerCtxtF1U-TNLInfoatCU BCBearerContextF1U-TNLInfo,
    iE-Extensions ProtocolExtensionContainer { { BroadcastMRBs-ToBeSetupMod-Item-ExtIEs } } OPTIONAL,
    ...
}

BroadcastMRBs-ToBeSetupMod-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

BroadcastNIDList ::= SEQUENCE (SIZE(1..maxnoofNIDsupported)) OF NID

BroadcastSNPN-ID-List ::= SEQUENCE (SIZE(1..maxnoofNIDsupported)) OF BroadcastSNPN-ID-List-Item

BroadcastSNPN-ID-List-Item ::= SEQUENCE {
    pLMN-Identity PLMN-Identity,
    broadcastNIDList BroadcastNIDList,
    iE-Extensions ProtocolExtensionContainer { { BroadcastSNPN-ID-List-ItemExtIEs } } OPTIONAL,
    ...
}

BroadcastSNPN-ID-List-ItemExtIEs F1AP-PROTOCOL-EXTENSION ::= {

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```

}
...
BroadcastPNI-NPN-ID-List ::= SEQUENCE (SIZE(1..maxnoofCAGsupported)) OF BroadcastPNI-NPN-ID-List-Item
BroadcastPNI-NPN-ID-List-Item ::= SEQUENCE {
    pLMN-Identity          PLMN-Identity,
    broadcastCAGList       BroadcastCAGList,
    iE-Extensions          ProtocolExtensionContainer { { BroadcastPNI-NPN-ID-List-ItemExtIEs } } OPTIONAL,
    ...
}

BroadcastPNI-NPN-ID-List-ItemExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

BroadcastAreaScope ::= CHOICE {
    completeSuccess        NULL,
    partialSuccess         PartialSuccessCell,
    choice-extension       ProtocolIE-SingleContainer { { BroadcastAreaScope-ExtIEs } }
}

BroadcastAreaScope-ExtIEs F1AP-PROTOCOL-IES::={
    ...
}

BroadcastCellList ::= SEQUENCE (SIZE(1.. maxCellingNBDU)) OF Broadcast-Cell-List-Item
Broadcast-Cell-List-Item ::= SEQUENCE {
    cellID                 NRCGI,
    iE-Extensions          ProtocolExtensionContainer { { Broadcast-Cell-List-ItemExtIEs } } OPTIONAL,
    ...
}

Broadcast-Cell-List-ItemExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

BufferSizeThresh ::= INTEGER(0..16777215)

BurstArrivalTime ::= OCTET STRING

BWP-Id ::= INTEGER (0..4)

-- C
CAGID ::= BIT STRING (SIZE(32))

Cancel-all-Warning-Messages-Indicator ::= ENUMERATED {true, ...}

Candidate-SpCell-Item ::= SEQUENCE {
    candidate-SpCell-ID     NRCGI ,
    iE-Extensions          ProtocolExtensionContainer { { Candidate-SpCell-ItemExtIEs } } OPTIONAL,
    ...
}

```

```
Candidate-SpCell-ItemExtIEs      F1AP-PROTOCOL-EXTENSION ::= {  
  ...  
}  
  
CapacityValue ::= SEQUENCE {  
  capacityValue          INTEGER (0..100),  
  sSBAreaCapacityValueList  SSBAreaCapacityValueList OPTIONAL,  
  iE-Extensions          ProtocolExtensionContainer { { CapacityValue-ExtIEs} } OPTIONAL  
}  
  
CapacityValue-ExtIEs      F1AP-PROTOCOL-EXTENSION ::= {  
  ...  
}  
  
Cause ::= CHOICE {  
  radioNetwork      CauseRadioNetwork,  
  transport          CauseTransport,  
  protocol           CauseProtocol,  
  misc               CauseMisc,  
  choice-extension   ProtocolIE-SingleContainer { { Cause-ExtIEs} }  
}  
  
Cause-ExtIEs F1AP-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,  
  rl-failure-rlc,  
  unknown-or-already-allocated-gnb-cu-ue-f1ap-id,  
  unknown-or-already-allocated-gnb-du-ue-f1ap-id,  
  unknown-or-inconsistent-pair-of-ue-f1ap-id,  
  interaction-with-other-procedure,  
  not-supported-qci-Value,  
}
```

```
    action-desirable-for-radio-reasons,
    no-radio-resources-available,
    procedure-cancelled,
    normal-release,
    ...,
    cell-not-available,
    rl-failure-others,
    ue-rejection,
    resources-not-available-for-the-slice,
    amf-initiated-abnormal-release,
    release-due-to-pre-emption,
    plmn-not-served-by-the-gNB-CU,
    multiple-drb-id-instances,
    unknown-drb-id,
    multiple-bh-rlc-ch-id-instances,
    unknown-bh-rlc-ch-id,
    cho-cpc-resources-to-be-changed,
    nPN-not-supported,
    nPN-access-denied,
    gNB-CU-Cell-Capacity-Exceeded,
    report-characteristics-empty,
    existing-measurement-ID,
    measurement-temporarily-not-available,
    measurement-not-supported-for-the-object,
    unknown-bh-address,
    unknown-bap-routing-id,
    insufficient-ue-capabilities,
    scg-activation-deactivation-failure,
    scg-deactivation-failure-due-to-data-transmission,
    requested-item-not-supported-on-time,
    unknown-or-already-allocated-gNB-CU-MBS-F1AP-ID,
    unknown-or-already-allocated-gNB-DU-MBS-F1AP-ID,
    unknown-or-inconsistent-pair-of-MBS-F1AP-ID,
    unknown-or-inconsistent-MRB-ID,
    tat-sdt-expiry
}

CauseTransport ::= ENUMERATED {
    unspecified,
    transport-resource-unavailable,
    ...,
    unknown-TNL-address-for-IAB,
    unknown-UP-TNL-information-for-IAB
}

CellGroupConfig ::= OCTET STRING

CellCapacityClassValue ::= INTEGER (1..100,...)

Cell-Direction ::= ENUMERATED {dl-only, ul-only}

CellMeasurementResultList ::= SEQUENCE (SIZE(1.. maxCellingNBDU)) OF CellMeasurementResultItem
```

```

CellMeasurementResultItem ::= SEQUENCE {
    cellID                               NRCGI,
    radioResourceStatus                 RadioResourceStatus OPTIONAL,
    compositeAvailableCapacityGroup     CompositeAvailableCapacityGroup OPTIONAL,
    sliceAvailableCapacity              SliceAvailableCapacity OPTIONAL,
    numberOfActiveUEs                  NumberofActiveUEs OPTIONAL,
    iE-Extensions                      ProtocolExtensionContainer { { CellMeasurementResultItem-ExtIEs } } OPTIONAL
}

CellMeasurementResultItem-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    { ID id-NR-U-Channel-List CRITICALITY ignore EXTENSION NR-U-Channel-List PRESENCE optional },
    ...
}

Cell-Portion-ID ::= INTEGER (0..4095,...)

CellsForSON-List ::= SEQUENCE (SIZE(1.. maxServedCellforSON)) OF CellsForSON-Item

CellsForSON-Item ::= SEQUENCE {
    nRCGI                               NRCGI,
    neighbourNR-CellsForSON-List       NeighbourNR-CellsForSON-List OPTIONAL,
    iE-Extensions                      ProtocolExtensionContainer { { CellsForSON-Item-ExtIEs } } OPTIONAL,
    ...
}

CellsForSON-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

Cells-Failed-to-be-Activated-List-Item ::= SEQUENCE {
    nRCGI                               NRCGI,
    cause                              Cause,
    iE-Extensions                      ProtocolExtensionContainer { { Cells-Failed-to-be-Activated-List-ItemExtIEs } } OPTIONAL,
    ...
}

Cells-Failed-to-be-Activated-List-ItemExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

Cells-Status-Item ::= SEQUENCE {
    nRCGI                               NRCGI,
    service-status                     Service-Status,
    iE-Extensions                      ProtocolExtensionContainer { { Cells-Status-ItemExtIEs } } OPTIONAL,
    ...
}

Cells-Status-ItemExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

Cells-To-Be-Broadcast-Item ::= SEQUENCE {
    nRCGI                               NRCGI,
    iE-Extensions                      ProtocolExtensionContainer { { Cells-To-Be-Broadcast-ItemExtIEs } } OPTIONAL,

```

```

    ...
}

Cells-To-Be-Broadcast-ItemExtIEs    F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

Cells-Broadcast-Completed-Item ::= SEQUENCE {
    nRCGI          NRCGI,
    iE-Extensions  ProtocolExtensionContainer { { Cells-Broadcast-Completed-ItemExtIEs } } OPTIONAL,
    ...
}

Cells-Broadcast-Completed-ItemExtIEs    F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

Broadcast-To-Be-Cancelled-Item ::= SEQUENCE {
    nRCGI          NRCGI,
    iE-Extensions  ProtocolExtensionContainer { { Broadcast-To-Be-Cancelled-ItemExtIEs } } OPTIONAL,
    ...
}

Broadcast-To-Be-Cancelled-ItemExtIEs    F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

Cells-Broadcast-Cancelled-Item ::= SEQUENCE {
    nRCGI          NRCGI,
    numberOfBroadcasts  NumberOfBroadcasts,
    iE-Extensions  ProtocolExtensionContainer { { Cells-Broadcast-Cancelled-ItemExtIEs } } OPTIONAL,
    ...
}

Cells-Broadcast-Cancelled-ItemExtIEs    F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

Cells-to-be-Activated-List-Item ::= SEQUENCE {
    nRCGI          NRCGI,
    nRPCI          NRPCI          OPTIONAL,
    iE-Extensions  ProtocolExtensionContainer { { Cells-to-be-Activated-List-ItemExtIEs } } OPTIONAL,
    ...
}

Cells-to-be-Activated-List-ItemExtIEs    F1AP-PROTOCOL-EXTENSION ::= {
    { ID id-gNB-CUSystemInformation      CRITICALITY reject EXTENSION GNB-CUSystemInformation      PRESENCE optional }|
    { ID id-AvailablePLMNList            CRITICALITY ignore EXTENSION AvailablePLMNList            PRESENCE optional }|
    { ID id-ExtendedAvailablePLMN-List    CRITICALITY ignore EXTENSION ExtendedAvailablePLMN-List    PRESENCE optional }|
    { ID id-IAB-Info-IAB-donor-CU         CRITICALITY ignore EXTENSION IAB-Info-IAB-donor-CU         PRESENCE optional }|
    { ID id-AvailableSNPN-ID-List         CRITICALITY ignore EXTENSION AvailableSNPN-ID-List         PRESENCE optional }|
    { ID id-MBS-Broadcast-NeighbourCellList CRITICALITY ignore EXTENSION MBS-Broadcast-NeighbourCellList PRESENCE optional },
    ...
}

```

```

}

Cells-to-be-Deactivated-List-Item ::= SEQUENCE {
    nRCGI          NRCGI      ,
    iE-Extensions  ProtocolExtensionContainer { { Cells-to-be-Deactivated-List-ItemExtIEs } } OPTIONAL,
    ...
}

Cells-to-be-Deactivated-List-ItemExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

Cells-to-be-Barred-Item ::= SEQUENCE {
    nRCGI          NRCGI      ,
    cellBarred     CellBarred,
    iE-Extensions  ProtocolExtensionContainer { { Cells-to-be-Barred-Item-ExtIEs } } OPTIONAL
}

Cells-to-be-Barred-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    { ID id-IAB-Barred CRITICALITY ignore EXTENSION IAB-Barred PRESENCE optional },
    ...
}

CellBarred ::= ENUMERATED {barred, not-barred, ...}

CellSize ::= ENUMERATED {verysmall, small, medium, large, ...}

CellToReportList ::= SEQUENCE (SIZE(1.. maxCellingNBDU)) OF CellToReportItem

CellToReportItem ::= SEQUENCE {
    cellID          NRCGI,
    sSBToReportList SSBToReportList OPTIONAL,
    sliceToReportList SliceToReportList OPTIONAL,
    iE-Extensions  ProtocolExtensionContainer { { CellToReportItem-ExtIEs } } OPTIONAL
}

CellToReportItem-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

CellType ::= SEQUENCE {
    cellSize        CellSize,
    iE-Extensions  ProtocolExtensionContainer { {CellType-ExtIEs} } OPTIONAL,
    ...
}

CellType-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

CellULConfigured ::= ENUMERATED {none, ul, sul, ul-and-sul, ...}

```



```

CG-SDTQueryIndication ::= ENUMERATED {true, ...}

CG-SDTKeptIndicator ::= ENUMERATED {true, ...}

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

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

CG-SDTSessionInfo ::= SEQUENCE {
    gNB-CU-UE-F1AP-ID          GNB-CU-UE-F1AP-ID,
    gNB-DU-UE-F1AP-ID          GNB-DU-UE-F1AP-ID,
    iE-Extensions              ProtocolExtensionContainer {{CG-SDTSessionInfo-ExtIEs}} OPTIONAL,
    ...
}

CG-SDTSessionInfo-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

ChannelOccupancyTimePercentage ::= INTEGER (0..100,...)

Child-IAB-Nodes-NA-Resource-List ::= SEQUENCE (SIZE(1..maxnoofChildIABNodes)) OF Child-IAB-Nodes-NA-Resource-List-Item

Child-IAB-Nodes-NA-Resource-List-Item ::= SEQUENCE {
    gNB-CU-UE-F1AP-ID          GNB-CU-UE-F1AP-ID,
    gNB-DU-UE-F1AP-ID          GNB-DU-UE-F1AP-ID,
    nA-Resource-Configuration-List NA-Resource-Configuration-List OPTIONAL,
    iE-Extensions              ProtocolExtensionContainer { { Child-IAB-Nodes-NA-Resource-List-Item-ExtIEs } } OPTIONAL
}

Child-IAB-Nodes-NA-Resource-List-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

Child-Node-Cells-List ::= SEQUENCE (SIZE(1..maxnoofChildIABNodes)) OF Child-Node-Cells-List-Item

Child-Node-Cells-List-Item ::= SEQUENCE{
    nRCGI                      NRCGI,
    iAB-DU-Cell-Resource-Configuration-Mode-Info IAB-DU-Cell-Resource-Configuration-Mode-Info OPTIONAL,
    iAB-STC-Info                IAB-STC-Info OPTIONAL,
    rACH-Config-Common          RACH-Config-Common OPTIONAL,
    rACH-Config-Common-IAB      RACH-Config-Common-IAB OPTIONAL,
    cSI-RS-Configuration        OCTET STRING OPTIONAL,
    sR-Configuration            OCTET STRING OPTIONAL,
    pDCCH-ConfigSIB1            OCTET STRING OPTIONAL,
    sCS-Common                  OCTET STRING OPTIONAL,
    multiplexingInfo             MultiplexingInfo OPTIONAL,
    iE-Extensions              ProtocolExtensionContainer {{Child-Node-Cells-List-Item-ExtIEs}} OPTIONAL
}

Child-Node-Cells-List-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

```

```

}

Child-Nodes-List ::= SEQUENCE (SIZE(1..maxnoofChildIABNodes)) OF Child-Nodes-List-Item

Child-Nodes-List-Item ::= SEQUENCE{
    gNB-CU-UE-F1AP-ID    GNB-CU-UE-F1AP-ID,
    gNB-DU-UE-F1AP-ID    GNB-DU-UE-F1AP-ID,
    child-Node-Cells-List Child-Node-Cells-List OPTIONAL,
    iE-Extensions         ProtocolExtensionContainer {{Child-Nodes-List-Item-ExtIEs}} OPTIONAL
}

Child-Nodes-List-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

CHOTtrigger-InterDU ::= ENUMERATED {
    cho-initiation,
    cho-replace,
    ...
}

CHOTtrigger-IntraDU ::= ENUMERATED {
    cho-initiation,
    cho-replace,
    cho-cancel,
    ...
}

CNSubgroupID ::= INTEGER (0..7, ...)

CNUEPagingIdentity ::= CHOICE {
    fiveG-S-TMSI        BIT STRING (SIZE(48)),
    choice-extension     ProtocolIE-SingleContainer { { CNUEPagingIdentity-ExtIEs } }
}

CNUEPagingIdentity-ExtIEs F1AP-PROTOCOL-IES ::= {
    ...
}

CompositeAvailableCapacityGroup ::= SEQUENCE {
    compositeAvailableCapacityDownlink CompositeAvailableCapacity,
    compositeAvailableCapacityUplink   CompositeAvailableCapacity,
    iE-Extensions                      ProtocolExtensionContainer { { CompositeAvailableCapacityGroup-ExtIEs } } OPTIONAL
}

CompositeAvailableCapacityGroup-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    { ID id-CompositeAvailableCapacity-SUL CRITICALITY ignore EXTENSION CompositeAvailableCapacity PRESENCE optional },
    ...
}

CompositeAvailableCapacity ::= SEQUENCE {
    cellCapacityClassValue CellCapacityClassValue OPTIONAL,
    capacityValue           CapacityValue,
    iE-Extensions           ProtocolExtensionContainer { { CompositeAvailableCapacity-ExtIEs } } OPTIONAL
}

```

```

}

CompositeAvailableCapacity-ExtIEs    F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

CHO-Probability ::= INTEGER (1..100)

ConditionalInterDUMobilityInformation ::= SEQUENCE {
    cho-trigger                CHOtrigger-InterDU,
    targetgNB-DUUEF1APIID      GNB-DU-UE-F1AP-ID                OPTIONAL
    -- This IE shall be present if the cho-trigger IE is present and set to "cho-replace" --,
    iE-Extensions              ProtocolExtensionContainer { { ConditionalInterDUMobilityInformation-ExtIEs } } OPTIONAL,
    ...
}

ConditionalInterDUMobilityInformation-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    { ID id-EstimatedArrivalProbability    CRITICALITY ignore      EXTENSION CHO-Probability    PRESENCE optional },
    ...
}

ConditionalIntraDUMobilityInformation ::= SEQUENCE {
    cho-trigger                CHOtrigger-IntraDU,
    targetCellsTocancel        TargetCellList                    OPTIONAL,
    -- This IE may be present if the cho-trigger IE is present and set to "cho-cancel"
    iE-Extensions              ProtocolExtensionContainer { { ConditionalIntraDUMobilityInformation-ExtIEs } } OPTIONAL,
    ...
}

ConditionalIntraDUMobilityInformation-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    { ID id-EstimatedArrivalProbability    CRITICALITY ignore      EXTENSION CHO-Probability    PRESENCE optional },
    ...
}

ConfigRestrictInfoDAPS ::= OCTET STRING

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

Configured-BWP-List ::= SEQUENCE (SIZE(1.. maxNrofBWPs)) OF Configured-BWP-Item

Configured-BWP-Item ::= SEQUENCE {
    bWP-Id                    BWP-Id,
    bWP-Location-and-bandwidth INTEGER (0..37949),
    iE-Extensions              ProtocolExtensionContainer { { Configured-BWP-Item-ExtIEs } } OPTIONAL,
    ...
}

Configured-BWP-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

```

```

CoordinateID ::= INTEGER (0..511, ...)

Coverage-Modification-Notification ::= SEQUENCE {
    coverage-Modification-List      Coverage-Modification-List,
    iE-Extensions                    ProtocolExtensionContainer { { Coverage-Modification-Notification-ExtIEs} } OPTIONAL,
    ...
}

Coverage-Modification-Notification-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

Coverage-Modification-List ::= SEQUENCE (SIZE (1..maxCellingNBDU)) OF Coverage-Modification-Item

Coverage-Modification-Item ::= SEQUENCE {
    nRCGI                          NRCGI,
    cellCoverageState               CellCoverageState,
    ssbCoverageModificationList     ssbCoverageModification-List OPTIONAL,
    iE-Extension                    ProtocolExtensionContainer { { Coverage-Modification-Item-ExtIEs} } OPTIONAL,
    ...
}

Coverage-Modification-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

CellCoverageState ::= INTEGER (0..63, ...)

CCO-Assistance-Information ::= SEQUENCE {
    cco-issue-detection             CCO-issue-detection OPTIONAL,
    affectedCellsAndBeams-List      AffectedCellsAndBeams-List OPTIONAL,
    iE-Extensions                    ProtocolExtensionContainer { { CCO-Assistance-Information-ExtIEs} } OPTIONAL,
    ...
}

CCO-Assistance-Information-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

CCO-issue-detection ::= ENUMERATED {
    coverage,
    cell-edge-capacity,
    ...}

CP-TransportLayerAddress ::= CHOICE {
    endpoint-IP-address             TransportLayerAddress,
    endpoint-IP-address-and-port    Endpoint-IP-address-and-port,
    choice-extension                 ProtocolIE-SingleContainer { { CP-TransportLayerAddress-ExtIEs } }
}

```

```

CP-TransportLayerAddress-ExtIEs F1AP-PROTOCOL-IES ::= {
    ...
}

CPACMCGInformation ::= SEQUENCE {
    cpac-trigger          CPAC-trigger,
    pscellid              NRCGI,
    iE-Extensions         ProtocolExtensionContainer { { CPACMCGInformation-ExtIEs} } OPTIONAL,
    ...
}

CPACMCGInformation-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    { ID id-candidatePSCellsToCancel          CRITICALITY ignore EXTENSION PSCellList          PRESENCE optional },
    -- The above IE shall be present if the cpac-trigger IE is present and set to "cpac-cancel"
    ...
}

CPAC-trigger ::= ENUMERATED {
    cpac-preparation,
    cpac-executed,
    ...,
    cpac-cancel
}

CPTrafficType ::= INTEGER (1..3,...)

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 F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

CriticalityDiagnostics-IE-List ::= SEQUENCE (SIZE (1.. maxnoofErrors)) OF CriticalityDiagnostics-IE-Item

CriticalityDiagnostics-IE-Item ::= SEQUENCE {
    iECriticality           Criticality,
    iE-ID                   ProtocolIE-ID,
    typeOfError             TypeOfError,
    iE-Extensions           ProtocolExtensionContainer {{CriticalityDiagnostics-IE-Item-ExtIEs}} OPTIONAL,
    ...
}

CriticalityDiagnostics-IE-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

```

```

C-RNTI ::= INTEGER (0..65535, ...)

CUDURadioInformationType ::= CHOICE {
    rIM                                CUDURIMInformation,
    choice-extension                  ProtocolIE-SingleContainer { { CUDURadioInformationType-ExtIEs } }
}

CUDURadioInformationType-ExtIEs F1AP-PROTOCOL-IES ::= {
    ...
}

CUDURIMInformation ::= SEQUENCE {
    victimgNBSetID                    GNBSetID,
    rIMRSDetectionStatus              RIMRSDetectionStatus,
    iE-Extensions                     ProtocolExtensionContainer { { CUDURIMInformation-ExtIEs } } OPTIONAL
}

CUDURIMInformation-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

CutoDURRCInformation ::= SEQUENCE {
    cG-ConfigInfo                    CG-ConfigInfo                                OPTIONAL,
    uE-CapabilityRAT-ContainerList    UE-CapabilityRAT-ContainerList              OPTIONAL,
    measConfig                        MeasConfig                                OPTIONAL,
    iE-Extensions                     ProtocolExtensionContainer { { CutoDURRCInformation-ExtIEs } } OPTIONAL,
    ...
}

CutoDURRCInformation-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    { ID id-HandoverPreparationInformation CRITICALITY ignore EXTENSION HandoverPreparationInformation PRESENCE optional }|
    { ID id-CellGroupConfig                CRITICALITY ignore EXTENSION CellGroupConfig                PRESENCE optional }|
    { ID id-MeasurementTimingConfiguration CRITICALITY ignore EXTENSION MeasurementTimingConfiguration PRESENCE optional }|
    { ID id-UEAssistanceInformation         CRITICALITY ignore EXTENSION UEAssistanceInformation         PRESENCE optional }|
    { ID id-CG-Config                       CRITICALITY ignore EXTENSION CG-Config                       PRESENCE optional }|
    { ID id-UEAssistanceInformationEUTRA    CRITICALITY ignore EXTENSION UEAssistanceInformationEUTRA    PRESENCE optional }|
    { ID id-LocationMeasurementInformation CRITICALITY ignore EXTENSION LocationMeasurementInformation PRESENCE optional }|
    { ID id-MUSIM-GapConfig                 CRITICALITY reject  EXTENSION MUSIM-GapConfig                 PRESENCE optional }|
    { ID id-SDT-MAC-PHY-CG-Config           CRITICALITY ignore EXTENSION SDT-MAC-PHY-CG-Config           PRESENCE optional }|
    { ID id-MBSInterestIndication           CRITICALITY ignore EXTENSION MBSInterestIndication           PRESENCE optional }|
    { ID id-NeedForGapsInfoNR               CRITICALITY ignore EXTENSION NeedForGapsInfoNR               PRESENCE optional }|
    { ID id-NeedForGapNCSGInfoNR            CRITICALITY ignore EXTENSION NeedForGapNCSGInfoNR            PRESENCE optional }|
    { ID id-NeedForGapNCSGInfoEUTRA         CRITICALITY ignore EXTENSION NeedForGapNCSGInfoEUTRA         PRESENCE optional }|
    { ID id-ConfigRestrictInfoDAPS          CRITICALITY ignore EXTENSION ConfigRestrictInfoDAPS          PRESENCE optional }|
    { ID id-Preconfigured-measurement-GAP-Request CRITICALITY ignore EXTENSION Preconfigured-measurement-GAP-Request PRESENCE optional },
    ...
}

-- D

DAPS-HO-Status ::= ENUMERATED{initiation, ... }

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

```

```

Dedicated-SIDelivery-NeededUE-Item ::= SEQUENCE {
    gNB-CU-UE-F1AP-ID          GNB-CU-UE-F1AP-ID,
    nRCGI                      NRCGI,
    iE-Extensions              ProtocolExtensionContainer { { DedicatedSIDeliveryNeededUE-Item-ExtIEs } } OPTIONAL,
    ...
}

DedicatedSIDeliveryNeededUE-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

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

DL-PRS ::= SEQUENCE {
    prsid                      INTEGER (0..255),
    dl-PRSResourceSetID        PRS-Resource-Set-ID,
    dl-PRSResourceID           PRS-Resource-ID OPTIONAL,
    iE-Extensions              ProtocolExtensionContainer { {DL-PRS-ExtIEs} } OPTIONAL
}

DL-PRS-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

DL-PRSMutingPattern ::= CHOICE {
    two                        BIT STRING (SIZE(2)),
    four                      BIT STRING (SIZE(4)),
    six                      BIT STRING (SIZE(6)),
    eight                    BIT STRING (SIZE(8)),
    sixteen                  BIT STRING (SIZE(16)),
    thirty-two              BIT STRING (SIZE(32)),
    choice-extension          ProtocolIE-SingleContainer { { DL-PRSMutingPattern-ExtIEs } }
}

DL-PRSMutingPattern-ExtIEs F1AP-PROTOCOL-IES ::= {
    ...
}

DLPRSResourceCoordinates ::= SEQUENCE {
    listofDL-PRSResourceSetARP SEQUENCE (SIZE(1.. maxnoofPRS-ResourceSets)) OF DLPRSResourceSetARP,
    iE-Extensions              ProtocolExtensionContainer { { DLPRSResourceCoordinates-ExtIEs } } OPTIONAL
}

DLPRSResourceCoordinates-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

DLPRSResourceSetARP ::= SEQUENCE {
    dl-PRSResourceSetID        PRS-Resource-Set-ID,
    dl-PRSResourceSetARPLocation DL-PRSResourceSetARPLocation,
    listofDL-PRSResourceARP    SEQUENCE (SIZE(1.. maxnoofPRS-ResourcesPerSet)) OF DLPRSResourceARP,
    iE-Extensions              ProtocolExtensionContainer { { DLPRSResourceSetARP-ExtIEs } } OPTIONAL
}

```

```

DLPRSResourceSetARP-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

DL-PRSResourceSetARPLocation ::= CHOICE {
    relativeGeodeticLocation      RelativeGeodeticLocation,
    relativeCartesianLocation     RelativeCartesianLocation,
    choice-Extension              ProtocolIE-SingleContainer { { DL-PRSResourceSetARPLocation-ExtIEs } }
}

DL-PRSResourceSetARPLocation-ExtIEs F1AP-PROTOCOL-IES ::= {
    ...
}

DLPRSResourceARP ::= SEQUENCE {
    dl-PRSResourceID              PRS-Resource-ID,
    dl-PRSResourceARPLocation     DL-PRSResourceARPLocation,
    iE-Extensions                 ProtocolExtensionContainer { { DLPRSResourceARP-ExtIEs } } OPTIONAL
}

DLPRSResourceARP-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

DL-PRSResourceARPLocation ::= CHOICE {
    relativeGeodeticLocation      RelativeGeodeticLocation,
    relativeCartesianLocation     RelativeCartesianLocation,
    choice-Extension              ProtocolIE-SingleContainer { { DL-PRSResourceARPLocation-ExtIEs } }
}

DL-PRSResourceARPLocation-ExtIEs F1AP-PROTOCOL-IES ::= {
    ...
}

DL-UP-TNL-Address-to-Update-List-Item ::= SEQUENCE {
    oldIPAddress                  TransportLayerAddress,
    newIPAddress                  TransportLayerAddress,
    iE-Extensions                ProtocolExtensionContainer { { DL-UP-TNL-Address-to-Update-List-ItemExtIEs } } OPTIONAL,
    ...
}

DL-UP-TNL-Address-to-Update-List-ItemExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

DLUPTNLInformation-ToBeSetup-List ::= SEQUENCE (SIZE(1..maxnoofDLUPTNLInformation)) OF DLUPTNLInformation-ToBeSetup-Item

DLUPTNLInformation-ToBeSetup-Item ::= SEQUENCE {
    dLUPTNLInformation            UPTransportLayerInformation,
    iE-Extensions                ProtocolExtensionContainer { { DLUPTNLInformation-ToBeSetup-ItemExtIEs } } OPTIONAL,
    ...
}

```



```

}

DLUPTNLInformation-ToBeSetup-ItemExtIes      F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

DRB-Activity-Item ::= SEQUENCE {
    dRBID          DRBID,
    dRB-Activity    DRB-Activity OPTIONAL,
    iE-Extensions   ProtocolExtensionContainer { { DRB-Activity-ItemExtIes } } OPTIONAL,
    ...
}

DRB-Activity-ItemExtIes      F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

DRB-Activity ::= ENUMERATED {active, not-active}

DRBID ::= INTEGER (1..32, ...)

DRBs-FailedToBeModified-Item      ::= SEQUENCE {
    dRBID          DRBID,
    cause          Cause OPTIONAL,
    iE-Extensions   ProtocolExtensionContainer { { DRBs-FailedToBeModified-ItemExtIes } } OPTIONAL,
    ...
}

DRBs-FailedToBeModified-ItemExtIes F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

DRBs-FailedToBeSetup-Item      ::= SEQUENCE {
    dRBID          DRBID,
    cause          Cause OPTIONAL,
    iE-Extensions   ProtocolExtensionContainer { { DRBs-FailedToBeSetup-ItemExtIes } } OPTIONAL,
    ...
}

DRBs-FailedToBeSetup-ItemExtIes      F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

DRBs-FailedToBeSetupMod-Item      ::= SEQUENCE {
    dRBID          DRBID,
    cause          Cause OPTIONAL,
    iE-Extensions   ProtocolExtensionContainer { { DRBs-FailedToBeSetupMod-ItemExtIes } } OPTIONAL,
    ...
}

DRBs-FailedToBeSetupMod-ItemExtIes F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

```

```

DRB-Information ::= SEQUENCE {
    drb-QoS      QoSFlowLevelQoSParameters,
    snssai       SNSSAI,
    notificationControl NotificationControl OPTIONAL,
    flows-Mapped-To-DRB-List Flows-Mapped-To-DRB-List,
    iE-Extensions ProtocolExtensionContainer { { DRB-Information-ItemExtIEs } } OPTIONAL
}

DRB-Information-ItemExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

DRBs-Modified-Item ::= SEQUENCE {
    drbID          DRBID,
    lcID           LCID OPTIONAL,
    dlUPTNLInformation-ToBeSetup-List DLUPTNLInformation-ToBeSetup-List,
    iE-Extensions ProtocolExtensionContainer { { DRBs-Modified-ItemExtIEs } } OPTIONAL,
    ...
}

DRBs-Modified-ItemExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    { ID id-RLC-Status CRITICALITY ignore EXTENSION RLC-Status PRESENCE optional }|
    { ID id-AdditionalPDCPDuplicationTNL-List CRITICALITY ignore EXTENSION AdditionalPDCPDuplicationTNL-List PRESENCE optional }|
    { ID id-CurrentQoSParaSetIndex CRITICALITY ignore EXTENSION QoSParaSetIndex PRESENCE optional },
    ...
}

DRBs-ModifiedConf-Item ::= SEQUENCE {
    drbID          DRBID,
    ulUPTNLInformation-ToBeSetup-List ULUPTNLInformation-ToBeSetup-List ,
    iE-Extensions ProtocolExtensionContainer { { DRBs-ModifiedConf-ItemExtIEs } } OPTIONAL,
    ...
}

DRBs-ModifiedConf-ItemExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    { ID id-AdditionalPDCPDuplicationTNL-List CRITICALITY ignore EXTENSION AdditionalPDCPDuplicationTNL-List PRESENCE optional },
    ...
}

DRB-Notify-Item ::= SEQUENCE {
    drbID          DRBID,
    notification-Cause Notification-Cause,
    iE-Extensions ProtocolExtensionContainer { { DRB-Notify-ItemExtIEs } } OPTIONAL,
    ...
}

DRB-Notify-ItemExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    { ID id-CurrentQoSParaSetIndex CRITICALITY ignore EXTENSION QoSParaSetNotifyIndex PRESENCE optional },
    ...
}

DRBs-Required-ToBeModified-Item ::= SEQUENCE {
    drbID          DRBID,

```

```

    dLUPTNLInformation-ToBeSetup-List      DLUPTNLInformation-ToBeSetup-List      ,
    iE-Extensions      ProtocolExtensionContainer { { DRBs-Required-ToBeModified-ItemExtIEs } }      OPTIONAL,
    ...
}

DRBs-Required-ToBeModified-ItemExtIEs      F1AP-PROTOCOL-EXTENSION ::= {
    { ID id-RLC-Status      CRITICALITY ignore      EXTENSION RLC-Status      PRESENCE optional }|
    { ID id-AdditionalPDCPDuplicationTNL-List      CRITICALITY ignore      EXTENSION AdditionalPDCPDuplicationTNL-List      PRESENCE optional },
    ...
}

DRBs-Required-ToBeReleased-Item ::= SEQUENCE {
    dRBID      DRBID,
    iE-Extensions      ProtocolExtensionContainer { { DRBs-Required-ToBeReleased-ItemExtIEs } }      OPTIONAL,
    ...
}

DRBs-Required-ToBeReleased-ItemExtIEs      F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

DRBs-Setup-Item ::= SEQUENCE {
    dRBID      DRBID,
    lCID      LCID      OPTIONAL,
    dLUPTNLInformation-ToBeSetup-List      DLUPTNLInformation-ToBeSetup-List      ,
    iE-Extensions      ProtocolExtensionContainer { { DRBs-Setup-ItemExtIEs } }      OPTIONAL,
    ...
}

DRBs-Setup-ItemExtIEs      F1AP-PROTOCOL-EXTENSION ::= {
    { ID id-AdditionalPDCPDuplicationTNL-List      CRITICALITY ignore      EXTENSION AdditionalPDCPDuplicationTNL-List      PRESENCE optional }|
    { ID id-CurrentQoSParaSetIndex      CRITICALITY ignore      EXTENSION QoSParaSetIndex      PRESENCE optional },
    ...
}

DRBs-SetupMod-Item ::= SEQUENCE {
    dRBID      DRBID,
    lCID      LCID      OPTIONAL,
    dLUPTNLInformation-ToBeSetup-List      DLUPTNLInformation-ToBeSetup-List      ,
    iE-Extensions      ProtocolExtensionContainer { { DRBs-SetupMod-ItemExtIEs } }      OPTIONAL,
    ...
}

DRBs-SetupMod-ItemExtIEs      F1AP-PROTOCOL-EXTENSION ::= {
    { ID id-AdditionalPDCPDuplicationTNL-List      CRITICALITY ignore      EXTENSION AdditionalPDCPDuplicationTNL-List      PRESENCE optional }|
    { ID id-CurrentQoSParaSetIndex      CRITICALITY ignore      EXTENSION QoSParaSetIndex      PRESENCE optional },
    ...
}

DRBs-ToBeModified-Item ::= SEQUENCE {
    dRBID      DRBID,
    qosInformation      QoSInformation      OPTIONAL,
    uLUPTNLInformation-ToBeSetup-List      ULUPTNLInformation-ToBeSetup-List      ,

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    ULConfiguration          ULConfiguration OPTIONAL,
    iE-Extensions    ProtocolExtensionContainer { { DRBs-ToBeModified-ItemExtIEs } } OPTIONAL,
    ...
}

DRBs-ToBeModified-ItemExtIEs    F1AP-PROTOCOL-EXTENSION ::= {
    { ID id-DLPDCPSNLength          CRITICALITY ignore EXTENSION PDCPSNLength          PRESENCE optional }|
    { ID id-ULPDCPSNLength          CRITICALITY ignore EXTENSION PDCPSNLength          PRESENCE optional }|
    { ID id-BearerTypeChange        CRITICALITY ignore EXTENSION BearerTypeChange        PRESENCE optional }|
    { ID id-RLCMode                  CRITICALITY ignore EXTENSION RLCMode                  PRESENCE optional }|
    { ID id-Duplication-Activation   CRITICALITY reject EXTENSION DuplicationActivation   PRESENCE optional }|
    { ID id-DC-Based-Duplication-Configured CRITICALITY reject EXTENSION DCBasedDuplicationConfigured PRESENCE optional }|
    { ID id-DC-Based-Duplication-Activation CRITICALITY reject EXTENSION DuplicationActivation   PRESENCE optional }|
    { ID id-AdditionalPDCPDuplicationTNL-List CRITICALITY ignore EXTENSION AdditionalPDCPDuplicationTNL-List PRESENCE optional }|
    { ID id-RLCDuplicationInformation CRITICALITY ignore EXTENSION RLCDuplicationInformation PRESENCE optional }|
    { ID id-TransmissionStopIndicator CRITICALITY ignore EXTENSION TransmissionStopIndicator PRESENCE optional }|
    { ID id-CG-SDTIndicatorMod       CRITICALITY reject EXTENSION CG-SDTIndicatorMod       PRESENCE optional },
    ...
}

DRBs-ToBeReleased-Item ::= SEQUENCE {
    drbID      drbID,
    iE-Extensions    ProtocolExtensionContainer { { DRBs-ToBeReleased-ItemExtIEs } } OPTIONAL,
    ...
}

DRBs-ToBeReleased-ItemExtIEs    F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

DRBs-ToBeSetup-Item ::= SEQUENCE {
    drbID      drbID,
    qosInformation    QoSInformation,
    uLUPTNLInformation-ToBeSetup-List    ULUPTNLInformation-ToBeSetup-List ,
    rLCMode          RLCMode,
    uLConfiguration    ULConfiguration OPTIONAL,
    duplicationActivation    DuplicationActivation OPTIONAL,
    iE-Extensions    ProtocolExtensionContainer { { DRBs-ToBeSetup-ItemExtIEs } } OPTIONAL,
    ...
}

DRBs-ToBeSetup-ItemExtIEs    F1AP-PROTOCOL-EXTENSION ::= {
    { ID id-DC-Based-Duplication-Configured CRITICALITY reject EXTENSION DCBasedDuplicationConfigured PRESENCE optional }|
    { ID id-DC-Based-Duplication-Activation CRITICALITY reject EXTENSION DuplicationActivation PRESENCE optional }|
    { ID id-DLPDCPSNLength          CRITICALITY ignore EXTENSION PDCPSNLength          PRESENCE mandatory }|
    { ID id-ULPDCPSNLength          CRITICALITY ignore EXTENSION PDCPSNLength          PRESENCE optional }|
    { ID id-AdditionalPDCPDuplicationTNL-List CRITICALITY ignore EXTENSION AdditionalPDCPDuplicationTNL-List PRESENCE optional }|
    { ID id-RLCDuplicationInformation CRITICALITY ignore EXTENSION RLCDuplicationInformation PRESENCE optional }|
    { ID id-SDTRLCEBearingConfiguration CRITICALITY ignore EXTENSION SDTRLCEBearingConfiguration PRESENCE optional },
    ...
}

DRBs-ToBeSetupMod-Item ::= SEQUENCE {

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    dRBID                DRBID,
    qosInformation        QoSInformation,
    uLUPTNLInformation-ToBeSetup-List  ULUPTNLInformation-ToBeSetup-List,
    rLCMode              RLCMode,
    uLCConfiguration      ULConfiguration OPTIONAL,
    duplicationActivation  DuplicationActivation OPTIONAL,
    iE-Extensions         ProtocolExtensionContainer { { DRBs-ToBeSetupMod-ItemExtIEs } } OPTIONAL,
    ...
}

DRBs-ToBeSetupMod-ItemExtIEs F1AP-PROTOCOL-EXTENSION ::= {
  { ID id-DC-Based-Duplication-Configured    CRITICALITY reject EXTENSION DCBasedDuplicationConfigured PRESENCE optional } |
  { ID id-DC-Based-Duplication-Activation    CRITICALITY reject EXTENSION DuplicationActivation PRESENCE optional } |
  { ID id-DLPDCPSNLength                     CRITICALITY ignore EXTENSION PDCPSNLength PRESENCE optional } |
  { ID id-ULPDCPSNLength                     CRITICALITY ignore EXTENSION PDCPSNLength PRESENCE optional } |
  { ID id-AdditionalPDCPDuplicationTNL-List  CRITICALITY ignore EXTENSION AdditionalPDCPDuplicationTNL-List PRESENCE optional } |
  { ID id-RLCDuplicationInformation          CRITICALITY ignore EXTENSION RLCDuplicationInformation PRESENCE optional } |
  { ID id-CG-SDTIndicatorSetup               CRITICALITY reject EXTENSION CG-SDTIndicatorSetup PRESENCE optional },
  ...
}

DRXCycle ::= SEQUENCE {
  longDRXCycleLength LongDRXCycleLength,
  shortDRXCycleLength ShortDRXCycleLength OPTIONAL,
  shortDRXCycleTimer ShortDRXCycleTimer OPTIONAL,
  iE-Extensions      ProtocolExtensionContainer { { DRXCycle-ExtIEs } } OPTIONAL,
  ...
}

DRXCycle-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
  ...
}

DRX-Config ::= OCTET STRING

DRXConfigurationIndicator ::= ENUMERATED{ release, ...}

DRX-LongCycleStartOffset ::= INTEGER (0..10239)

DSInformationList ::= SEQUENCE (SIZE(0..maxnoofDSInfo)) OF DSCP

DSCP ::= BIT STRING (SIZE (6))

DutoCURRCContainer ::= OCTET STRING

DUCURadioInformationType ::= CHOICE {
  rIM                DUCURIMInformation,
  choice-extension   ProtocolIE-SingleContainer { { DUCURadioInformationType-ExtIEs } }
}

DUCURadioInformationType-ExtIEs F1AP-PROTOCOL-IES ::= {
  ...
}

```

```

DUCURIMInformation ::= SEQUENCE {
    victimGNBSetID          GNBSetID,
    rIMRSDetectionStatus    RIMRSDetectionStatus,
    aggressorCellList       AggressorCellList,
    iE-Extensions           ProtocolExtensionContainer { { DUCURIMInformation-ExtIEs} } OPTIONAL
}

DUCURIMInformation-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

DUF-Slot-Config-Item ::= CHOICE {
    explicitFormat          ExplicitFormat,
    implicitFormat          ImplicitFormat,
    choice-extension        ProtocolIE-SingleContainer { { DUF-Slot-Config-Item-ExtIEs} }
}

DUF-Slot-Config-Item-ExtIEs F1AP-PROTOCOL-IES ::= {
    ...
}

DUF-Slot-Config-List ::= SEQUENCE (SIZE(1..maxnoofDUFSlots)) OF DUF-Slot-Config-Item

DUFSlotformatIndex ::= INTEGER(0..254)

DUFTransmissionPeriodicity ::= ENUMERATED { ms0p5, ms0p625, ms1, ms1p25, ms2, ms2p5, ms5, ms10, ...}

DU-RX-MT-RX ::= ENUMERATED {supported, not-supported }

DU-TX-MT-TX ::= ENUMERATED {supported, not-supported }

DU-RX-MT-TX ::= ENUMERATED {supported, not-supported }

DU-TX-MT-RX ::= ENUMERATED {supported, not-supported }

DU-RX-MT-RX-Extend ::= ENUMERATED {supported, not-supported, supported-and-FDM-required, ...}

DU-TX-MT-TX-Extend ::= ENUMERATED {supported, not-supported, supported-and-FDM-required, ...}

DU-RX-MT-TX-Extend ::= ENUMERATED {supported, not-supported, supported-and-FDM-required, ...}

DU-TX-MT-RX-Extend ::= ENUMERATED {supported, not-supported, supported-and-FDM-required, ...}

DutoCURRCInformation ::= SEQUENCE {
    cellGroupConfig        CellGroupConfig,
    measGapConfig           MeasGapConfig OPTIONAL,
    requestedP-MaxFR1       OCTET STRING OPTIONAL,
    iE-Extensions           ProtocolExtensionContainer { { DutoCURRCInformation-ExtIEs} } OPTIONAL,
    ...
}

DutoCURRCInformation-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    { ID id-DRX-LongCycleStartOffset          CRITICALITY ignore EXTENSION DRX-LongCycleStartOffset          PRESENCE optional }|
    { ID id-SelectedBandCombinationIndex       CRITICALITY ignore EXTENSION SelectedBandCombinationIndex PRESENCE optional }|
    { ID id-SelectedFeatureSetEntryIndex       CRITICALITY ignore EXTENSION SelectedFeatureSetEntryIndex PRESENCE optional }|

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{ ID id-Ph-InfoSCG                CRITICALITY ignore EXTENSION Ph-InfoSCG                PRESENCE optional }|
{ ID id-RequestedBandCombinationIndex CRITICALITY ignore EXTENSION RequestedBandCombinationIndex PRESENCE optional }|
{ ID id-RequestedFeatureSetEntryIndex CRITICALITY ignore EXTENSION RequestedFeatureSetEntryIndex PRESENCE optional }|
{ ID id-DRX-Config                CRITICALITY ignore EXTENSION DRX-Config                PRESENCE optional }|
{ ID id-PDCCH-BlindDetectionSCG    CRITICALITY ignore EXTENSION PDCCH-BlindDetectionSCG    PRESENCE optional }|
{ ID id-Requested-PDCCH-BlindDetectionSCG CRITICALITY ignore EXTENSION Requested-PDCCH-BlindDetectionSCG PRESENCE optional }|
{ ID id-Ph-InfoMCG                CRITICALITY ignore EXTENSION Ph-InfoMCG                PRESENCE optional }|
{ ID id-MeasGapSharingConfig       CRITICALITY ignore EXTENSION MeasGapSharingConfig       PRESENCE optional }|
{ ID id-SL-PHY-MAC-RLC-Config      CRITICALITY ignore EXTENSION SL-PHY-MAC-RLC-Config      PRESENCE optional }|
{ ID id-SL-ConfigDedicatedEUTRA-Info CRITICALITY ignore EXTENSION SL-ConfigDedicatedEUTRA-Info PRESENCE optional }|
{ ID id-RequestedP-MaxFR2          CRITICALITY ignore EXTENSION RequestedP-MaxFR2          PRESENCE optional }|
{ ID id-SDT-MAC-PHY-CG-Config      CRITICALITY ignore EXTENSION SDT-MAC-PHY-CG-Config      PRESENCE optional }|
{ ID id-MUSIM-GapConfig            CRITICALITY ignore EXTENSION MUSIM-GapConfig            PRESENCE optional }|
{ ID id-SL-RLC-ChannelToAddModList CRITICALITY ignore EXTENSION SL-RLC-ChannelToAddModList PRESENCE optional }|
{ ID id-InterFrequencyConfig-NoGap CRITICALITY ignore EXTENSION InterFrequencyConfig-NoGap PRESENCE optional }|
{ ID id-UL-GapFR2-Config           CRITICALITY ignore EXTENSION UL-GapFR2-Config           PRESENCE optional }|
{ ID id-TwoPHRModeMCG             CRITICALITY ignore EXTENSION TwoPHRModeMCG             PRESENCE optional }|
{ ID id-TwoPHRModeSCG             CRITICALITY ignore EXTENSION TwoPHRModeSCG             PRESENCE optional }|
{ ID id-ncd-SSB-RedCapInitialBWP-SDT CRITICALITY ignore EXTENSION Ncd-SSB-RedCapInitialBWP-SDT PRESENCE optional }|
{ ID id-ServCellInfoList          CRITICALITY ignore EXTENSION ServCellInfoList          PRESENCE optional }|
{ ID id-SL-PHY-MAC-RLC-ConfigExt   CRITICALITY ignore EXTENSION SL-PHY-MAC-RLC-ConfigExt   PRESENCE optional },
...
}

DuplicationActivation ::= ENUMERATED{active,inactive,... }

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

DuplicationState ::= ENUMERATED {
    active,
    inactive,
    ...
}

Dynamic5QIDescriptor ::= SEQUENCE {
    qosPriorityLevel          INTEGER (1..127),
    packetDelayBudget         PacketDelayBudget,
    packetErrorRate           PacketErrorRate,
    fiveQI                   INTEGER (0..255, ...)
    delayCritical             ENUMERATED {delay-critical, non-delay-critical} OPTIONAL,
    -- C-ifGBRflow: This IE shall be present if the GBR QoS Flow Information IE is present in the QoS Flow Level QoS Parameters IE.
    averagingWindow           AveragingWindow OPTIONAL,
    -- C-ifGBRflow: This IE shall be present if the GBR QoS Flow Information IE is present in the QoS Flow Level QoS Parameters IE.
    maxDataBurstVolume        MaxDataBurstVolume OPTIONAL,
    iE-Extensions             ProtocolExtensionContainer { { Dynamic5QIDescriptor-ExtIEs } } OPTIONAL
}

Dynamic5QIDescriptor-ExtIEs F1AP-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 },
    ...
}

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DynamicPQIDescriptor ::= SEQUENCE {
    resourceType          ENUMERATED {gbr, non-gbr, delay-critical-grb, ...} OPTIONAL,
    qosPriorityLevel       INTEGER (1..8, ...),
    packetDelayBudget     PacketDelayBudget,
    packetErrorRate       PacketErrorRate,
    averagingWindow       AveragingWindow OPTIONAL,
    -- C-ifGBRflow: This IE shall be present if the GBR QoS Flow Information IE is present in the QoS Flow Level QoS Parameters IE.
    maxDataBurstVolume    MaxDataBurstVolume OPTIONAL,
    iE-Extensions         ProtocolExtensionContainer { { DynamicPQIDescriptor-ExtIES } } OPTIONAL
}

DynamicPQIDescriptor-ExtIES F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

-- E

E-CID-MeasurementQuantities ::= SEQUENCE (SIZE (1.. maxnoofMeasE-CID)) OF ProtocolIE-SingleContainer { {E-CID-MeasurementQuantities-ItemIES} }

E-CID-MeasurementQuantities-ItemIES F1AP-PROTOCOL-IES ::= {
    { ID id-E-CID-MeasurementQuantities-Item CRITICALITY reject TYPE E-CID-MeasurementQuantities-Item PRESENCE mandatory}
}

E-CID-MeasurementQuantities-Item ::= SEQUENCE {
    e-CIDmeasurementQuantitiesValue E-CID-MeasurementQuantitiesValue,
    iE-Extensions                   ProtocolExtensionContainer { { E-CID-MeasurementQuantitiesValue-ExtIES} } OPTIONAL
}

E-CID-MeasurementQuantitiesValue-ExtIES F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

E-CID-MeasurementQuantitiesValue ::= ENUMERATED {
    default,
    angleOfArrivalNR,
    ... ,
    timingAdvanceNR
}

E-CID-MeasurementResult ::= SEQUENCE {
    geographicalCoordinates GeographicalCoordinates OPTIONAL,
    measuredResults-List    E-CID-MeasuredResults-List OPTIONAL,
    iE-Extensions          ProtocolExtensionContainer { { E-CID-MeasurementResult-ExtIES} } OPTIONAL
}

E-CID-MeasurementResult-ExtIES F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

E-CID-MeasuredResults-List ::= SEQUENCE (SIZE(1..maxnoofMeasE-CID)) OF E-CID-MeasuredResults-Item

E-CID-MeasuredResults-Item ::= SEQUENCE {
    e-CID-MeasuredResults-Value E-CID-MeasuredResults-Value,

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    iE-Extensions          ProtocolExtensionContainer {{ E-CID-MeasuredResults-Item-ExtIEs }} OPTIONAL
  }

E-CID-MeasuredResults-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
  ...
}

E-CID-MeasuredResults-Value ::= CHOICE {
  valueAngleofArrivalNR    UL-AoA,
  choice-extension         ProtocolIE-SingleContainer { { E-CID-MeasuredResults-Value-ExtIEs } }
}

E-CID-MeasuredResults-Value-ExtIEs F1AP-PROTOCOL-IES ::= {
  { ID id-NR-TADV          CRITICALITY ignore TYPE NR-TADV PRESENCE mandatory },
  ...
}

E-CID-ReportCharacteristics ::= ENUMERATED {
  onDemand,
  periodic,
  ...
}

EgressBHRLCCHList ::= SEQUENCE (SIZE(1..maxnoofEgressLinks)) OF EgressBHRLCCHItem

EgressBHRLCCHItem ::= SEQUENCE {
  nextHopBAPAddress        BAPAddress,
  bHRLCChannelID           BHRLCChannelID,
  iE-Extensions            ProtocolExtensionContainer {{EgressBHRLCCHItemExtIEs }} OPTIONAL
}

EgressBHRLCCHItemExtIEs F1AP-PROTOCOL-EXTENSION ::= {
  ...
}

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

Endpoint-IP-address-and-port ::=SEQUENCE {
  endpointIPAddress TransportLayerAddress,
  iE-Extensions          ProtocolExtensionContainer { { Endpoint-IP-address-and-port-ExtIEs } } OPTIONAL
}

Endpoint-IP-address-and-port-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
  { ID id-portNumber CRITICALITY reject EXTENSION PortNumber PRESENCE optional},
  ...
}

EnergyDetectionThreshold ::= INTEGER (-100..-50, ...)

ExtendedAvailablePLMN-List ::= SEQUENCE (SIZE(1..maxnoofExtendedBPLMNs)) OF ExtendedAvailablePLMN-Item

ExtendedAvailablePLMN-Item ::= SEQUENCE {
  pLMNIdentity            PLMN-Identity,
  iE-Extensions            ProtocolExtensionContainer { { ExtendedAvailablePLMN-Item-ExtIEs } } OPTIONAL
}

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}

ExplicitFormat ::= SEQUENCE {
    permutation          Permutation,
    noofDownlinkSymbols  NoofDownlinkSymbols OPTIONAL,
    noofUplinkSymbols     NoofUplinkSymbols  OPTIONAL,
    iE-Extensions         ProtocolExtensionContainer { { ExplicitFormat-ExtIEs } } OPTIONAL
}

ExplicitFormat-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

ExtendedAvailablePLMN-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

ExtendedServedPLMNs-List ::= SEQUENCE (SIZE(1.. maxnoofExtendedBPLMNs)) OF ExtendedServedPLMNs-Item

ExtendedServedPLMNs-Item ::= SEQUENCE {
    pLMN-Identity          PLMN-Identity,
    tAISliceSupportList     SliceSupportList OPTIONAL,
    iE-Extensions          ProtocolExtensionContainer { { ExtendedServedPLMNs-ItemExtIEs } } OPTIONAL,
    ...
}

ExtendedServedPLMNs-ItemExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    { ID id-NPNSupportInfo          CRITICALITY reject EXTENSION NPNSupportInfo          PRESENCE optional }|
    { ID id-ExtendedTAISliceSupportList CRITICALITY reject EXTENSION ExtendedSliceSupportList PRESENCE optional }|
    { ID id-TAINSAGSupportList       CRITICALITY ignore  EXTENSION NSAGSupportList       PRESENCE optional},
    ...
}

ExtendedSliceSupportList ::= SEQUENCE (SIZE(1.. maxnoofExtSliceItems)) OF SliceSupportItem

ExtendedUEIdentityIndexValue ::= BIT STRING (SIZE(16))

EUTRACells-List ::= SEQUENCE (SIZE (1.. maxCellineNB)) OF EUTRACells-List-item

EUTRACells-List-item ::= SEQUENCE {
    eUTRA-Cell-ID          EUTRA-Cell-ID,
    served-EUTRA-Cells-Information Served-EUTRA-Cells-Information,
    iE-Extensions          ProtocolExtensionContainer { { EUTRACells-List-itemExtIEs } } OPTIONAL
}

EUTRACells-List-itemExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

EUTRA-Cell-ID ::= BIT STRING (SIZE(28))

EUTRA-Coex-FDD-Info ::= SEQUENCE {
    uL-EARFCN              ExtendedEARFCN              OPTIONAL,

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    dL-EARFCN                ExtendedEARFCN,
    uL-Transmission-Bandwidth EUTRA-Transmission-Bandwidth OPTIONAL,
    dL-Transmission-Bandwidth EUTRA-Transmission-Bandwidth,
    iE-Extensions             ProtocolExtensionContainer { {EUTRA-Coex-FDD-Info-ExtIEs} } OPTIONAL,
    ...
}

EUTRA-Coex-FDD-Info-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

EUTRA-Coex-Mode-Info ::= CHOICE {
    fDD      EUTRA-Coex-FDD-Info,
    tDD      EUTRA-Coex-TDD-Info,
    ...
}

EUTRA-Coex-TDD-Info ::= SEQUENCE {
    eARFCN                ExtendedEARFCN,
    transmission-Bandwidth EUTRA-Transmission-Bandwidth,
    subframeAssignment     EUTRA-SubframeAssignment,
    specialSubframe-Info    EUTRA-SpecialSubframe-Info,
    iE-Extensions          ProtocolExtensionContainer { {EUTRA-Coex-TDD-Info-ExtIEs} } OPTIONAL,
    ...
}

EUTRA-Coex-TDD-Info-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

EUTRA-CyclicPrefixDL ::= ENUMERATED {
    normal,
    extended,
    ...
}

EUTRA-CyclicPrefixUL ::= ENUMERATED {
    normal,
    extended,
    ...
}

EUTRA-PRACH-Configuration ::= SEQUENCE {
    rootSequenceIndex      INTEGER (0..837),
    zeroCorrelationIndex    INTEGER (0..15),
    highSpeedFlag           BOOLEAN,
    prach-FreqOffset         INTEGER (0..94),
    prach-ConfigIndex        INTEGER (0..63) OPTIONAL,
    -- C-ifTDD: This IE shall be present if the EUTRA-Mode-Info IE in the Resource Coordination E-UTRA Cell Information IE is set to the value
    "TDD"
    iE-Extensions           ProtocolExtensionContainer { {EUTRA-PRACH-Configuration-ExtIEs} } OPTIONAL,
    ...
}

EUTRA-PRACH-Configuration-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

```

```
}
```

```
EUTRA-SpecialSubframe-Info ::= SEQUENCE {  
    specialSubframePatterns    EUTRA-SpecialSubframePatterns,  
    cyclicPrefixDL             EUTRA-CyclicPrefixDL,  
    cyclicPrefixUL             EUTRA-CyclicPrefixUL,  
    iE-Extensions              ProtocolExtensionContainer { { EUTRA-SpecialSubframe-Info-ExtIEs} } OPTIONAL,  
    ...  
}
```

```
EUTRA-SpecialSubframe-Info-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {  
    ...  
}
```

```
EUTRA-SpecialSubframePatterns ::= ENUMERATED {  
    ssp0,  
    ssp1,  
    ssp2,  
    ssp3,  
    ssp4,  
    ssp5,  
    ssp6,  
    ssp7,  
    ssp8,  
    ssp9,  
    ssp10,  
    ...  
}
```

```
EUTRA-SubframeAssignment ::= ENUMERATED {  
    sa0,  
    sa1,  
    sa2,  
    sa3,  
    sa4,  
    sa5,  
    sa6,  
    ...  
}
```

```
EUTRA-Transmission-Bandwidth ::= ENUMERATED {  
    bw6,  
    bw15,  
    bw25,  
    bw50,  
    bw75,  
    bw100,  
    ...  
}
```

```
EUTRANQoS ::= SEQUENCE {  
    qCI          QCI,  
    allocationAndRetentionPriority AllocationAndRetentionPriority,
```

```

    gbrQosInformation          GBR-QosInformation          OPTIONAL,
    iE-Extensions              ProtocolExtensionContainer { { EUTRANQoS-ExtIES} } OPTIONAL,
    ...
}

EUTRANQoS-ExtIES F1AP-PROTOCOL-EXTENSION ::= {
{ ID id-ENBDLTNAddress        CRITICALITY ignore  EXTENSION TransportLayerAddress PRESENCE optional },
    ...
}

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

ExtendedEARFCN ::= INTEGER (0..262143)

EUTRA-Mode-Info ::= CHOICE {
    eUTRAFDD          EUTRA-FDD-Info,
    eUTRATDD          EUTRA-TDD-Info,
    choice-extension   ProtocolIE-SingleContainer { { EUTRA-Mode-Info-ExtIES} }
}

EUTRA-Mode-Info-ExtIES F1AP-PROTOCOL-IES ::= {
    ...
}

EUTRA-NR-CellResourceCoordinationReq-Container ::= OCTET STRING

EUTRA-NR-CellResourceCoordinationReqAck-Container ::= OCTET STRING

EUTRA-FDD-Info ::= SEQUENCE {
    uL-offsetToPointA          OffsetToPointA,
    dL-offsetToPointA          OffsetToPointA,
    iE-Extensions              ProtocolExtensionContainer { {EUTRA-FDD-Info-ExtIES} } OPTIONAL,
    ...
}

EUTRA-FDD-Info-ExtIES F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

EUTRA-TDD-Info ::= SEQUENCE {
    offsetToPointA              OffsetToPointA,
    iE-Extensions              ProtocolExtensionContainer { {EUTRA-TDD-Info-ExtIES} } OPTIONAL,
    ...
}

EUTRA-TDD-Info-ExtIES F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

EventType ::= ENUMERATED {
    on-demand,
    periodic,
    stop,
    ...
}

```

```

}

ExtendedPacketDelayBudget ::= INTEGER (1..65535, ..., 65536..109999)

Expected-UL-AoA ::= SEQUENCE {
    expected-Azimuth-AoA      Expected-Azimuth-AoA,
    expected-Zenith-AoA       Expected-Zenith-AoA      OPTIONAL,
    iE-extensions             ProtocolExtensionContainer { { Expected-UL-AoA-ExtIEs } }  OPTIONAL,
    ...
}
Expected-UL-AoA-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

Expected-ZoA-only ::= SEQUENCE {
    expected-ZoA-only      Expected-Zenith-AoA,
    iE-extensions          ProtocolExtensionContainer { { Expected-ZoA-only-ExtIEs } }  OPTIONAL,
    ...
}

Expected-ZoA-only-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

Expected-Azimuth-AoA ::= SEQUENCE {
    expected-Azimuth-AoA-value      Expected-Value-AoA,
    expected-Azimuth-AoA-uncertainty Uncertainty-range-AoA,
    iE-Extensions                  ProtocolExtensionContainer { { Expected-Azimuth-AoA-ExtIEs } }  OPTIONAL,
    ...
}

Expected-Azimuth-AoA-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

Expected-Zenith-AoA ::= SEQUENCE {
    expected-Zenith-AoA-value      Expected-Value-ZoA,
    expected-Zenith-AoA-uncertainty Uncertainty-range-ZoA,
    iE-Extensions                  ProtocolExtensionContainer { { Expected-Zenith-AoA-ExtIEs } }  OPTIONAL,
    ...
}

Expected-Zenith-AoA-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

Expected-Value-AoA ::= INTEGER (0..3599)

Expected-Value-ZoA ::= INTEGER (0..1799)

-- F

F1CPathNSA ::= ENUMERATED {lte, nr, both}

F1CTransferPath ::= SEQUENCE {

```

```

    f1CPathNSA
    iE-Extensions
    ...
}

F1CTransferPath-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

F1CPathNRDC ::= ENUMERATED {mcg, scg, both}

F1CTransferPathNRDC ::= SEQUENCE {
    f1CPathNRDC
    iE-Extensions
    ...
    ProtocolExtensionContainer { { F1CTransferPathNRDC-ExtIEs} } OPTIONAL,
}

F1CTransferPathNRDC-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

FDD-Info ::= SEQUENCE {
    uL-NRFreqInfo
    dL-NRFreqInfo
    uL-Transmission-Bandwidth
    dL-Transmission-Bandwidth
    iE-Extensions
    ...
    NRFreqInfo,
    NRFreqInfo,
    Transmission-Bandwidth,
    Transmission-Bandwidth,
    ProtocolExtensionContainer { {FDD-Info-ExtIEs} } OPTIONAL,
}

FDD-Info-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    { ID id-ULCarrierList
    { ID id-DLCarrierList
    ...
    CRITICALITY ignore EXTENSION NRCarrierList PRESENCE optional }|
    CRITICALITY ignore EXTENSION NRCarrierList PRESENCE optional },
}

FDD-InfoRel16 ::= SEQUENCE {
    uL-FreqInfo
    sUL-FreqInfo
    iE-Extensions
    ...
    FreqInfoRel16
    FreqInfoRel16
    ProtocolExtensionContainer { {FDD-InfoRel16-ExtIEs} } OPTIONAL,
    OPTIONAL,
    OPTIONAL,
}

FDD-InfoRel16-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

FiveG-ProSeAuthorized ::= SEQUENCE {
    fiveG-proSeDirectDiscovery
    fiveG-proSeDirectCommunication
    fiveG-ProSeLayer2UEtoNetworkRelay
    fiveG-ProSeLayer3UEtoNetworkRelay
    fiveG-ProSeLayer2RemoteUE
    FiveG-ProSeDirectDiscovery
    FiveG-ProSeDirectCommunication
    FiveG-ProSeLayer2UEtoNetworkRelay
    FiveG-ProSeLayer3UEtoNetworkRelay
    FiveG-ProSeLayer2RemoteUE
    OPTIONAL,
    OPTIONAL,
    OPTIONAL,
    OPTIONAL,
    OPTIONAL,
}

```

```

    iE-Extensions          ProtocolExtensionContainer { {FiveG-ProSeAuthorized-ExtIEs} } OPTIONAL,
    ...
}

FiveG-ProSeAuthorized-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

FiveG-ProSeDirectDiscovery ::= ENUMERATED {
    authorized,
    not-authorized,
    ...
}

FiveG-ProSeDirectCommunication ::= ENUMERATED {
    authorized,
    not-authorized,
    ...
}

FiveG-ProSeLayer2UEtoNetworkRelay ::= ENUMERATED {
    authorized,
    not-authorized,
    ...
}

FiveG-ProSeLayer3UEtoNetworkRelay ::= ENUMERATED {
    authorized,
    not-authorized,
    ...
}

FiveG-ProSeLayer2RemoteUE ::= ENUMERATED {
    authorized,
    not-authorized,
    ...
}

Flows-Mapped-To-DRB-List ::= SEQUENCE (SIZE(1.. maxnoofQoSFlows)) OF Flows-Mapped-To-DRB-Item

Flows-Mapped-To-DRB-Item ::= SEQUENCE {
    qoSFlowIdentifier          QoSFlowIdentifier,
    qoSFlowLevelQoSParameters QoSFlowLevelQoSParameters,
    iE-Extensions              ProtocolExtensionContainer { { Flows-Mapped-To-DRB-ItemExtIEs} } OPTIONAL
}

Flows-Mapped-To-DRB-ItemExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    {ID id-QoSFlowMappingIndication    CRITICALITY ignore EXTENSION QoSFlowMappingIndication    PRESENCE optional}|
    {ID id-TSCTrafficCharacteristics    CRITICALITY ignore EXTENSION TSCTrafficCharacteristics    PRESENCE optional},
    ...
}

FR1-Bandwidth ::= ENUMERATED {bw5, bw10, bw20, bw40, bw50, bw80, bw100, ..., rel-18-dummy1, rel-18-dummy2, bw15, bw25, bw30, bw60, bw35, bw45,
bw70, bw90}

```


FR2-Bandwidth ::= ENUMERATED {bw50, bw100, bw200, bw400, ..., bw800, bw1600, bw2000}

FreqBandNrItem ::= SEQUENCE {
 freqBandIndicatorNr INTEGER (1..1024,...),
 supportedSULBandList SEQUENCE (SIZE(0..maxnoofNrCellBands)) OF SupportedSULFreqBandItem,
 iE-Extensions ProtocolExtensionContainer { {FreqBandNrItem-ExtIEs} } OPTIONAL,
 ...
 }

FreqBandNrItem-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
 ...
 }

FreqDomainLength ::= CHOICE {
 l839 L839Info,
 l139 L139Info,
 choice-extension ProtocolIE-SingleContainer { {FreqDomainLength-ExtIEs} }
 }

FreqDomainLength-ExtIEs F1AP-PROTOCOL-IES ::= {
 { ID id-L571Info CRITICALITY reject TYPE L571Info PRESENCE mandatory}|
 { ID id-L1151Info CRITICALITY reject TYPE L1151Info PRESENCE mandatory},
 ...
 }

FreqInfoRel16 ::= SEQUENCE {
 nRARFCN INTEGER (0..maxNRARFCN) OPTIONAL,
 frequencyShift7p5khz FrequencyShift7p5khz OPTIONAL,
 carrierList NRCarrierList OPTIONAL,
 iE-Extensions ProtocolExtensionContainer { { FreqInfoRel16-ExtIEs} } OPTIONAL,
 ...
 }

FreqInfoRel16-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
 ...
 }

FrequencyShift7p5khz ::= ENUMERATED {false, true, ...}

Frequency-Domain-HSNA-Configuration-List ::= SEQUENCE (SIZE(1..maxnoofRBsetsPerCell)) OF Frequency-Domain-HSNA-Configuration-Item

Frequency-Domain-HSNA-Configuration-Item ::= SEQUENCE {
 rBSetIndex INTEGER (0..maxnoofRBsetsPerCell-1, ...),
 frequency-Domain-HSNA-Slot-Configuration-List Frequency-Domain-HSNA-Slot-Configuration-List,
 iE-Extensions ProtocolExtensionContainer { { Frequency-Domain-HSNA-Configuration-Item-ExtIEs} } OPTIONAL
 }

Frequency-Domain-HSNA-Configuration-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
 ...
 }

Frequency-Domain-HSNA-Slot-Configuration-List ::= SEQUENCE (SIZE(1..maxnoofHSNASlots)) OF Frequency-Domain-HSNA-Slot-Configuration-Item

```

Frequency-Domain-HSNA-Slot-Configuration-Item ::= SEQUENCE {
    slotIndex          INTEGER (0..5119)          OPTIONAL,
    hSNADownlink        HSNADownlink              OPTIONAL,
    hSNAUplink          HSNAUplink                OPTIONAL,
    hSNAFlexible        HSNAFlexible              OPTIONAL,
    iE-Extensions       ProtocolExtensionContainer { { Frequency-Domain-HSNA-Slot-Configuration-Item-ExtIEs } } OPTIONAL
}

```

```

Frequency-Domain-HSNA-Slot-Configuration-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

```

```

FullConfiguration ::= ENUMERATED {full, ...}

```

```

FlowsMappedToSLDRB-List ::= SEQUENCE (SIZE(1.. maxnoofPC5QoSFlows)) OF FlowsMappedToSLDRB-Item

```

```

FlowsMappedToSLDRB-Item ::= SEQUENCE {
    pc5QoSFlowIdentifier PC5QoSFlowIdentifier,
    iE-Extensions        ProtocolExtensionContainer { { FlowsMappedToSLDRB-Item-ExtIEs } } OPTIONAL,
    ...
}

```

```

FlowsMappedToSLDRB-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

```

```

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```

```

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 F1AP-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 F1AP-PROTOCOL-EXTENSION ::= {
    { ID id-AlternativeQoSParaSetList CRITICALITY ignore EXTENSION AlternativeQoSParaSetList PRESENCE optional },
    ...
}

CG-Config ::= OCTET STRING

GeographicalCoordinates ::= SEQUENCE {
    trpPositionDefinitionType TRPPositionDefinitionType,
    dlPRSResourceCoordinates DLPRSResourceCoordinates OPTIONAL,
    iE-Extensions ProtocolExtensionContainer { { GeographicalCoordinates-ExtIEs } } OPTIONAL
}

GeographicalCoordinates-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    { ID id-ARPLocationInfo CRITICALITY ignore EXTENSION ARPLocationInformation PRESENCE optional},
    ...
}

GNB-CU-MBS-F1AP-ID ::= INTEGER (0..4294967295)

GNBCUMeasurementID ::= INTEGER (0.. 4095, ...)

GNBDUMeasurementID ::= INTEGER (0.. 4095, ...)

GNB-CUSystemInformation ::= SEQUENCE {
    sibtypetobeupdatedlist SEQUENCE (SIZE(1.. maxnoofSIBTypes)) OF SibtypetobeupdatedListItem,
    iE-Extensions ProtocolExtensionContainer { { GNB-CUSystemInformation-ExtIEs } } OPTIONAL,
    ...
}

GNB-CUSystemInformation-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    {ID id-systemInformationAreaID CRITICALITY ignore EXTENSION SystemInformationAreaID PRESENCE optional},
    ...
}

GNB-CU-TNL-Association-Setup-Item ::= SEQUENCE {
    tnlAssociationTransportLayerAddress CP-TransportLayerAddress ,
    iE-Extensions ProtocolExtensionContainer { { GNB-CU-TNL-Association-Setup-Item-ExtIEs } } OPTIONAL
}

GNB-CU-TNL-Association-Setup-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

GNB-CU-TNL-Association-Failed-To-Setup-Item ::= SEQUENCE {
    tnlAssociationTransportLayerAddress CP-TransportLayerAddress ,
    cause Cause,
    iE-Extensions ProtocolExtensionContainer { { GNB-CU-TNL-Association-Failed-To-Setup-Item-ExtIEs } } OPTIONAL
}

GNB-CU-TNL-Association-Failed-To-Setup-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

```

```

GNB-CU-TNL-Association-To-Add-Item ::= SEQUENCE {
    tNLAssociationTransportLayerAddress    CP-TransportLayerAddress    ,
    tNLAssociationUsage                    TNLAssociationUsage,
    iE-Extensions                          ProtocolExtensionContainer { { GNB-CU-TNL-Association-To-Add-Item-ExtIEs} } OPTIONAL
}

GNB-CU-TNL-Association-To-Add-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

GNB-CU-TNL-Association-To-Remove-Item ::= SEQUENCE {
    tNLAssociationTransportLayerAddress    CP-TransportLayerAddress    ,
    iE-Extensions                          ProtocolExtensionContainer { { GNB-CU-TNL-Association-To-Remove-Item-ExtIEs} } OPTIONAL
}

GNB-CU-TNL-Association-To-Remove-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    {ID id-TNLAssociationTransportLayerAddressgNB-DU CRITICALITY reject EXTENSION CP-TransportLayerAddress PRESENCE optional},
    ...
}

GNB-CU-TNL-Association-To-Update-Item ::= SEQUENCE {
    tNLAssociationTransportLayerAddress    CP-TransportLayerAddress    ,
    tNLAssociationUsage                    TNLAssociationUsage OPTIONAL,
    iE-Extensions                          ProtocolExtensionContainer { { GNB-CU-TNL-Association-To-Update-Item-ExtIEs} } OPTIONAL
}

GNB-CU-TNL-Association-To-Update-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

GNB-CU-UE-F1AP-ID ::= INTEGER (0..4294967295)

GNB-DU-Cell-Resource-Configuration ::= SEQUENCE {
    subcarrierSpacing          SubcarrierSpacing,
    dUFTxTransmissionPeriodicity    DUFTransmissionPeriodicity OPTIONAL,
    dUF-Slot-Config-List         DUF-Slot-Config-List OPTIONAL,
    hSNATransmissionPeriodicity    HSNATransmissionPeriodicity,
    hSNASlotConfigList            HSNASlotConfigList OPTIONAL,
    iE-Extensions                  ProtocolExtensionContainer { { GNB-DU-Cell-Resource-Configuration-ExtIEs } } OPTIONAL
}

GNB-DU-Cell-Resource-Configuration-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    {ID id-rBSetConfiguration          CRITICALITY reject EXTENSION RBSetsConfiguration PRESENCE optional}|
    {ID id-frequency-Domain-HSNA-Configuration-List CRITICALITY reject EXTENSION Frequency-Domain-HSNA-Configuration-List PRESENCE optional}|
    {ID id-child-IAB-Nodes-NA-Resource-List CRITICALITY reject EXTENSION Child-IAB-Nodes-NA-Resource-List PRESENCE optional}|
    {ID id-Parent-IAB-Nodes-NA-Resource-Configuration-List CRITICALITY reject EXTENSION Parent-IAB-Nodes-NA-Resource-Configuration-List PRESENCE optional},
    ...
}

GNB-DU-MBS-F1AP-ID ::= INTEGER (0..4294967295)

```

```

GNB-DU-UE-F1AP-ID      ::= INTEGER (0..4294967295)

GNB-DU-ID               ::= INTEGER (0..68719476735)

GNB-CU-Name ::= PrintableString(SIZE(1..150,...))

GNB-DU-Name ::= PrintableString(SIZE(1..150,...))

Extended-GNB-CU-Name    ::= SEQUENCE {
    gNB-CU-NameVisibleString GNB-CU-NameVisibleString OPTIONAL,
    gNB-CU-NameUTF8String    GNB-CU-NameUTF8String    OPTIONAL,
    iE-Extensions            ProtocolExtensionContainer { { Extended-GNB-CU-Name-ExtIEs } } OPTIONAL,
    ...
}

Extended-GNB-CU-Name-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

GNB-CU-NameVisibleString ::= VisibleString(SIZE(1..150,...))

GNB-CU-NameUTF8String ::= UTF8String(SIZE(1..150,...))

Extended-GNB-DU-Name    ::= SEQUENCE {
    gNB-DU-NameVisibleString GNB-DU-NameVisibleString OPTIONAL,
    gNB-DU-NameUTF8String    GNB-DU-NameUTF8String    OPTIONAL,
    iE-Extensions            ProtocolExtensionContainer { { Extended-GNB-DU-Name-ExtIEs } } OPTIONAL,
    ...
}

Extended-GNB-DU-Name-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

GNB-DU-NameVisibleString ::= VisibleString(SIZE(1..150,...))

GNB-DU-NameUTF8String ::= UTF8String(SIZE(1..150,...))

GNB-DU-Served-Cells-Item ::= SEQUENCE {
    served-Cell-Information Served-Cell-Information,
    gNB-DU-System-Information GNB-DU-System-Information OPTIONAL,
    iE-Extensions            ProtocolExtensionContainer { { GNB-DU-Served-Cells-ItemExtIEs } } OPTIONAL,
    ...
}

GNB-DU-Served-Cells-ItemExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

GNB-DU-System-Information ::= SEQUENCE {
    mIB-message MIB-message,
    sIB1-message SIB1-message,

```

```

    iE-Extensions                ProtocolExtensionContainer { { GNB-DU-System-Information-ExtIEs } } OPTIONAL,
    ...
}

GNB-DU-System-Information-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    { ID id-SIB12-message          CRITICALITY ignore EXTENSION SIB12-message          PRESENCE optional}|
    { ID id-SIB13-message          CRITICALITY ignore EXTENSION SIB13-message          PRESENCE optional}|
    { ID id-SIB14-message          CRITICALITY ignore EXTENSION SIB14-message          PRESENCE optional}|
    { ID id-SIB10-message          CRITICALITY ignore EXTENSION SIB10-message          PRESENCE optional}|
    { ID id-SIB17-message          CRITICALITY ignore EXTENSION SIB17-message          PRESENCE optional}|
    { ID id-SIB20-message          CRITICALITY ignore EXTENSION SIB20-message          PRESENCE optional}|
    { ID id-SIB15-message          CRITICALITY ignore EXTENSION SIB15-message          PRESENCE optional},
    ...
}

GNB-DUConfigurationQuery ::= ENUMERATED {true, ...}

GNBDUOverloadInformation ::= ENUMERATED {overloaded, not-overloaded}

GNB-DU-TNL-Association-To-Remove-Item ::= SEQUENCE {
    tNLAssociationTransportLayerAddress CP-TransportLayerAddress ,
    tNLAssociationTransportLayerAddresssgNBCU CP-TransportLayerAddress OPTIONAL,
    iE-Extensions ProtocolExtensionContainer { { GNB-DU-TNL-Association-To-Remove-Item-ExtIEs} } OPTIONAL
}

GNB-DU-TNL-Association-To-Remove-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

GNBDUUESliceMaximumBitRateList ::= SEQUENCE (SIZE(1.. maxnoofSMBRValues)) OF GNBDUUESliceMaximumBitRateItem

GNBDUUESliceMaximumBitRateItem ::= SEQUENCE {
    sNSSAI SNSSAI,
    uESliceMaximumBitRateUL BitRate,
    iE-Extensions ProtocolExtensionContainer { { GNBDUUESliceMaximumBitRateItem-ExtIEs} } OPTIONAL,
    ...
}

GNBDUUESliceMaximumBitRateItem-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

GNB-RxTxTimeDiff ::= SEQUENCE {
    rxTxTimeDiff GNB-RxTxTimeDiffMeas,
    additionalPath-List AdditionalPath-List OPTIONAL,
    iE-Extensions ProtocolExtensionContainer { { GNB-RxTxTimeDiff-ExtIEs} } OPTIONAL
}

GNB-RxTxTimeDiff-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    { ID id-ExtendedAdditionalPathList CRITICALITY ignore EXTENSION ExtendedAdditionalPathList PRESENCE optional}|
    { ID id-TRPTEGInformation CRITICALITY ignore EXTENSION TRPTEGInformation PRESENCE optional },
    ...
}

```

```

GNBRxTxTimeDiffMeas ::= CHOICE {
    k0      INTEGER (0.. 1970049),
    k1      INTEGER (0.. 985025),
    k2      INTEGER (0.. 492513),
    k3      INTEGER (0.. 246257),
    k4      INTEGER (0.. 123129),
    k5      INTEGER (0.. 61565),
    choice-extension      ProtocolIE-SingleContainer { { GNBRxTxTimeDiffMeas-ExtIEs } }
}

GNBRxTxTimeDiffMeas-ExtIEs      F1AP-PROTOCOL-IES ::= {
    ...
}

GNBSetID ::= BIT STRING (SIZE(22))

GTP-TEID      ::= OCTET STRING (SIZE (4))

GTPTLAs ::= SEQUENCE (SIZE(1.. maxnoofGTPTLAs)) OF  GTPTLA-Item

GTPTLA-Item ::= SEQUENCE {
    gTPTransportLayerAddress      TransportLayerAddress,
    iE-Extensions      ProtocolExtensionContainer { { GTPTLA-Item-ExtIEs } }      OPTIONAL
}

GTPTLA-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

GTPTunnel      ::= SEQUENCE {
    transportLayerAddress      TransportLayerAddress,
    gTP-TEID      GTP-TEID,
    iE-Extensions      ProtocolExtensionContainer { { GTPTunnel-ExtIEs } } OPTIONAL,
    ...
}

GTPTunnel-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

-- H

HandoverPreparationInformation ::= OCTET STRING

HardwareLoadIndicator ::= SEQUENCE {
    dLHardwareLoadIndicator      INTEGER (0..100, ...),
    uLHardwareLoadIndicator      INTEGER (0..100, ...),
    iE-Extensions      ProtocolExtensionContainer { { HardwareLoadIndicator-ExtIEs } } OPTIONAL,
    ...
}

HardwareLoadIndicator-ExtIEs      F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

```

```

}

HSNASlotConfigList ::= SEQUENCE (SIZE(1..maxnoofHSNASlots)) OF HSNASlotConfigItem

HSNASlotConfigItem ::= SEQUENCE {
    hSNADownlink          HSNADownlink          OPTIONAL,
    hSNAUplink            HSNAUplink            OPTIONAL,
    hSNAFlexible          hSNAFlexible          OPTIONAL,
    iE-Extensions         ProtocolExtensionContainer { { HSNASlotConfigItem-ExtIEs } } OPTIONAL
}

HSNASlotConfigItem-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}
HSNADownlink ::= ENUMERATED { hard, soft, notavailable }
HSNAFlexible ::= ENUMERATED { hard, soft, notavailable }
HSNAUplink ::= ENUMERATED { hard, soft, notavailable }
HSNATransmissionPeriodicity ::= ENUMERATED { ms0p5, ms0p625, ms1, ms1p25, ms2, ms2p5, ms5, ms10, ms20, ms40, ms80, ms160, ...}
HashedUEIdentityIndexValue ::= BIT STRING (SIZE(13, ...))

-- I

IAB-Barred ::= ENUMERATED {barred, not-barred, ...}

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

IABCongestionIndication ::= SEQUENCE {
    iAB-Congestion-Indication-List          IAB-Congestion-Indication-List,
    iE-Extensions      ProtocolExtensionContainer { { IAB-Congestion-Indication-List-ExtIEs } } OPTIONAL
}

IAB-Congestion-Indication-List-ExtIEs      F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

IAB-Congestion-Indication-List ::= SEQUENCE (SIZE(1..maxnoofIABCongInd)) OF IAB-Congestion-Indication-Item

IAB-Congestion-Indication-Item ::= SEQUENCE {
    childNodeIdentifier          BAPAddress,
    bHRLCCHList                  BHRLCCHList      OPTIONAL,
    iE-Extensions                ProtocolExtensionContainer { { IAB-Congestion-Indication-ItemExtIEs } } OPTIONAL
}

IAB-Congestion-Indication-ItemExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

IAB-Info-IAB-donor-CU ::= SEQUENCE{

```



```

    iAB-STC-Info    IAB-STC-Info    OPTIONAL,
    iE-Extensions   ProtocolExtensionContainer { { IAB-Info-IAB-donor-CU-ExtIEs } } OPTIONAL
}

IAB-Info-IAB-donor-CU-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

IAB-Info-IAB-DU ::= SEQUENCE{
    multiplexingInfo    MultiplexingInfo    OPTIONAL,
    iAB-STC-Info        IAB-STC-Info        OPTIONAL,
    iE-Extensions       ProtocolExtensionContainer { { IAB-Info-IAB-DU-ExtIEs } } OPTIONAL
}

IAB-Info-IAB-DU-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

IAB-MT-Cell-List ::= SEQUENCE (SIZE(1..maxnoofServingCells)) OF IAB-MT-Cell-List-Item

IAB-MT-Cell-List-Item ::= SEQUENCE {
    nRCellIdentity      NRCellIdentity,
    dU-RX-MT-RX         DU-RX-MT-RX,
    dU-TX-MT-TX         DU-TX-MT-TX,
    dU-RX-MT-TX         DU-RX-MT-TX,
    dU-TX-MT-RX         DU-TX-MT-RX,
    iE-Extensions       ProtocolExtensionContainer { { IAB-MT-Cell-List-Item-ExtIEs } } OPTIONAL
}

IAB-MT-Cell-List-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    { ID id-DU-RX-MT-RX-Extend      CRITICALITY ignore EXTENSION DU-RX-MT-RX-Extend      PRESENCE optional }|
    { ID id-DU-TX-MT-TX-Extend      CRITICALITY ignore EXTENSION DU-TX-MT-TX-Extend      PRESENCE optional }|
    { ID id-DU-RX-MT-TX-Extend      CRITICALITY ignore EXTENSION DU-RX-MT-TX-Extend      PRESENCE optional }|
    { ID id-DU-TX-MT-RX-Extend      CRITICALITY ignore EXTENSION DU-TX-MT-RX-Extend      PRESENCE optional },
    ...
}

IAB-MT-Cell-NA-Resource-Configuration-Mode-Info ::= CHOICE {
    fDD      IAB-MT-Cell-NA-Resource-Configuration-FDD-Info,
    tDD      IAB-MT-Cell-NA-Resource-Configuration-TDD-Info,
    choice-extension      ProtocolIE-SingleContainer { { IAB-MT-Cell-NA-Resource-Configuration-Mode-Info-ExtIEs } }
}

IAB-MT-Cell-NA-Resource-Configuration-Mode-Info-ExtIEs F1AP-PROTOCOL-IES ::= {
    ...
}

IAB-MT-Cell-NA-Resource-Configuration-FDD-Info ::= SEQUENCE {
    gNB-DU-Cell-NA-Resource-Configuration-FDD-UL      GNB-DU-Cell-Resource-Configuration,
    gNB-DU-Cell-NA-Resource-Configuration-FDD-DL      GNB-DU-Cell-Resource-Configuration,
    uL-FreqInfo      NRFreqInfo      OPTIONAL,
    uL-Transmission-Bandwidth      Transmission-Bandwidth      OPTIONAL,

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    uL-NR-Carrier-List          NRCarrierList          OPTIONAL,
    dL-FreqInfo                 NRFreqInfo              OPTIONAL,
    dL-Transmission-Bandwidth   Transmission-Bandwidth OPTIONAL,
    dL-NR-Carrier-List          NRCarrierList          OPTIONAL,
    iE-Extensions                ProtocolExtensionContainer { {IAB-MT-Cell-NA-Resource-Configuration-FDD-Info-ExtIEs} } OPTIONAL,
    ...
}

IAB-MT-Cell-NA-Resource-Configuration-FDD-Info-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

IAB-MT-Cell-NA-Resource-Configuration-TDD-Info ::= SEQUENCE {
    gNB-DU-Cell-NA-Resourc-Configuration-TDD          GNB-DU-Cell-Resource-Configuration,
    nRFreqInfo                                         NRFreqInfo          OPTIONAL,
    transmission-Bandwidth                             Transmission-Bandwidth OPTIONAL,
    nR-Carrier-List                                    NRCarrierList       OPTIONAL,
    iE-Extensions                                       ProtocolExtensionContainer { {IAB-MT-Cell-NA-Resource-Configuration-TDD-Info-ExtIEs} } OPTIONAL,
    ...
}

IAB-MT-Cell-NA-Resource-Configuration-TDD-Info-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

IAB-STC-Info ::= SEQUENCE{
    iAB-STC-Info-List  IAB-STC-Info-List,
    iE-Extensions      ProtocolExtensionContainer { { IAB-STC-Info-ExtIEs } } OPTIONAL
}

IAB-STC-Info-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

IAB-STC-Info-List ::= SEQUENCE (SIZE(1..maxnoofIABSTCInfo)) OF IAB-STC-Info-Item

IAB-STC-Info-Item ::= SEQUENCE {
    sSB-freqInfo          SSB-freqInfo,
    sSB-subcarrierSpacing SSB-subcarrierSpacing,
    sSB-transmissionPeriodicity SSB-transmissionPeriodicity,
    sSB-transmissionTimingOffset SSB-transmissionTimingOffset,
    sSB-transmissionBitmap SSB-transmissionBitmap,
    iE-Extensions          ProtocolExtensionContainer { { IAB-STC-Info-Item-ExtIEs } } OPTIONAL
}

IAB-STC-Info-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

IAB-Allocated-TNL-Address-Item ::= SEQUENCE {
    iABTNLAddress          IABTNLAddress,
    iABTNLAddressUsage      IABTNLAddressUsage          OPTIONAL,
    iE-Extensions           ProtocolExtensionContainer { { IAB-Allocated-TNL-Address-Item-ExtIEs } } OPTIONAL
}

```

```

IAB-Allocated-TNL-Address-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

IAB-DU-Cell-Resource-Configuration-Mode-Info ::= CHOICE {
    fDD      IAB-DU-Cell-Resource-Configuration-FDD-Info,
    tDD      IAB-DU-Cell-Resource-Configuration-TDD-Info,
    choice-extension          ProtocolIE-SingleContainer { { IAB-DU-Cell-Resource-Configuration-Mode-Info-ExtIEs} }
}

IAB-DU-Cell-Resource-Configuration-Mode-Info-ExtIEs F1AP-PROTOCOL-IES ::= {
    ...
}

IAB-DU-Cell-Resource-Configuration-FDD-Info ::= SEQUENCE {
    gNB-DU-Cell-Resource-Configuration-FDD-UL          GNB-DU-Cell-Resource-Configuration,
    gNB-DU-Cell-Resource-Configuration-FDD-DL          GNB-DU-Cell-Resource-Configuration,
    iE-Extensions          ProtocolExtensionContainer { {IAB-DU-Cell-Resource-Configuration-FDD-Info-ExtIEs} } OPTIONAL,
    ...
}

IAB-DU-Cell-Resource-Configuration-FDD-Info-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    {ID id-uL-FreqInfo          CRITICALITY reject EXTENSION NRFreqInfo          PRESENCE optional}|
    {ID id-uL-Transmission-Bandwidth CRITICALITY reject EXTENSION Transmission-Bandwidth PRESENCE optional}|
    {ID id-uL-NR-Carrier-List      CRITICALITY reject EXTENSION NRCarrierList      PRESENCE optional}|
    {ID id-dL-FreqInfo          CRITICALITY reject EXTENSION NRFreqInfo          PRESENCE optional}|
    {ID id-dL-Transmission-Bandwidth CRITICALITY reject EXTENSION Transmission-Bandwidth PRESENCE optional}|
    {ID id-dL-NR-Carrier-List      CRITICALITY reject EXTENSION NRCarrierList      PRESENCE optional},
    ...
}

IAB-DU-Cell-Resource-Configuration-TDD-Info ::= SEQUENCE {
    gNB-DU-Cell-Resourc-Configuration-TDD          GNB-DU-Cell-Resource-Configuration,
    iE-Extensions          ProtocolExtensionContainer { {IAB-DU-Cell-Resource-Configuration-TDD-Info-ExtIEs} } OPTIONAL,
    ...
}

IAB-DU-Cell-Resource-Configuration-TDD-Info-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    {ID id-nRFreqInfo          CRITICALITY reject EXTENSION NRFreqInfo          PRESENCE optional}|
    {ID id-transmission-Bandwidth CRITICALITY reject EXTENSION Transmission-Bandwidth PRESENCE optional}|
    {ID id-nR-Carrier-List      CRITICALITY reject EXTENSION NRCarrierList      PRESENCE optional},
    ...
}

IABIPv6RequestType ::= CHOICE {
    iIPv6Address          IABTNLAddressesRequested,
    iIPv6Prefix          IABTNLAddressesRequested,
    choice-extension          ProtocolIE-SingleContainer { { IABIPv6RequestType-ExtIEs} }
}

IABIPv6RequestType-ExtIEs F1AP-PROTOCOL-IES ::= {
    ...
}

```

```

IABTNLAddress ::= CHOICE {
    ipv4Address          BIT STRING (SIZE(32)),
    ipv6Address          BIT STRING (SIZE(128)),
    ipv6Prefix           BIT STRING (SIZE(64)),
    choice-extension     ProtocolIE-SingleContainer { { IABTNLAddress-ExtIEs } }
}

IABTNLAddress-ExtIEs F1AP-PROTOCOL-IES ::= {
    ...
}

IABTNLAddressesRequested ::= SEQUENCE {
    tNLAddressesOrPrefixesRequestedAllTraffic INTEGER (1..256) OPTIONAL,
    tNLAddressesOrPrefixesRequestedF1-C      INTEGER (1..256) OPTIONAL,
    tNLAddressesOrPrefixesRequestedF1-U      INTEGER (1..256) OPTIONAL,
    tNLAddressesOrPrefixesRequestedNonF1     INTEGER (1..256) OPTIONAL,
    iE-Extensions                           ProtocolExtensionContainer { { IABTNLAddressesRequested-ExtIEs } } OPTIONAL
}

IABTNLAddressesRequested-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

IAB-TNL-Addresses-To-Remove-Item ::= SEQUENCE {
    iABTNLAddress          IABTNLAddress,
    iE-Extensions          ProtocolExtensionContainer { { IAB-TNL-Addresses-To-Remove-Item-ExtIEs } } OPTIONAL
}

IAB-TNL-Addresses-To-Remove-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

IAB-TNL-Addresses-Exception ::= SEQUENCE {
    iABTNLAddressList      IABTNLAddressList,
    iE-Extensions          ProtocolExtensionContainer { { IAB-TNL-Addresses-Exception-ExtIEs } } OPTIONAL
}

IAB-TNL-Addresses-Exception-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

IABTNLAddressList ::= SEQUENCE (SIZE(1.. maxnoofTLAsIAB)) OF IABTNLAddress-Item

IABTNLAddress-Item ::= SEQUENCE {
    iABTNLAddress          IABTNLAddress ,
    iE-Extensions          ProtocolExtensionContainer { { IABTNLAddress-ItemExtIEs } } OPTIONAL
}

IABTNLAddress-ItemExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

IABTNLAddressUsage ::= ENUMERATED {

```

```

    f1-c,
    f1-u,
    non-f1,
    ...
}

IABv4AddressesRequested ::= SEQUENCE {
    iABv4AddressesRequested          IABTNLAddressesRequested,
    iE-Extensions                    ProtocolExtensionContainer { { IABv4AddressesRequested-ExtIEs } } OPTIONAL
}

IABv4AddressesRequested-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

ImplicitFormat ::= SEQUENCE {
    dUFSslotformatIndex              DUFslotformatIndex,
    iE-Extensions                    ProtocolExtensionContainer { { ImplicitFormat-ExtIEs } } OPTIONAL
}

ImplicitFormat-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

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

IgnoreResourceCoordinationContainer ::= ENUMERATED { yes,...}
InactivityMonitoringRequest ::= ENUMERATED { true,...}
InactivityMonitoringResponse ::= ENUMERATED { not-supported,...}
InterfacesToTrace ::= BIT STRING (SIZE(8))

IntendedTDD-DL-ULConfig ::= SEQUENCE {
    nRSCS                            ENUMERATED { scs15, scs30, scs60, scs120,..., scs480, scs960},
    nRCP                             ENUMERATED { normal, extended,...},
    nRDLULTxPeriodicity               ENUMERATED { ms0p5, ms0p625, ms1, ms1p25, ms2, ms2p5, ms3, ms4, ms5, ms10, ms20, ms40, ms60, ms80, ms100, ms120,
ms140, ms160, ...},
    slot-Configuration-List           Slot-Configuration-List,
    iE-Extensions                    ProtocolExtensionContainer { {IntendedTDD-DL-ULConfig-ExtIEs} } OPTIONAL
}

InterFrequencyConfig-NoGap ::= ENUMERATED {
    true,
    ...
}

IngressNonF1terminatingTopologyIndicator ::= ENUMERATED {true, ...}

IntendedTDD-DL-ULConfig-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

IPHeaderInformation ::= SEQUENCE {
    destinationIABTNLAddress          IABTNLAddress,

```

```

    dsInformationList          DSInformationList OPTIONAL,
    ipv6FlowLabel              BIT STRING (SIZE (20)) OPTIONAL,
    iE-Extensions              ProtocolExtensionContainer { { IPHeaderInformation-ItemExtIEs} } OPTIONAL,
    ...
}

IPHeaderInformation-ItemExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

IPTolayer2TrafficMappingInfo ::= SEQUENCE {
    iptolayer2TrafficMappingInfoToAdd          IPTolayer2TrafficMappingInfoList OPTIONAL,
    iptolayer2TrafficMappingInfoToRemove      MappingInformationToRemove OPTIONAL,
    iE-Extensions                             ProtocolExtensionContainer { { IPTolayer2TrafficMappingInfo-ItemExtIEs} } OPTIONAL,
    ...
}

IPTolayer2TrafficMappingInfoList ::= SEQUENCE (SIZE(1..maxnoofMappingEntries)) OF IPTolayer2TrafficMappingInfo-Item

IPTolayer2TrafficMappingInfo-Item ::= SEQUENCE {
    mappingInformationIndex      MappingInformationIndex,
    ipHeaderInformation          IPHeaderInformation,
    bhInfo                      BHInfo, iE-Extensions
OPTIONAL,                      ProtocolExtensionContainer { { IPTolayer2TrafficMappingInfo-ItemExtIEs} }
    ...
}

IPTolayer2TrafficMappingInfo-ItemExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

-- J
-- K
-- L

L139Info ::= SEQUENCE {
    prachSCS          ENUMERATED {scs15, scs30, scs60, scs120, ..., scs480, scs960},
    rootSequenceIndex INTEGER (0..137) OPTIONAL,
    iE-Extension       ProtocolExtensionContainer { {L139Info-ExtIEs} } OPTIONAL,
    ...
}

L139Info-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

L839Info ::= SEQUENCE {
    rootSequenceIndex      INTEGER (0..837),
    restrictedSetConfig     ENUMERATED {unrestrictedSet, restrictedSetTypeA,
                                     restrictedSetTypeB, ...},
    iE-Extension            ProtocolExtensionContainer { {L839Info-ExtIEs} } OPTIONAL,
    ...
}

```

```

}

L839Info-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

L571Info ::= SEQUENCE {
    prachSCSForL571          ENUMERATED { scs30, scs120, ... , scs480},
    rootSequenceIndex        INTEGER (0..569),
    iE-Extension              ProtocolExtensionContainer { {L571Info-ExtIEs} }    OPTIONAL,
    ...
}

L571Info-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

L1151Info ::= SEQUENCE {
    prachSCSForL1151          ENUMERATED { scs15, scs120,...},
    rootSequenceIndex        INTEGER (0..1149),
    iE-Extension              ProtocolExtensionContainer { {L1151Info-ExtIEs} }    OPTIONAL,
    ...
}

L1151Info-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

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

LCID ::= INTEGER (1..32, ...)

LCS-to-GCS-Translation ::= SEQUENCE {
    alpha                    INTEGER (0..3599),
    beta                    INTEGER (0..3599),
    gamma                   INTEGER (0..3599),
    iE-Extensions            ProtocolExtensionContainer { { LCS-to-GCS-Translation-ExtIEs} } OPTIONAL,
    ...
}

LCS-to-GCS-Translation-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

LCStoGCSTranslationList ::= SEQUENCE (SIZE (1.. maxnooflcs-gcs-translation)) OF LCStoGCSTranslation

LCStoGCSTranslation ::= SEQUENCE {
    alpha                   INTEGER (0..359),
    alpha-fine              INTEGER (0..9)    OPTIONAL,
    beta                    INTEGER (0..359),
    beta-fine              INTEGER (0..9)    OPTIONAL,
    gamma                   INTEGER (0..359),

```

```

    gamma-fine      INTEGER (0..9)      OPTIONAL,
    iE-Extensions   ProtocolExtensionContainer { {LCStoGCSTranslation-ExtIEs} } OPTIONAL
}

LCStoGCSTranslation-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

LMF-MeasurementID ::= INTEGER (1.. 65536, ...)

LMF-UE-MeasurementID ::= INTEGER (1.. 256, ...)

LocationDependentMBSF1UInformation ::= SEQUENCE (SIZE(1..maxnoofMBSAreaSessionIDs)) OF LocationDependentMBSF1UInformation-Item
LocationDependentMBSF1UInformation-Item ::= SEQUENCE {
    mbsAreaSession-ID      MBS-Area-Session-ID,
    mbs-f1u-info-at-CU      UPTransportLayerInformation,
    iE-Extensions          ProtocolExtensionContainer { { LocationDependentMBSF1UInformation-Item-ExtIEs } } OPTIONAL,
    ...
}

LocationDependentMBSF1UInformation-Item-ExtIEs      F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

LocationMeasurementInformation ::= OCTET STRING

LocationUncertainty ::= SEQUENCE {
    horizontalUncertainty      INTEGER (0..255),
    horizontalConfidence       INTEGER (0..100),
    verticalUncertainty         INTEGER (0..255),
    verticalConfidence          INTEGER (0..100),
    iE-Extensions              ProtocolExtensionContainer { { LocationUncertainty-ExtIEs} } OPTIONAL
}

LocationUncertainty-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

LongDRXCycleLength ::= ENUMERATED
{ms10, ms20, ms32, ms40, ms60, ms64, ms70, ms80, ms128, ms160, ms256, ms320, ms512, ms640, ms1024, ms1280, ms2048, ms2560, ms5120, ms10240, ...}

LowerLayerPresenceStatusChange ::= ENUMERATED {
    suspend-lower-layers,
    resume-lower-layers,
    ...
}

LoS-NLoSIndicatorHard ::= ENUMERATED {nLoS, loS}

LoS-NLoSIndicatorSoft ::= INTEGER (0..10)

LoS-NLoSInformation ::= CHOICE {
    loS-NLoSIndicatorSoft      LoS-NLoSIndicatorSoft,

```



```

    LoS-NLoSIndicatorHard      LoS-NLoSIndicatorHard,
    choice-Extension           ProtocolIE-SingleContainer {{ LoS-NLoSInformation-ExtIes}}
}

LoS-NLoSInformation-ExtIes F1AP-PROTOCOL-IES ::= {
    ...
}

LTEUESidelinkAggregateMaximumBitrate ::= SEQUENCE {
    uELTESidelinkAggregateMaximumBitrate      BitRate,
    iE-Extensions                             ProtocolExtensionContainer { {LTEUESidelinkAggregateMaximumBitrate-ExtIes} } OPTIONAL
}

LTEUESidelinkAggregateMaximumBitrate-ExtIes F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

LTEV2XServicesAuthorized ::= SEQUENCE {
    vehicleUE          VehicleUE                                OPTIONAL,
    pedestrianUE       PedestrianUE                              OPTIONAL,
    iE-Extensions      ProtocolExtensionContainer { {LTEV2XServicesAuthorized-ExtIes} } OPTIONAL
}

LTEV2XServicesAuthorized-ExtIes F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

-- M

MappingInformationIndex ::= BIT STRING (SIZE (26))

MappingInformationToRemove ::= SEQUENCE (SIZE(1..maxnoofMappingEntries)) OF MappingInformationIndex

MaskedIMEISV ::= BIT STRING (SIZE (64))

MaxDataBurstVolume ::= INTEGER (0..4095, ..., 4096.. 20000000)
MaxPacketLossRate ::= INTEGER (0..1000)

MBS-Broadcast-NeighbourCellList ::= OCTET STRING

MBS-Flows-Mapped-To-MRB-List ::= SEQUENCE (SIZE(1.. maxnoofMBSQoSFlows)) OF MBS-Flows-Mapped-To-MRB-Item

MBS-Flows-Mapped-To-MRB-Item ::= SEQUENCE {
    mBS-QoSFlowIdentifier      QoSFlowIdentifier,
    mbs-QoSFlowLevelQoSParameters QoSFlowLevelQoSParameters,
    iE-Extensions              ProtocolExtensionContainer { { MBS-Flows-Mapped-To-MRB-Item-ExtIes} } OPTIONAL
}

MBS-Flows-Mapped-To-MRB-Item-ExtIes F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

MBSF1UIInformation ::= SEQUENCE {

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    mbs-f1u-info          UPTransportLayerInformation,
    iE-Extensions          ProtocolExtensionContainer { { MBSF1UInformation-ExtIEs } } OPTIONAL,
    ...
}

MBSF1UInformation-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

MBSInterestIndication ::= OCTET STRING

MBS-Session-ID ::= SEQUENCE {
    tMGI          TMGI,
    nID           NID,
    iE-Extensions ProtocolExtensionContainer { { MBS-Session-ID-ExtIEs } } OPTIONAL,
    ...
}

MBS-Session-ID-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

MBS-Area-Session-ID ::= INTEGER (0..65535, ...)

MBS-CUtoDURRCInformation ::= SEQUENCE {
    mBS-Broadcast-Cell-List MBS-Broadcast-Cell-List,
    mBS-Broadcast-MRB-List  MBS-Broadcast-MRB-List,
    iE-Extensions          ProtocolExtensionContainer { { MBS-CUtoDURRCInformation-ExtIEs } } OPTIONAL,
    ...
}

MBS-CUtoDURRCInformation-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

MBS-Broadcast-Cell-List ::= SEQUENCE (SIZE(1.. maxCellingNBDU)) OF MBS-Broadcast-Cell-Item

MBS-Broadcast-Cell-Item ::= SEQUENCE {
    nRCGI          NRCGI,
    mtch-neighbourCell OCTET STRING OPTIONAL,
    iE-Extensions  ProtocolExtensionContainer { { MBS-Broadcast-Cell-Item-ExtIEs } } OPTIONAL,
    ...
}

MBS-Broadcast-Cell-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

MBS-Broadcast-MRB-List ::= SEQUENCE (SIZE(1.. maxnoofMRBs)) OF MBS-Broadcast-MRB-Item

MBS-Broadcast-MRB-Item ::= SEQUENCE {
    mRB-ID          MRB-ID,
    mRB-PDCP-Config-Broadcast OCTET STRING,

```

```

    iE-Extensions          ProtocolExtensionContainer { { MBS-Broadcast-MRB-Item-ExtIEs } } OPTIONAL,
    ...
}

MBS-Broadcast-MRB-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

MBSMulticastF1UContextDescriptor ::= SEQUENCE {
    multicastF1UContextReferenceF1          MulticastF1UContextReferenceF1,
    mc-F1UCtxtusage          ENUMERATED {ptm, ptp, ptp-retransmission, ptp-forwarding, ...},
    mbsAreaSession          MBS-Area-Session-ID          OPTIONAL,
    iE-Extensions          ProtocolExtensionContainer { {MBSMulticastF1UContextDescriptor-ExtIEs} } OPTIONAL,
    ...
}

MBSMulticastF1UContextDescriptor-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

MulticastF1UContext-ToBeSetup-Item ::= SEQUENCE {
    mRB-ID          MRB-ID,
    mbs-f1u-info-at-DU          UPTransportLayerInformation,
    mbsProgressInformation          MRB-ProgressInformation          OPTIONAL,
    iE-Extensions          ProtocolExtensionContainer { {MulticastF1UContext-ToBeSetup-Item-ExtIEs} } OPTIONAL,
    ...
}

MulticastF1UContext-ToBeSetup-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

MulticastF1UContext-Setup-Item ::= SEQUENCE {
    mRB-ID          MRB-ID,
    mbs-f1u-info-at-CU          UPTransportLayerInformation,
    iE-Extensions          ProtocolExtensionContainer { {MulticastF1UContext-Setup-Item-ExtIEs} } OPTIONAL,
    ...
}

MulticastF1UContext-Setup-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

MulticastF1UContext-FailedToBeSetup-Item ::= SEQUENCE {
    mRB-ID          MRB-ID,
    cause          Cause          OPTIONAL,
    iE-Extensions          ProtocolExtensionContainer { {MulticastF1UContext-FailedToBeSetup-Item-ExtIEs} } OPTIONAL,
    ...
}

MulticastF1UContext-FailedToBeSetup-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {

```

```

}
...

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

MBS-ServiceArea ::= CHOICE {
    locationindependent MBS-ServiceAreaInformation,
    locationdependent MBS-ServiceAreaInformationList,
    choice-Extensions ProtocolIE-SingleContainer { {MBS-ServiceArea-ExtIEs} }
}

MBS-ServiceArea-ExtIEs F1AP-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 F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

MBS-ServiceAreaCellList ::= SEQUENCE (SIZE(1.. maxnoofCellsforMBS)) OF NRCGI

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 F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

MBS-ServiceAreaInformationList ::= SEQUENCE (SIZE(1..maxnoofMBS-ServiceAreaInformation)) OF MBS-ServiceAreaInformationItem

MBS-ServiceAreaInformationItem ::= SEQUENCE {
    mBS-AreaSessionID MBS-Area-Session-ID,
    mBS-ServiceAreaInformation MBS-ServiceAreaInformation,
    iE-Extensions ProtocolExtensionContainer { { MBS-ServiceAreaInformationItem-ExtIEs} } OPTIONAL,
    ...
}

MBS-ServiceAreaInformationItem-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {

```

```
}  
...  
}  
MC-PagingCell-Item ::= SEQUENCE {  
    nRCGI          NRCGI,  
    iE-Extensions  ProtocolExtensionContainer { { MC-PagingCell-ItemExtIEs } } OPTIONAL  
}  
MC-PagingCell-ItemExtIEs F1AP-PROTOCOL-EXTENSION ::= {  
    ...  
}  
  
MIB-message ::= OCTET STRING  
MeasConfig ::= OCTET STRING  
MeasGapConfig ::= OCTET STRING  
MeasGapSharingConfig ::= OCTET STRING  
PosMeasurementAmount ::= ENUMERATED {ma0, ma1, ma2, ma4, ma8, ma16, ma32, ma64}  
MeasurementBeamInfoRequest ::= ENUMERATED {true, ...}  
MeasurementBeamInfo ::= SEQUENCE {  
    pRS-Resource-ID          PRS-Resource-ID          OPTIONAL,  
    pRS-Resource-Set-ID      PRS-Resource-Set-ID OPTIONAL,  
    sSB-Index                SSB-Index                OPTIONAL,  
    iE-Extensions            ProtocolExtensionContainer { { MeasurementBeamInfo-ExtIEs } } OPTIONAL  
}  
MeasurementBeamInfo-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {  
    ...  
}  
  
MeasurementTimingConfiguration ::= OCTET STRING  
MessageIdentifier ::= BIT STRING (SIZE (16))  
  
MeasurementTimeOccasion ::= ENUMERATED {o1, o4, ...}  
MeasurementCharacteristicsRequestIndicator ::= BIT STRING (SIZE (16))  
MRB-ProgressInformation ::= CHOICE {  
    pdcp-SN12          INTEGER (0..4095),  
    pdcp-SN18          INTEGER (0..262143),  
    choice-extension    ProtocolIE-SingleContainer { { MRB-ProgressInformation-ExtIEs } }  
}  
MRB-ProgressInformation-ExtIEs F1AP-PROTOCOL-IES ::= {  
    ...  
}
```

```

}

MulticastF1UContextReferenceF1 ::= OCTET STRING (SIZE(4))

MulticastF1UContextReferenceCU ::= OCTET STRING (SIZE(4))

MultipleULAoA ::= SEQUENCE {
    multipleULAoA          MultipleULAoA-List,
    iE-Extensions          ProtocolExtensionContainer { { MultipleULAoA-ExtIES} } OPTIONAL,
    ...
}

MultipleULAoA-ExtIES F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

MultipleULAoA-List ::= SEQUENCE (SIZE(1.. maxnoofULAoAs)) OF MultipleULAoA-Item

MultipleULAoA-Item ::= CHOICE {
    uL-AoA          UL-AoA,
    uL-ZoA          ZoAInformation,
    choice-extension ProtocolIE-SingleContainer { { MultipleULAoA-Item-ExtIES } }
}

MultipleULAoA-Item-ExtIES F1AP-PROTOCOL-IES ::= {
    ...
}

MDTPollutedMeasurementIndicator ::= ENUMERATED {iDC,no-IDC, ...}

MRB-ID ::= INTEGER (1..512, ...)

MulticastMBSSessionList ::= SEQUENCE (SIZE(1..maxnoofMBSSessionsofUE)) OF MulticastMBSSessionList-Item
MulticastMBSSessionList-Item ::= SEQUENCE {
    mbsSessionId          MBS-Session-ID,
    iE-Extensions          ProtocolExtensionContainer { { MulticastMBSSessionList-Item-ExtIES } } OPTIONAL,
    ...
}

MulticastMBSSessionList-Item-ExtIES F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

MulticastMRBs-FailedToBeModified-Item ::= SEQUENCE {
    mRB-ID          MRB-ID,
    cause          Cause OPTIONAL,
    iE-Extensions          ProtocolExtensionContainer { { MulticastMRBs-FailedtoBeModified-Item-ExtIES} } OPTIONAL,
    ...
}

MulticastMRBs-FailedtoBeModified-Item-ExtIES F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

```

```
MulticastMRBs-FailedToBeSetup-Item ::= SEQUENCE {
    mRB-ID                MRB-ID,
    cause                  Cause OPTIONAL,
    iE-Extensions          ProtocolExtensionContainer { { MulticastMRBs-FailedToBeSetup-Item-ExtIEs} } OPTIONAL,
    ...
}

MulticastMRBs-FailedToBeSetup-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

MulticastMRBs-FailedToBeSetupMod-Item ::= SEQUENCE {
    mRB-ID                MRB-ID,
    cause                  Cause OPTIONAL,
    iE-Extensions          ProtocolExtensionContainer { { MulticastMRBs-FailedToBeSetupMod-Item-ExtIEs} } OPTIONAL,
    ...
}

MulticastMRBs-FailedToBeSetupMod-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

MulticastMRBs-Modified-Item ::= SEQUENCE {
    mRB-ID                MRB-ID,
    iE-Extensions          ProtocolExtensionContainer { { MulticastMRBs-Modified-Item-ExtIEs} } OPTIONAL,
    ...
}

MulticastMRBs-Modified-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

MulticastMRBs-Setup-Item ::= SEQUENCE {
    mRB-ID                MRB-ID,
    iE-Extensions          ProtocolExtensionContainer { { MulticastMRBs-Setup-Item-ExtIEs} } OPTIONAL,
    ...
}

MulticastMRBs-Setup-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

MulticastMRBs-SetupMod-Item ::= SEQUENCE {
    mRB-ID                MRB-ID,
    iE-Extensions          ProtocolExtensionContainer { { MulticastMRBs-SetupMod-Item-ExtIEs} } OPTIONAL,
    ...
}

MulticastMRBs-SetupMod-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

MulticastMRBs-ToBeModified-Item ::= SEQUENCE {
    mRB-ID                MRB-ID,
```

```

    mRB-QoSInformation      QoSFlowLevelQoSParameters  OPTIONAL,
    mBS-Flows-Mapped-To-MRB-List  MBS-Flows-Mapped-To-MRB-List  OPTIONAL,
    mBS-DL-PDCP-SN-Length      PDCPSNLength          OPTIONAL,
    iE-Extensions              ProtocolExtensionContainer { { MulticastMRBs-ToBeModified-Item-ExtIEs} } OPTIONAL,
    ...
}

MulticastMRBs-ToBeModified-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

MulticastMRBs-ToBeReleased-Item ::= SEQUENCE {
    mRB-ID                MRB-ID,
    iE-Extensions          ProtocolExtensionContainer { { MulticastMRBs-ToBeReleased-ItemExtIEs } } OPTIONAL,
    ...
}

MulticastMRBs-ToBeReleased-ItemExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

MulticastMRBs-ToBeSetup-Item ::= SEQUENCE {
    mRB-ID                MRB-ID,
    mRB-QoSInformation      QoSFlowLevelQoSParameters,
    mBS-Flows-Mapped-To-MRB-List  MBS-Flows-Mapped-To-MRB-List,
    mBS-DL-PDCP-SN-Length  PDCPSNLength,
    iE-Extensions          ProtocolExtensionContainer { { MulticastMRBs-ToBeSetup-Item-ExtIEs} } OPTIONAL,
    ...
}

MulticastMRBs-ToBeSetup-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

MulticastMRBs-ToBeSetupMod-Item ::= SEQUENCE {
    mRB-ID                MRB-ID,
    mRB-QoSInformation      QoSFlowLevelQoSParameters,
    mBS-Flows-Mapped-To-MRB-List  MBS-Flows-Mapped-To-MRB-List,
    mBS-DL-PDCP-SN-Length  PDCPSNLength,
    iE-Extensions          ProtocolExtensionContainer { { MulticastMRBs-ToBeSetupMod-Item-ExtIEs} } OPTIONAL,
    ...
}

MulticastMRBs-ToBeSetupMod-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

MultiplexingInfo ::= SEQUENCE{
    iAB-MT-Cell-List      IAB-MT-Cell-List,
    iE-Extensions          ProtocolExtensionContainer { {MultiplexingInfo-ExtIEs} } OPTIONAL
}

MultiplexingInfo-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

```



```
}

M2Configuration ::= ENUMERATED {true, ...}

M5Configuration ::= SEQUENCE {
    m5period          M5period,
    m5-links-to-log   M5-Links-to-log,
    iE-Extensions     ProtocolExtensionContainer { { M5Configuration-ExtIEs} } OPTIONAL,
    ...
}

M5Configuration-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    {ID id-M5ReportAmount    CRITICALITY ignore    EXTENSION M5ReportAmount PRESENCE optional },
    ...
}

M5period ::= ENUMERATED { ms1024, ms2048, ms5120, ms10240, min1, ... }

M5ReportAmount ::= ENUMERATED { r1, r2, r4, r8, r16, r32, r64, infinity, ... }

M5-Links-to-log ::= ENUMERATED {uplink, downlink, both-uplink-and-downlink, ...}

M6Configuration ::= SEQUENCE {
    m6report-Interval M6report-Interval,
    m6-links-to-log   M6-Links-to-log,
    iE-Extensions     ProtocolExtensionContainer { { M6Configuration-ExtIEs} } OPTIONAL,
    ...
}

M6Configuration-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    {ID id-M6ReportAmount    CRITICALITY ignore    EXTENSION M6ReportAmount PRESENCE optional },
    ...
}

M6report-Interval ::= ENUMERATED { ms120, ms240, ms640, ms1024, ms2048, ms5120, ms10240, ms20480, ms40960, min1, min6, min12, min30, ..., ms480}

M6ReportAmount ::= ENUMERATED { r1, r2, r4, r8, r16, r32, r64, infinity, ... }

M6-Links-to-log ::= ENUMERATED {uplink, downlink, both-uplink-and-downlink, ...}

M7Configuration ::= SEQUENCE {
    m7period          M7period,
    m7-links-to-log   M7-Links-to-log,
    iE-Extensions     ProtocolExtensionContainer { { M7Configuration-ExtIEs} } OPTIONAL,
    ...
}

M7Configuration-ExtIEs F1AP-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, ... }

M7-Links-to-log ::= ENUMERATED {downlink, ...}

MDT-Activation ::= ENUMERATED {
    immediate-MDT-only,
    immediate-MDT-and-Trace,
    ...
}

MDTConfiguration ::= SEQUENCE {
    mdt-Activation MDT-Activation,
    measurementsToActivate MeasurementsToActivate,
    m2Configuration M2Configuration OPTIONAL,
    -- C-ifM2: This IE shall be present if the Measurements to Activate IE has the second bit set to "1".
    m5Configuration M5Configuration OPTIONAL,
    -- C-ifM5: This IE shall be present if the Measurements to Activate IE has the fifth bit set to "1".
    m6Configuration M6Configuration OPTIONAL,
    -- C-ifM6: This IE shall be present if the Measurements to Activate IE has the seventh bit set to "1".
    m7Configuration M7Configuration OPTIONAL,
    -- C-ifM7: This IE shall be present if the Measurements to Activate IE has the eighth bit set to "1".
    iE-Extensions ProtocolExtensionContainer { { MDTConfiguration-ExtIEs } } OPTIONAL,
    ...
}

MDTConfiguration-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

MDTPLMNList ::= SEQUENCE (SIZE(1..maxnoofMDTPLMNs)) OF PLMN-Identity

MDTPLMNModificationList ::= SEQUENCE (SIZE(0..maxnoofMDTPLMNs)) OF PLMN-Identity

MeasuredResultsValue ::= CHOICE {
    uL-AngleOfArrival UL-AoA,
    uL-SRS-RSRP UL-SRS-RSRP,
    uL-RTOA UL-RTOA-Measurement,
    gNB-RxTxTimeDiff GNB-RxTxTimeDiff,
    choice-extension ProtocolIE-SingleContainer { { MeasuredResultsValue-ExtIEs } }
}

MeasuredResultsValue-ExtIEs F1AP-PROTOCOL-IES ::= {
    { ID id-ZoAInformation CRITICALITY reject TYPE ZoAInformation PRESENCE mandatory}|
    { ID id-MultipleULAoA CRITICALITY reject TYPE MultipleULAoA PRESENCE mandatory}|
    { ID id-UL-SRS-RSRPP CRITICALITY reject TYPE UL-SRS-RSRPP PRESENCE mandatory},
    ...
}

MeasurementsToActivate ::= BIT STRING (SIZE (8))

```

MUSIM-GapConfig ::= OCTET STRING

-- N

NA-Resource-Configuration-List ::= SEQUENCE (SIZE(1.. maxnoofHSNASlots)) OF NA-Resource-Configuration-Item

NA-Resource-Configuration-Item ::= SEQUENCE {
 nADownlink NADownlink OPTIONAL,
 nAUplink NAUplink OPTIONAL,
 nAFlexible NAFlexible OPTIONAL,
 iE-Extensions ProtocolExtensionContainer { { NA-Resource-Configuration-Item-ExtIEs} } OPTIONAL
 }

NA-Resource-Configuration-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
 ...
 }

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

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

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

Ncd-SSB-RedCapInitialBWP-SDT ::= OCTET STRING

Neighbour-Node-Cells-List ::= SEQUENCE (SIZE(1..maxnoofNeighbourNodeCellsIAB)) OF Neighbour-Node-Cells-List-Item

Neighbour-Node-Cells-List-Item ::= SEQUENCE{
 nRCGI NRCGI,
 gNB-CU-UE-F1AP-ID GNB-CU-UE-F1AP-ID OPTIONAL,
 gNB-DU-UE-F1AP-ID GNB-DU-UE-F1AP-ID OPTIONAL,
 peer-Parent-Node-Indicator ENUMERATED {true, ...} OPTIONAL,
 iAB-DU-Cell-Resource-Configuration-Mode-Info IAB-DU-Cell-Resource-Configuration-Mode-Info OPTIONAL,
 iAB-STC-Info IAB-STC-Info OPTIONAL,
 rACH-Config-Common RACH-Config-Common OPTIONAL,
 rACH-Config-Common-IAB RACH-Config-Common-IAB OPTIONAL,
 cSI-RS-Configuration OCTET STRING OPTIONAL,
 sR-Configuration OCTET STRING OPTIONAL,
 pDCCH-ConfigSIB1 OCTET STRING OPTIONAL,
 SCS-Common OCTET STRING OPTIONAL,
 iE-Extensions ProtocolExtensionContainer {{Neighbour-Node-Cells-List-Item-ExtIEs}} OPTIONAL
 }

Neighbour-Node-Cells-List-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
 ...
 }

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

NeedForGapsInfoNR ::= OCTET STRING

NeedForGapNCSGInfoNR ::= OCTET STRING

NeedForGapNCSGInfoEUTRA ::= OCTET STRING

```

Neighbour-Cell-Information-Item ::= SEQUENCE {
    nRCGI                      NRCGI,
    intendedTDD-DL-ULConfig    IntendedTDD-DL-ULConfig OPTIONAL,
    iE-Extensions              ProtocolExtensionContainer { { Neighbour-Cell-Information-ItemExtIEs } } OPTIONAL
}

Neighbour-Cell-Information-ItemExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

NeighbourNR-CellsForSON-List ::= SEQUENCE (SIZE(1.. maxNeighbourCellforSON)) OF NeighbourNR-CellsForSON-Item

NeighbourNR-CellsForSON-Item ::= SEQUENCE {
    nRCGI                      NRCGI,
    nR-ModeInfoRel16           NR-ModeInfoRel16 OPTIONAL,
    sSB-PositionsInBurst        SSB-PositionsInBurst OPTIONAL,
    nRPRACHConfig              NRPRACHConfig OPTIONAL,
    iE-Extensions              ProtocolExtensionContainer { { NeighbourNR-CellsForSON-Item-ExtIEs } } OPTIONAL,
    ...
}

NeighbourNR-CellsForSON-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

NGRANAllocationAndRetentionPriority ::= SEQUENCE {
    priorityLevel              PriorityLevel,
    pre-emptionCapability       Pre-emptionCapability,
    pre-emptionVulnerability    Pre-emptionVulnerability,
    iE-Extensions              ProtocolExtensionContainer { { NGRANAllocationAndRetentionPriority-ExtIEs } } OPTIONAL
}

NGRANAllocationAndRetentionPriority-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

NGRANHighAccuracyAccessPointPosition ::= SEQUENCE {
    latitude                   INTEGER (-2147483648.. 2147483647),
    longitude                  INTEGER (-2147483648.. 2147483647),
    altitude                   INTEGER (-64000..128000),
    uncertaintySemi-major      INTEGER (0..255),
    uncertaintySemi-minor      INTEGER (0..255),
    orientationOfMajorAxis     INTEGER (0..179),
    horizontalConfidence       INTEGER (0..100),
    uncertaintyAltitude        INTEGER (0..255),
    verticalConfidence         INTEGER (0..100),
    iE-Extensions              ProtocolExtensionContainer { { NGRANHighAccuracyAccessPointPosition-ExtIEs } } OPTIONAL
}

NGRANHighAccuracyAccessPointPosition-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

```

```

NID ::= BIT STRING (SIZE(44))

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

NR-CGI-List-For-Restart-Item ::= SEQUENCE {
    nRCGI          NRCGI,
    iE-Extensions  ProtocolExtensionContainer { { NR-CGI-List-For-Restart-ItemExtIEs } } OPTIONAL,
    ...
}

NR-CGI-List-For-Restart-ItemExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

NrofSymbolsExtended ::= ENUMERATED {n8, n10, n12, n14, ...}

NR-PRSBearInformation ::= SEQUENCE {
    nR-PRSBearInformationList  NR-PRSBearInformationList,
    lCStoGCSTranslationList    LCStoGCSTranslationList OPTIONAL,
    iE-Extensions              ProtocolExtensionContainer { { NR-PRSBearInformation-ExtIEs } } OPTIONAL
}

NR-PRSBearInformation-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

NR-PRSBearInformationList ::= SEQUENCE (SIZE(1.. maxnoofPRS-ResourceSets)) OF NR-PRSBearInformationItem

NR-PRSBearInformationItem ::= SEQUENCE {
    pRSResourceSetID  PRS-Resource-Set-ID,
    pRSAngleList      PRSAngleList,
    iE-Extensions     ProtocolExtensionContainer { { NR-PRSBearInformationItem-ExtIEs } } OPTIONAL
}

NR-PRSBearInformationItem-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

NR-TADV ::= INTEGER (0.. 7690)

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

NRPagingeDRXInformation ::= SEQUENCE {
    nrpaging-eDRX-Cycle-Idle  NRPaging-eDRX-Cycle-Idle,
    nrpaging-Time-Window      NRPaging-Time-Window OPTIONAL,
    iE-Extensions             ProtocolExtensionContainer { {NRPagingeDRXInformation-ExtIEs} } OPTIONAL,
    ...
}

NRPagingeDRXInformation-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {

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```

    ...
}

NRPaging-eDRX-Cycle-Idle ::= ENUMERATED {
    hfquarter, hfhalf, hf1, hf2, hf4,
    hf8, hf16, hf32, hf64, hf128, hf256, hf512, hf1024,
    ...
}

NRPaging-Time-Window ::= ENUMERATED {
    s1, s2, s3, s4, s5,
    s6, s7, s8, s9, s10,
    s11, s12, s13, s14, s15, s16,
    ...,
    s17, s18, s19, s20, s21,
    s22, s23, s24, s25, s26,
    s27, s28, s29, s30, s31, s32
}

NRPagingeDRXInformationforRRCINACTIVE ::= SEQUENCE {
    nrpaging-eDRX-Cycle-Inactive      NRPaging-eDRX-Cycle-Inactive,
    iE-Extensions                     ProtocolExtensionContainer { { NRPagingeDRXInformationforRRCINACTIVE-ExtIEs } } OPTIONAL,
    ...
}

NRPagingeDRXInformationforRRCINACTIVE-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

NRPaging-eDRX-Cycle-Inactive ::= ENUMERATED {
    hfquarter, hfhalf, hf1,
    ...
}

NonDynamic5QIDescriptor ::= SEQUENCE {
    fiveQI                INTEGER (0..255, ...),
    qosPriorityLevel       INTEGER (1..127)                OPTIONAL,
    averagingWindow        AveragingWindow                OPTIONAL,
    maxDataBurstVolume     MaxDataBurstVolume              OPTIONAL,
    iE-Extensions          ProtocolExtensionContainer { { NonDynamic5QIDescriptor-ExtIEs } } OPTIONAL
}

NonDynamic5QIDescriptor-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    { ID id-CNPacketDelayBudgetDownlink CRITICALITY ignore EXTENSION ExtendedPacketDelayBudget PRESENCE optional }|
    { ID id-CNPacketDelayBudgetUplink   CRITICALITY ignore EXTENSION ExtendedPacketDelayBudget PRESENCE optional },
    ...
}

NonDynamicPQIDescriptor ::= SEQUENCE {
    fiveQI                INTEGER (0..255, ...),
    qosPriorityLevel       INTEGER (1..8, ...)              OPTIONAL,
    averagingWindow        AveragingWindow                 OPTIONAL,
    maxDataBurstVolume     MaxDataBurstVolume              OPTIONAL,

```

```

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

NonDynamicPQIDescriptor-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

NonUPTrafficType ::= ENUMERATED {ue-associated, non-ue-associated, non-f1, bap-control-pdu,...}

NoofDownlinkSymbols ::= INTEGER (0..14)

NoofUplinkSymbols    ::= INTEGER (0..14)

Notification-Cause ::= ENUMERATED {fulfilled, not-fulfilled, ...}

NotificationControl ::= ENUMERATED {active, not-active, ...}

NotificationInformation ::= SEQUENCE {
    message-Identifier MessageIdentifier,
    serialNumber        SerialNumber,
    iE-Extensions       ProtocolExtensionContainer { { NotificationInformationExtIEs } } OPTIONAL,
    ...
}

NotificationInformationExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

NPNBroadcastInformation ::= CHOICE {
    sNPN-Broadcast-Information          NPN-Broadcast-Information-SNPN,
    pNI-NPN-Broadcast-Information       NPN-Broadcast-Information-PNI-NPN,
    choice-extension                     ProtocolIE-SingleContainer { {NPNBroadcastInformation-ExtIEs} }
}

NPNBroadcastInformation-ExtIEs F1AP-PROTOCOL-IES ::= {
    ...
}

NPN-Broadcast-Information-SNPN ::= SEQUENCE {
    broadcastSNPNID-List      BroadcastSNPN-ID-List,
    iE-Extension              ProtocolExtensionContainer { {NPN-Broadcast-Information-SNPN-ExtIEs} } OPTIONAL,
    ...
}

NPN-Broadcast-Information-SNPN-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

NPN-Broadcast-Information-PNI-NPN ::= SEQUENCE {
    broadcastPNI-NPN-ID-Information BroadcastPNI-NPN-ID-List,
    iE-Extension                    ProtocolExtensionContainer { {NPN-Broadcast-Information-PNI-NPN-ExtIEs} } OPTIONAL,
    ...
}

NPN-Broadcast-Information-PNI-NPN-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {

```

```

}
...

NPNSupportInfo ::= CHOICE {
    sNPN-Information      NID,
    choice-extension      ProtocolIE-SingleContainer { { NPNSupportInfo-ExtIEs } }
}

NPNSupportInfo-ExtIEs      F1AP-PROTOCOL-IES ::= {
    ...
}

NRCarrierList ::= SEQUENCE (SIZE(1..maxnoofNRSCSs)) OF NRCarrierItem

NRCarrierItem ::= SEQUENCE {
    carrierSCS              NRSCS,
    offsetToCarrier          INTEGER (0..2199, ...),
    carrierBandwidth        INTEGER (0..maxnoofPhysicalResourceBlocks, ...),
    iE-Extension            ProtocolExtensionContainer { {NRCarrierItem-ExtIEs} }      OPTIONAL,
    ...
}

NRCarrierItem-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

NRFreqInfo ::= SEQUENCE {
    nRARFCN                INTEGER (0..maxNRARFCN),
    sul-Information        SUL-Information      OPTIONAL,
    freqBandListNr         SEQUENCE (SIZE(1..maxnoofNrCellBands)) OF FreqBandNrItem,
    iE-Extensions          ProtocolExtensionContainer { { NRFreqInfoExtIEs} } OPTIONAL,
    ...
}

NRFreqInfoExtIEs          F1AP-PROTOCOL-EXTENSION ::= {
    { ID id-FrequencyShift7p5khz    CRITICALITY ignore  EXTENSION FrequencyShift7p5khz  PRESENCE optional },
    ...
}

NR CGI ::= SEQUENCE {
    pLMN-Identity          PLMN-Identity,
    nRCellIdentity         NRCellIdentity,
    iE-Extensions          ProtocolExtensionContainer { {NR CGI-ExtIEs} } OPTIONAL,
    ...
}

NR CGI-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

NR-Mode-Info ::= CHOICE {
    fDD                    FDD-Info,
    tDD                    TDD-Info,

```



```

    choice-extension          ProtocolIE-SingleContainer { { NR-Mode-Info-ExtIEs} }
}

NR-Mode-Info-ExtIEs F1AP-PROTOCOL-IES ::= {
    { ID id-NR-U          CRITICALITY ignore TYPE NR-U-Channel-Info-List PRESENCE mandatory},
    ...
}

NR-ModeInfoRel16 ::= CHOICE {
    fDD                      FDD-InfoRel16,
    tDD                      TDD-InfoRel16,
    choice-extension         ProtocolIE-SingleContainer { { NR-ModeInfoRel16-ExtIEs} }
}

NR-ModeInfoRel16-ExtIEs F1AP-PROTOCOL-IES ::= {
    ...
}

NRPRACHConfig ::= SEQUENCE {
    ulPRACHConfigList        NRPRACHConfigList                                OPTIONAL,
    sulPRACHConfigList        NRPRACHConfigList                                OPTIONAL,
    iE-Extension              ProtocolExtensionContainer { {NRPRACHConfig-ExtIEs} }  OPTIONAL,
    ...
}

NRPRACHConfig-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

NRCellIdentity ::= BIT STRING (SIZE(36))

NRNRB ::= ENUMERATED { nrb11, nrb18, nrb24, nrb25, nrb31, nrb32, nrb38, nrb51, nrb52, nrb65, nrb66, nrb78, nrb79, nrb93, nrb106, nrb107, nrb121,
nrb132, nrb133, nrb135, nrb160, nrb162, nrb189, nrb216, nrb217, nrb245, nrb264, nrb270, nrb273, ..., nrb33, nrb62, nrb124, nrb148, nrb248, nrb44,
nrb58, nrb92, nrb119, nrb188, nrb242}

NRPCI ::= INTEGER(0..1007)

NRPRACHConfigList ::= SEQUENCE (SIZE(0..maxnoofPRACHconfigs)) OF NRPRACHConfigItem

NRPRACHConfigItem ::= SEQUENCE {
    nRSCS                    NRSCS,
    prachFreqStartfromCarrier INTEGER (0..maxnoofPhysicalResourceBlocks-1, ...),
    prachFDM                  ENUMERATED {one, two, four, eight, ...},
    prachConfigIndex          INTEGER (0..255, ..., 256..262),
    ssb-perRACH-Occasion      ENUMERATED {oneEighth, oneFourth, oneHalf, one,
                                         two, four, eight, sixteen, ...},
    freqDomainLength          FreqDomainLength,
    zeroCorrelZoneConfig      INTEGER (0..15),
    iE-Extension              ProtocolExtensionContainer { { NRPRACHConfigItem-ExtIEs} }  OPTIONAL,
    ...
}

```

```

NRPRACHConfigItem-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

NRSCS ::= ENUMERATED { scs15, scs30, scs60, scs120, ..., scs480, scs960}

NRUERLFReportContainer ::= OCTET STRING

NR-U-Channel-Info-List ::= SEQUENCE (SIZE (1..maxnoofNR-UChannelIDs)) OF NR-U-Channel-Info-Item

NR-U-Channel-Info-Item ::= SEQUENCE {
    nr-U-channel-ID          INTEGER(1.. maxnoofNR-UChannelIDs,...),
    nr-ARFCN                 INTEGER (0..maxNRARFCN),
    bandwidth                ENUMERATED{mHz-10,mHz-20,mHz-40, mHz-60, mHz-80,...,mHz-100},
    iE-Extensions            ProtocolExtensionContainer { { NR-U-Channel-Info-List-ExtIEs } }    OPTIONAL,
    ...
}

NR-U-Channel-Info-List-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

NR-U-Channel-List ::= SEQUENCE (SIZE (1..maxnoofNR-UChannelIDs)) OF NR-U-Channel-Item

NR-U-Channel-Item ::= SEQUENCE {
    nr-U-ChannelID           INTEGER(1..maxnoofNR-UChannelIDs),
    channelOccupancyTimePercentageDL ChannelOccupancyTimePercentage,
    energyDetectionThreshold EnergyDetectionThreshold,
    iE-Extensions            ProtocolExtensionContainer { { NR-U-Channel-Item-ExtIEs} } OPTIONAL,
    ...
}

NR-U-Channel-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

NumberOfActiveUEs ::= INTEGER(0..16777215, ...)

NumberOfBroadcasts ::= INTEGER (0..65535)

NumberOfBroadcastRequest ::= INTEGER (0..65535)

NumberOfTRPRxTEG ::= ENUMERATED {two, three, four, six, eight, ...}

NumberOfTRPRxTxTEG ::= ENUMERATED {wo, three, four, six, eight, ...}

NumDLULSymbols ::= SEQUENCE {
    numDLSymbols            INTEGER (0..13, ...),
    numULSymbols            INTEGER (0..13, ...),
    iE-Extensions            ProtocolExtensionContainer { { NumDLULSymbols-ExtIEs} } OPTIONAL
}

```

```

}

NumDLULSymbols-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    { ID id-permutation    CRITICALITY ignore  EXTENSION Permutation    PRESENCE optional },
    ...
}

NRV2XServicesAuthorized ::= SEQUENCE {
    vehicleUE             VehicleUE                                OPTIONAL,
    pedestrianUE          PedestrianUE                            OPTIONAL,
    iE-Extensions         ProtocolExtensionContainer { {NRV2XServicesAuthorized-ExtIEs} } OPTIONAL
}

NRV2XServicesAuthorized-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

NRUESidelinkAggregateMaximumBitrate ::= SEQUENCE {
    uENRSidelinkAggregateMaximumBitrate BitRate,
    iE-Extensions         ProtocolExtensionContainer { {NRUESidelinkAggregateMaximumBitrate-ExtIEs} } OPTIONAL
}

NRUESidelinkAggregateMaximumBitrate-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

NZP-CSI-RS-ResourceID ::= INTEGER (0..191)

-- 0

OffsetToPointA ::= INTEGER (0..2199,...)

OnDemandPRS-Info ::= SEQUENCE {
    onDemandPRSRequestAllowed BIT STRING (SIZE (16)),
    allowedResourceSetPeriodicityValues BIT STRING (SIZE (24)) OPTIONAL,
    allowedPRSBandwidthValues BIT STRING (SIZE (64)) OPTIONAL,
    allowedResourceRepetitionFactorValues BIT STRING (SIZE (8)) OPTIONAL,
    allowedResourceNumberOfSymbolsValues BIT STRING (SIZE (8)) OPTIONAL,
    allowedCombSizeValues BIT STRING (SIZE (8)) OPTIONAL,
    iE-Extensions ProtocolExtensionContainer { { OnDemandPRS-Info-ExtIEs} } OPTIONAL,
    ...
}

OnDemandPRS-Info-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

-- P

PacketDelayBudget ::= INTEGER (0..1023, ...)

PacketErrorRate ::= SEQUENCE {

```

```

    pER-Scalar      PER-Scalar,
    pER-Exponent    PER-Exponent,
    iE-Extensions   ProtocolExtensionContainer { {PacketErrorRate-ExtIEs} } OPTIONAL,
    ...
}

PacketErrorRate-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

PER-Scalar ::= INTEGER (0..9, ...)
PER-Exponent ::= INTEGER (0..9, ...)

PagingCell-Item ::= SEQUENCE {
    nRCGI          NRCGI,
    iE-Extensions  ProtocolExtensionContainer { { PagingCell-ItemExtIEs } } OPTIONAL
}

PagingCell-ItemExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    { ID id-LastUsedCellIndication          CRITICALITY ignore EXTENSION LastUsedCellIndication          PRESENCE optional }|
    { ID id-PEISubgroupingSupportIndication CRITICALITY ignore EXTENSION PEISubgroupingSupportIndication PRESENCE optional },
    ...
}

PagingDRX ::= ENUMERATED {
    v32,
    v64,
    v128,
    v256,
    ...
}

PagingIdentity ::= CHOICE {
    rANUEPagingIdentity RANUEPagingIdentity,
    cNUEPagingIdentity  CNU EPagingIdentity,
    choice-extension    ProtocolIE-SingleContainer { { PagingIdentity-ExtIEs } }
}

PagingCause ::= ENUMERATED { voice, ...}

PagingIdentity-ExtIEs F1AP-PROTOCOL-IES ::= {
    ...
}

PagingOrigin ::= ENUMERATED { non-3gpp, ...}

PagingPriority ::= ENUMERATED { priolevel1, priolevel2, priolevel3, priolevel4, priolevel5, priolevel6, priolevel7, priolevel8,...}

PEIPSAssistanceInfo ::= SEQUENCE {
    cNSubgroupID      CNSubgroupID,
    iE-Extensions     ProtocolExtensionContainer { { PEIPSAssistanceInfo-ExtIEs } } OPTIONAL
}

PEIPSAssistanceInfo-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {

```

```

    ...
}

RelativePathDelay ::= CHOICE {
    k0          INTEGER (0..16351),
    k1          INTEGER (0..8176),
    k2          INTEGER (0..4088),
    k3          INTEGER (0..2044),
    k4          INTEGER (0..1022),
    k5          INTEGER (0..511),
    choice-extension ProtocolIE-SingleContainer { { RelativePathDelay-ExtIEs } }
}

RelativePathDelay-ExtIEs F1AP-PROTOCOL-IES ::= {
    ...
}

Parent-IAB-Nodes-NA-Resource-Configuration-List ::= SEQUENCE (SIZE(1..maxnoofHSNASlots)) OF Parent-IAB-Nodes-NA-Resource-Configuration-Item

Parent-IAB-Nodes-NA-Resource-Configuration-Item ::= SEQUENCE {
    nADownlink          NADownlink          OPTIONAL,
    nAUplink            NAUplink            OPTIONAL,
    nAFlexible          NAFlexible          OPTIONAL,
    iE-Extensions       ProtocolExtensionContainer { { Parent-IAB-Nodes-NA-Resource-Configuration-Item-ExtIEs } } OPTIONAL
}

Parent-IAB-Nodes-NA-Resource-Configuration-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

PartialSuccessCell ::= SEQUENCE {
    broadcastCellList   BroadcastCellList,
    iE-Extensions       ProtocolExtensionContainer { { PartialSuccessCell-ExtIEs } } OPTIONAL,
    ...
}

PartialSuccessCell-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

PathlossReferenceInfo ::= SEQUENCE {
    pathlossReferenceSignal PathlossReferenceSignal,
    iE-Extensions           ProtocolExtensionContainer { { PathlossReferenceInfo-ExtIEs } } OPTIONAL
}

PathlossReferenceInfo-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

PathlossReferenceSignal ::= CHOICE {
    SSB,
    dL-PRS,
    choice-extension ProtocolIE-SingleContainer {{PathlossReferenceSignal-ExtIEs }}
}

```

```
PathlossReferenceSignal-ExtIEs F1AP-PROTOCOL-IES ::= {
    ...
}

PathSwitchConfiguration ::= SEQUENCE {
    targetRelayUEID          BIT STRING(SIZE(24)),
    remoteUELocalID          RemoteUELocalID,
    t420                     ENUMERATED {ms50, ms100, ms150, ms200, ms500, ms1000, ms2000, ms10000},
    iE-Extensions            ProtocolExtensionContainer { { PathSwitchConfiguration-ExtIEs } } OPTIONAL,
    ...
}

PathSwitchConfiguration-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

PC5QoSFlowIdentifier ::= INTEGER (1..2048)

PC5-QoS-Characteristics ::= CHOICE {
    non-Dynamic-PQI          NonDynamicPQIDescriptor,
    dynamic-PQI              DynamicPQIDescriptor,
    choice-extension         ProtocolIE-SingleContainer { { PC5-QoS-Characteristics-ExtIEs } }
}

PC5-QoS-Characteristics-ExtIEs F1AP-PROTOCOL-IES ::= {
    ...
}

PC5QoSParameters ::= SEQUENCE {
    pC5-QoS-Characteristics PC5-QoS-Characteristics,
    pC5-QoS-Flow-Bit-Rates  PC5FlowBitRates OPTIONAL,
    iE-Extensions           ProtocolExtensionContainer { { PC5QoSParameters-ExtIEs } } OPTIONAL,
    ...
}

PC5QoSParameters-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

PC5FlowBitRates ::= SEQUENCE {
    guaranteedFlowBitRate BitRate,
    maximumFlowBitRate   BitRate,
    iE-Extensions         ProtocolExtensionContainer { { PC5FlowBitRates-ExtIEs } } OPTIONAL,
    ...
}

PC5FlowBitRates-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

PC5RLCChannelID ::= INTEGER (1..512, ...)

PC5RLCChannelQoSInformation ::= CHOICE {
```

```

    pC5RLCChannelQoS          QoSFlowLevelQoSParameters,
    pC5ControlPlaneTrafficType ENUMERATED {srb1,srb2,...},
    choice-extension          ProtocolIE-SingleContainer { { PC5RLCChannelQoSInformation-ExtIEs } }
}

PC5RLCChannelQoSInformation-ExtIEs F1AP-PROTOCOL-IES ::= {
    ...
}

PC5RLCChannelToBeSetupList ::= SEQUENCE (SIZE(1.. maxnoofPC5RLCChannels)) OF PC5RLCChannelToBeSetupItem

PC5RLCChannelToBeSetupItem ::= SEQUENCE {
    pC5RLCChannelID          PC5RLCChannelID,
    remoteUELocalID          RemoteUELocalID          OPTIONAL,
    pC5RLCChannelQoSInformation PC5RLCChannelQoSInformation,
    rLCMode                  RLCMode,
    iE-Extensions            ProtocolExtensionContainer { { PC5RLCChannelToBeSetupItem-ExtIEs } } OPTIONAL,
    ...
}

PC5RLCChannelToBeSetupItem-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

PC5RLCChannelToBeModifiedList ::= SEQUENCE (SIZE(1.. maxnoofPC5RLCChannels)) OF PC5RLCChannelToBeModifiedItem

PC5RLCChannelToBeModifiedItem ::= SEQUENCE {
    pC5RLCChannelID          PC5RLCChannelID,
    remoteUELocalID          RemoteUELocalID          OPTIONAL,
    pC5RLCChannelQoSInformation PC5RLCChannelQoSInformation OPTIONAL,
    rLCMode                  RLCMode          OPTIONAL,
    iE-Extensions            ProtocolExtensionContainer { { PC5RLCChannelToBeModifiedItem-ExtIEs } } OPTIONAL,
    ...
}

PC5RLCChannelToBeModifiedItem-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

PC5RLCChannelToBeReleasedList ::= SEQUENCE (SIZE(1.. maxnoofPC5RLCChannels)) OF PC5RLCChannelToBeReleasedItem

PC5RLCChannelToBeReleasedItem ::= SEQUENCE {
    pC5RLCChannelID          PC5RLCChannelID,
    remoteUELocalID          RemoteUELocalID          OPTIONAL,
    iE-Extensions            ProtocolExtensionContainer { { PC5RLCChannelToBeReleasedItem-ExtIEs } } OPTIONAL,
    ...
}

PC5RLCChannelToBeReleasedItem-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

PC5RLCChannelSetupList ::= SEQUENCE (SIZE(1.. maxnoofPC5RLCChannels)) OF PC5RLCChannelSetupItem

```

```

PC5RLCChannelSetupItem ::= SEQUENCE {
    pC5RLCChannelID          PC5RLCChannelID,
    remoteUELocalID          RemoteUELocalID          OPTIONAL,
    iE-Extensions            ProtocolExtensionContainer { { PC5RLCChannelSetupItem-ExtIEs } } OPTIONAL,
    ...
}

PC5RLCChannelSetupItem-ExtIEs  F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

PC5RLCChannelFailedToBeSetupList ::= SEQUENCE (SIZE(1.. maxnoofPC5RLCChannels)) OF PC5RLCChannelFailedToBeSetupItem

PC5RLCChannelFailedToBeSetupItem ::= SEQUENCE {
    pC5RLCChannelID          PC5RLCChannelID,
    remoteUELocalID          RemoteUELocalID          OPTIONAL,
    cause                    Cause                    OPTIONAL,
    iE-Extensions            ProtocolExtensionContainer { { PC5RLCChannelFailedToBeSetupItem-ExtIEs } } OPTIONAL,
    ...
}

PC5RLCChannelFailedToBeSetupItem-ExtIEs  F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

PC5RLCChannelModifiedList ::= SEQUENCE (SIZE(1.. maxnoofPC5RLCChannels)) OF PC5RLCChannelModifiedItem

PC5RLCChannelModifiedItem ::= SEQUENCE {
    pC5RLCChannelID          PC5RLCChannelID,
    remoteUELocalID          RemoteUELocalID          OPTIONAL,
    iE-Extensions            ProtocolExtensionContainer { { PC5RLCChannelModifiedItem-ExtIEs } } OPTIONAL,
    ...
}

PC5RLCChannelModifiedItem-ExtIEs  F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

PC5RLCChannelFailedToBeModifiedList ::= SEQUENCE (SIZE(1.. maxnoofPC5RLCChannels)) OF PC5RLCChannelFailedToBeModifiedItem

PC5RLCChannelFailedToBeModifiedItem ::= SEQUENCE {
    pC5RLCChannelID          PC5RLCChannelID,
    remoteUELocalID          RemoteUELocalID          OPTIONAL,
    cause                    Cause                    OPTIONAL,
    iE-Extensions            ProtocolExtensionContainer { { PC5RLCChannelFailedToBeModifiedItem-ExtIEs } } OPTIONAL,
    ...
}

PC5RLCChannelFailedToBeModifiedItem-ExtIEs  F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

PC5RLCChannelRequiredToBeModifiedList ::= SEQUENCE (SIZE(1.. maxnoofPC5RLCChannels)) OF PC5RLCChannelRequiredToBeModifiedItem

```



```

PC5RLCChannelRequiredToBeModifiedItem ::= SEQUENCE {
    pC5RLCChannelID          PC5RLCChannelID,
    remoteUELocalID          RemoteUELocalID          OPTIONAL,
    iE-Extensions            ProtocolExtensionContainer { { PC5RLCChannelRequiredToBeModifiedItem-ExtIEs } } OPTIONAL,
    ...
}

PC5RLCChannelRequiredToBeModifiedItem-ExtIEs    F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

PC5RLCChannelRequiredToBeReleasedList ::= SEQUENCE (SIZE(1.. maxnoofPC5RLCChannels)) OF PC5RLCChannelRequiredToBeReleasedItem

PC5RLCChannelRequiredToBeReleasedItem ::= SEQUENCE {
    pC5RLCChannelID          PC5RLCChannelID,
    remoteUELocalID          RemoteUELocalID          OPTIONAL,
    iE-Extensions            ProtocolExtensionContainer { { PC5RLCChannelRequiredToBeReleasedItem-ExtIEs } } OPTIONAL,
    ...
}

PC5RLCChannelRequiredToBeReleasedItem-ExtIEs    F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

PDCCH-BlindDetectionSCG ::= OCTET STRING

PDCMeasurementPeriodicity ::= ENUMERATED
{ms80, ms120, ms160, ms240, ms320, ms480, ms640, ms1024, ms1280, ms2048, ms2560, ms5120, ...}

PDCMeasurementQuantities ::= SEQUENCE (SIZE (1.. maxnoofMeasPDC)) OF ProtocolIE-SingleContainer { {PDCMeasurementQuantities-ItemIEs} }

PDCMeasurementQuantities-ItemIEs F1AP-PROTOCOL-IES ::= {
    { ID id-PDCMeasurementQuantities-Item    CRITICALITY reject    TYPE PDCMeasurementQuantities-Item    PRESENCE mandatory}
}

PDCMeasurementQuantities-Item ::= SEQUENCE {
    pDCmeasurementQuantitiesValue          PDCMeasurementQuantitiesValue,
    iE-Extensions                          ProtocolExtensionContainer { { PDCMeasurementQuantitiesValue-ExtIEs} } OPTIONAL
}

PDCMeasurementQuantitiesValue-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

PDCMeasurementQuantitiesValue ::= ENUMERATED {
    nr-pdc-tadv,
    gNB-rx-tx,
    ...
}

PDCMeasurementResult ::= SEQUENCE {
    pDCMeasuredResultsList          PDCMeasuredResultsList,
    iE-Extensions                  ProtocolExtensionContainer { { PDCMeasurementResult-ExtIEs} } OPTIONAL
}

```

```

PDCMeasurementResult-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

PDCMeasuredResultsList ::= SEQUENCE (SIZE(1..maxnoofMeasPDC)) OF PDCMeasuredResults-Item

PDCMeasuredResults-Item ::= SEQUENCE {
    pDCMeasuredResults-Value      PDCMeasuredResults-Value,
    iE-Extensions                 ProtocolExtensionContainer {{ PDCMeasuredResults-Item-ExtIEs }} OPTIONAL
}

PDCMeasuredResults-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

PDCMeasuredResults-Value ::= CHOICE {
    pDC-TADV-NR                PDC-TADV-NR,
    pDC-RxTxTimeDiff           PDC-RxTxTimeDiff,
    choice-extension            ProtocolIE-SingleContainer { { PDCMeasuredResults-Value-ExtIEs } }
}

PDCMeasuredResults-Value-ExtIEs F1AP-PROTOCOL-IES ::= {
    ...
}

PDCReportType ::= ENUMERATED {
    onDemand,
    periodic,
    ...
}

PDC-RxTxTimeDiff ::= INTEGER (0..61565, ...)

PDC-TADV-NR ::= INTEGER (0..62500, ...)

PDCP-SN ::= INTEGER (0..4095)

PDCPSNLength ::= ENUMERATED { twelve-bits, eighteen-bits, ... }

PDUSessionID ::= INTEGER (0..255)

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

ReportingPeriodicityValue ::= INTEGER (0..512, ...)

Periodicity ::= INTEGER (0..640000, ...)

PeriodicitySRS ::= ENUMERATED { ms0p125, ms0p25, ms0p5, ms0p625, ms1, ms1p25, ms2, ms2p5, ms4, ms5, ms8, ms10, ms16, ms20, ms32, ms40, ms64, ms80,
ms160, ms320, ms640, ms1280, ms2560, ms5120, ms10240, ... }

PeriodicityList ::= SEQUENCE (SIZE(1.. maxnoSRS-ResourcePerSet)) OF PeriodicityList-Item

PeriodicityList-Item ::= SEQUENCE {

```

```

    periodicitySRS          PeriodicitySRS,
    iE-Extensions          ProtocolExtensionContainer { { PeriodicityList-ItemExtIEs} } OPTIONAL
}

PeriodicityList-ItemExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

Permutation ::= ENUMERATED {dfu, ufd, ...}

Ph-InfoMCG ::= OCTET STRING

Ph-InfoSCG ::= OCTET STRING

PLMN-Identity ::= OCTET STRING (SIZE(3))

PlayoutDelayForMediaStartup ::= OCTET STRING

PortNumber ::= BIT STRING (SIZE (16))

PosAssistance-Information ::= OCTET STRING

PosAssistanceInformationFailureList ::= OCTET STRING

PosBroadcast ::= ENUMERATED {
    start,
    stop,
    ...
}

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

PositioningBroadcastCells ::= SEQUENCE (SIZE (1..maxnoBcastCell)) OF NRCGI

PosMeasGapPreConfigList ::= SEQUENCE {
    posMeasGapPreConfigToAddModList OCTET STRING OPTIONAL,
    posMeasGapPreConfigToReleaseList OCTET STRING OPTIONAL,
    iE-Extensions ProtocolExtensionContainer { { PosMeasGapPreConfigList-ExtIEs} } OPTIONAL
}

PosMeasGapPreConfigList-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

MeasurementPeriodicity ::= ENUMERATED
{ms120, ms240, ms480, ms640, ms1024, ms2048, ms5120, ms10240, min1, min6, min12, min30, ..., ms20480, ms40960, extended }

MeasurementPeriodicityExtended ::= ENUMERATED {ms160, ms320, ms1280, ms2560, ms61440, ms81920, ms368640, ms737280, ms1843200, ...}

PosMeasurementPeriodicityNR-AoA ::= ENUMERATED {

```

```

ms160,
ms320,
ms640,
ms1280,
ms2560,
ms5120,
ms10240,
ms20480,
ms40960,
ms61440,
ms81920,
ms368640,
ms737280,
ms1843200,
...
}

PosMeasurementQuantities ::= SEQUENCE (SIZE(1.. maxnoofPosMeas)) OF PosMeasurementQuantities-Item

PosMeasurementQuantities-Item ::= SEQUENCE {
    posMeasurementType      PosMeasurementType,
    timingReportingGranularityFactor  INTEGER (0..5) OPTIONAL,
    iE-Extensions            ProtocolExtensionContainer { { PosMeasurementQuantities-ItemExtIEs } } OPTIONAL
}

PosMeasurementQuantities-ItemExtIEs  F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

PosMeasurementResult ::= SEQUENCE (SIZE (1.. maxnoofPosMeas)) OF PosMeasurementResultItem

PosMeasurementResultItem ::= SEQUENCE {
    measuredResultsValue      MeasuredResultsValue,
    timeStamp                  TimeStamp,
    measurementQuality          TRPMeasurementQuality  OPTIONAL,
    measurementBeamInfo         MeasurementBeamInfo     OPTIONAL,
    iE-Extensions              ProtocolExtensionContainer { { PosMeasurementResultItemExtIEs } }  OPTIONAL
}

PosMeasurementResultItemExtIEs  F1AP-PROTOCOL-EXTENSION ::= {
    { ID id-ARP-ID              CRITICALITY ignore EXTENSION ARP-ID              PRESENCE optional}|
    { ID id-SRSResourcetype      CRITICALITY ignore EXTENSION SRSResourcetype    PRESENCE optional}|
    { ID id-LoS-NLoSInformation  CRITICALITY ignore EXTENSION LoS-NLoSInformation PRESENCE optional },
    ...
}

PosMeasurementResultList ::= SEQUENCE (SIZE(1.. maxNoOfMeasTRPs)) OF PosMeasurementResultList-Item

PosMeasurementResultList-Item ::= SEQUENCE {
    posMeasurementResult      PosMeasurementResult,
    trPID                      TRPID,
    iE-Extensions              ProtocolExtensionContainer { { PosMeasurementResultList-ItemExtIEs } } OPTIONAL
}

```

```

PosMeasurementResultList-ItemExtIEs      F1AP-PROTOCOL-EXTENSION ::= {
    { ID id-NRCGI    CRITICALITY ignore EXTENSION NRCGI      PRESENCE optional },
    ...
}

PosMeasurementType ::= ENUMERATED {
    gnb-rx-tx,
    ul-srs-rsrp,
    ul-aoa,
    ul-rtoa,
    ...,
    multiple-ul-aoa,
    ul-srs-rsrpp
}

PosReportCharacteristics ::= ENUMERATED {
    ondemand,
    periodic,
    ...
}

PosResourceSetType ::= CHOICE {
    periodic           PosResourceSetTypePR,
    semi-persistent   PosResourceSetTypeSP,
    aperiodic         PosResourceSetTypeAP,
    choice-extension   ProtocolIE-SingleContainer {{ PosResourceSetType-ExtIEs }}
}

PosResourceSetType-ExtIEs F1AP-PROTOCOL-IES ::= {
    ...
}

PosResourceSetTypePR ::= SEQUENCE {
    posperiodicSet      ENUMERATED{true, ...},
    iE-Extensions       ProtocolExtensionContainer { { PosResourceSetTypePR-ExtIEs} }    OPTIONAL
}

PosResourceSetTypePR-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

PosResourceSetTypeSP ::= SEQUENCE {
    possemi-persistentSet      ENUMERATED{true, ...},
    iE-Extensions              ProtocolExtensionContainer { { PosResourceSetTypeSP-ExtIEs} }    OPTIONAL
}

PosResourceSetTypeSP-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

PosResourceSetTypeAP ::= SEQUENCE {
    sRSResourceTrigger-List      INTEGER(1..3),
    iE-Extensions                ProtocolExtensionContainer { { PosResourceSetTypeAP-ExtIEs} }    OPTIONAL
}

```

```

}

PosResourceSetTypeAP-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

PosSITypeList ::= SEQUENCE (SIZE(1.. maxnoofPosSITypes)) OF PosSIType-Item
PosSIType-Item ::= SEQUENCE {
    posSIType          PosSIType,
    iE-Extensions      ProtocolExtensionContainer { { PosSIType-ItemExtIEs } } OPTIONAL
}

PosSIType-ItemExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

PosSIType ::= INTEGER (1..32, ...)

PosSRSResourceID-List ::= SEQUENCE (SIZE (1..maxnoSRS-PosResourcePerSet)) OF SRSPosResourceID

PosSRSResource-Item ::= SEQUENCE {
    srs-PosResourceID          SRSPosResourceID,
    transmissionCombPos        TransmissionCombPos,
    startPosition               INTEGER (0..13),
    nrofSymbols                 ENUMERATED {n1, n2, n4, n8, n12},
    freqDomainShift             INTEGER (0..268),
    c-SRS                       INTEGER (0..63),
    groupOrSequenceHopping      ENUMERATED { neither, groupHopping, sequenceHopping },
    resourceTypePos             ResourceTypePos,
    sequenceId                  INTEGER (0.. 65535),
    spatialRelationPos          SpatialRelationPos OPTIONAL,
    iE-Extensions               ProtocolExtensionContainer { { PosSRSResource-Item-ExtIEs } } OPTIONAL
}

PosSRSResource-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

PosSRSResource-List ::= SEQUENCE (SIZE (1..maxnoSRS-PosResources)) OF PosSRSResource-Item

PosSRSResourceSet-Item ::= SEQUENCE {
    possrsResourceSetID        INTEGER(0..15),
    possrsResourceID-List      PosSRSResourceID-List,
    posresourceSetType          PosResourceSetType,
    iE-Extensions               ProtocolExtensionContainer { { PosSRSResourceSet-Item-ExtIEs } } OPTIONAL
}

PosSRSResourceSet-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

PosSRSResourceSet-List ::= SEQUENCE (SIZE (1..maxnoSRS-PosResourceSets)) OF PosSRSResourceSet-Item

PrimaryPathIndication ::= ENUMERATED {

```

```
    true,
    false,
    ...
}

Pre-emptionCapability ::= ENUMERATED {
    shall-not-trigger-pre-emption,
    may-trigger-pre-emption
}

Pre-emptionVulnerability ::= ENUMERATED {
    not-pre-emptable,
    pre-emptable
}

Preconfigured-measurement-GAP-Request ::= ENUMERATED {true, ...}

PriorityLevel ::= INTEGER { spare (0), highest (1), lowest (14), no-priority (15) } (0..15)

ProtectedEUTRAResourceIndication ::= OCTET STRING

Protected-EUTRA-Resources-Item ::= SEQUENCE {
    spectrumSharingGroupID SpectrumSharingGroupID,
    eUTRACells-List EUTRACells-List,
    iE-Extensions ProtocolExtensionContainer { { Protected-EUTRA-Resources-ItemExtIEs } } OPTIONAL
}

Protected-EUTRA-Resources-ItemExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

PRSConfiguration ::= SEQUENCE {
    pRSResourceSet-List PRSResourceSet-List,
    iE-Extensions ProtocolExtensionContainer { { PRSConfiguration-ExtIEs } } OPTIONAL
}

PRSConfiguration-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

PRSInformationPos ::= SEQUENCE {
    pRS-IDPos INTEGER(0..255),
    pRS-Resource-Set-IDPos INTEGER(0..7),
    pRS-Resource-IDPos INTEGER(0..63) OPTIONAL,
    iE-Extensions ProtocolExtensionContainer { { PRSInformationPos-ExtIEs } } OPTIONAL
}

PRSInformationPos-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

PRS-Measurement-Info-List ::= SEQUENCE (SIZE(1..maxFreqLayers)) OF PRS-Measurement-Info-List-Item

PRS-Measurement-Info-List-Item ::= SEQUENCE {
```

```

    pointA                INTEGER (0..3279165),
    measPRSPeriodicity    ENUMERATED {ms20, ms40, ms80, ms160, ...},
    measPRSOffset         INTEGER (0..159, ...),
    measurementPRSLength  ENUMERATED {ms1dot5, ms3, ms3dot5, ms4, ms5dot5, ms6, ms10, ms20},
    iE-Extensions         ProtocolExtensionContainer { { PRS-Measurement-Info-List-Item-ExtIEs } } OPTIONAL,
    ...
}

PRS-Measurement-Info-List-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

Potential-SpCell-Item ::= SEQUENCE {
    potential-SpCell-ID    NRCGI ,
    iE-Extensions         ProtocolExtensionContainer { { Potential-SpCell-ItemExtIEs } } OPTIONAL,
    ...
}

Potential-SpCell-ItemExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

PRSAngleList ::= SEQUENCE (SIZE(1.. maxnoofPRS-ResourcesPerSet)) OF PRSAngleItem

PRSAngleItem ::= SEQUENCE {
    nR-PRS-Azimuth        INTEGER (0..359),
    nR-PRS-Azimuth-fine   INTEGER (0..9) OPTIONAL,
    nR-PRS-Elevation      INTEGER (0..180) OPTIONAL,
    nR-PRS-Elevation-fine INTEGER (0..9) OPTIONAL,
    iE-Extensions         ProtocolExtensionContainer { { PRSAngleItem-ItemExtIEs } } OPTIONAL
}

PRSAngleItem-ItemExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    { ID id-PRS-Resource-ID CRITICALITY ignore EXTENSION PRS-Resource-ID PRESENCE optional },
    ...
}

PRConfigRequestType ::= ENUMERATED {configure, off, ...}

PRSMuting ::= SEQUENCE {
    pRSMutingOption1      PRSMutingOption1      OPTIONAL,
    pRSMutingOption2      PRSMutingOption2      OPTIONAL,
    iE-Extensions         ProtocolExtensionContainer { { PRSMuting-ExtIEs } } OPTIONAL
}

PRSMuting-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

PRSMutingOption1 ::= SEQUENCE {
    mutingPattern          DL-PRSMutingPattern,
    mutingBitRepetitionFactor ENUMERATED{rf1, rf2, rf4, rf8, ...},

```



```

    iE-Extensions          ProtocolExtensionContainer { { PRSMutingOption1-ExtIEs } } OPTIONAL
  }

  PRSMutingOption1-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
  }

  PRSMutingOption2 ::= SEQUENCE {
    mutingPattern           DL-PRSMutingPattern,
    iE-Extensions          ProtocolExtensionContainer { { PRSMutingOption2-ExtIEs } } OPTIONAL
  }

  PRSMutingOption2-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
  }

  PRS-Resource-ID ::= INTEGER (0..63)

  PRSResource-List ::= SEQUENCE (SIZE (1..maxnoofPRSresources)) OF PRSResource-Item

  PRSResource-Item ::= SEQUENCE {
    pPRSResourceID          PRS-Resource-ID,
    sequenceID              INTEGER(0..4095),
    rEOffset                INTEGER(0..11,...),
    resourceSlotOffset      INTEGER(0..511),
    resourceSymbolOffset    INTEGER(0..12),
    qCLInfo                 PRSResource-QCLInfo OPTIONAL,
    iE-Extensions          ProtocolExtensionContainer { { PRSResource-Item-ExtIEs } } OPTIONAL
  }

  PRSResource-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
  }

  PRSResource-QCLInfo ::= CHOICE {
    qCLSourceSSB            PRSResource-QCLSourceSSB,
    qCLSourcePRS            PRSResource-QCLSourcePRS,
    choice-extension        ProtocolIE-SingleContainer { { PRSResource-QCLInfo-ExtIEs } }
  }

  PRSResource-QCLInfo-ExtIEs F1AP-PROTOCOL-IES ::= {
    ...
  }

  PRSResource-QCLSourceSSB ::= SEQUENCE {
    pCI-NR                  INTEGER(0..1007),
    sSB-Index               SSB-Index OPTIONAL,
    iE-Extensions          ProtocolExtensionContainer { { PRSResource-QCLSourceSSB-ExtIEs } } OPTIONAL,
    ...
  }

  PRSResource-QCLSourceSSB-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
  }

```

```

PRSResource-QCLSourcePRS ::= SEQUENCE {
    qCLSourcePRSResourceSetID PRS-Resource-Set-ID,
    qCLSourcePRSResourceID PRS-Resource-ID OPTIONAL,
    iE-Extensions ProtocolExtensionContainer { { PRSResource-QCLSourcePRS-ExtIEs } } OPTIONAL
}

PRSResource-QCLSourcePRS-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

PRS-Resource-Set-ID ::= INTEGER(0..7)

PRSResourceSet-List ::= SEQUENCE (SIZE (1.. maxnoofPRSresourceSets)) OF PRSResourceSet-Item
PRSResourceSet-Item ::= SEQUENCE {
    pRSResourceSetID PRS-Resource-Set-ID,
    subcarrierSpacing ENUMERATED{kHz15, kHz30, kHz60, kHz120, ...},
    pRSbandwidth INTEGER(1..63),
    startPRB INTEGER(0..2176),
    pointA INTEGER (0..3279165),
    combSize ENUMERATED{n2, n4, n6, n12, ...},
    cPType ENUMERATED{normal, extended, ...},
    resourceSetPeriodicity ENUMERATED{n4, n5, n8, n10, n16, n20, n32, n40, n64, n80, n160, n320, n640, n1280, n2560, n5120, n10240, n20480, n40960,
n81920, ..., n128, n256, n512},
    resourceSetSlotOffset INTEGER(0..81919, ...),
    resourceRepetitionFactor ENUMERATED{rf1, rf2, rf4, rf6, rf8, rf16, rf32, ...},
    resourceTimeGap ENUMERATED{tg1, tg2, tg4, tg8, tg16, tg32, ...},
    resourceNumberOfSymbols ENUMERATED{n2, n4, n6, n12, ...},
    pRSMuting PRSMuting OPTIONAL,
    pRSResourceTransmitPower INTEGER(-60..50),
    pRSResource-List PRSResource-List,
    iE-Extensions ProtocolExtensionContainer { { PRSResourceSet-Item-ExtIEs } } OPTIONAL
}

PRSResourceSet-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

PRSTransmissionOffIndication ::= CHOICE {
    pRSTransmissionOffPerTRP NULL,
    pRSTransmissionOffPerResourceSet PRSTransmissionOffPerResourceSet,
    pRSTransmissionOffPerResource PRSTransmissionOffPerResource,
    choice-extension ProtocolIE-SingleContainer { { PRSTransmissionOffIndication-ExtIEs } }
}

PRSTransmissionOffIndication-ExtIEs F1AP-PROTOCOL-IES ::= {
    ...
}

PRSTransmissionOffPerResource ::= SEQUENCE (SIZE (1..maxnoofPRSresourceSets)) OF PRSTransmissionOffPerResource-Item

PRSTransmissionOffPerResource-Item ::= SEQUENCE {
    pRSResourceSetID PRS-Resource-Set-ID,
    pRSTransmissionOffIndicationPerResourceList SEQUENCE (SIZE(1.. maxnoofPRSresources)) OF PRSTransmissionOffIndicationPerResource-Item,
    iE-Extensions ProtocolExtensionContainer { { PRSTransmissionOffPerResource-Item-ExtIEs } } OPTIONAL,

```

```

    ...
}

PRSTransmissionOffPerResource-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

PRSTransmissionOffIndicationPerResource-Item ::= SEQUENCE {
    pRSResourceID          PRS-Resource-ID,
    iE-Extensions          ProtocolExtensionContainer { { PRSTransmissionOffIndicationPerResource-Item-ExtIEs } } OPTIONAL,
    ...
}

PRSTransmissionOffIndicationPerResource-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

PRSTransmissionOffInformation ::= SEQUENCE {
    pRSTransmissionOffIndication PRSTransmissionOffIndication,
    iE-Extensions                ProtocolExtensionContainer { { PRSTransmissionOffInformation-ExtIEs } } OPTIONAL,
    ...
}

PRSTransmissionOffInformation-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

PRSTransmissionOffPerResourceSet ::= SEQUENCE (SIZE (1..maxnoofPRSresourceSets)) OF PRSTransmissionOffPerResourceSet-Item

PRSTransmissionOffPerResourceSet-Item ::= SEQUENCE {
    pRSResourceSetID          PRS-Resource-Set-ID,
    iE-Extensions             ProtocolExtensionContainer { { PRSTransmissionOffPerResourceSet-Item-ExtIEs } } OPTIONAL,
    ...
}

PRSTransmissionOffPerResourceSet-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

PWS-Failed-NR-CGI-Item ::= SEQUENCE {
    nRCGI                    NRCGI,
    numberOfBroadcasts        NumberOfBroadcasts,
    iE-Extensions             ProtocolExtensionContainer { { PWS-Failed-NR-CGI-ItemExtIEs } } OPTIONAL,
    ...
}

PWS-Failed-NR-CGI-ItemExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

PWSSystemInformation ::= SEQUENCE {
    sIBtype                  SIBtype-PWS,
    sIBmessage                OCTET STRING,

```

```

    iE-Extensions      ProtocolExtensionContainer { { PWSSystemInformationExtIEs } } OPTIONAL,
    ...
}

PWSSystemInformationExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    {ID id-NotificationInformation      CRITICALITY ignore EXTENSION NotificationInformation      PRESENCE optional}|
    { ID id-AdditionalSIBMessageList    CRITICALITY reject  EXTENSION AdditionalSIBMessageList    PRESENCE optional},
    ...
}

PrivacyIndicator ::= ENUMERATED {immediate-MDT, logged-MDT, ...}

PRS-ID ::= INTEGER(0..255)

PRSTRPList ::= SEQUENCE (SIZE(1.. maxnoofTRPs)) OF PRSTRPItem

PRSTRPItem ::= SEQUENCE {
    trp-ID      TRPID,
    requestedDLPRSTransmissionCharacteristics RequestedDLPRSTransmissionCharacteristics OPTIONAL,
    -- The IE shall be present if the PRS Configuration Request Type IE is set to "configure" --
    prSTransmissionOffInformation PRSTransmissionOffInformation OPTIONAL,
    -- The IE shall be present if the PRS Configuration Request Type IE is set to "off" --

    iE-Extensions ProtocolExtensionContainer { { PRSTRPItem-ExtIEs } } OPTIONAL,
    ...
}

PRSTRPItem-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

RequestedDLPRSTransmissionCharacteristics ::= SEQUENCE {
    requestedDLPRSResourceSet-List RequestedDLPRSResourceSet-List,
    numberOfFrequencyLayers        INTEGER(1..4) OPTIONAL,
    startTimeAndDuration            STARTTIMEANDDURATION OPTIONAL,
    iE-Extensions ProtocolExtensionContainer { { RequestedDLPRSTransmissionCharacteristics-ExtIEs } } OPTIONAL,
    ...
}

RequestedDLPRSTransmissionCharacteristics-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

RequestedDLPRSResourceSet-List ::= SEQUENCE (SIZE (1..maxnoofPRSresourceSets)) OF RequestedDLPRSResourceSet-Item

RequestedDLPRSResourceSet-Item ::= SEQUENCE {
    prSbandwidth        INTEGER(1..63) OPTIONAL,
    combSize            ENUMERATED{n2, n4, n6, n12, ...} OPTIONAL,
    resourceSetPeriodicity
n81920,..., n128, n256, n512} ENUMERATED{n4, n5, n8, n10, n16, n20, n32, n40, n64, n80, n160, n320, n640, n1280, n2560, n5120, n10240, n20480, n40960, ...} OPTIONAL,
    resourceRepetitionFactor
ENUMERATED{rf1, rf2, rf4, rf6, rf8, rf16, rf32, ...} OPTIONAL,
    resourceNumberOfSymbols
ENUMERATED{n2, n4, n6, n12, ...} OPTIONAL,
    requestedDLPRSResource-List RequestedDLPRSResource-List OPTIONAL,
    resourceSetStartTimeAndDuration
STARTTIMEANDDURATION OPTIONAL,
    iE-Extensions ProtocolExtensionContainer { { RequestedDLPRSResourceSet-Item-ExtIEs } } OPTIONAL,

```

```

    ...
}

RequestedDLPRSResourceSet-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

RequestedDLPRSResource-List ::= SEQUENCE (SIZE (1..maxnoofPRSresources)) OF RequestedDLPRSResource-Item

RequestedDLPRSResource-Item ::= SEQUENCE {
    qCLInfo          PRSResource-QCLInfo          OPTIONAL,
    iE-Extensions    ProtocolExtensionContainer { { RequestedDLPRSResource-Item-ExtIEs } } OPTIONAL,
    ...
}

RequestedDLPRSResource-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

PRSTransmissionTRPList ::= SEQUENCE (SIZE(1.. maxnoofTRPs)) OF PRSTransmissionTRPItem

PRSTransmissionTRPItem ::= SEQUENCE {
    tRP-ID           TRPID,
    pRSConfiguration PRSConfiguration,
    iE-Extensions    ProtocolExtensionContainer { { PRSTransmissionTRPItem-ExtIEs } } OPTIONAL,
    ...
}

PRSTransmissionTRPItem-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

PSCellList ::= SEQUENCE (SIZE(1..maxnoofCH0cells)) OF PSCellList-Item

PSCellList-Item ::= SEQUENCE {
    pscell           NRCGI,
    iE-Extensions    ProtocolExtensionContainer { { PSCellList-Item-ExtIEs } } OPTIONAL
}

PSCellList-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

-- Q

QCI ::= INTEGER (0..255)

QoEInformation ::= SEQUENCE {
    qoEInformationList QoEInformationList,
    iE-Extensions      ProtocolExtensionContainer { { QoEInformation-ExtIEs } } OPTIONAL
}

```

```

}

QoEInformation-ExtIEs    F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

QoEInformationList ::= SEQUENCE (SIZE(1.. maxnoofQoEInformation)) OF QoEInformationList-Item

QoEInformationList-Item ::= SEQUENCE {
    qoEMetrics          QoEMetrics OPTIONAL,
    iE-Extensions       ProtocolExtensionContainer { { QoEInformationList-Item-ExtIEs } } OPTIONAL
}

QoEInformationList-Item-ExtIEs    F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

QoEMetrics ::= SEQUENCE {
    appLayerBufferLevelList          AppLayerBufferLevelList OPTIONAL,
    playoutDelayForMediaStartup       PlayoutDelayForMediaStartup OPTIONAL,
    iE-Extensions                     ProtocolExtensionContainer { { QoEMetrics-ExtIEs } } OPTIONAL,
    ...
}

QoEMetrics-ExtIEs    F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

QoS-Characteristics ::= CHOICE {
    non-Dynamic-5QI          NonDynamic5QIDescriptor,
    dynamic-5QI              Dynamic5QIDescriptor,
    choice-extension         ProtocolIE-SingleContainer { { QoS-Characteristics-ExtIEs } }
}

QoS-Characteristics-ExtIEs F1AP-PROTOCOL-IES ::= {
    ...
}

QoSFlowIdentifier ::= INTEGER (0..63)

QoSFlowLevelQoSParameters ::= SEQUENCE {
    qoS-Characteristics          QoS-Characteristics,
    nGRANAllocationRetentionPriority NGRANAllocationAndRetentionPriority,
    gBR-QoS-Flow-Information     GBR-QoSFlowInformation OPTIONAL,
    reflective-QoS-Attribute      ENUMERATED {subject-to, ...} OPTIONAL,
    iE-Extensions                ProtocolExtensionContainer { { QoSFlowLevelQoSParameters-ExtIEs } } OPTIONAL
}

QoSFlowLevelQoSParameters-ExtIEs    F1AP-PROTOCOL-EXTENSION ::= {
    { ID id-PDUSessionID          CRITICALITY ignore EXTENSION PDUSessionID          PRESENCE optional}|
    { ID id-ULPDUSessionAggregateMaximumBitRate CRITICALITY ignore EXTENSION BitRate          PRESENCE optional}|
    { ID id-QoSMonitoringRequest CRITICALITY ignore EXTENSION QoSMonitoringRequest PRESENCE optional}|
    { ID id-PDCPTerminatingNodeDLTLNAddrInfo   CRITICALITY ignore EXTENSION TransportLayerAddress PRESENCE optional },
    ...
}

```

```

}

QoSFlowMappingIndication ::= ENUMERATED {ul,dl,...}

QoSInformation ::= CHOICE {
    eUTRANQoS          EUTRANQoS,
    choice-extension    ProtocolIE-SingleContainer { { QoSInformation-ExtIEs} }
}

QoSInformation-ExtIEs F1AP-PROTOCOL-IES ::= {
    { ID id-DRB-Information          CRITICALITY ignore TYPE DRB-Information          PRESENCE mandatory},
    ...
}

QoSMonitoringRequest ::= ENUMERATED {ul, dl, both, ..., stop}

QoSParaSetIndex ::= INTEGER (1..8, ...)

QoSParaSetNotifyIndex ::= INTEGER (0..8, ...)

-- R

RACH-Config-Common ::= OCTET STRING

RACH-Config-Common-IAB ::= OCTET STRING

RACHReportContainer ::= OCTET STRING

RACHReportInformationList ::= SEQUENCE (SIZE(1.. maxnoofRACHReports)) OF RACHReportInformationItem

RACHReportInformationItem ::= SEQUENCE {
    rACHReportContainer          RACHReportContainer,
    uEAssitantIdentifier          GNB-DU-UE-F1AP-ID          OPTIONAL,
    iE-Extensions                ProtocolExtensionContainer { { RACHReportInformationItem-ExtIEs} } OPTIONAL,
    ...
}

RACHReportInformationItem-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

RadioResourceStatus ::= SEQUENCE {
    sSBAreaRadioResourceStatusList          SSBAreaRadioResourceStatusList,
    iE-Extensions          ProtocolExtensionContainer { { RadioResourceStatus-ExtIEs} } OPTIONAL
}

RadioResourceStatus-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    { ID id-SliceRadioResourceStatus          CRITICALITY ignore EXTENSION SliceRadioResourceStatus          PRESENCE optional }|
    { ID id-MIMOPRBusageInformation          CRITICALITY ignore EXTENSION MIMOPRBusageInformation          PRESENCE optional },
    ...
}

```

```

MIMOPRUsageInformation ::= SEQUENCE {
    dl-GBR-PRB-usage-for-MIMO    INTEGER (0..100),
    ul-GBR-PRB-usage-for-MIMO    INTEGER (0..100),
    dl-non-GBR-PRB-usage-for-MIMO INTEGER (0..100),
    ul-non-GBR-PRB-usage-for-MIMO INTEGER (0..100),
    dl-Total-PRB-usage-for-MIMO  INTEGER (0..100),
    ul-Total-PRB-usage-for-MIMO  INTEGER (0..100),
    iE-Extensions                ProtocolExtensionContainer { { MIMOPRUsageInformation-ExtIes } } OPTIONAL,
    ...
}

MIMOPRUsageInformation-ExtIes F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

RANAC ::= INTEGER (0..255)

RAN-MeasurementID ::= INTEGER (1.. 65536, ...)

RAN-UE-MeasurementID ::= INTEGER (1.. 256, ...)

RAN-UE-PDC-MeasID ::= INTEGER (1..16, ...)

RANUEID ::= OCTET STRING (SIZE (8))

RANUEPagingIdentity ::= SEQUENCE {
    iRNTI          BIT STRING (SIZE(40)),
    iE-Extensions  ProtocolExtensionContainer { { RANUEPagingIdentity-ExtIes } } OPTIONAL}

RANUEPagingIdentity-ExtIes F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

RAT-FrequencyPriorityInformation ::= CHOICE {
    eNDC          SubscriberProfileIDforRFP,
    nGRAN         RAT-FrequencySelectionPriority,
    choice-extension ProtocolIE-SingleContainer { { RAT-FrequencyPriorityInformation-ExtIes } }
}

RAT-FrequencyPriorityInformation-ExtIes F1AP-PROTOCOL-IES ::= {
    ...
}

RAT-FrequencySelectionPriority ::= INTEGER (1.. 256, ...)

RBSetConfiguration ::= SEQUENCE {
    subcarrierSpacing    SubcarrierSpacing,
    rBSetSize            RBSetSize,
    nUmberRBsets         INTEGER(1..maxnoofRBsetsPerCell),
    iE-Extensions        ProtocolExtensionContainer { { RBSetConfiguration-ExtIes } } OPTIONAL
}

RBSetConfiguration-ExtIes F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

```



```

}

RBSetSize ::= ENUMERATED { rb2, rb4, rb8, rb16, rb32, rb64}

Re-routingEnableIndicator ::= ENUMERATED {
    true,
    false,
    ...
}

Redcap-Bcast-Information ::= BIT STRING(SIZE(8))

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

Reestablishment-Indication ::= ENUMERATED {
    reestablished,
    ...
}

ReferencePoint ::= CHOICE {
    coordinateID                CoordinateID,
    referencePointCoordinate     AccessPointPosition,
    referencePointCoordinateHA   NGRANHighAccuracyAccessPointPosition,
    choice-Extension             ProtocolIE-SingleContainer { { ReferencePoint-ExtIEs } }
}

ReferencePoint-ExtIEs F1AP-PROTOCOL-IES ::= {
    ...
}

ReferenceSFN ::= INTEGER (0..1023)

ReferenceSignal ::= CHOICE {
    nZP-CSI-RS                  NZP-CSI-RS-ResourceID,
    SSB                         SSB,
    SRS                         SRSResourceID,
    positioningSRS              SRSPosResourceID,
    dL-PRS                      DL-PRS,
    choice-extension             ProtocolIE-SingleContainer {{ReferenceSignal-ExtIEs }}
}

ReferenceSignal-ExtIEs F1AP-PROTOCOL-IES ::= {
    ...
}

RelativeCartesianLocation ::= SEQUENCE {
    xYZunit                     ENUMERATED {mm, cm, dm, ...},
    xvalue                      INTEGER (-65536..65535),
    yvalue                      INTEGER (-65536..65535),
    zvalue                      INTEGER (-32768..32767),
    locationUncertainty         LocationUncertainty,
    iE-Extensions               ProtocolExtensionContainer { { RelativeCartesianLocation-ExtIEs } } OPTIONAL
}

```

```

}

RelativeCartesianLocation-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

RelativeGeodeticLocation ::= SEQUENCE {
    milli-Arc-SecondUnits    ENUMERATED {zerodot03, zerodot3, three, ...},
    heightUnits              ENUMERATED {mm, cm, m, ...},
    deltaLatitude            INTEGER (-1024.. 1023),
    deltaLongitude           INTEGER (-1024.. 1023),
    deltaHeight              INTEGER (-1024.. 1023),
    locationUncertainty      LocationUncertainty,
    iE-extensions            ProtocolExtensionContainer {{RelativeGeodeticLocation-ExtIEs }} OPTIONAL
}

RelativeGeodeticLocation-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

RemoteUELocalID ::= INTEGER (0..255, ...)

ReferenceTime ::= OCTET STRING

RegistrationRequest ::= ENUMERATED{start, stop, add, ...}

ReportCharacteristics ::= BIT STRING (SIZE(32))

ReportingPeriodicity ::= ENUMERATED{ms500, ms1000, ms2000, ms5000, ms10000, ...}

RequestedBandCombinationIndex ::= OCTET STRING

RequestedFeatureSetEntryIndex ::= OCTET STRING

RequestedP-MaxFR2 ::= OCTET STRING

Requested-PDCCH-BlindDetectionSCG ::= OCTET STRING

RequestedSRSTransmissionCharacteristics ::= SEQUENCE {
    numberOfTransmissions    INTEGER (0..500, ...) OPTIONAL,
    -- The IE shall be present if the Resource Type IE is set to "periodic" --
    resourceType             ENUMERATED {periodic, semi-persistent, aperiodic,...},
    bandwidthSRS             BandwidthSRS,
    sRSResourceSetList       SRSResourceSetList OPTIONAL,
    sSBInformation           SSBInformation OPTIONAL,
    iE-Extensions            ProtocolExtensionContainer { { RequestedSRSTransmissionCharacteristics-ExtIEs } } OPTIONAL
}

RequestedSRSTransmissionCharacteristics-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    { ID id-SrsFrequency      CRITICALITY ignore EXTENSION SrsFrequency    PRESENCE optional },
    ...
}

```

```

RequestType ::= ENUMERATED {offer, execution, ...}

ResourceCoordinationEUTRACellInfo ::= SEQUENCE {
    eUTRA-Mode-Info          EUTRA-Mode-Info,
    eUTRA-PRACH-Configuration EUTRA-PRACH-Configuration,
    iE-Extensions    ProtocolExtensionContainer { { ResourceCoordinationEUTRACellInfo-ExtIEs } } OPTIONAL,
    ...
}

ResourceCoordinationEUTRACellInfo-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    {ID id-IgnorePRACHConfiguration    CRITICALITY reject EXTENSION IgnorePRACHConfiguration    PRESENCE optional },
    ...
}

ResourceCoordinationTransferInformation ::= SEQUENCE {
    meNB-Cell-ID          EUTRA-Cell-ID,
    resourceCoordinationEUTRACellInfo    ResourceCoordinationEUTRACellInfo    OPTIONAL,
    iE-Extensions    ProtocolExtensionContainer { { ResourceCoordinationTransferInformation-ExtIEs } }    OPTIONAL,
    ...
}

ResourceCoordinationTransferInformation-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

ResourceCoordinationTransferContainer ::= OCTET STRING

ResourceSetType ::= CHOICE {
    periodic          ResourceSetTypePeriodic,
    semi-persistent   ResourceSetTypeSemi-persistent,
    aperiodic         ResourceSetTypeAperiodic,
    choice-extension   ProtocolIE-SingleContainer {{ ResourceSetType-ExtIEs }}
}

ResourceSetType-ExtIEs F1AP-PROTOCOL-IES ::= {
    ...
}

ResourceSetTypePeriodic ::= SEQUENCE {
    periodicSet        ENUMERATED{true, ...},
    iE-Extensions      ProtocolExtensionContainer { { ResourceSetTypePeriodic-ExtIEs } }    OPTIONAL
}

ResourceSetTypePeriodic-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

ResourceSetTypeSemi-persistent ::= SEQUENCE {
    semi-persistentSet ENUMERATED{true, ...},
    iE-Extensions      ProtocolExtensionContainer { { ResourceSetTypeSemi-persistent-ExtIEs } }    OPTIONAL
}

```

```

ResourceSetTypeSemi-persistent-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

ResourceSetTypeAperiodic ::= SEQUENCE {
    srsResourceTrigger-List    INTEGER(1..3),
    slotoffset                 INTEGER(0..32),
    iE-Extensions              ProtocolExtensionContainer { { ResourceSetTypeAperiodic-ExtIEs } } OPTIONAL
}

ResourceSetTypeAperiodic-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

RepetitionFactorExtended ::= ENUMERATED {n3, n5, n6, n7, n8, n10, n12, n14, ...}
RepetitionPeriod ::= INTEGER (0..131071, ...)

ReportingRequestType ::= SEQUENCE {
    eventType                  EventType,
    reportingPeriodicityValue  ReportingPeriodicityValue OPTIONAL,
    -- C-ifEventTypeisPeriodic: This IE shall be present if the Event Type IE is set to "periodic" in the Event Type IE.
    iE-Extensions              ProtocolExtensionContainer { {ReportingRequestType-ExtIEs} } OPTIONAL
}

ReportingRequestType-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

ResourceType ::= CHOICE {
    periodic                  ResourceTypePeriodic,
    semi-persistent           ResourceTypeSemi-persistent,
    aperiodic                  ResourceTypeAperiodic,
    choice-extension           ProtocolIE-SingleContainer {{ ResourceType-ExtIEs }}
}

ResourceType-ExtIEs F1AP-PROTOCOL-IES ::= {
    ...
}

ResourceTypePeriodic ::= SEQUENCE {
    periodicity                ENUMERATED{slot1, slot2, slot4, slot5, slot8, slot10, slot16, slot20, slot32, slot40, slot64, slot80, slot160, slot320,
slot640, slot1280, slot2560, ...},
    offset                     INTEGER(0..2559, ...),
    iE-Extensions              ProtocolExtensionContainer { { ResourceTypePeriodic-ExtIEs } } OPTIONAL
}

ResourceTypePeriodic-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

ResourceTypeSemi-persistent ::= SEQUENCE {
    periodicity                ENUMERATED{slot1, slot2, slot4, slot5, slot8, slot10, slot16, slot20, slot32, slot40, slot64, slot80, slot160, slot320,
slot640, slot1280, slot2560, ...},
    offset                     INTEGER(0..2559, ...),

```

```

    iE-Extensions      ProtocolExtensionContainer { { ResourceTypeSemi-persistent-ExtIEs } }    OPTIONAL
}

ResourceTypeSemi-persistent-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

ResourceTypeAperiodic ::= SEQUENCE {
    aperiodicResourceType      ENUMERATED{true, ...},
    iE-Extensions      ProtocolExtensionContainer { { ResourceTypeAperiodic-ExtIEs } }    OPTIONAL
}

ResourceTypeAperiodic-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

ResourceTypePos ::= CHOICE {
    periodic      ResourceTypePeriodicPos,
    semi-persistent      ResourceTypeSemi-persistentPos,
    aperiodic      ResourceTypeAperiodicPos,
    choice-extension      ProtocolIE-SingleContainer { { ResourceTypePos-ExtIEs } }
}

ResourceTypePos-ExtIEs F1AP-PROTOCOL-IES ::= {
    ...
}

ResourceTypePeriodicPos ::= SEQUENCE {
    periodicity      ENUMERATED{slot1, slot2, slot4, slot5, slot8, slot10, slot16, slot20, slot32, slot40, slot64, slot80, slot160, slot320,
slot640, slot1280, slot2560, slot5120, slot10240, slot40960, slot81920, ..., slot128, slot256, slot512, slot20480},
    offset      INTEGER(0..81919, ...),
    iE-Extensions      ProtocolExtensionContainer { { ResourceTypePeriodicPos-ExtIEs } }    OPTIONAL
}

ResourceTypePeriodicPos-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

ResourceTypeSemi-persistentPos ::= SEQUENCE {
    periodicity      ENUMERATED{slot1, slot2, slot4, slot5, slot8, slot10, slot16, slot20, slot32, slot40, slot64, slot80, slot160, slot320,
slot640, slot1280, slot2560, slot5120, slot10240, slot40960, slot81920, ..., slot128, slot256, slot512, slot20480},
    offset      INTEGER(0..81919, ...),
    iE-Extensions      ProtocolExtensionContainer { { ResourceTypeSemi-persistentPos-ExtIEs } }    OPTIONAL
}

ResourceTypeSemi-persistentPos-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

ResourceTypeAperiodicPos ::= SEQUENCE {
    slotOffset      INTEGER (0..32),
    iE-Extensions      ProtocolExtensionContainer { { ResourceTypeAperiodicPos-ExtIEs } }    OPTIONAL
}

```

```

ResourceTypeAperiodicPos-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

RLCDuplicationInformation ::= SEQUENCE {
    rLCDuplicationStateList          RLCDuplicationStateList,
    primaryPathIndication            PrimaryPathIndication OPTIONAL,
    iE-Extensions                    ProtocolExtensionContainer { {RLCDuplicationInformation-ExtIEs} } OPTIONAL
}

RLCDuplicationInformation-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

RLCDuplicationStateList ::= SEQUENCE (SIZE(1..maxnoofRLCDuplicationState)) OF RLCDuplicationState-Item

RLCDuplicationState-Item ::= SEQUENCE {
    duplicationState                 DuplicationState,
    iE-Extensions                    ProtocolExtensionContainer { {RLCDuplicationState-Item-ExtIEs } } OPTIONAL,
    ...
}

RLCDuplicationState-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

RLCFailureIndication ::= SEQUENCE {
    associatedLCID                   LCID,
    iE-Extensions                    ProtocolExtensionContainer { {RLCFailureIndication-ExtIEs} } OPTIONAL
}

RLCFailureIndication-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

RLCMode ::= ENUMERATED {
    rlc-am,
    rlc-um-bidirectional,
    rlc-um-unidirectional-ul,
    rlc-um-unidirectional-dl,
    ...
}

RLC-Status ::= SEQUENCE {
    reestablishment-Indication       Reestablishment-Indication,
    iE-Extensions                    ProtocolExtensionContainer { { RLC-Status-ExtIEs } } OPTIONAL,
    ...
}

RLC-Status-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

```

```

RLFReportInformationList ::= SEQUENCE (SIZE(1.. maxnoofRLFReports)) OF RLFReportInformationItem

RLFReportInformationItem ::= SEQUENCE {
    nRUERLFReportContainer    NRUERLFReportContainer,
    uEAssitantIdentifier      GNB-DU-UE-F1AP-ID OPTIONAL,
    iE-Extensions             ProtocolExtensionContainer { { RLFReportInformationItem-ExtIES } } OPTIONAL,
    ...
}

RLFReportInformationItem-ExtIES    F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

RIMRSDetectionStatus ::= ENUMERATED {rs-detected, rs-disappeared, ...}

RRCContainer ::= OCTET STRING

RRCContainer-RRCSetsComplete ::= OCTET STRING

RRCDeliveryStatus ::= SEQUENCE {
    delivery-status          PDCP-SN,
    triggering-message       PDCP-SN,
    iE-Extensions            ProtocolExtensionContainer { { RRCDeliveryStatus-ExtIES } } OPTIONAL}

RRCDeliveryStatus-ExtIES    F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

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

RRCReconfigurationCompleteIndicator ::= ENUMERATED {
    true,
    ...,
    failure
}

RRC-Version ::= SEQUENCE {
    latest-RRC-Version       BIT STRING (SIZE(3)),
    iE-Extensions            ProtocolExtensionContainer { { RRC-Version-ExtIES } } OPTIONAL}

RRC-Version-ExtIES    F1AP-PROTOCOL-EXTENSION ::= {
    {ID id-latest-RRC-Version-Enhanced    CRITICALITY ignore EXTENSION OCTET STRING (SIZE(3)) PRESENCE optional },
    ...
}

RoutingID ::= OCTET STRING

ResponseTime ::= SEQUENCE {
    time                INTEGER (1..128,...),
    timeUnit            ENUMERATED {second, ten-seconds, ten-milliseconds,...},
    iE-Extensions        ProtocolExtensionContainer { { ResponseTime-ExtIES } } OPTIONAL,
    ...
}

```

```

ResponseTime-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

RxTxTimingErrorMargin ::= ENUMERATED {tc0dot5, tc1, tc2, tc4, tc8, tc12, tc16, tc20, tc24, tc32, tc40, tc48, tc64, tc80, tc96, tc128, ...}

-- S

SCell-FailedtoSetup-Item ::= SEQUENCE {
    sCell-ID          NRCGI ,
    cause             Cause OPTIONAL ,
    iE-Extensions     ProtocolExtensionContainer { { SCell-FailedtoSetup-ItemExtIEs } } OPTIONAL,
    ...
}

SCell-FailedtoSetup-ItemExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

SCell-FailedtoSetupMod-Item ::= SEQUENCE {
    sCell-ID          NRCGI ,
    cause             Cause OPTIONAL ,
    iE-Extensions     ProtocolExtensionContainer { { SCell-FailedtoSetupMod-ItemExtIEs } } OPTIONAL,
    ...
}

SCell-FailedtoSetupMod-ItemExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

SCell-ToBeRemoved-Item ::= SEQUENCE {
    sCell-ID          NRCGI ,
    iE-Extensions     ProtocolExtensionContainer { { SCell-ToBeRemoved-ItemExtIEs } } OPTIONAL,
    ...
}

SCell-ToBeRemoved-ItemExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

SCell-ToBeSetup-Item ::= SEQUENCE {
    sCell-ID          NRCGI ,
    sCellIndex        SCellIndex,
    sCellULConfigured CellULConfigured OPTIONAL,
    iE-Extensions     ProtocolExtensionContainer { { SCell-ToBeSetup-ItemExtIEs } } OPTIONAL,
    ...
}

SCell-ToBeSetup-ItemExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    { ID id-ServingCellMO CRITICALITY ignore EXTENSION ServingCellMO PRESENCE optional },
    ...
}

```



```

SCell-ToBeSetupMod-Item ::= SEQUENCE {
    sCell-ID          NRCGI ,
    sCellIndex        SCellIndex,
    sCellULConfigured CellULConfigured OPTIONAL,
    iE-Extensions     ProtocolExtensionContainer { { SCell-ToBeSetupMod-ItemExtIEs } } OPTIONAL,
    ...
}

SCell-ToBeSetupMod-ItemExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    { ID id-ServingCellMO      CRITICALITY ignore EXTENSION ServingCellMO      PRESENCE optional },
    ...
}

SCellIndex ::= INTEGER (1..31, ...)

SCGActivationRequest ::= ENUMERATED {activate-scg, deactivate-scg, ...}

SCGActivationStatus ::= ENUMERATED {scg-activated, scg-deactivated, ...}

SCGIndicator ::= ENUMERATED{released, ...}

SCS-480 ::= INTEGER(0..319)

SCS-960 ::= INTEGER(0..639)

SCS-SpecificCarrier ::= SEQUENCE {
    offsetToCarrier      INTEGER (0..2199,...),
    subcarrierSpacing    ENUMERATED {kHz15, kHz30, kHz60, kHz120,..., kHz480, kHz960},
    carrierBandwidth     INTEGER (1..275,...),
    iE-Extensions        ProtocolExtensionContainer { { SCS-SpecificCarrier-ExtIEs } } OPTIONAL
}

SCS-SpecificCarrier-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

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

SDTBearerConfigurationInfo ::= SEQUENCE {
    sDTBearerConfig-List SDTBearerConfig-List,
    iE-Extensions        ProtocolExtensionContainer { { SDTBearerConfigurationInfo-ExtIEs } } OPTIONAL
}

SDTBearerConfigurationInfo-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

SDTBearerConfig-List ::= SEQUENCE (SIZE(1..maxnoofSDTBearers)) OF SDTBearerConfig-List-Item

SDTBearerConfig-List-Item ::= SEQUENCE{
    sDTBearerType          SDTBearerType,
    SDTRLCBearerConfiguration SDTRLCBearerConfiguration,
    iE-Extensions          ProtocolExtensionContainer {{ SDTBearerConfig-List-Item-ExtIEs}} OPTIONAL
}

```

```
SDTBearerConfig-List-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {  
    ...  
}  
  
SDTBearerType ::= CHOICE {  
    sRB SRBID,  
    dRB DRBID,  
    choice-extension ProtocolIE-SingleContainer {{ SDTBearerType-ExtIEs }}  
}  
  
SDTBearerType-ExtIEs F1AP-PROTOCOL-IES ::= {  
    ...  
}  
  
SDT-MAC-PHY-CG-Config ::= OCTET STRING  
  
SDTInformation ::= SEQUENCE {  
    sdtIndicator ENUMERATED {true,...},  
    sdtAssistantInformation ENUMERATED {singlepacket, multiplepackets,...} OPTIONAL,  
    iE-Extensions ProtocolExtensionContainer { { SDTInformation-ExtIEs } } OPTIONAL  
}  
  
SDTInformation-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {  
    ...  
}  
  
SDTRLCBearerConfiguration ::= OCTET STRING  
  
SDT-Termination-Request ::= ENUMERATED {radio-link-problem, normal, ...}  
  
Search-window-information ::= SEQUENCE {  
    expectedPropagationDelay INTEGER (-3841..3841,...),  
    delayUncertainty INTEGER (1..246,...),  
    iE-Extensions ProtocolExtensionContainer { { Search-window-information-ExtIEs } } OPTIONAL  
}  
  
Search-window-information-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {  
    ...  
}  
  
SerialNumber ::= BIT STRING (SIZE (16))  
  
SIBType-PWS ::= INTEGER (6..8, ...)  
  
SelectedBandCombinationIndex ::= OCTET STRING  
  
SelectedFeatureSetEntryIndex ::= OCTET STRING  
  
CG-ConfigInfo ::= OCTET STRING  
  
ServCellInfoList ::= OCTET STRING
```

```

ServCellIndex ::= INTEGER (0..31, ...)

ServingCellMO ::= INTEGER (1..64, ...)

ServingCellMO-List-Item ::= SEQUENCE {
    servingCellMO          ServingCellMO,
    sSB-Frequency          INTEGER (0..3279165),
    iE-Extensions          ProtocolExtensionContainer { { ServingCellMO-List-Item-ExtIEs } } OPTIONAL
}

ServingCellMO-List-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

ServingCellMO-encoded-in-CGC-List ::= SEQUENCE (SIZE(1.. maxNrofBWPs)) OF ServingCellMO-encoded-in-CGC-Item

ServingCellMO-encoded-in-CGC-Item ::= SEQUENCE {
    servingCellMO          ServingCellMO,
    iE-Extensions          ProtocolExtensionContainer { { ServingCellMO-encoded-in-CGC-Item-ExtIEs } } OPTIONAL,
    ...
}

ServingCellMO-encoded-in-CGC-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    { ID id-BWP-Id CRITICALITY ignore EXTENSION BWP-Id PRESENCE optional },
    ...
}

Served-Cell-Information ::= SEQUENCE {
    nRCGI                  NRCGI,
    nRPCI                  NRPCI,
    fiveGS-TAC             FiveGS-TAC OPTIONAL,
    configured-EPS-TAC     Configured-EPS-TAC OPTIONAL,
    servedPLMNs            ServedPLMNs-List,
    nR-Mode-Info           NR-Mode-Info,
    measurementTimingConfiguration OCTET STRING,
    iE-Extensions          ProtocolExtensionContainer { {Served-Cell-Information-ExtIEs} } OPTIONAL,
    ...
}

Served-Cell-Information-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    { ID id-RANAC CRITICALITY ignore EXTENSION RANAC PRESENCE optional }|
    { ID id-ExtendedServedPLMNs-List CRITICALITY ignore EXTENSION ExtendedServedPLMNs-List PRESENCE optional }|
    { ID id-Cell-Direction CRITICALITY ignore EXTENSION Cell-Direction PRESENCE optional }|
    { ID id-BPLMN-ID-Info-List CRITICALITY ignore EXTENSION BPLMN-ID-Info-List PRESENCE optional }|
    { ID id-Cell-Type CRITICALITY ignore EXTENSION CellType PRESENCE optional }|
    { ID id-ConfiguredTACIndication CRITICALITY ignore EXTENSION ConfiguredTACIndication PRESENCE optional }|
    { ID id-AggressorNBSetID CRITICALITY ignore EXTENSION AggressorNBSetID PRESENCE optional }|
    { ID id-VictimNBSetID CRITICALITY ignore EXTENSION VictimNBSetID PRESENCE optional }|
    { ID id-IAB-Info-IAB-DU CRITICALITY ignore EXTENSION IAB-Info-IAB-DU PRESENCE optional }|
    { ID id-SSB-PositionsInBurst CRITICALITY ignore EXTENSION SSB-PositionsInBurst PRESENCE optional }|
    { ID id-NRPRACHConfig CRITICALITY ignore EXTENSION NRPRACHConfig PRESENCE optional }|
    { ID id-SFN-Offset CRITICALITY ignore EXTENSION SFN-Offset PRESENCE optional }|
    { ID id-NPNBroadcastInformation CRITICALITY reject EXTENSION NPNBroadcastInformation PRESENCE optional }|
    { ID id-Supported-MBS-FSA-ID-List CRITICALITY ignore EXTENSION Supported-MBS-FSA-ID-List PRESENCE optional }|

```

```

    { ID id-Redcap-Bcast-Information CRITICALITY ignore EXTENSION Redcap-Bcast-Information PRESENCE optional },
    ...
}

```

Serving-Cells-List ::= SEQUENCE (SIZE(1..maxnoofServingCells)) OF Serving-Cells-List-Item

```

Serving-Cells-List-Item ::= SEQUENCE{
    nRCGI NRCGI,
    iAB-MT-Cell-NA-Resource-Configuration-Mode-Info IAB-MT-Cell-NA-Resource-Configuration-Mode-Info OPTIONAL,
    iE-Extensions ProtocolExtensionContainer {{Serving-Cells-List-Item-ExtIEs}} OPTIONAL
}

```

```

Serving-Cells-List-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

```

Supported-MBS-FSA-ID-List ::= SEQUENCE (SIZE(1.. maxnoofMBSFSAs)) OF MBS-FrequencySelectionArea-Identity

MBS-FrequencySelectionArea-Identity ::= OCTET STRING (SIZE(3))

```

SFN-Offset ::= SEQUENCE {
    sFN-Time-Offset BIT STRING (SIZE(24)),
    iE-Extensions ProtocolExtensionContainer { {SFN-Offset-ExtIEs} } OPTIONAL,
    ...
}

```

```

SFN-Offset-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

```

```

Served-Cells-To-Add-Item ::= SEQUENCE {
    served-Cell-Information Served-Cell-Information,
    gNB-DU-System-Information GNB-DU-System-Information OPTIONAL,
    iE-Extensions ProtocolExtensionContainer { { Served-Cells-To-Add-ItemExtIEs} } OPTIONAL,
    ...
}

```

```

Served-Cells-To-Add-ItemExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

```

```

Served-Cells-To-Delete-Item ::= SEQUENCE {
    oldNRCGI NRCGI ,
    iE-Extensions ProtocolExtensionContainer { { Served-Cells-To-Delete-ItemExtIEs } } OPTIONAL,
    ...
}

```

```

Served-Cells-To-Delete-ItemExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

```

```

Served-Cells-To-Modify-Item ::= SEQUENCE {
    oldNRCGI NRCGI ,
    served-Cell-Information Served-Cell-Information ,
    ...
}

```

```

    gNB-DU-System-Information  GNB-DU-System-Information  OPTIONAL
    iE-Extensions              ProtocolExtensionContainer { { Served-Cells-To-Modify-ItemExtIEs } } OPTIONAL,
    ...
}

Served-Cells-To-Modify-ItemExtIEs  F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

Served-EUTRA-Cells-Information ::= SEQUENCE {
    eUTRA-Mode-Info              EUTRA-Mode-Info,
    protectedEUTRAResourceIndication ProtectedEUTRAResourceIndication,
    iE-Extensions                ProtocolExtensionContainer { {Served-EUTRA-Cell-Information-ExtIEs} } OPTIONAL,
    ...
}

Served-EUTRA-Cell-Information-ExtIEs  F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

Service-State ::= ENUMERATED {
    in-service,
    out-of-service,
    ...
}

Service-Status ::= SEQUENCE {
    service-state                Service-State,
    switchingOffOngoing          ENUMERATED {true, ...} OPTIONAL,
    iE-Extensions                ProtocolExtensionContainer { { Service-Status-ExtIEs } }    OPTIONAL,
    ...
}

Service-Status-ExtIEs  F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

RelativeTime1900 ::=  BIT STRING (SIZE (64))

ShortDRXCycleLength ::=  ENUMERATED {ms2, ms3, ms4, ms5, ms6, ms7, ms8, ms10, ms14, ms16, ms20, ms30, ms32, ms35, ms40, ms64, ms80, ms128, ms160,
ms256, ms320, ms512, ms640, ...}

ShortDRXCycleTimer ::= INTEGER (1..16)

SIB1-message ::= OCTET STRING

SIB10-message ::= OCTET STRING

SIB12-message ::= OCTET STRING

SIB13-message ::= OCTET STRING

SIB14-message ::= OCTET STRING

```

SIB15-message ::= OCTET STRING

SIB17-message ::= OCTET STRING

SIB20-message ::= OCTET STRING

Sitype ::= INTEGER (1..32, ...)

Sitype-List ::= SEQUENCE (SIZE(1.. maxnoofSITypes)) OF Sitype-Item

```
Sitype-Item ::= SEQUENCE {
    sitype          Sitype ,
    iE-Extensions   ProtocolExtensionContainer { { Sitype-ItemExtIEs } }    OPTIONAL
}
```

```
Sitype-ItemExtIEs   F1AP-PROTOCOL-EXTENSION ::= {
    ...
}
```

```
SibtypetobeupdatedListItem ::= SEQUENCE {
    sIBtype          INTEGER (2..32,...),
    sIBmessage        OCTET STRING,
    valueTag          INTEGER (0..31,...),
    iE-Extensions     ProtocolExtensionContainer { { SibtypetobeupdatedListItem-ExtIEs } }    OPTIONAL,
    ...
}
```

```
SibtypetobeupdatedListItem-ExtIEs   F1AP-PROTOCOL-EXTENSION ::= {
    {ID id-areaScope    CRITICALITY ignore EXTENSION   AreaScope    PRESENCE optional},
    ...
}
```

```
SidelinkRelayConfiguration ::= SEQUENCE {
    gNB-DU-UE-F1APIDofRelayUE        GNB-DU-UE-F1AP-ID,
    remoteUELocalID                    RemoteUELocalID,
    sidelinkConfigurationContainer     SidelinkConfigurationContainer    OPTIONAL,
    iE-Extensions                      ProtocolExtensionContainer { { SidelinkRelayConfiguration-ExtIEs } }    OPTIONAL,
    ...
}
```

```
SidelinkRelayConfiguration-ExtIEs   F1AP-PROTOCOL-EXTENSION ::= {
    ...
}
```

SidelinkConfigurationContainer ::= OCTET STRING

SLDRBID ::= INTEGER (1..512, ...)

```
SLDRBInformation ::= SEQUENCE {
    SLDRB-QoS          PC5QoSParameters,
    flowsMappedToSLDRB-List  FlowsMappedToSLDRB-List,
    ...
}
```

```

}

SLDRBs-FailedToBeModified-Item ::= SEQUENCE {
    SLDRBID      SLDRBID      ,
    cause      Cause      OPTIONAL,
    iE-Extensions ProtocolExtensionContainer { { SLDRBs-FailedToBeModified-ItemExtIEs } } OPTIONAL
}

SLDRBs-FailedToBeModified-ItemExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

SLDRBs-FailedToBeSetup-Item ::= SEQUENCE {
    SLDRBID SLDRBID,
    cause Cause OPTIONAL,
    iE-Extensions ProtocolExtensionContainer { { SLDRBs-FailedToBeSetup-ItemExtIEs } } OPTIONAL
}

SLDRBs-FailedToBeSetup-ItemExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

SLDRBs-FailedToBeSetupMod-Item ::= SEQUENCE {
    SLDRBID      SLDRBID ,
    cause      Cause      OPTIONAL ,
    iE-Extensions ProtocolExtensionContainer { { SLDRBs-FailedToBeSetupMod-ItemExtIEs } } OPTIONAL
}

SLDRBs-FailedToBeSetupMod-ItemExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

SLDRBs-Modified-Item ::= SEQUENCE {
    SLDRBID      SLDRBID,
    iE-Extensions ProtocolExtensionContainer { { SLDRBs-Modified-ItemExtIEs } } OPTIONAL
}

SLDRBs-Modified-ItemExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

SLDRBs-ModifiedConf-Item ::= SEQUENCE {
    SLDRBID      SLDRBID,
    iE-Extensions ProtocolExtensionContainer { { SLDRBs-ModifiedConf-ItemExtIEs } } OPTIONAL
}

SLDRBs-ModifiedConf-ItemExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

SLDRBs-Required-ToBeModified-Item ::= SEQUENCE {
    SLDRBID      SLDRBID,
    iE-Extensions ProtocolExtensionContainer { { SLDRBs-Required-ToBeModified-ItemExtIEs } } OPTIONAL
}

```

```

SLDRBs-Required-ToBeModified-ItemExtIEs      F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

SLDRBs-Required-ToBeReleased-Item      ::= SEQUENCE {
    SLDRBID          SLDRBID,
    iE-Extensions    ProtocolExtensionContainer { { SLDRBs-Required-ToBeReleased-ItemExtIEs } } OPTIONAL
}

SLDRBs-Required-ToBeReleased-ItemExtIEs      F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

SLDRBs-Setup-Item ::= SEQUENCE {
    SLDRBID          SLDRBID,
    iE-Extensions    ProtocolExtensionContainer { { SLDRBs-Setup-ItemExtIEs } } OPTIONAL
}

SLDRBs-Setup-ItemExtIEs      F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

SLDRBs-SetupMod-Item      ::= SEQUENCE {
    SLDRBID          SLDRBID,
    iE-Extensions    ProtocolExtensionContainer { { SLDRBs-SetupMod-ItemExtIEs } } OPTIONAL
}

SLDRBs-SetupMod-ItemExtIEs      F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

SLDRBs-ToBeModified-Item      ::= SEQUENCE {
    SLDRBID          SLDRBID,
    SLDRBInformation  SLDRBInformation OPTIONAL,
    rLCMode          RLCMode OPTIONAL,
    iE-Extensions    ProtocolExtensionContainer { { SLDRBs-ToBeModified-ItemExtIEs } } OPTIONAL
}

SLDRBs-ToBeModified-ItemExtIEs      F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

SLDRBs-ToBeReleased-Item      ::= SEQUENCE {
    SLDRBID          SLDRBID,
    iE-Extensions    ProtocolExtensionContainer { { SLDRBs-ToBeReleased-ItemExtIEs } } OPTIONAL
}

SLDRBs-ToBeReleased-ItemExtIEs      F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

SLDRBs-ToBeSetup-Item ::= SEQUENCE {
    SLDRBID          SLDRBID,

```



```

        SLDRBInformation      SLDRBInformation,
        rLCMode               RLCMode,

        iE-Extensions        ProtocolExtensionContainer { { SLDRBs-ToBeSetup-ItemExtIEs } } OPTIONAL
    }

SLDRBs-ToBeSetup-ItemExtIEs      F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

SLDRBs-ToBeSetupMod-Item        ::= SEQUENCE {
    SLDRBID                    SLDRBID,
    SLDRBInformation            SLDRBInformation,
    rLCMode                    RLCMode OPTIONAL,
    iE-Extensions              ProtocolExtensionContainer { { SLDRBs-ToBeSetupMod-ItemExtIEs } } OPTIONAL
}

SLDRBs-ToBeSetupMod-ItemExtIEs  F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

SLDRXCycleList ::= SEQUENCE (SIZE(1.. maxnoofSLdestinations)) OF SLDRXCycleItem
SLDRXCycleItem ::= SEQUENCE {
    rXUEID                     BIT STRING (SIZE(24)),
    SLDRXInformation            SLDRXInformation,
    iE-Extensions              ProtocolExtensionContainer { { SLDRXCycleItem-ExtIEs } } OPTIONAL,
    ...
}

SLDRXCycleItem-ExtIEs          F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

SLDRXInformation              ::= CHOICE {
    SLDRXCycle                 SLDRXCycleLength,
    nosLDRX                    SLDRXConfigurationIndicator,
    choice-extension            ProtocolIE-SingleContainer { { SLDRXInformation-ExtIEs } }
}

SLDRXCycleLength ::= ENUMERATED{ms10, ms20, ms32, ms40, ms60, ms64, ms70, ms80, ms128, ms160, ms256, ms320, ms512, ms640, ms1024, ms1280, ms2048,
ms2560, ms5120, ms10240, ...}

SLDRXConfigurationIndicator ::= ENUMERATED{ release, ...}

SLDRXInformation-ExtIEs F1AP-PROTOCOL-IES ::= {
    ...
}

SL-PHY-MAC-RLC-Config ::= OCTET STRING

SL-PHY-MAC-RLC-ConfigExt ::= OCTET STRING

```

SL-RLC-ChannelToAddModList ::= OCTET STRING

SL-ConfigDedicatedEUTRA-Info ::= OCTET STRING

SliceAvailableCapacity ::= SEQUENCE {
 sliceAvailableCapacityList SliceAvailableCapacityList,
 iE-Extensions ProtocolExtensionContainer { { SliceAvailableCapacity-ExtIEs } } OPTIONAL
 }

SliceAvailableCapacity-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
 ...
 }

SliceAvailableCapacityList ::= SEQUENCE (SIZE(1.. maxnoofBPLMNsNR)) OF SliceAvailableCapacityItem

SliceAvailableCapacityItem ::= SEQUENCE {
 plmnIdentity PLMN-Identity,
 snssaiAvailableCapacity-List SNSSAIAvailableCapacity-List,
 iE-Extensions ProtocolExtensionContainer { { SliceAvailableCapacityItem-ExtIEs } } OPTIONAL
 }

SliceAvailableCapacityItem-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
 ...
 }

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

SNSSAIAvailableCapacity-Item ::= SEQUENCE {
 snssai SNSSAI,
 sliceAvailableCapacityValueDownlink INTEGER (0..100) OPTIONAL,
 sliceAvailableCapacityValueUplink INTEGER (0..100) OPTIONAL,
 iE-Extensions ProtocolExtensionContainer { { SNSSAIAvailableCapacity-Item-ExtIEs } } OPTIONAL
 }

SNSSAIAvailableCapacity-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
 ...
 }

SliceRadioResourceStatus ::= SEQUENCE {
 sliceRadioResourceStatus SliceRadioResourceStatus-List,
 iE-Extensions ProtocolExtensionContainer { { SliceRadioResourceStatus-ExtIEs } } OPTIONAL
 }

SliceRadioResourceStatus-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
 ...
 }

SliceRadioResourceStatus-List ::= SEQUENCE (SIZE(1..maxnoofBPLMNsNR)) OF SliceRadioResourceStatus-Item

SliceRadioResourceStatus-Item ::= SEQUENCE {
 plmnIdentity PLMN-Identity,
 snssaiRadioResourceStatus-List SNSSAIRadioResourceStatus-List,
 iE-Extensions ProtocolExtensionContainer { { SliceRadioResourceStatus-Item-ExtIEs } } OPTIONAL
 }

```

}

SliceRadioResourceStatus-Item-ExtIEs    F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

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

SNSSAIRadioResourceStatus-Item ::= SEQUENCE {
    SNSSAI          SNSSAI,
    SNSSAIid1GBRPRUsage    INTEGER (0..100),
    SNSSAIul1GBRPRUsage    INTEGER (0..100),
    SNSSAIid1NonGBRPRUsage    INTEGER (0..100),
    SNSSAIul1NonGBRPRUsage    INTEGER (0..100),
    SNSSAIid1TotalPRBAllocation    INTEGER (0..100),
    SNSSAIul1TotalPRBAllocation    INTEGER (0..100),
    iE-Extensions          ProtocolExtensionContainer { { SNSSAIRadioResourceStatus-Item-ExtIEs } } OPTIONAL
}

SNSSAIRadioResourceStatus-Item-ExtIEs    F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

SliceSupportList ::= SEQUENCE (SIZE(1.. maxnoofSliceItems)) OF SliceSupportItem

SliceSupportItem ::= SEQUENCE {
    SNSSAI          SNSSAI,
    iE-Extensions          ProtocolExtensionContainer { { SliceSupportItem-ExtIEs } } OPTIONAL
}

SliceSupportItem-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

SliceToReportList ::= SEQUENCE (SIZE(1.. maxnoofBPLMNsNR)) OF SliceToReportItem

SliceToReportItem ::= SEQUENCE {
    pLMNIdentity          PLMN-Identity,
    SNSSAIlist            SNSSAI-list,
    iE-Extensions          ProtocolExtensionContainer { { SliceToReportItem-ExtIEs } } OPTIONAL
}

SliceToReportItem-ExtIEs    F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

SlotNumber ::= INTEGER (0..79)

SNSSAI-list ::= SEQUENCE (SIZE(1.. maxnoofSliceItems)) OF SNSSAI-Item

SNSSAI-Item ::= SEQUENCE {
    SNSSAI          SNSSAI,
    iE-Extensions          ProtocolExtensionContainer { { SNSSAI-Item-ExtIEs } } OPTIONAL
}

```

```

SNSSAI-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

Slot-Configuration-List ::= SEQUENCE (SIZE(1.. maxnoofslots)) OF Slot-Configuration-Item

Slot-Configuration-Item ::= SEQUENCE {
    slotIndex          INTEGER (0..5119, ...),
    symbolAllocInSlot  SymbolAllocInSlot,
    iE-Extensions      ProtocolExtensionContainer { { Slot-Configuration-ItemExtIEs } } OPTIONAL
}

Slot-Configuration-ItemExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

SNSSAI ::= SEQUENCE {
    sst          OCTET STRING (SIZE(1)),
    sd          OCTET STRING (SIZE(3)) OPTIONAL ,
    iE-Extensions      ProtocolExtensionContainer { { SNSSAI-ExtIEs } } OPTIONAL
}

SNSSAI-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

SpatialDirectionInformation ::= SEQUENCE {
    nr-PRSBearInformation NR-PRSBearInformation,
    iE-Extensions      ProtocolExtensionContainer { { SpatialDirectionInformation-ExtIEs } } OPTIONAL
}

SpatialDirectionInformation-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

SpatialRelationInfo ::= SEQUENCE {
    spatialRelationForResourceID SpatialRelationForResourceID,
    iE-Extensions      ProtocolExtensionContainer { {SpatialRelationInfo-ExtIEs} } OPTIONAL
}

SpatialRelationInfo-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

SpatialRelationForResourceID ::= SEQUENCE (SIZE(1..maxnoofSpatialRelations)) OF SpatialRelationForResourceIDItem

SpatialRelationForResourceIDItem ::= SEQUENCE {
    referenceSignal ReferenceSignal,
    iE-Extensions      ProtocolExtensionContainer { {SpatialRelationForResourceIDItem-ExtIEs} } OPTIONAL
}

SpatialRelationForResourceIDItem-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {

```

```

}
...
}

SpatialRelationPerSRSResource ::= SEQUENCE {
    spatialRelationPerSRSResource-List SpatialRelationPerSRSResource-List,
    iE-Extensions ProtocolExtensionContainer { { SpatialRelationPerSRSResource-ExtIEs} } OPTIONAL,
    ...
}

SpatialRelationPerSRSResource-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

SpatialRelationPerSRSResource-List ::= SEQUENCE(SIZE (1.. maxnoSRS-ResourcePerSet)) OF SpatialRelationPerSRSResourceItem

SpatialRelationPerSRSResourceItem ::= SEQUENCE {
    referenceSignal ReferenceSignal,
    iE-Extensions ProtocolExtensionContainer { { SpatialRelationPerSRSResourceItem-ExtIEs} } OPTIONAL,
    ...
}

SpatialRelationPerSRSResourceItem-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

SpatialRelationPos ::= CHOICE {
    sSBPos SSB,
    pRSInformationPos PRSInformationPos,
    choice-extension ProtocolIE-SingleContainer {{ SpatialInformationPos-ExtIEs }}
}

SpatialInformationPos-ExtIEs F1AP-PROTOCOL-IES ::= {
    ...
}

SpectrumSharingGroupID ::= INTEGER (1..maxCelllineNB)

SRBID ::= INTEGER (0..3, ..., 4)

SRBs-FailedToBeSetup-Item ::= SEQUENCE {
    sRBID SRBID ,
    cause Cause OPTIONAL,
    iE-Extensions ProtocolExtensionContainer { { SRBs-FailedToBeSetup-ItemExtIEs } } OPTIONAL,
    ...
}

SRBs-FailedToBeSetup-ItemExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

SRBs-FailedToBeSetupMod-Item ::= SEQUENCE {
    sRBID SRBID ,
    cause Cause OPTIONAL,
    iE-Extensions ProtocolExtensionContainer { { SRBs-FailedToBeSetupMod-ItemExtIEs } } OPTIONAL,

```

```

    ...
}

SRBs-FailedToBeSetupMod-ItemExtIEs  F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

SRBs-Modified-Item ::= SEQUENCE {
    SRBID                SRBID,
    LCID                  LCID,
    iE-Extensions        ProtocolExtensionContainer { { SRBs-Modified-ItemExtIEs } } OPTIONAL,
    ...
}

SRBs-Modified-ItemExtIEs  F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

SRBs-Required-ToBeReleased-Item ::= SEQUENCE {
    SRBID                SRBID,
    iE-Extensions        ProtocolExtensionContainer { { SRBs-Required-ToBeReleased-ItemExtIEs } } OPTIONAL,
    ...
}

SRBs-Required-ToBeReleased-ItemExtIEs  F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

SRBs-Setup-Item ::= SEQUENCE {
    SRBID                SRBID,
    LCID                  LCID,
    iE-Extensions        ProtocolExtensionContainer { { SRBs-Setup-ItemExtIEs } } OPTIONAL,
    ...
}

SRBs-Setup-ItemExtIEs  F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

SRBs-SetupMod-Item ::= SEQUENCE {
    SRBID                SRBID,
    LCID                  LCID,
    iE-Extensions        ProtocolExtensionContainer { { SRBs-SetupMod-ItemExtIEs } } OPTIONAL,
    ...
}

SRBs-SetupMod-ItemExtIEs  F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

SRBs-ToBeReleased-Item ::= SEQUENCE {
    SRBID                SRBID,
    iE-Extensions        ProtocolExtensionContainer { { SRBs-ToBeReleased-ItemExtIEs } } OPTIONAL,
    ...
}

```

```

}

SRBs-ToBeReleased-ItemExtIEs    F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

SRBs-ToBeSetup-Item ::= SEQUENCE {
    srbID          SRBID ,
    duplicationIndication DuplicationIndication OPTIONAL,
    iE-Extensions  ProtocolExtensionContainer { { SRBs-ToBeSetup-ItemExtIEs } } OPTIONAL,
    ...
}

SRBs-ToBeSetup-ItemExtIEs    F1AP-PROTOCOL-EXTENSION ::= {
    { ID id-AdditionalDuplicationIndication CRITICALITY ignore EXTENSION AdditionalDuplicationIndication PRESENCE optional }|
    { ID id-SDTRLCBearerConfiguration      CRITICALITY ignore EXTENSION SDTRLCBearerConfiguration PRESENCE optional }|
    { ID id-SRBMappingInfo                  CRITICALITY ignore EXTENSION UuRLCChannelID PRESENCE optional },
    ...
}

SRBs-ToBeSetupMod-Item ::= SEQUENCE {
    srbID          SRBID,
    duplicationIndication DuplicationIndication OPTIONAL,
    iE-Extensions  ProtocolExtensionContainer { { SRBs-ToBeSetupMod-ItemExtIEs } } OPTIONAL,
    ...
}

SRBs-ToBeSetupMod-ItemExtIEs    F1AP-PROTOCOL-EXTENSION ::= {
    { ID id-AdditionalDuplicationIndication CRITICALITY ignore EXTENSION AdditionalDuplicationIndication PRESENCE optional }|
    { ID id-SRBMappingInfo                  CRITICALITY ignore EXTENSION UuRLCChannelID PRESENCE optional }|
    { ID id-CG-SDTIndicatorSetup            CRITICALITY reject EXTENSION CG-SDTIndicatorSetup PRESENCE optional },
    ...
}

SRSCarrier-List ::= SEQUENCE (SIZE(1.. maxnoSRS-Carriers)) OF SRSCarrier-List-Item

SRSCarrier-List-Item ::= SEQUENCE {
    pointA          INTEGER (0..3279165),
    uplinkChannelBW-PerSCS-List UplinkChannelBW-PerSCS-List,
    activeULBWP      ActiveULBWP,
    pci              NRPCI OPTIONAL,
    iE-Extensions    ProtocolExtensionContainer { { SRSCarrier-List-Item-ExtIEs } } OPTIONAL
}

SRSCarrier-List-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

SRSConfig ::= SEQUENCE {
    srsResource-List          SRSResource-List OPTIONAL,
    posSRSResource-List       PosSRSResource-List OPTIONAL,
    srsResourceSet-List        SRSResourceSet-List OPTIONAL,
    posSRSResourceSet-List     PosSRSResourceSet-List OPTIONAL,
    iE-Extensions              ProtocolExtensionContainer { { SRSConfig-ExtIEs } } OPTIONAL
}

```

```

}

SRSSConfig-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

SRSSConfiguration ::= SEQUENCE {
    srSCarrier-List          SRSCarrier-List,
    iE-Extensions            ProtocolExtensionContainer { { SRSSConfiguration-ExtIEs } } OPTIONAL
}

SRSSConfiguration-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

SrsFrequency ::= INTEGER (0..3279165)

SRSPortIndex ::= ENUMERATED {id1000, id1001, id1002, id1003,...}

SRSPosResourceID ::= INTEGER (0..63)

SRSSResource ::= SEQUENCE {
    srSSResourceID                SRSSResourceID,
    nrofSRS-Ports                 ENUMERATED {port1, ports2, ports4},
    transmissionComb              TransmissionComb,
    startPosition                 INTEGER (0..13),
    nrofSymbols                   ENUMERATED {n1, n2, n4},
    repetitionFactor              ENUMERATED {n1, n2, n4},
    freqDomainPosition            INTEGER (0..67),
    freqDomainShift               INTEGER (0..268),
    c-SRS                        INTEGER (0..63),
    b-SRS                        INTEGER (0..3),
    b-hop                        INTEGER (0..3),
    groupOrSequenceHopping        ENUMERATED { neither, groupHopping, sequenceHopping },
    resourceType                  ResourceType,
    sequenceId                    INTEGER (0..1023),
    iE-Extensions                 ProtocolExtensionContainer { { SRSSResource-ExtIEs } } OPTIONAL
}

SRSSResource-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    { ID id-nrofSymbolsExtended      CRITICALITY ignore EXTENSION NrofSymbolsExtended      PRESENCE optional}|
    { ID id-repetitionFactorExtended CRITICALITY ignore EXTENSION RepetitionFactorExtended PRESENCE optional}|
    { ID id-startRBHopping           CRITICALITY ignore EXTENSION StartRBHopping           PRESENCE optional}|
    { ID id-startRBIndex             CRITICALITY ignore EXTENSION StartRBIndex             PRESENCE optional},
    ...
}

SRSSResourceID ::= INTEGER (0..63)

SRSSResourceID-List ::= SEQUENCE (SIZE (1..maxnoSRS-ResourcePerSet)) OF SRSSResourceID

SRSSResource-List ::= SEQUENCE (SIZE (1..maxnoSRS-Resources)) OF SRSSResource

SRSSResourceSet ::= SEQUENCE {

```



```

    SRSResourceSetID          SRSResourceSetID,
    SRSResourceID-List        SRSResourceID-List,
    resourceSetType            ResourceSetType,
    iE-Extensions              ProtocolExtensionContainer { { SRSResourceSet-ExtIEs } } OPTIONAL
}

SRSResourceSet-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

SRSResourceSetID ::= INTEGER (0..15, ...)

SRSResourceSetList ::= SEQUENCE (SIZE(1.. maxnoSRS-ResourceSets)) OF SRSResourceSetItem

SRSResourceSetItem ::= SEQUENCE {
    numSRSresourcesperset    INTEGER (1..16, ...)    OPTIONAL,
    periodicityList           PeriodicityList        OPTIONAL,
    spatialRelationInfo       SpatialRelationInfo     OPTIONAL,
    pathlossReferenceInfo     PathlossReferenceInfo    OPTIONAL,
    iE-Extensions             ProtocolExtensionContainer { { SRSResourceSetItemExtIEs } } OPTIONAL
}

SRSResourceSetItemExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    { ID id-SRSSpatialRelationPerSRSResource    CRITICALITY ignore  EXTENSION SpatialRelationPerSRSResource PRESENCE optional},
    ...
}

SRSResourceSet-List ::= SEQUENCE (SIZE (1..maxnoSRS-ResourceSets)) OF SRSResourceSet

SRSResourceTrigger ::= SEQUENCE {
    aperiodicSRSResourceTriggerList    AperiodicSRSResourceTriggerList,
    iE-Extensions                      ProtocolExtensionContainer { {SRSResourceTrigger-ExtIEs} } OPTIONAL
}

SRSResourceTrigger-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

SRSResourcetype ::= SEQUENCE {
    SRSResourceTypeChoice            SRSResourceTypeChoice,
    iE-Extensions                    ProtocolExtensionContainer { { SRSResourcetype-ExtIEs} }    OPTIONAL,
    ...
}

SRSResourcetype-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    { ID id-SRSPortIndex              CRITICALITY ignore EXTENSION SRSPortIndex    PRESENCE optional },
    ...
}

SRSResourceTypeChoice ::= CHOICE {
    SRSResourceInfo                SRSInfo,
    posSRSResourceInfo             PosSRSInfo,
    choice-extension                ProtocolIE-SingleContainer { { SRSResourceTypeChoice-ExtIEs} }
}

```

```

}

SRSResourceTypeChoice-ExtIEs F1AP-PROTOCOL-IES ::= {
    ...
}

SRSInfo ::= SEQUENCE {
    sRSResource          SRSResourceID,
    ...
}

SRSPosRRCTInactiveConfig ::= OCTET STRING

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

PosSRSInfo ::= SEQUENCE {
    posSRSResourceID      SRSPosResourceID,
    ...
}

SSB ::= SEQUENCE {
    pCI-NR                NRPCI,
    ssb-index              SSB-Index OPTIONAL,
    iE-Extensions          ProtocolExtensionContainer { {SSB-ExtIEs} } OPTIONAL
}

SSBCoverageModification-List ::= SEQUENCE (SIZE (1..maxnoofSSBAreas)) OF SSBCoverageModification-Item

SSBCoverageModification-Item ::= SEQUENCE {
    ssbIndex                INTEGER(0..63),
    ssbCoverageState         SSBCoverageState,
    iE-Extensions            ProtocolExtensionContainer { { SSBCoverageModification-Item-ExtIEs} } OPTIONAL,
    ...
}

SSBCoverageModification-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

SSBCoverageState ::= INTEGER (0..15, ...)

SSB-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

SSB-freqInfo ::= INTEGER (0..maxNRARFCN)

SSB-Index ::= INTEGER(0..63)

SSB-subcarrierSpacing ::= ENUMERATED {kHz15, kHz30, kHz120, kHz240, spare3, spare2, spare1, ...}

SSB-transmissionPeriodicity ::= ENUMERATED {sf10, sf20, sf40, sf80, sf160, sf320, sf640, ..., sf5}

```

SSB-transmissionTimingOffset ::= INTEGER (0..127, ...)

SSB-transmissionBitmap ::= CHOICE {
 shortBitmap BIT STRING (SIZE (4)),
 mediumBitmap BIT STRING (SIZE (8)),
 longBitmap BIT STRING (SIZE (64)),
 choice-extension ProtocolIE-SingleContainer { { SSB-transmissionBitmap-ExtIEs } }
 }

SSB-transmissionBitmap-ExtIEs F1AP-PROTOCOL-IES ::= {
 ...
 }

SSBAreaCapacityValueList ::= SEQUENCE (SIZE(1.. maxnoofSSBAreas)) OF SSBAreaCapacityValueItem

SSBAreaCapacityValueItem ::= SEQUENCE {
 ssbIndex INTEGER(0..63),
 ssbAreaCapacityValue INTEGER (0..100),
 iE-Extensions ProtocolExtensionContainer { { SSBAreaCapacityValueItem-ExtIEs } } OPTIONAL
 }

SSBAreaCapacityValueItem-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
 ...
 }

SSBAreaRadioResourceStatusList ::= SEQUENCE (SIZE(1.. maxnoofSSBAreas)) OF SSBAreaRadioResourceStatusItem

SSBAreaRadioResourceStatusItem ::= SEQUENCE {
 ssbIndex INTEGER(0..63),
 ssbAreaDLGBRPRUsage INTEGER (0..100),
 ssbAreaULGBRPRUsage INTEGER (0..100),
 ssbAreaDLnon-GBRPRUsage INTEGER (0..100),
 ssbAreaULnon-GBRPRUsage INTEGER (0..100),
 ssbAreaDLTotalPRUsage INTEGER (0..100),
 ssbAreaULTotalPRUsage INTEGER (0..100),
 dlschedulingPDCCHCEUsage INTEGER (0..100) OPTIONAL,
 ulschedulingPDCCHCEUsage INTEGER (0..100) OPTIONAL,
 iE-Extensions ProtocolExtensionContainer { { SSBAreaRadioResourceStatusItem-ExtIEs } } OPTIONAL
 }

SSBAreaRadioResourceStatusItem-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
 ...
 }

SSBInformation ::= SEQUENCE {
 ssbInformationList SSBInformationList,
 iE-Extensions ProtocolExtensionContainer { { SSBInformation-ExtIEs } } OPTIONAL
 }

SSBInformation-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
 ...
 }

```

SSBInformationList ::= SEQUENCE (SIZE(1.. maxnoofSSBs)) OF SSBInformationItem

SSBInformationItem ::= SEQUENCE {
    sSB-Configuration      SSB-TF-Configuration,
    pCI-NR                 NRPCI,
    iE-Extensions          ProtocolExtensionContainer { { SSBInformationItem-ExtIEs } }    OPTIONAL
}

SSBInformationItem-ExtIEs  F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

SSB-PositionsInBurst ::= CHOICE {
    shortBitmap              BIT STRING (SIZE (4)),
    mediumBitmap             BIT STRING (SIZE (8)),
    longBitmap              BIT STRING (SIZE (64)),
    choice-extension         ProtocolIE-SingleContainer { {SSB-PositionsInBurst-ExtIEs} }
}

SSB-PositionsInBurst-ExtIEs F1AP-PROTOCOL-IES ::= {
    ...
}

SSB-TF-Configuration ::= SEQUENCE {
    sSB-frequency            INTEGER (0..3279165),
    sSB-subcarrier-spacing  ENUMERATED {kHz15, kHz30, kHz60, kHz120, kHz240, ..., kHz480, kHz960},
    -- The value kHz60 is not supported in this version of the specification.
    sSB-Transmit-power      INTEGER (-60..50),
    sSB-periodicity         ENUMERATED {ms5, ms10, ms20, ms40, ms80, ms160, ...},
    sSB-half-frame-offset   INTEGER(0..1),
    sSB-SFN-offset          INTEGER(0..15),
    sSB-position-in-burst   SSB-PositionsInBurst    OPTIONAL,
    sFNInitialisationTime   RelativeTime1900       OPTIONAL,
    iE-Extensions           ProtocolExtensionContainer { { SSB-TF-Configuration-ExtIEs} } OPTIONAL
}

SSB-TF-Configuration-ExtIEs  F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

SSBToReportList ::= SEQUENCE (SIZE(1.. maxnoofSSBAreas)) OF SSBToReportItem

SSBToReportItem ::= SEQUENCE {
    sSBIndex                INTEGER(0..63),
    iE-Extensions           ProtocolExtensionContainer { { SSBToReportItem-ExtIEs} } OPTIONAL
}

SSBToReportItem-ExtIEs  F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

StartRBIndex ::= CHOICE{
    freqScalingFactor2     INTEGER(0..1),

```

```

    freqScalingFactor4    INTEGER(0..3),
    choice-extension      ProtocolIE-SingleContainer { { StartRBIndex-ExtIEs } }
}
StartRBIndex-ExtIEs F1AP-PROTOCOL-IES ::= {
    ...
}

StartRBHopping ::= ENUMERATED {enable}

StartTimeAndDuration ::= SEQUENCE {
    startTime            RelativeTime1900                OPTIONAL,
    duration              INTEGER (0..90060, ...)         OPTIONAL,
    iE-Extensions        ProtocolExtensionContainer { { StartTimeAndDuration-ExtIEs } } OPTIONAL,
    ...
}

StartTimeAndDuration-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

SUL-Information ::= SEQUENCE {
    SUL-NRARFCN          INTEGER (0..maxNRARFCN),
    SUL-transmission-Bandwidth Transmission-Bandwidth,
    iE-Extensions        ProtocolExtensionContainer { { SUL-InformationExtIEs } } OPTIONAL,
    ...
}

SUL-InformationExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    { ID id-CarrierList    CRITICALITY ignore EXTENSION NRCarrierList    PRESENCE optional }|
    { ID id-FrequencyShift7p5khz CRITICALITY ignore EXTENSION FrequencyShift7p5khz PRESENCE optional },
    ...
}

SubcarrierSpacing ::= ENUMERATED { kHz15, kHz30, kHz60, kHz120, kHz240, spare3, spare2, spare1, ...}

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

SuccessfulH0ReportInformationList ::= SEQUENCE (SIZE(1.. maxnoofSuccessfulH0Reports)) OF SuccessfulH0ReportInformation-Item

SuccessfulH0ReportInformation-Item ::= SEQUENCE {
    successfulH0ReportContainer OCTET STRING,
    iE-Extensions ProtocolExtensionContainer { { SuccessfulH0ReportInformation-Item-ExtIEs } } OPTIONAL
}

SuccessfulH0ReportInformation-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

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

SupportedSULFreqBandItem ::= SEQUENCE {
    freqBandIndicatorNr    INTEGER (1..1024,...),
    iE-Extensions          ProtocolExtensionContainer { { SupportedSULFreqBandItem-ExtIEs } } OPTIONAL,

```

```

    ...
}

SupportedSULFreqBandItem-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

SurvivalTime ::= INTEGER (0.. 1920000,...)

SymbolAllocInSlot ::= CHOICE {
    all-DL                NULL,
    all-UL                NULL,
    both-DL-and-UL        NumDLULSymbols,
    choice-extension      ProtocolIE-SingleContainer { { SymbolAllocInSlot-ExtIEs } }
}

SymbolAllocInSlot-ExtIEs F1AP-PROTOCOL-IES ::= {
    ...
}

SystemFrameNumber ::= INTEGER (0..1023)

SystemInformationAreaID ::=BIT STRING (SIZE (24))

-- T

FiveGS-TAC ::= OCTET STRING (SIZE(3))

Configured-EPS-TAC ::= OCTET STRING (SIZE(2))

TargetCellList ::= SEQUENCE (SIZE(1..maxnoofCH0cells)) OF TargetCellList-Item

TargetCellList-Item ::= SEQUENCE {
    target-cell            NRCGI,
    iE-Extensions          ProtocolExtensionContainer { { TargetCellList-Item-ExtIEs} } OPTIONAL
}

TargetCellList-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

NSAGSupportList ::= SEQUENCE (SIZE(1.. maxnoofNSAGs)) OF NSAGSupportItem

NSAGSupportItem ::= SEQUENCE {
    nSAG-ID                NSAG-ID,
    nSAGSLiceSupport        ExtendedSliceSupportList,
    iE-Extensions          ProtocolExtensionContainer { {NSAGSupportItem-ExtIEs} } OPTIONAL,
    ...
}

NSAGSupportItem-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

```

NSAG-ID ::= INTEGER (0..255, ...)

```
TDD-Info ::= SEQUENCE {
    nRFreqInfo          NRFreqInfo,
    transmission-Bandwidth Transmission-Bandwidth,
    iE-Extensions        ProtocolExtensionContainer { {TDD-Info-ExtIEs} } OPTIONAL,
    ...
}
```

```
TDD-Info-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    {ID id-IntendedTDD-DL-ULConfig CRITICALITY ignore EXTENSION IntendedTDD-DL-ULConfig PRESENCE optional}|
    {ID id-TDD-UL-DLConfigCommonNR CRITICALITY ignore EXTENSION TDD-UL-DLConfigCommonNR PRESENCE optional }|
    {ID id-CarrierList CRITICALITY ignore EXTENSION NRCarrierList PRESENCE optional }|
    {ID id-Transmission-Bandwidth-asymmetric CRITICALITY ignore EXTENSION Transmission-Bandwidth-asymmetric PRESENCE optional },
    ...
}
```

```
TDD-InfoRel16 ::= SEQUENCE {
    tDD-FreqInfo          FreqInfoRel16 OPTIONAL,
    sUL-FreqInfo          FreqInfoRel16 OPTIONAL,
    tDD-UL-DLConfigCommonNR TDD-UL-DLConfigCommonNR OPTIONAL,
    iE-Extensions        ProtocolExtensionContainer { {TDD-InfoRel16-ExtIEs} } OPTIONAL,
    ...
}
```

```
TDD-InfoRel16-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}
```

TDD-UL-DLConfigCommonNR ::= OCTET STRING

```
TRPTEGInformation ::= CHOICE {
    rxTx-TEG          RxTxTEG,
    rx-TEG            RxTEG,
    choice-extension   ProtocolIE-SingleContainer { { TRPTEGInformation-ExtIEs} }
}
```

```
TRPTEGInformation-ExtIEs F1AP-PROTOCOL-IES ::= {
    ...
}
```

```
RxTxTEG ::= SEQUENCE {
    tRP-RxTx-TEGInformation TRP-RxTx-TEGInformation,
    tRP-Tx-TEGInformation   TRP-Tx-TEGInformation OPTIONAL,
    iE-Extensions          ProtocolExtensionContainer { { RxTxTEG-ExtIEs } } OPTIONAL,
    ...
}
```

```
RxTxTEG-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}
```

```
RxTEG ::= SEQUENCE {
```

```

    TRP-Rx-TEGInformation      TRP-Rx-TEGInformation,
    TRP-Tx-TEGInformation      TRP-Tx-TEGInformation,
    IE-Extensions              ProtocolExtensionContainer { { RxTEG-ExtIEs } }    OPTIONAL,
    ...
}

RxTEG-ExtIEs    F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

TimeReferenceInformation ::= SEQUENCE {
    referenceTime      ReferenceTime,
    referenceSFN       ReferenceSFN,
    uncertainty        Uncertainty      OPTIONAL,
    timeInformationType TimeInformationType OPTIONAL,
    IE-Extensions      ProtocolExtensionContainer { {TimeReferenceInformation-ExtIEs} }    OPTIONAL
}

TimeReferenceInformation-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

TimeInformationType ::= ENUMERATED {localClock}

TimeStamp ::= SEQUENCE {
    systemFrameNumber      SystemFrameNumber,
    slotIndex              TimeStampSlotIndex,
    measurementTime        RelativeTime1900    OPTIONAL,
    IE-Extension            ProtocolExtensionContainer { { TimeStamp-ExtIEs } }    OPTIONAL
}

TimeStamp-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

TimeStampSlotIndex ::= CHOICE {
    SCS-15      INTEGER(0..9),
    SCS-30      INTEGER(0..19),
    SCS-60      INTEGER(0..39),
    SCS-120     INTEGER(0..79),
    choice-extension    ProtocolIE-SingleContainer { { TimeStampSlotIndex-ExtIEs } }
}

TimeStampSlotIndex-ExtIEs F1AP-PROTOCOL-IES ::= {
    { ID id-SCS-480      CRITICALITY reject TYPE SCS-480 PRESENCE mandatory}|
    { ID id-SCS-960      CRITICALITY reject TYPE SCS-960 PRESENCE mandatory},
    ...
}

TimeToWait ::= ENUMERATED {v1s, v2s, v5s, v10s, v20s, v60s, ...}

TimingErrorMargin ::= ENUMERATED {m0Tc, m2Tc, m4Tc, m6Tc, m8Tc, m12Tc, m16Tc, m20Tc, m24Tc, m32Tc, m40Tc, m48Tc, m56Tc, m64Tc, m72Tc, m80Tc, ...}

TimingMeasurementQuality ::= SEQUENCE {

```



```

    measurementQuality    INTEGER(0..31),
    resolution             ENUMERATED{m0dot1, m1, m10, m30, ...},
    iE-Extensions          ProtocolExtensionContainer { { TimingMeasurementQuality-ExtIEs} } OPTIONAL
}

TimingMeasurementQuality-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

TMGI ::= OCTET STRING (SIZE(6))

TNLAssociationUsage ::= ENUMERATED {
    ue,
    non-ue,
    both,
    ...
}

TNLCapacityIndicator ::= SEQUENCE {
    dLTNOfferedCapacity    INTEGER (1.. 16777216,...),
    dLTNLAvailableCapacity INTEGER (0.. 100,...),
    uLTNOfferedCapacity    INTEGER (1.. 16777216,...),
    uLTNLAvailableCapacity INTEGER (0.. 100,...),
    iE-Extensions          ProtocolExtensionContainer { { TNLCapacityIndicator-ExtIEs} } OPTIONAL
}

TNLCapacityIndicator-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

TraceActivation ::= SEQUENCE {
    traceID                TraceID,
    interfacesToTrace       InterfacesToTrace,
    traceDepth              TraceDepth,
    traceCollectionEntityIPAddress TransportLayerAddress,
    iE-Extensions          ProtocolExtensionContainer { {TraceActivation-ExtIEs} } OPTIONAL
}

TraceActivation-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    {ID id-mdtConfiguration CRITICALITY ignore EXTENSION MDTConfiguration PRESENCE optional}|
    {ID id-TraceCollectionEntityURI CRITICALITY ignore EXTENSION URI-address PRESENCE optional},
    ...
}

TraceDepth ::= ENUMERATED {
    minimum,
    medium,
    maximum,
    minimumWithoutVendorSpecificExtension,
    mediumWithoutVendorSpecificExtension,
    maximumWithoutVendorSpecificExtension,
    ...
}

```

```

TraceID ::= OCTET STRING (SIZE(8))

TrafficMappingInfo ::= CHOICE {
    iptolayer2TrafficMappingInfo          IPTolayer2TrafficMappingInfo,
    bAPlayerBHRLCchannelMappingInfo       BAPlayerBHRLCchannelMappingInfo,
    choice-extension                       ProtocolIE-SingleContainer { { TrafficMappingInfo-ExtIEs } }
}

TrafficMappingInfo-ExtIEs F1AP-PROTOCOL-IES ::= {
    ...
}

TransportLayerAddress ::= BIT STRING (SIZE(1..160, ...))

TransactionID ::= INTEGER (0..255, ...)

Transmission-Bandwidth ::= SEQUENCE {
    nRSCS      NRSCS,
    nRNRB      NRNRB,
    iE-Extensions          ProtocolExtensionContainer { { Transmission-Bandwidth-ExtIEs } } OPTIONAL,
    ...
}

Transmission-Bandwidth-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

Transmission-Bandwidth-asymmetric ::= SEQUENCE {
    ul-Transmission-Bandwidth      Transmission-Bandwidth,
    dl-Transmission-Bandwidth      Transmission-Bandwidth,
    iE-Extensions          ProtocolExtensionContainer { { Transmission-Bandwidth-asymmetric-ExtIEs } } OPTIONAL,
    ...
}

Transmission-Bandwidth-asymmetric-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

TransmissionComb ::= CHOICE {
    n2      SEQUENCE {
        combOffset-n2      INTEGER (0..1),
        cyclicShift-n2     INTEGER (0..7)
    },
    n4      SEQUENCE {
        combOffset-n4      INTEGER (0..3),
        cyclicShift-n4     INTEGER (0..11)
    },
    choice-extension          ProtocolIE-SingleContainer { { TransmissionComb-ExtIEs } }
}

TransmissionComb-ExtIEs F1AP-PROTOCOL-IES ::= {
    { ID id-transmissionCombN8 CRITICALITY reject TYPE TransmissionCombN8 PRESENCE mandatory},
    ...
}

```

```

TransmissionCombn8 ::= SEQUENCE {
    combOffset-n8          INTEGER (0..7),
    cyclicShift-n8         INTEGER (0..5),
    iE-Extensions          ProtocolExtensionContainer { { TransmissionCombn8-ExtIEs } } OPTIONAL
}

TransmissionCombn8-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

TransmissionCombPos ::= CHOICE {
    n2    SEQUENCE {
        combOffset-n2    INTEGER (0..1),
        cyclicShift-n2    INTEGER (0..7)
    },
    n4    SEQUENCE {
        combOffset-n4    INTEGER (0..3),
        cyclicShift-n4    INTEGER (0..11)
    },
    n8    SEQUENCE {
        combOffset-n8    INTEGER (0..7),
        cyclicShift-n8    INTEGER (0..5)
    },
    choice-extension      ProtocolIE-SingleContainer { { TransmissionCombPos-ExtIEs } }
}

TransmissionCombPos-ExtIEs F1AP-PROTOCOL-IES ::= {
    ...
}

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

Transport-UP-Layer-Address-Info-To-Add-List ::= SEQUENCE (SIZE(1.. maxnoofTLAs)) OF Transport-UP-Layer-Address-Info-To-Add-Item

Transport-UP-Layer-Address-Info-To-Add-Item ::= SEQUENCE {
    iP-SecTransportLayerAddress    TransportLayerAddress,
    gTPTransportLayerAddressToAdd  GTPTLAs                      OPTIONAL,
    iE-Extensions                  ProtocolExtensionContainer { { Transport-UP-Layer-Address-Info-To-Add-ItemExtIEs } } OPTIONAL
}

Transport-UP-Layer-Address-Info-To-Add-ItemExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

Transport-UP-Layer-Address-Info-To-Remove-List ::= SEQUENCE (SIZE(1.. maxnoofTLAs)) OF Transport-UP-Layer-Address-Info-To-Remove-Item

Transport-UP-Layer-Address-Info-To-Remove-Item ::= SEQUENCE {
    iP-SecTransportLayerAddress    TransportLayerAddress,
    gTPTransportLayerAddressToRemove GTPTLAs                      OPTIONAL,
    iE-Extensions                  ProtocolExtensionContainer { { Transport-UP-Layer-Address-Info-To-Remove-ItemExtIEs } } OPTIONAL
}

Transport-UP-Layer-Address-Info-To-Remove-ItemExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

```

```

}

TransmissionActionIndicator ::= ENUMERATED {stop, ..., restart }

TRPBeamAntennaInformation ::= SEQUENCE {
    choice-TRP-Beam-Antenna-Info-Item          Choice-TRP-Beam-Antenna-Info-Item
    iE-Extensions                             ProtocolExtensionContainer {{ TRPBeamAntennaInformation-ExtIes}}    , OPTIONAL,
    ...
}

TRPBeamAntennaInformation-ExtIes F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

Choice-TRP-Beam-Antenna-Info-Item ::= CHOICE {
    reference                TRPID,
    explicit                 TRP-BeamAntennaExplicitInformation,
    noChange                NULL,
    choice-extension        ProtocolIE-SingleContainer { { Choice-TRP-Beam-Info-Item-ExtIes } }
}

Choice-TRP-Beam-Info-Item-ExtIes F1AP-PROTOCOL-IES ::= {
    ...
}

TRP-BeamAntennaExplicitInformation ::= SEQUENCE {
    trp-BeamAntennaAngles          TRP-BeamAntennaAngles,
    lcs-to-gcs-translation          LCS-to-GCS-Translation                                OPTIONAL,
    iE-Extensions                 ProtocolExtensionContainer {{ TRP-BeamAntennaExplicitInformation-ExtIes}}    OPTIONAL,
    ...
}

TRP-BeamAntennaExplicitInformation-ExtIes F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

TRP-BeamAntennaAngles ::= SEQUENCE (SIZE (1.. maxnoAzimuthAngles)) OF TRP-BeamAntennaAnglesList-Item

TRP-BeamAntennaAnglesList-Item ::= SEQUENCE {
    trp-azimuth-angle            INTEGER (0..359),
    trp-azimuth-angle-fine       INTEGER (0..9) OPTIONAL,
    trp-elevation-angle-list      SEQUENCE (SIZE (1.. maxnoElevationAngles)) OF TRP-ElevationAngleList-Item,
    iE-Extensions                ProtocolExtensionContainer {{ TRP-BeamAntennaAnglesList-Item-ExtIes}}    OPTIONAL,
    ...
}

TRP-BeamAntennaAnglesList-Item-ExtIes F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

TRP-ElevationAngleList-Item ::= SEQUENCE {
    trp-elevation-angle          INTEGER (0..180),

```

```

    trp-elevation-angle-fine          INTEGER (0..9)  OPTIONAL,
    trp-beam-power-list              SEQUENCE (SIZE (2..maxNumResourcesPerAngle)) OF TRP-Beam-Power-Item,
    iE-Extensions                    ProtocolExtensionContainer {{ TRP-ElevationAngleList-Item-ExtIEs}}  OPTIONAL,
    ...
}
TRP-ElevationAngleList-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

TRP-Beam-Power-Item ::= SEQUENCE {
    pRSResourceSetID                PRS-Resource-Set-ID                                OPTIONAL,
    pRSResourceID                   PRS-Resource-ID,
    relativePower                   INTEGER (0..30), --negative value
    relativePowerFine               INTEGER (0..9)  OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer {{ TRP-Beam-Power-Item-ExtIEs}}  OPTIONAL,
    ...
}

TRP-Beam-Power-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

TRPID ::= INTEGER (0.. maxnoofTRPs, ...)

TRPInformation ::= SEQUENCE {
    tRPID                           TRPID,
    tRPInformationTypeResponseList  TRPInformationTypeResponseList,
    iE-Extensions                   ProtocolExtensionContainer { { TRPInformation-ExtIEs } }  OPTIONAL
}

TRPInformation-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

TRPInformationItem ::= SEQUENCE {
    tRPInformation                   TRPInformation,
    iE-Extensions                   ProtocolExtensionContainer { { TRPInformationItem-ExtIEs } }  OPTIONAL
}

TRPInformationItem-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

TRPInformationTypeItem ::= ENUMERATED {
    nrPCI,
    nG-RAN-CGI,
    arfcn,
    pRSConfig,
    sSBConfig,
    sFNInitTime,
    spatialDirectInfo,
    geoCoord,
    ...,

```

```

    trp-type,
    ondemandPRS,
    trpTxTeg,
    beam-antenna-info
}

```

TRPInformationTypeResponseList ::= SEQUENCE (SIZE(1.. maxnoofTRPInfoTypes)) OF TRPInformationTypeResponseItem

```

TRPInformationTypeResponseItem ::= CHOICE {
    pCI-NR                NRPCI,
    nG-RAN-CGI            NR CGI,
    nRARFCN               INTEGER (0..maxNRARFCN),
    PRSConfiguration      PRSConfiguration,
    sSBInformation         SSBInformation,
    sFNInitialisationTime RelativeTime1900,
    spatialDirectionInformation SpatialDirectionInformation,
    geographicalCoordinates GeographicalCoordinates,
    choice-extension       ProtocolIE-SingleContainer { { TRPInformationTypeResponseItem-ExtIEs } }
}

```

```

TRPInformationTypeResponseItem-ExtIEs F1AP-PROTOCOL-IES ::= {
    { ID id-TRPType                CRITICALITY reject    TYPE TRPType                PRESENCE mandatory }|
    { ID id-OnDemandPRS            CRITICALITY reject    TYPE OnDemandPRS-Info       PRESENCE mandatory }|
    { ID id-TRPTxTEGAssociation     CRITICALITY reject    TYPE TRPTxTEGAssociation    PRESENCE mandatory }|
    { ID id-TRPBeamAntennaInformation CRITICALITY reject    TYPE TRPBeamAntennaInformation PRESENCE mandatory },
    ...
}

```

TRPList ::= SEQUENCE (SIZE(1.. maxnoofTRPs)) OF TRPListItem

```

TRPListItem ::= SEQUENCE {
    trPID                TRPID,
    iE-Extensions        ProtocolExtensionContainer { { TRPListItem-ExtIEs } } OPTIONAL
}

```

```

TRPListItem-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

```

```

TRPMeasurementQuality ::= SEQUENCE {
    trpMeasurementQuality-Item TRPMeasurementQuality-Item,
    iE-Extensions              ProtocolExtensionContainer { {TRPMeasurementQuality-ExtIEs} } OPTIONAL
}

```

```

TRPMeasurementQuality-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

```

```

TRPMeasurementQuality-Item ::= CHOICE {
    timingMeasurementQuality TimingMeasurementQuality,
    angleMeasurementQuality  AngleMeasurementQuality,
    choice-extension          ProtocolIE-SingleContainer { { TRPMeasurementQuality-Item-ExtIEs } }
}

```

```

}

TRPMMeasurementQuality-Item-ExtIEs F1AP-PROTOCOL-IES ::= {
    ...
}

TRP-MeasurementRequestList ::= SEQUENCE (SIZE (1..maxNoOfMeasTRPs)) OF TRP-MeasurementRequestItem

TRP-MeasurementRequestItem ::= SEQUENCE {
    tRPID TRPID,
    search-window-information Search-window-information OPTIONAL,
    iE-extensions ProtocolExtensionContainer { { TRP-MeasurementRequestItem-ExtIEs } } OPTIONAL
}

TRP-MeasurementRequestItem-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    { ID id-NRCGI CRITICALITY ignore EXTENSION NRCGI PRESENCE optional }|
    { ID id-AoA-SearchWindow CRITICALITY ignore EXTENSION AoA-AssistanceInfo PRESENCE optional }|
    { ID id-NumberOfTRPRxTEG CRITICALITY ignore EXTENSION NumberOfTRPRxTEG PRESENCE optional }|
    { ID id-NumberOfTRPRxTxTEG CRITICALITY ignore EXTENSION NumberOfTRPRxTxTEG PRESENCE optional },
    ...
}

TRP-PRS-Info-List ::= SEQUENCE (SIZE(1.. maxnoofPRSTRPs)) OF TRP-PRS-Info-List-Item

TRP-PRS-Info-List-Item ::= SEQUENCE {
    tRP-ID TRPID,
    nR-PCI NRPCI,
    CGI-NR NRCGI OPTIONAL,
    pRSConfiguration PRSConfiguration,
    iE-Extensions ProtocolExtensionContainer { { TRP-PRS-Info-List-Item-ExtIEs} } OPTIONAL,
    ...
}

TRP-PRS-Info-List-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

TRPPositionDefinitionType ::= CHOICE {
    direct TRPPositionDirect,
    referenced TRPPositionReferenced,
    choice-extension ProtocolIE-SingleContainer { { TRPPositionDefinitionType-ExtIEs } }
}

TRPPositionDefinitionType-ExtIEs F1AP-PROTOCOL-IES ::= {
    ...
}

TRPPositionDirect ::= SEQUENCE {
    accuracy TRPPositionDirectAccuracy,
    iE-extensions ProtocolExtensionContainer { { TRPPositionDirect-ExtIEs } } OPTIONAL
}

TRPPositionDirect-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {

```

```

    ...
}

TRPPositionDirectAccuracy ::= CHOICE {
    trPPosition          AccessPointPosition,
    trPHAposition        NGRANHighAccuracyAccessPointPosition,
    choice-extension     ProtocolIE-SingleContainer { { TRPPositionDirectAccuracy-ExtIEs } }
}

TRPPositionDirectAccuracy-ExtIEs F1AP-PROTOCOL-IES ::= {
    ...
}

TRPPositionReferenced ::= SEQUENCE {
    referencePoint          ReferencePoint,
    referencePointType      TRPReferencePointType,
    iE-extensions           ProtocolExtensionContainer { { TRPPositionReferenced-ExtIEs } } OPTIONAL
}

TRPPositionReferenced-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

TRPReferencePointType ::= CHOICE {
    trPPositionRelativeGeodetic      RelativeGeodeticLocation,
    trPPositionRelativeCartesian     RelativeCartesianLocation,
    choice-extension                 ProtocolIE-SingleContainer { { TRPReferencePointType-ExtIEs } }
}

TRPReferencePointType-ExtIEs F1AP-PROTOCOL-IES ::= {
    ...
}

TRP-Rx-TEGInformation ::= SEQUENCE {
    trP-Rx-TEGID          INTEGER (0..31),
    trP-Rx-TimingErrorMargin TimingErrorMargin,
    iE-Extensions         ProtocolExtensionContainer { { TRP-Rx-TEGInformation-ExtIEs } } OPTIONAL,
    ...
}

TRP-Rx-TEGInformation-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

TRP-RxTx-TEGInformation ::= SEQUENCE {
    trP-RxTx-TEGID          INTEGER (0..255),
    trP-RxTx-TimingErrorMargin RxTxTimingErrorMargin,
    iE-Extensions           ProtocolExtensionContainer { { TRP-RxTx-TEGInformation-ExtIEs } } OPTIONAL,
    ...
}

TRP-RxTx-TEGInformation-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

```



```

TRP-Tx-TEGInformation ::= SEQUENCE {
    trp-Tx-TEGID          INTEGER (0..7),
    trp-Tx-TimingErrorMargin TimingErrorMargin,
    iE-Extensions         ProtocolExtensionContainer { { TRP-Tx-TEGInformation-ExtIEs } } OPTIONAL,
    ...
}

TRP-Tx-TEGInformation-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

TRPTxTEGAssociation ::= SEQUENCE (SIZE(1.. maxnoTRPTEGs)) OF TRPTEG-Item

TRPTEG-Item ::= SEQUENCE {
    trp-Tx-TEGInformation TRP-Tx-TEGInformation,
    dl-PRSResourceSetID   PRS-Resource-Set-ID,
    dl-PRSResourceID-List SEQUENCE (SIZE(1.. maxnoofPRS-ResourcesPerSet)) OF DLPRSResourceID-Item OPTIONAL,
    iE-Extensions         ProtocolExtensionContainer { { TRPTEGItem-ExtIEs } } OPTIONAL,
    ...
}

TRPTEGItem-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

DLPRSResourceID-Item ::= SEQUENCE {
    dl-PRSResourceID PRS-Resource-ID,
    iE-Extensions    ProtocolExtensionContainer { { DLPRSResource-Item-ExtIEs } } OPTIONAL,
    ...
}

DLPRSResource-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

TypeOfError ::= ENUMERATED {
    not-understood,
    missing,
    ...
}

Transport-Layer-Address-Info ::= SEQUENCE {
    transport-UP-Layer-Address-Info-To-Add-List Transport-UP-Layer-Address-Info-To-Add-List OPTIONAL,
    transport-UP-Layer-Address-Info-To-Remove-List Transport-UP-Layer-Address-Info-To-Remove-List OPTIONAL,
    iE-Extensions ProtocolExtensionContainer { { Transport-Layer-Address-Info-ExtIEs } } OPTIONAL
}

Transport-Layer-Address-Info-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

```

```

TRPType ::= ENUMERATED {
    prsOnlyTP,
    srsOnlyRP,
    tp,
    rp,
    trp,
    ...
}

TSCAssistanceInformation ::= SEQUENCE {
    periodicity          Periodicity,
    burstArrivalTime     BurstArrivalTime
    iE-Extensions        ProtocolExtensionContainer { {TSCAssistanceInformation-ExtIEs} } OPTIONAL,
    ...
}

TSCAssistanceInformation-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    { ID id-SurvivalTime     CRITICALITY ignore EXTENSION SurvivalTime     PRESENCE optional },
    ...
}

TSTrafficCharacteristics ::= SEQUENCE {
    tSCAssistanceInformationDL      TSCAssistanceInformation      OPTIONAL,
    tSCAssistanceInformationUL      TSCAssistanceInformation      OPTIONAL,
    iE-Extensions        ProtocolExtensionContainer { {TSTrafficCharacteristics-ExtIEs} } OPTIONAL,
    ...
}

TSTrafficCharacteristics-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

TRP-MeasurementUpdateList ::= SEQUENCE (SIZE (1..maxNoOfMeasTRPs)) OF TRP-MeasurementUpdateItem

TRP-MeasurementUpdateItem ::= SEQUENCE {
    trp-ID          TRPID,
    aoA-window-information    AoA-AssistanceInfo OPTIONAL,
    iE-extensions        ProtocolExtensionContainer { { TRP-MeasurementUpdateItem-ExtIEs } } OPTIONAL,
    ...
}

TRP-MeasurementUpdateItem-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    { ID id-NumberOfTRPRxTEG      CRITICALITY ignore EXTENSION NumberOfTRPRxTEG      PRESENCE optional }|
    { ID id-NumberOfTRPRxTxTEG    CRITICALITY ignore EXTENSION NumberOfTRPRxTxTEG    PRESENCE optional },
    ...
}

TwoPHRModeMCG ::= ENUMERATED {enabled, ...}

TwoPHRModeSCG ::= ENUMERATED {enabled, ...}

-- U
UAC-Assistance-Info ::= SEQUENCE {

```

```

    uACPLMN-List      UACPLMN-List,
    iE-Extensions     ProtocolExtensionContainer { { UAC-Assistance-InfoExtIEs } } OPTIONAL
}

UAC-Assistance-InfoExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

UACPLMN-List ::= SEQUENCE (SIZE(1..maxnoofUACPLMNs)) OF UACPLMN-Item

UACPLMN-Item ::= SEQUENCE {
    pLMNIdentity      PLMN-Identity,
    uACType-List      UACType-List, iE-Extensions     ProtocolExtensionContainer { { UACPLMN-Item-ExtIEs } } OPTIONAL
}

UACPLMN-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    { ID id-NID CRITICALITY ignore EXTENSION NID PRESENCE optional },
    ...
}

UACType-List ::= SEQUENCE (SIZE(1..maxnoofUACperPLMN)) OF UACType-Item

UACType-Item ::= SEQUENCE {
    uACReductionIndication      UACReductionIndication,
    uACCategoryType             UACCategoryType,
    iE-Extensions               ProtocolExtensionContainer { { UACType-Item-ExtIEs } } OPTIONAL
}

UACType-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

UACCategoryType ::= CHOICE {
    uACstandardized      UACAction,
    uACOperatorDefined    UACOperatorDefined,
    choice-extension      ProtocolIE-SingleContainer { { UACCategoryType-ExtIEs } }
}

UACCategoryType-ExtIEs F1AP-PROTOCOL-IES ::= {
    ...
}

UACOperatorDefined ::= SEQUENCE {
    accessCategory      INTEGER (32..63,...),
    accessIdentity      BIT STRING (SIZE(7)),
    iE-Extensions       ProtocolExtensionContainer { { UACOperatorDefined-ExtIEs } } OPTIONAL
}

UACOperatorDefined-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

UACAction ::= ENUMERATED {

```

```

    reject-non-emergency-mo-dt,
    reject-rrc-cr-signalling,
    permit-emergency-sessions-and-mobile-terminated-services-only,
    permit-high-priority-sessions-and-mobile-terminated-services-only,
    ...
}

UACReductionIndication ::= INTEGER (0..100)

UE-associatedLogicalF1-ConnectionItem ::= SEQUENCE {
    gNB-CU-UE-F1AP-ID      GNB-CU-UE-F1AP-ID      OPTIONAL,
    gNB-DU-UE-F1AP-ID      GNB-DU-UE-F1AP-ID      OPTIONAL,
    iE-Extensions          ProtocolExtensionContainer { { UE-associatedLogicalF1-ConnectionItemExtIEs } } OPTIONAL,
    ...
}

UEAssistanceInformation ::= OCTET STRING

UEAssistanceInformationEUTRA ::= OCTET STRING

UE-associatedLogicalF1-ConnectionItemExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

UE-CapabilityRAT-ContainerList ::= OCTET STRING

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

UEIdentityIndexValue ::= CHOICE {
    indexLength10          BIT STRING (SIZE (10)),
    choice-extension        ProtocolIE-SingleContainer { {UEIdentityIndexValueChoice-ExtIEs} }
}

UEIdentityIndexValueChoice-ExtIEs F1AP-PROTOCOL-IES ::= {
    ...
}

UEIdentity-List-For-Paging-Item ::= SEQUENCE {
    uEIdentityIndexValue    UEIdentityIndexValue,
    pagingDRX               PagingDRX            OPTIONAL,
    iE-Extensions           ProtocolExtensionContainer { { UEIdentity-List-For-Paging-Item-ExtIEs } } OPTIONAL
}

UEIdentity-List-For-Paging-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

UE-MulticastMRBs-ConfirmedToBeModified-Item ::= SEQUENCE {
    mRB-ID                  MRB-ID,
    mrb-type-reconfiguration MBSPTPretransmissionTunnelRequired OPTIONAL,
    iE-Extensions           ProtocolExtensionContainer { { UE-MulticastMRBs-ConfirmedToBeModified-Item-ExtIEs } } OPTIONAL
}

```

```

UE-MulticastMRBs-ConfirmedToBeModified-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}
UE-MulticastMRBs-RequiredToBeModified-Item ::= SEQUENCE {
    mRB-ID MRB-ID,
    mrb-type-reconfiguration ENUMERATED {true, ...} OPTIONAL,
    mrb-reconfigured-RLCtype ENUMERATED {
        rlc-um-ptp,
        rlc-am-ptp,
        rlc-um-dl-ptm,
        two-rlc-um-dl-ptp-and-dl-ptm,
        three-rlc-um-dl-ptp-ul-ptp-dl-ptm,
        two-rlc-am-ptp-um-dl-ptm,
        ...} OPTIONAL,
    iE-Extensions ProtocolExtensionContainer { { UE-MulticastMRBs-RequiredToBeModified-Item-ExtIEs } } OPTIONAL
}

UE-MulticastMRBs-RequiredToBeModified-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    { ID id-MulticastF1UContextReferenceCU CRITICALITY reject EXTENSION MulticastF1UContextReferenceCU PRESENCE
optional},
    ...
}

UE-MulticastMRBs-RequiredToBeReleased-Item ::= SEQUENCE {
    mRB-ID MRB-ID,
    iE-Extensions ProtocolExtensionContainer { { UE-MulticastMRBs-RequiredToBeReleased-Item-ExtIEs } } OPTIONAL
}

UE-MulticastMRBs-RequiredToBeReleased-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

UE-MulticastMRBs-Setup-Item ::= SEQUENCE {
    mRB-ID MRB-ID,
    multicastF1UContextReferenceCU MulticastF1UContextReferenceCU,
    iE-Extensions ProtocolExtensionContainer { { UE-MulticastMRBs-Setup-Item-ExtIEs } } OPTIONAL
}

UE-MulticastMRBs-Setup-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

UE-MulticastMRBs-Setupnew-Item ::= SEQUENCE {
    mRB-ID MRB-ID,
    multicastF1UContextReferenceCU MulticastF1UContextReferenceCU,
    iE-Extensions ProtocolExtensionContainer { { UE-MulticastMRBs-Setupnew-Item-ExtIEs } } OPTIONAL
}

UE-MulticastMRBs-Setupnew-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

UE-MulticastMRBs-ToBeReleased-Item ::= SEQUENCE {
    mRB-ID MRB-ID,

```

```

    iE-Extensions          ProtocolExtensionContainer { { UE-MulticastMRBs-ToBeReleased-Item-ExtIEs } } OPTIONAL
}

UE-MulticastMRBs-ToBeReleased-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

UE-MulticastMRBs-ToBeSetup-Item ::= SEQUENCE {
    mRB-ID                  MRB-ID,
    mbsPTPRetransmissionTunnelRequired    MBSPTPRetransmissionTunnelRequired    OPTIONAL,
    mbsPTPForwardingRequiredInformation    MRB-ProgressInformation              OPTIONAL,
    iE-Extensions          ProtocolExtensionContainer { { UE-MulticastMRBs-ToBeSetup-Item-ExtIEs } } OPTIONAL
}

UE-MulticastMRBs-ToBeSetup-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    { ID id-Source-MRB-ID          CRITICALITY ignore EXTENSION MRB-ID          PRESENCE optional },
    ...
}

UE-MulticastMRBs-ToBeSetup-atModify-Item ::= SEQUENCE {
    mRB-ID                  MRB-ID,
    mbsPTPRetransmissionTunnelRequired    MBSPTPRetransmissionTunnelRequired    OPTIONAL,
    mbsPTPForwardingRequiredInformation    MRB-ProgressInformation              OPTIONAL,
    iE-Extensions          ProtocolExtensionContainer { { UE-MulticastMRBs-ToBeSetup-atModify-Item-ExtIEs } } OPTIONAL
}

UE-MulticastMRBs-ToBeSetup-atModify-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

UEPagingCapability ::= SEQUENCE {
    iNACTIVEStatePODetermination          ENUMERATED {supported, ...}          OPTIONAL,
    iE-Extension          ProtocolExtensionContainer { { UEPagingCapability-ExtIEs } }          OPTIONAL,
    ...
}

UEPagingCapability-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    { ID id-RedCapIndication          CRITICALITY ignore EXTENSION RedCapIndication          PRESENCE optional },
    ...
}

UEReportingInformation ::= SEQUENCE {
    reportingAmount          ENUMERATED {ma0, ma1, ma2, ma4, ma8, ma16, ma32, ma64},
    reportingInterval          ENUMERATED {none, one, two, four, eight, ten, sixteen, twenty, thirty-two, sixty-four, ...},
    iE-extensions          ProtocolExtensionContainer { { UEReportingInformation-ExtIEs } }          OPTIONAL,
    ...
}

UEReportingInformation-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

ULTxDirectCurrentMoreCarrierInformation ::= OCTET STRING

```

```

UL-AoA ::= SEQUENCE {
    azimuthAoA          INTEGER (0..3599),
    zenithAoA           INTEGER (0..1799)    OPTIONAL,
    LCS-to-GCS-Translation LCS-to-GCS-Translation  OPTIONAL,
    iE-extensions        ProtocolExtensionContainer { { UL-AoA-ExtIEs } }    OPTIONAL,
    ...
}

UL-AoA-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

UL-BH-Non-UP-Traffic-Mapping ::= SEQUENCE {
    uL-BH-Non-UP-Traffic-Mapping-List    UL-BH-Non-UP-Traffic-Mapping-List,
    iE-Extensions    ProtocolExtensionContainer { { UL-BH-Non-UP-Traffic-Mapping-ExtIEs } } OPTIONAL
}

UL-BH-Non-UP-Traffic-Mapping-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

UL-BH-Non-UP-Traffic-Mapping-List ::= SEQUENCE (SIZE(1..maxnoofNonUPTrafficMappings)) OF UL-BH-Non-UP-Traffic-Mapping-Item

UL-BH-Non-UP-Traffic-Mapping-Item ::= SEQUENCE {
    nonUPTrafficType    NonUPTrafficType,
    bhInfo              BHInfo,
    iE-Extensions        ProtocolExtensionContainer { { UL-BH-Non-UP-Traffic-Mapping-ItemExtIEs } }    OPTIONAL
}

UL-BH-Non-UP-Traffic-Mapping-ItemExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

ULConfiguration ::= SEQUENCE {
    uLUEConfiguration    ULUEConfiguration,
    iE-Extensions        ProtocolExtensionContainer { { ULConfigurationExtIEs } }    OPTIONAL,
    ...
}

ULConfigurationExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

UL-GapFR2-Config ::= OCTET STRING

UL-RT0A-Measurement ::= SEQUENCE {
    uL-RT0A-MeasurementItem    UL-RT0A-MeasurementItem,
    additionalPath-List        AdditionalPath-List OPTIONAL,
    iE-Extensions              ProtocolExtensionContainer { { UL-RT0A-Measurement-ExtIEs } }    OPTIONAL
}

UL-RT0A-Measurement-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    { ID id-ExtendedAdditionalPathList    CRITICALITY ignore EXTENSION ExtendedAdditionalPathList    PRESENCE optional}|
    { ID id-TRPRx-TEGInformation          CRITICALITY ignore EXTENSION TRP-Rx-TEGInformation          PRESENCE optional},

```

```

    ...
}

UL-RT0A-MeasurementItem ::= CHOICE {
    k0          INTEGER (0..1970049),
    k1          INTEGER (0..985025),
    k2          INTEGER (0..492513),
    k3          INTEGER (0..246257),
    k4          INTEGER (0..123129),
    k5          INTEGER (0..61565),
    choice-extension ProtocolIE-SingleContainer { { UL-RT0A-MeasurementItem-ExtIEs } }
}

UL-RT0A-MeasurementItem-ExtIEs F1AP-PROTOCOL-IES ::= {
    ...
}

UL-SRS-RSRP ::= INTEGER (0..126)

UL-SRS-RSRPP ::= SEQUENCE {
    firstPathRSRPP          INTEGER (0..126),
    iE-extensions           ProtocolExtensionContainer { { UL-SRS-RSRPP-ExtIEs } } OPTIONAL,
    ...
}

UL-SRS-RSRPP-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

ULUEConfiguration ::= ENUMERATED {no-data, shared, only, ...}

UL-UP-TNL-Information-to-Update-List-Item ::= SEQUENCE {
    uLUPTNLInformation      UPTransportLayerInformation,
    newULUPTNLInformation   UPTransportLayerInformation OPTIONAL,
    bHInfo BHInfo,
    iE-Extensions           ProtocolExtensionContainer { { UL-UP-TNL-Information-to-Update-List-ItemExtIEs } } OPTIONAL,
    ...
}

UL-UP-TNL-Information-to-Update-List-ItemExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

UL-UP-TNL-Address-to-Update-List-Item ::= SEQUENCE {
    oldIPAddress            TransportLayerAddress,
    newIPAddress            TransportLayerAddress,
    iE-Extensions           ProtocolExtensionContainer { { UL-UP-TNL-Address-to-Update-List-ItemExtIEs } } OPTIONAL,
    ...
}

UL-UP-TNL-Address-to-Update-List-ItemExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

```


ULUPTNLInformation-ToBeSetup-List ::= SEQUENCE (SIZE(1..maxnoofULUPTNLInformation)) OF ULUPTNLInformation-ToBeSetup-Item

ULUPTNLInformation-ToBeSetup-Item ::=SEQUENCE {
 uLUPTNLInformation UPTransportLayerInformation,
 iE-Extensions ProtocolExtensionContainer { { ULUPTNLInformation-ToBeSetup-ItemExtIES } } OPTIONAL,
 ...
 }

ULUPTNLInformation-ToBeSetup-ItemExtIES F1AP-PROTOCOL-EXTENSION ::= {
 { ID id-BHInfo CRITICALITY ignore EXTENSION BHInfo PRESENCE optional }|
 { ID id-DRBMappingInfo CRITICALITY ignore EXTENSION UuRLCChannelID PRESENCE optional },
 ...
 }

Uncertainty ::= INTEGER (0..32767, ...)

UplinkChannelBW-PerSCS-List ::= SEQUENCE (SIZE (1..maxnoSCSs)) OF SCS-SpecificCarrier

UplinkTxDirectCurrentListInformation ::= OCTET STRING

UplinkTxDirectCurrentTwoCarrierListInfo ::= OCTET STRING

UPTransportLayerInformation ::= CHOICE {
 gTPTunnel GTP Tunnel,
 choice-extension ProtocolIE-SingleContainer { { UPTransportLayerInformation-ExtIES} }
 }

UPTransportLayerInformation-ExtIES F1AP-PROTOCOL-IES ::= {
 ...
 }

URI-address ::= VisibleString

Uncertainty-range-AoA ::= INTEGER (0..3599)

Uncertainty-range-ZoA ::= INTEGER (0..1799)

UuRLCChannelID ::= INTEGER (1..32)

UuRLCChannelQoSInformation ::= CHOICE {
 uuRLCChannelQoS QoSFlowLevelQoSParameters,
 uuControlPlaneTrafficType ENUMERATED {srb0,srb1,srb2,...},
 choice-extension ProtocolIE-SingleContainer { { UuRLCChannelQoSInformation-ExtIES} }
 }

UuRLCChannelQoSInformation-ExtIES F1AP-PROTOCOL-IES ::= {
 ...
 }

UuRLCChannelToBeSetupList ::= SEQUENCE (SIZE(1.. maxnoofUuRLCChannels)) OF UuRLCChannelToBeSetupItem

UuRLCChannelToBeSetupItem ::= SEQUENCE {

```

    uuRLCChannelID          UuRLCChannelID,
    uuRLCChannelQoSInformation UuRLCChannelQoSInformation,
    rLCMode                  RLCMode,
    iE-Extensions            ProtocolExtensionContainer { { UuRLCChannelToBeSetupItem-ExtIES } } OPTIONAL,
    ...
}

UuRLCChannelToBeSetupItem-ExtIES F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

UuRLCChannelToBeModifiedList ::= SEQUENCE (SIZE(1.. maxnoofUuRLCChannels)) OF UuRLCChannelToBeModifiedItem

UuRLCChannelToBeModifiedItem ::= SEQUENCE {
    uuRLCChannelID          UuRLCChannelID,
    uuRLCChannelQoSInformation UuRLCChannelQoSInformation OPTIONAL,
    rLCMode                  RLCMode OPTIONAL,
    iE-Extensions            ProtocolExtensionContainer { { UuRLCChannelToBeModifiedItem-ExtIES } } OPTIONAL,
    ...
}

UuRLCChannelToBeModifiedItem-ExtIES F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

UuRLCChannelToBeReleasedList ::= SEQUENCE (SIZE(1.. maxnoofUuRLCChannels)) OF UuRLCChannelToBeReleasedItem

UuRLCChannelToBeReleasedItem ::= SEQUENCE {
    uuRLCChannelID          UuRLCChannelID,
    iE-Extensions            ProtocolExtensionContainer { { UuRLCChannelToBeReleasedItem-ExtIES } } OPTIONAL,
    ...
}

UuRLCChannelToBeReleasedItem-ExtIES F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

UuRLCChannelSetupList ::= SEQUENCE (SIZE(1.. maxnoofUuRLCChannels)) OF UuRLCChannelSetupItem

UuRLCChannelSetupItem ::= SEQUENCE {
    uuRLCChannelID          UuRLCChannelID,
    iE-Extensions            ProtocolExtensionContainer { { UuRLCChannelSetupItem-ExtIES } } OPTIONAL,
    ...
}

UuRLCChannelSetupItem-ExtIES F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

UuRLCChannelFailedToBeSetupList ::= SEQUENCE (SIZE(1.. maxnoofUuRLCChannels)) OF UuRLCChannelFailedToBeSetupItem

UuRLCChannelFailedToBeSetupItem ::= SEQUENCE {
    uuRLCChannelID          UuRLCChannelID,
    cause                    Cause OPTIONAL,

```

```

    iE-Extensions          ProtocolExtensionContainer { { UuRLCChannelFailedToBeSetupItem-ExtIEs } } OPTIONAL,
    ...
}

UuRLCChannelFailedToBeSetupItem-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

UuRLCChannelModifiedList ::= SEQUENCE (SIZE(1.. maxnoofUuRLCChannels)) OF UuRLCChannelModifiedItem

UuRLCChannelModifiedItem ::= SEQUENCE {
    uuRLCChannelID          UuRLCChannelID,
    iE-Extensions          ProtocolExtensionContainer { { UuRLCChannelModifiedItem-ExtIEs } } OPTIONAL,
    ...
}

UuRLCChannelModifiedItem-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

UuRLCChannelFailedToBeModifiedList ::= SEQUENCE (SIZE(1.. maxnoofUuRLCChannels)) OF UuRLCChannelFailedToBeModifiedItem

UuRLCChannelFailedToBeModifiedItem ::= SEQUENCE {
    uuRLCChannelID          UuRLCChannelID,
    cause                   Cause OPTIONAL,
    iE-Extensions          ProtocolExtensionContainer { { UuRLCChannelFailedToBeModifiedItem-ExtIEs } } OPTIONAL,
    ...
}

UuRLCChannelFailedToBeModifiedItem-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

UuRLCChannelRequiredToBeModifiedList ::= SEQUENCE (SIZE(1.. maxnoofUuRLCChannels)) OF UuRLCChannelRequiredToBeModifiedItem

UuRLCChannelRequiredToBeModifiedItem ::= SEQUENCE {
    uuRLCChannelID          UuRLCChannelID,
    iE-Extensions          ProtocolExtensionContainer { { UuRLCChannelRequiredToBeModifiedItem-ExtIEs } } OPTIONAL,
    ...
}

UuRLCChannelRequiredToBeModifiedItem-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

UuRLCChannelRequiredToBeReleasedList ::= SEQUENCE (SIZE(1.. maxnoofUuRLCChannels)) OF UuRLCChannelRequiredToBeReleasedItem

UuRLCChannelRequiredToBeReleasedItem ::= SEQUENCE {
    uuRLCChannelID          UuRLCChannelID,
    iE-Extensions          ProtocolExtensionContainer { { UuRLCChannelRequiredToBeReleasedItem-ExtIEs } } OPTIONAL,
    ...
}

UuRLCChannelRequiredToBeReleasedItem-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {

```

```

    ...
}

-- V
VictimNBSetID ::= SEQUENCE {
    victimNBSetID      GNBSetID,
    iE-Extensions      ProtocolExtensionContainer { { VictimNBSetID-ExtIEs } }      OPTIONAL
}

VictimNBSetID-ExtIEs  F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

VehicleUE ::= ENUMERATED {
    authorized,
    not-authorized,
    ...
}

PedestrianUE ::= ENUMERATED {
    authorized,
    not-authorized,
    ...
}

-- W

-- X

-- Y

-- Z

ZoAInformation ::= SEQUENCE {
    zenithAoA          INTEGER (0..1799),
    LCS-to-GCS-Translation  LCS-to-GCS-Translation      OPTIONAL,
    iE-extensions      ProtocolExtensionContainer { { ZoAInformation-ExtIEs } }      OPTIONAL,
    ...
}

ZoAInformation-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {
    ...
}

END
-- ASN1STOP

```

9.4.6 Common Definitions

```
-- ASN1START
```

```
-- *****
--
-- Common definitions
--
-- *****

F1AP-CommonDataTypes {
itu-t (0) identified-organization (4) etsi (0) mobileDomain (0)
ngran-access (22) modules (3) flap (3) version1 (1) flap-CommonDataTypes (3) }

DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

Criticality      ::= ENUMERATED { reject, ignore, notify }

Presence        ::= ENUMERATED { optional, conditional, mandatory }

PrivateIE-ID    ::= CHOICE {
    local          INTEGER (0..65535),
    global         OBJECT IDENTIFIER
}

ProcedureCode    ::= INTEGER (0..255)

ProtocolExtensionID ::= INTEGER (0..65535)

ProtocolIE-ID    ::= INTEGER (0..65535)

TriggeringMessage ::= ENUMERATED { initiating-message, successful-outcome, unsuccessful-outcome }

END
-- ASN1STOP
```

9.4.7 Constant Definitions

```
-- ASN1START
-- *****
--
-- Constant definitions
--
-- *****

F1AP-Constants {
itu-t (0) identified-organization (4) etsi (0) mobileDomain (0)
ngran-access (22) modules (3) flap (3) version1 (1) flap-Constants (4) }

DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

-- *****
--
```

```
-- IE parameter types from other modules.
--
-- *****

IMPORTS
    ProcedureCode,
    ProtocolIE-ID

FROM F1AP-CommonDataTypes;

-- *****
--
-- Elementary Procedures
--
-- *****

id-Reset                      ProcedureCode ::= 0
id-F1Setup                    ProcedureCode ::= 1
id-ErrorIndication            ProcedureCode ::= 2
id-gNBDCUConfigurationUpdate  ProcedureCode ::= 3
id-gNBCUCUConfigurationUpdate ProcedureCode ::= 4
id-UEContextSetup             ProcedureCode ::= 5
id-UEContextRelease           ProcedureCode ::= 6
id-UEContextModification      ProcedureCode ::= 7
id-UEContextModificationRequired ProcedureCode ::= 8
id-UEMobilityCommand          ProcedureCode ::= 9
id-UEContextReleaseRequest     ProcedureCode ::= 10
id-InitialULRRRCMessageTransfer ProcedureCode ::= 11
id-DLRRRCMessageTransfer      ProcedureCode ::= 12
id-ULRRRCMessageTransfer      ProcedureCode ::= 13
id-privateMessage             ProcedureCode ::= 14
id-UEInactivityNotification   ProcedureCode ::= 15
id-GNBDCUResourceCoordination ProcedureCode ::= 16
id-SystemInformationDeliveryCommand ProcedureCode ::= 17
id-Paging                     ProcedureCode ::= 18
id-Notify                     ProcedureCode ::= 19
id-WriteReplaceWarning        ProcedureCode ::= 20
id-PWSCancel                  ProcedureCode ::= 21
id-PWSRestartIndication       ProcedureCode ::= 22
id-PWSFailureIndication       ProcedureCode ::= 23
id-GNBDCUStatusIndication     ProcedureCode ::= 24
id-RRCDeliveryReport          ProcedureCode ::= 25
id-F1Removal                  ProcedureCode ::= 26
id-NetworkAccessRateReduction ProcedureCode ::= 27
id-TraceStart                  ProcedureCode ::= 28
id-DeactivateTrace            ProcedureCode ::= 29
id-DUCURadioInformationTransfer ProcedureCode ::= 30
id-CUDURadioInformationTransfer ProcedureCode ::= 31
id-BAPMappingConfiguration    ProcedureCode ::= 32
id-GNBDCUResourceConfiguration ProcedureCode ::= 33
id-IABTNLAddressAllocation    ProcedureCode ::= 34
id-IABUPConfigurationUpdate    ProcedureCode ::= 35
id-resourceStatusReportingInitiation ProcedureCode ::= 36
```

id-resourceStatusReporting	ProcedureCode ::= 37
id-accessAndMobilityIndication	ProcedureCode ::= 38
id-accessSuccess	ProcedureCode ::= 39
id-cellTrafficTrace	ProcedureCode ::= 40
id-PositioningMeasurementExchange	ProcedureCode ::= 41
id-PositioningAssistanceInformationControl	ProcedureCode ::= 42
id-PositioningAssistanceInformationFeedback	ProcedureCode ::= 43
id-PositioningMeasurementReport	ProcedureCode ::= 44
id-PositioningMeasurementAbort	ProcedureCode ::= 45
id-PositioningMeasurementFailureIndication	ProcedureCode ::= 46
id-PositioningMeasurementUpdate	ProcedureCode ::= 47
id-TRPInformationExchange	ProcedureCode ::= 48
id-PositioningInformationExchange	ProcedureCode ::= 49
id-PositioningActivation	ProcedureCode ::= 50
id-PositioningDeactivation	ProcedureCode ::= 51
id-E-CIDMeasurementInitiation	ProcedureCode ::= 52
id-E-CIDMeasurementFailureIndication	ProcedureCode ::= 53
id-E-CIDMeasurementReport	ProcedureCode ::= 54
id-E-CIDMeasurementTermination	ProcedureCode ::= 55
id-PositioningInformationUpdate	ProcedureCode ::= 56
id-ReferenceTimeInformationReport	ProcedureCode ::= 57
id-ReferenceTimeInformationReportingControl	ProcedureCode ::= 58
id-BroadcastContextSetup	ProcedureCode ::= 59
id-BroadcastContextRelease	ProcedureCode ::= 60
id-BroadcastContextReleaseRequest	ProcedureCode ::= 61
id-BroadcastContextModification	ProcedureCode ::= 62
id-MulticastGroupPaging	ProcedureCode ::= 63
id-MulticastContextSetup	ProcedureCode ::= 64
id-MulticastContextRelease	ProcedureCode ::= 65
id-MulticastContextReleaseRequest	ProcedureCode ::= 66
id-MulticastContextModification	ProcedureCode ::= 67
id-MulticastDistributionSetup	ProcedureCode ::= 68
id-MulticastDistributionRelease	ProcedureCode ::= 69
id-PDCMeasurementInitiation	ProcedureCode ::= 70
id-PDCMeasurementReport	ProcedureCode ::= 71
id-PDCMeasurementInitiationRequest	ProcedureCode ::= 72
id-PDCMeasurementInitiationResponse	ProcedureCode ::= 73
id-PDCMeasurementInitiationFailure	ProcedureCode ::= 74
id-pRSConfigurationExchange	ProcedureCode ::= 75
id-measurementPreconfiguration	ProcedureCode ::= 76
id-measurementActivation	ProcedureCode ::= 77
id-QoEInformationTransfer	ProcedureCode ::= 78
id-PDCMeasurementTerminationCommand	ProcedureCode ::= 79
id-PDCMeasurementFailureIndication	ProcedureCode ::= 80
id-PosSystemInformationDeliveryCommand	ProcedureCode ::= 81

```
-- *****  
--  
-- Extension constants  
--  
-- *****
```

```
maxPrivateIEs                INTEGER ::= 65535
maxProtocolExtensions         INTEGER ::= 65535
maxProtocolIEs                INTEGER ::= 65535
-- *****
--
-- Lists
--
-- *****

maxNRARFCN                    INTEGER ::= 3279165
maxNoofErrors                  INTEGER ::= 256
maxNoofIndividualF1ConnectionsToReset  INTEGER ::= 65536
maxCellingNBDU                INTEGER ::= 512
maxNoofSCells                  INTEGER ::= 32
maxNoofSRBs                    INTEGER ::= 8
maxNoofDRBs                    INTEGER ::= 64
maxNoofULUPTNLInformation     INTEGER ::= 2
maxNoofDLUPTNLInformation     INTEGER ::= 2
maxNoofBPLMNs                  INTEGER ::= 6
maxNoofCandidateSpCells       INTEGER ::= 64
maxNoofPotentialSpCells       INTEGER ::= 64
maxNoofNrCellBands            INTEGER ::= 32
maxNoofSIBTypes                INTEGER ::= 32
maxNoofSITypes                 INTEGER ::= 32
maxNoofPagingCells            INTEGER ::= 512
maxNoofTNLAAssociations        INTEGER ::= 32
maxNoofQoSFlows                INTEGER ::= 64
maxNoofSliceItems             INTEGER ::= 1024
maxCelllineNB                  INTEGER ::= 256
maxNoofExtendedBPLMNs         INTEGER ::= 6
maxNoofUEIDs                   INTEGER ::= 65536
maxNoofBPLMNsNR               INTEGER ::= 12
maxNoofUACPLMNs               INTEGER ::= 12
maxNoofUACperPLMN             INTEGER ::= 64
maxNoofAdditionalSIBs         INTEGER ::= 63
maxNoofSlots                   INTEGER ::= 5120
maxNoofTLAs                    INTEGER ::= 16
maxNoofGTPTLAs                INTEGER ::= 16
maxNoofBHRLCChannels          INTEGER ::= 65536
maxNoofRoutingEntries          INTEGER ::= 1024
maxNoofIABSTCInfo             INTEGER ::= 45
maxNoofSymbols                 INTEGER ::= 14
maxNoofServingCells           INTEGER ::= 32
maxNoofDUFSlots                INTEGER ::= 320
maxNoofHSNASlots              INTEGER ::= 5120
maxNoofServedCellsIAB         INTEGER ::= 512
maxNoofChildIABNodes          INTEGER ::= 1024
maxNoofNonUPTrafficMappings   INTEGER ::= 32
maxNoofTLAsIAB                INTEGER ::= 1024
maxNoofMappingEntries          INTEGER ::= 67108864
maxNoofDSInfo                  INTEGER ::= 64
maxNoofEgressLinks            INTEGER ::= 2
maxNoofULUPTNLInformationforIAB  INTEGER ::= 32678
maxNoofUPTNLAddresses          INTEGER ::= 8
```


maxnoofSLDRBs	INTEGER ::= 512
maxnoofQoSParaSets	INTEGER ::= 8
maxnoofPC5QoSFlows	INTEGER ::= 2048
maxnoofSSBAreas	INTEGER ::= 64
maxnoofPhysicalResourceBlocks	INTEGER ::= 275
maxnoofPhysicalResourceBlocks-1	INTEGER ::= 274
maxnoofPRACHconfigs	INTEGER ::= 16
maxnoofRACHReports	INTEGER ::= 64
maxnoofRLFReports	INTEGER ::= 64
maxnoofAdditionalPDCPDuplicationTNL	INTEGER ::= 2
maxnoofRLCDuplicationState	INTEGER ::= 3
maxnoofCHOcells	INTEGER ::= 8
maxnoofMDTPLMNs	INTEGER ::= 16
maxnoofCAGsupported	INTEGER ::= 12
maxnoofNIDsupported	INTEGER ::= 12
maxnoofNRSCSs	INTEGER ::= 5
maxnoofExtSliceItems	INTEGER ::= 65535
maxnoofPosMeas	INTEGER ::= 16384
maxnoofTRPInfoTypes	INTEGER ::= 64
maxnoofTRPs	INTEGER ::= 65535
maxnoofSRSTriggerStates	INTEGER ::= 3
maxnoofSpatialRelations	INTEGER ::= 64
maxnoBcastCell	INTEGER ::= 16384
maxnoofAngleInfo	INTEGER ::= 65535
maxnooflcs-gcs-translation	INTEGER ::= 3
maxnoofPath	INTEGER ::= 2
maxnoofMeasE-CID	INTEGER ::= 64
maxnoofSSBs	INTEGER ::= 255
maxnoSRS-ResourceSets	INTEGER ::= 16
maxnoSRS-ResourcePerSet	INTEGER ::= 16
maxnoSRS-Carriers	INTEGER ::= 32
maxnoSCSs	INTEGER ::= 5
maxnoSRS-Resources	INTEGER ::= 64
maxnoSRS-PosResources	INTEGER ::= 64
maxnoSRS-PosResourceSets	INTEGER ::= 16
maxnoSRS-PosResourcePerSet	INTEGER ::= 16
maxnoofPRS-ResourceSets	INTEGER ::= 2
maxnoofPRS-ResourcesPerSet	INTEGER ::= 64
maxNoOfMeasTRPs	INTEGER ::= 64
maxnoofPRSresourceSets	INTEGER ::= 8
maxnoofPRSresources	INTEGER ::= 64
maxnoofSuccessfulHOReports	INTEGER ::= 64
maxnoofNR-UChannelIDs	INTEGER ::= 16
maxServedCellforSON	INTEGER ::= 256
maxNeighbourCellforSON	INTEGER ::= 32
maxAffectedCells	INTEGER ::= 32
maxnoofMRBs	INTEGER ::= 32
maxnoofMBSQoSFlows	INTEGER ::= 64
maxnoofMBSFSAs	INTEGER ::= 256
maxnoofUEIDforPaging	INTEGER ::= 4096
maxnoofCellsforMBS	INTEGER ::= 512
maxnoofTAIforMBS	INTEGER ::= 512
maxnoofMBSAreaSessionIDs	INTEGER ::= 256
maxnoofMBSServiceAreaInformation	INTEGER ::= 256

maxnoofIABCongInd	INTEGER ::= 1024
maxnoofNeighbourNodeCellsIAB	INTEGER ::= 1024
maxnoofRBsetsPerCell	INTEGER ::= 8
maxnoofRBsetsPerCell-1	INTEGER ::= 7
maxnoofMeasPDC	INTEGER ::= 16
maxnoARPs	INTEGER ::= 16
maxnoofULAoAs	INTEGER ::= 8
maxNoPathExtended	INTEGER ::= 8
maxnoTRPTEGs	INTEGER ::= 8
maxFreqLayers	INTEGER ::= 4
maxNumResourcesPerAngle	INTEGER ::= 24
maxnoAzimuthAngles	INTEGER ::= 3600
maxnoElevationAngles	INTEGER ::= 1801
maxnoofPRSTRPs	INTEGER ::= 256
maxnoofQoEInformation	INTEGER ::= 16
maxnoofUuRLCChannels	INTEGER ::= 32
maxnoofPC5RLCChannels	INTEGER ::= 512
maxnoofSMBRValues	INTEGER ::= 8
maxnoofMRBsforUE	INTEGER ::= 64
maxnoofMBSSessionsofUE	INTEGER ::= 256
maxnoofSLdestinations	INTEGER ::= 32
maxnoofNSAGs	INTEGER ::= 256
maxnoofSDTBearers	INTEGER ::= 72
maxnoofServingCellMOs	INTEGER ::= 16
maxNrofBWPs	INTEGER ::= 8
maxnoofPosSITypes	INTEGER ::= 32

```
-- *****
--
-- IEs
--
-- *****
```

id-Cause	ProtocolIE-ID ::= 0
id-Cells-Failed-to-be-Activated-List	ProtocolIE-ID ::= 1
id-Cells-Failed-to-be-Activated-List-Item	ProtocolIE-ID ::= 2
id-Cells-to-be-Activated-List	ProtocolIE-ID ::= 3
id-Cells-to-be-Activated-List-Item	ProtocolIE-ID ::= 4
id-Cells-to-be-Deactivated-List	ProtocolIE-ID ::= 5
id-Cells-to-be-Deactivated-List-Item	ProtocolIE-ID ::= 6
id-CriticalityDiagnostics	ProtocolIE-ID ::= 7
id-CUtoDURRCInformation	ProtocolIE-ID ::= 9
id-DRBs-FailedToBeModified-Item	ProtocolIE-ID ::= 12
id-DRBs-FailedToBeModified-List	ProtocolIE-ID ::= 13
id-DRBs-FailedToBeSetup-Item	ProtocolIE-ID ::= 14
id-DRBs-FailedToBeSetup-List	ProtocolIE-ID ::= 15
id-DRBs-FailedToBeSetupMod-Item	ProtocolIE-ID ::= 16
id-DRBs-FailedToBeSetupMod-List	ProtocolIE-ID ::= 17
id-DRBs-ModifiedConf-Item	ProtocolIE-ID ::= 18
id-DRBs-ModifiedConf-List	ProtocolIE-ID ::= 19
id-DRBs-Modified-Item	ProtocolIE-ID ::= 20

id-DRBs-Modified-List	ProtocolIE-ID ::= 21
id-DRBs-Required-ToBeModified-Item	ProtocolIE-ID ::= 22
id-DRBs-Required-ToBeModified-List	ProtocolIE-ID ::= 23
id-DRBs-Required-ToBeReleased-Item	ProtocolIE-ID ::= 24
id-DRBs-Required-ToBeReleased-List	ProtocolIE-ID ::= 25
id-DRBs-Setup-Item	ProtocolIE-ID ::= 26
id-DRBs-Setup-List	ProtocolIE-ID ::= 27
id-DRBs-SetupMod-Item	ProtocolIE-ID ::= 28
id-DRBs-SetupMod-List	ProtocolIE-ID ::= 29
id-DRBs-ToBeModified-Item	ProtocolIE-ID ::= 30
id-DRBs-ToBeModified-List	ProtocolIE-ID ::= 31
id-DRBs-ToBeReleased-Item	ProtocolIE-ID ::= 32
id-DRBs-ToBeReleased-List	ProtocolIE-ID ::= 33
id-DRBs-ToBeSetup-Item	ProtocolIE-ID ::= 34
id-DRBs-ToBeSetup-List	ProtocolIE-ID ::= 35
id-DRBs-ToBeSetupMod-Item	ProtocolIE-ID ::= 36
id-DRBs-ToBeSetupMod-List	ProtocolIE-ID ::= 37
id-DRXCycle	ProtocolIE-ID ::= 38
id-DUtoCURRCInformation	ProtocolIE-ID ::= 39
id-gNB-CU-UE-F1AP-ID	ProtocolIE-ID ::= 40
id-gNB-DU-UE-F1AP-ID	ProtocolIE-ID ::= 41
id-gNB-DU-ID	ProtocolIE-ID ::= 42
id-gNB-DU-Served-Cells-Item	ProtocolIE-ID ::= 43
id-gNB-DU-Served-Cells-List	ProtocolIE-ID ::= 44
id-gNB-DU-Name	ProtocolIE-ID ::= 45
id-NRCellID	ProtocolIE-ID ::= 46
id-oldgNB-DU-UE-F1AP-ID	ProtocolIE-ID ::= 47
id-ResetType	ProtocolIE-ID ::= 48
id-ResourceCoordinationTransferContainer	ProtocolIE-ID ::= 49
id-RRCContainer	ProtocolIE-ID ::= 50
id-SCell-ToBeRemoved-Item	ProtocolIE-ID ::= 51
id-SCell-ToBeRemoved-List	ProtocolIE-ID ::= 52
id-SCell-ToBeSetup-Item	ProtocolIE-ID ::= 53
id-SCell-ToBeSetup-List	ProtocolIE-ID ::= 54
id-SCell-ToBeSetupMod-Item	ProtocolIE-ID ::= 55
id-SCell-ToBeSetupMod-List	ProtocolIE-ID ::= 56
id-Served-Cells-To-Add-Item	ProtocolIE-ID ::= 57
id-Served-Cells-To-Add-List	ProtocolIE-ID ::= 58
id-Served-Cells-To-Delete-Item	ProtocolIE-ID ::= 59
id-Served-Cells-To-Delete-List	ProtocolIE-ID ::= 60
id-Served-Cells-To-Modify-Item	ProtocolIE-ID ::= 61
id-Served-Cells-To-Modify-List	ProtocolIE-ID ::= 62
id-SpCell-ID	ProtocolIE-ID ::= 63
id-SRBID	ProtocolIE-ID ::= 64
id-SRBs-FailedToBeSetup-Item	ProtocolIE-ID ::= 65
id-SRBs-FailedToBeSetup-List	ProtocolIE-ID ::= 66
id-SRBs-FailedToBeSetupMod-Item	ProtocolIE-ID ::= 67
id-SRBs-FailedToBeSetupMod-List	ProtocolIE-ID ::= 68
id-SRBs-Required-ToBeReleased-Item	ProtocolIE-ID ::= 69
id-SRBs-Required-ToBeReleased-List	ProtocolIE-ID ::= 70
id-SRBs-ToBeReleased-Item	ProtocolIE-ID ::= 71
id-SRBs-ToBeReleased-List	ProtocolIE-ID ::= 72
id-SRBs-ToBeSetup-Item	ProtocolIE-ID ::= 73
id-SRBs-ToBeSetup-List	ProtocolIE-ID ::= 74

id-SRBs-ToBeSetupMod-Item	ProtocolIE-ID ::= 75
id-SRBs-ToBeSetupMod-List	ProtocolIE-ID ::= 76
id-TimeToWait	ProtocolIE-ID ::= 77
id-TransactionID	ProtocolIE-ID ::= 78
id-TransmissionActionIndicator	ProtocolIE-ID ::= 79
id-UE-associatedLogicalF1-ConnectionItem	ProtocolIE-ID ::= 80
id-UE-associatedLogicalF1-ConnectionListResAck	ProtocolIE-ID ::= 81
id-gNB-CU-Name	ProtocolIE-ID ::= 82
id-SCell-FailedtoSetup-List	ProtocolIE-ID ::= 83
id-SCell-FailedtoSetup-Item	ProtocolIE-ID ::= 84
id-SCell-FailedtoSetupMod-List	ProtocolIE-ID ::= 85
id-SCell-FailedtoSetupMod-Item	ProtocolIE-ID ::= 86
id-RRCReconfigurationCompleteIndicator	ProtocolIE-ID ::= 87
id-Cells-Status-Item	ProtocolIE-ID ::= 88
id-Cells-Status-List	ProtocolIE-ID ::= 89
id-Candidate-SpCell-List	ProtocolIE-ID ::= 90
id-Candidate-SpCell-Item	ProtocolIE-ID ::= 91
id-Potential-SpCell-List	ProtocolIE-ID ::= 92
id-Potential-SpCell-Item	ProtocolIE-ID ::= 93
id-FullConfiguration	ProtocolIE-ID ::= 94
id-C-RNTI	ProtocolIE-ID ::= 95
id-SpCellULConfigured	ProtocolIE-ID ::= 96
id-InactivityMonitoringRequest	ProtocolIE-ID ::= 97
id-InactivityMonitoringResponse	ProtocolIE-ID ::= 98
id-DRB-Activity-Item	ProtocolIE-ID ::= 99
id-DRB-Activity-List	ProtocolIE-ID ::= 100
id-EUTRA-NR-CellResourceCoordinationReq-Container	ProtocolIE-ID ::= 101
id-EUTRA-NR-CellResourceCoordinationReqAck-Container	ProtocolIE-ID ::= 102
id-Protected-EUTRA-Resources-List	ProtocolIE-ID ::= 105
id-RequestType	ProtocolIE-ID ::= 106
id-ServCellIndex	ProtocolIE-ID ::= 107
id-RAT-FrequencyPriorityInformation	ProtocolIE-ID ::= 108
id-ExecuteDuplication	ProtocolIE-ID ::= 109
id-NRCGI	ProtocolIE-ID ::= 111
id-PagingCell-Item	ProtocolIE-ID ::= 112
id-PagingCell-List	ProtocolIE-ID ::= 113
id-PagingDRX	ProtocolIE-ID ::= 114
id-PagingPriority	ProtocolIE-ID ::= 115
id-SItype-List	ProtocolIE-ID ::= 116
id-UEIdentityIndexValue	ProtocolIE-ID ::= 117
id-gNB-CU-SystemInformation	ProtocolIE-ID ::= 118
id-HandoverPreparationInformation	ProtocolIE-ID ::= 119
id-gNB-CU-TNL-Association-To-Add-Item	ProtocolIE-ID ::= 120
id-gNB-CU-TNL-Association-To-Add-List	ProtocolIE-ID ::= 121
id-gNB-CU-TNL-Association-To-Remove-Item	ProtocolIE-ID ::= 122
id-gNB-CU-TNL-Association-To-Remove-List	ProtocolIE-ID ::= 123
id-gNB-CU-TNL-Association-To-Update-Item	ProtocolIE-ID ::= 124
id-gNB-CU-TNL-Association-To-Update-List	ProtocolIE-ID ::= 125
id-MaskedIMEISV	ProtocolIE-ID ::= 126
id-PagingIdentity	ProtocolIE-ID ::= 127
id-DutoCURRCContainer	ProtocolIE-ID ::= 128
id-Cells-to-be-Barred-List	ProtocolIE-ID ::= 129
id-Cells-to-be-Barred-Item	ProtocolIE-ID ::= 130
id-TAISliceSupportList	ProtocolIE-ID ::= 131

id-GNB-CU-TNL-Association-Setup-List	ProtocolIE-ID ::= 132
id-GNB-CU-TNL-Association-Setup-Item	ProtocolIE-ID ::= 133
id-GNB-CU-TNL-Association-Failed-To-Setup-List	ProtocolIE-ID ::= 134
id-GNB-CU-TNL-Association-Failed-To-Setup-Item	ProtocolIE-ID ::= 135
id-DRB-Notify-Item	ProtocolIE-ID ::= 136
id-DRB-Notify-List	ProtocolIE-ID ::= 137
id-NotificationControl	ProtocolIE-ID ::= 138
id-RANAC	ProtocolIE-ID ::= 139
id-PWSSystemInformation	ProtocolIE-ID ::= 140
id-RepetitionPeriod	ProtocolIE-ID ::= 141
id-NumberOfBroadcastRequest	ProtocolIE-ID ::= 142
id-Cells-To-Be-Broadcast-List	ProtocolIE-ID ::= 144
id-Cells-To-Be-Broadcast-Item	ProtocolIE-ID ::= 145
id-Cells-Broadcast-Completed-List	ProtocolIE-ID ::= 146
id-Cells-Broadcast-Completed-Item	ProtocolIE-ID ::= 147
id-Broadcast-To-Be-Cancelled-List	ProtocolIE-ID ::= 148
id-Broadcast-To-Be-Cancelled-Item	ProtocolIE-ID ::= 149
id-Cells-Broadcast-Cancelled-List	ProtocolIE-ID ::= 150
id-Cells-Broadcast-Cancelled-Item	ProtocolIE-ID ::= 151
id-NR-CGI-List-For-Restart-List	ProtocolIE-ID ::= 152
id-NR-CGI-List-For-Restart-Item	ProtocolIE-ID ::= 153
id-PWS-Failed-NR-CGI-List	ProtocolIE-ID ::= 154
id-PWS-Failed-NR-CGI-Item	ProtocolIE-ID ::= 155
id-ConfirmedUEID	ProtocolIE-ID ::= 156
id-Cancel-all-Warning-Messages-Indicator	ProtocolIE-ID ::= 157
id-GNB-DU-UE-AMBR-UL	ProtocolIE-ID ::= 158
id-DRXConfigurationIndicator	ProtocolIE-ID ::= 159
id-RLC-Status	ProtocolIE-ID ::= 160
id-DLPDCPSNLength	ProtocolIE-ID ::= 161
id-GNB-DUConfigurationQuery	ProtocolIE-ID ::= 162
id-MeasurementTimingConfiguration	ProtocolIE-ID ::= 163
id-DRB-Information	ProtocolIE-ID ::= 164
id-ServingPLMN	ProtocolIE-ID ::= 165
id-Protected-EUTRA-Resources-Item	ProtocolIE-ID ::= 168
id-GNB-CU-RRC-Version	ProtocolIE-ID ::= 170
id-GNB-DU-RRC-Version	ProtocolIE-ID ::= 171
id-GNBDUOverloadInformation	ProtocolIE-ID ::= 172
id-CellGroupConfig	ProtocolIE-ID ::= 173
id-RLCFailureIndication	ProtocolIE-ID ::= 174
id-UplinkTxDirectCurrentListInformation	ProtocolIE-ID ::= 175
id-DC-Based-Duplication-Configured	ProtocolIE-ID ::= 176
id-DC-Based-Duplication-Activation	ProtocolIE-ID ::= 177
id-SULAccessIndication	ProtocolIE-ID ::= 178
id-AvailablePLMNList	ProtocolIE-ID ::= 179
id-PDUSessionID	ProtocolIE-ID ::= 180
id-ULPDUSessionAggregateMaximumBitRate	ProtocolIE-ID ::= 181
id-ServingCellMO	ProtocolIE-ID ::= 182
id-QoSFlowMappingIndication	ProtocolIE-ID ::= 183
id-RRCDeliveryStatusRequest	ProtocolIE-ID ::= 184
id-RRCDeliveryStatus	ProtocolIE-ID ::= 185
id-BearerTypeChange	ProtocolIE-ID ::= 186
id-RLCMode	ProtocolIE-ID ::= 187
id-Duplication-Activation	ProtocolIE-ID ::= 188
id-Dedicated-SIDelivery-NeededUE-List	ProtocolIE-ID ::= 189

id-Dedicated-SIDelivery-NeededUE-Item	ProtocolIE-ID ::= 190
id-DRX-LongCycleStartOffset	ProtocolIE-ID ::= 191
id-ULPDCPSNLength	ProtocolIE-ID ::= 192
id-SelectedBandCombinationIndex	ProtocolIE-ID ::= 193
id-SelectedFeatureSetEntryIndex	ProtocolIE-ID ::= 194
id-ResourceCoordinationTransferInformation	ProtocolIE-ID ::= 195
id-ExtendedServedPLMNs-List	ProtocolIE-ID ::= 196
id-ExtendedAvailablePLMN-List	ProtocolIE-ID ::= 197
id-Associated-SCell-List	ProtocolIE-ID ::= 198
id-latest-RRC-Version-Enhanced	ProtocolIE-ID ::= 199
id-Associated-SCell-Item	ProtocolIE-ID ::= 200
id-Cell-Direction	ProtocolIE-ID ::= 201
id-SRBs-Setup-List	ProtocolIE-ID ::= 202
id-SRBs-Setup-Item	ProtocolIE-ID ::= 203
id-SRBs-SetupMod-List	ProtocolIE-ID ::= 204
id-SRBs-SetupMod-Item	ProtocolIE-ID ::= 205
id-SRBs-Modified-List	ProtocolIE-ID ::= 206
id-SRBs-Modified-Item	ProtocolIE-ID ::= 207
id-Ph-InfoSCG	ProtocolIE-ID ::= 208
id-RequestedBandCombinationIndex	ProtocolIE-ID ::= 209
id-RequestedFeatureSetEntryIndex	ProtocolIE-ID ::= 210
id-RequestedP-MaxFR2	ProtocolIE-ID ::= 211
id-DRX-Config	ProtocolIE-ID ::= 212
id-IgnoreResourceCoordinationContainer	ProtocolIE-ID ::= 213
id-UEAssistanceInformation	ProtocolIE-ID ::= 214
id-NeedforGap	ProtocolIE-ID ::= 215
id-PagingOrigin	ProtocolIE-ID ::= 216
id-new-gNB-CU-UE-F1AP-ID	ProtocolIE-ID ::= 217
id-RedirectedRRCmessage	ProtocolIE-ID ::= 218
id-new-gNB-DU-UE-F1AP-ID	ProtocolIE-ID ::= 219
id-NotificationInformation	ProtocolIE-ID ::= 220
id-PLMNAssistanceInfoForNetShar	ProtocolIE-ID ::= 221
id-UEContextNotRetrievable	ProtocolIE-ID ::= 222
id-BPLMN-ID-Info-List	ProtocolIE-ID ::= 223
id-SelectedPLMNID	ProtocolIE-ID ::= 224
id-UAC-Assistance-Info	ProtocolIE-ID ::= 225
id-RANUEID	ProtocolIE-ID ::= 226
id-GNB-DU-TNL-Association-To-Remove-Item	ProtocolIE-ID ::= 227
id-GNB-DU-TNL-Association-To-Remove-List	ProtocolIE-ID ::= 228
id-TNLAssociationTransportLayerAddressgNBdu	ProtocolIE-ID ::= 229
id-portNumber	ProtocolIE-ID ::= 230
id-AdditionalSIBMessageList	ProtocolIE-ID ::= 231
id-Cell-Type	ProtocolIE-ID ::= 232
id-IgnorePRACHConfiguration	ProtocolIE-ID ::= 233
id-CG-Config	ProtocolIE-ID ::= 234
id-PDCCH-BlindDetectionSCG	ProtocolIE-ID ::= 235
id-Requested-PDCCH-BlindDetectionSCG	ProtocolIE-ID ::= 236
id-Ph-InfoMCG	ProtocolIE-ID ::= 237
id-MeasGapSharingConfig	ProtocolIE-ID ::= 238
id-systemInformationAreaID	ProtocolIE-ID ::= 239
id-areaScope	ProtocolIE-ID ::= 240
id-RRCContainer-RRCSetupComplete	ProtocolIE-ID ::= 241
id-TraceActivation	ProtocolIE-ID ::= 242
id-TraceID	ProtocolIE-ID ::= 243

id-Neighbour-Cell-Information-List	ProtocolIE-ID ::= 244
id-SymbolAllocInSlot	ProtocolIE-ID ::= 246
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id-BHChannels-Setup-Item	ProtocolIE-ID ::= 261
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id-BHChannels-ToBeModified-List	ProtocolIE-ID ::= 263
id-BHChannels-ToBeReleased-Item	ProtocolIE-ID ::= 264
id-BHChannels-ToBeReleased-List	ProtocolIE-ID ::= 265
id-BHChannels-ToBeSetupMod-Item	ProtocolIE-ID ::= 266
id-BHChannels-ToBeSetupMod-List	ProtocolIE-ID ::= 267
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id-BHChannels-FailedToBeModified-List	ProtocolIE-ID ::= 269
id-BHChannels-FailedToBeSetupMod-Item	ProtocolIE-ID ::= 270
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id-DL-UP-TNL-Address-to-Update-List-Item	ProtocolIE-ID ::= 305
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id-SLDRBs-ToBeModified-List	ProtocolIE-ID ::= 326
id-SLDRBs-ToBeReleased-Item	ProtocolIE-ID ::= 327
id-SLDRBs-ToBeReleased-List	ProtocolIE-ID ::= 328
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id-SLDRBs-ToBeSetup-List	ProtocolIE-ID ::= 330
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id-BroadcastMRBs-FailedToBeSetupMod-Item	ProtocolIE-ID ::= 463

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id-BroadcastMRBs-Setup-List	ProtocolIE-ID ::= 466
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id-BroadcastMRBs-SetupMod-List	ProtocolIE-ID ::= 468
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id-MulticastMRBs-FailedToBeSetup-List	ProtocolIE-ID ::= 484
id-MulticastMRBs-FailedToBeSetup-Item	ProtocolIE-ID ::= 485
id-MulticastMRBs-FailedToBeSetupMod-List	ProtocolIE-ID ::= 486
id-MulticastMRBs-FailedToBeSetupMod-Item	ProtocolIE-ID ::= 487
id-MulticastMRBs-Modified-List	ProtocolIE-ID ::= 488
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id-MulticastMRBs-Setup-List	ProtocolIE-ID ::= 490
id-MulticastMRBs-Setup-Item	ProtocolIE-ID ::= 491
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id-MulticastMRBs-SetupMod-Item	ProtocolIE-ID ::= 493
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id-MulticastMRBs-ToBeSetupMod-Item	ProtocolIE-ID ::= 501
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id-UuRLCChannelToBeReleasedList	ProtocolIE-ID ::= 601
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id-UuRLCChannelRequiredToBeReleasedList	ProtocolIE-ID ::= 607
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id-PC5RLCChannelToBeReleasedList	ProtocolIE-ID ::= 610
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id-PC5RLCChannelFailedToBeModifiedList	ProtocolIE-ID ::= 613
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id-UE-MulticastMRBs-ToBeReleased-Item	ProtocolIE-ID ::= 629
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id-DU-RX-MT-TX-Extend	ProtocolIE-ID ::= 639
id-DU-TX-MT-RX-Extend	ProtocolIE-ID ::= 640
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id-BAP-Header-Rewriting-Removed-List-Item	ProtocolIE-ID ::= 642
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id-SIB15-message	ProtocolIE-ID ::= 648
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id-UE-MulticastMRBs-ConfirmedToBeModified-Item	ProtocolIE-ID ::= 654
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id-UE-MulticastMRBs-RequiredToBeModified-Item	ProtocolIE-ID ::= 656
id-UE-MulticastMRBs-RequiredToBeReleased-List	ProtocolIE-ID ::= 657
id-UE-MulticastMRBs-RequiredToBeReleased-Item	ProtocolIE-ID ::= 658
id-L571Info	ProtocolIE-ID ::= 659
id-L1151Info	ProtocolIE-ID ::= 660
id-SCS-480	ProtocolIE-ID ::= 661
id-SCS-960	ProtocolIE-ID ::= 662
id-SRSPortIndex	ProtocolIE-ID ::= 663
id-PEISubgroupingSupportIndication	ProtocolIE-ID ::= 664
id-NeedForGapsInfoNR	ProtocolIE-ID ::= 665
id-NeedForGapNCSGInfoNR	ProtocolIE-ID ::= 666
id-NeedForGapNCSGInfoEUTRA	ProtocolIE-ID ::= 667
id-procedure-code-668-not-to-be-used	ProtocolIE-ID ::= 668
id-procedure-code-669-not-to-be-used	ProtocolIE-ID ::= 669
id-procedure-code-670-not-to-be-used	ProtocolIE-ID ::= 670
id-Source-MRB-ID	ProtocolIE-ID ::= 671
id-PosMeasurementPeriodicityNR-AoA	ProtocolIE-ID ::= 672
id-RedCapIndication	ProtocolIE-ID ::= 673
id-SRSPosRRCInactiveConfig	ProtocolIE-ID ::= 674
id-SDTBearerConfigurationQueryIndication	ProtocolIE-ID ::= 675
id-SDTBearerConfigurationInfo	ProtocolIE-ID ::= 676
id-UL-GapFR2-Config	ProtocolIE-ID ::= 677
id-ConfigRestrictInfoDAPS	ProtocolIE-ID ::= 678
id-UE-MulticastMRBs-Setup-List	ProtocolIE-ID ::= 679
id-UE-MulticastMRBs-Setup-Item	ProtocolIE-ID ::= 680
id-MulticastF1UContextReferenceCU	ProtocolIE-ID ::= 681

id-PosSITypeList	ProtocolIE-ID ::= 682
id-DAPS-HO-Status	ProtocolIE-ID ::= 683
id-UplinkTxDirectCurrentTwoCarrierListInfo	ProtocolIE-ID ::= 684
id-UE-MulticastMRBs-ToBeSetup-atModify-List	ProtocolIE-ID ::= 685
id-UE-MulticastMRBs-ToBeSetup-atModify-Item	ProtocolIE-ID ::= 686
id-MC-PagingCell-List	ProtocolIE-ID ::= 687
id-MC-PagingCell-Item	ProtocolIE-ID ::= 688
id-SRSPoSRRRCInactiveQueryIndication	ProtocolIE-ID ::= 689
id-ULTxDirectCurrentMoreCarrierInformation	ProtocolIE-ID ::= 690
id-CPACMCGInformation	ProtocolIE-ID ::= 691
id-TwoPHRModeMCG	ProtocolIE-ID ::= 692
id-TwoPHRModeSCG	ProtocolIE-ID ::= 693
id-ExtendedUEIdentityIndexValue	ProtocolIE-ID ::= 694
id-ServingCellMO-List	ProtocolIE-ID ::= 695
id-ServingCellMO-List-Item	ProtocolIE-ID ::= 696
id-ServingCellMO-encoded-in-CGC-List	ProtocolIE-ID ::= 697
id-HashedUEIdentityIndexValue	ProtocolIE-ID ::= 698
id-UE-MulticastMRBs-Setupnew-List	ProtocolIE-ID ::= 699
id-UE-MulticastMRBs-Setupnew-Item	ProtocolIE-ID ::= 700
id-ncd-SSB-RedCapInitialBWP-SDT	ProtocolIE-ID ::= 701
id-nrofSymbolsExtended	ProtocolIE-ID ::= 702
id-repetitionFactorExtended	ProtocolIE-ID ::= 703
id-startRBHopping	ProtocolIE-ID ::= 704
id-startRBIndex	ProtocolIE-ID ::= 705
id-transmissionCombn8	ProtocolIE-ID ::= 706
id-ServCellInfoList	ProtocolIE-ID ::= 707
id-DedicatedSIDeliveryIndication	ProtocolIE-ID ::= 708
id-Configured-BWP-List	ProtocolIE-ID ::= 709
id-Preconfigured-measurement-GAP-Request	ProtocolIE-ID ::= 710
id-BWP-Id	ProtocolIE-ID ::= 711
id-SL-PHY-MAC-RLC-ConfigExt	ProtocolIE-ID ::= 800
id-Transmission-Bandwidth-asymmetric	ProtocolIE-ID ::= 852
id-candidatePSCellsToCancel	ProtocolIE-ID ::= 858

END
-- ASN1STOP

9.4.8 Container Definitions

```
-- ASN1START
-- *****
--
-- Container definitions
--
-- *****

F1AP-Containers {
itu-t (0) identified-organization (4) etsi (0) mobileDomain (0)
ngran-access (22) modules (3) f1ap (3) version1 (1) f1ap-Containers (5) }

DEFINITIONS AUTOMATIC TAGS ::=
```

BEGIN

```
-- *****
--
-- IE parameter types from other modules.
--
-- *****
```

IMPORTS

```
    Criticality,
    Presence,
    PrivateIE-ID,
    ProtocolExtensionID,
    ProtocolIE-ID
```

FROM F1AP-CommonDataTypes

```
    maxPrivateIEs,
    maxProtocolExtensions,
    maxProtocolIEs
```

FROM F1AP-Constants;

```
-- *****
--
-- Class Definition for Protocol IEs
--
-- *****
```

```
F1AP-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 IEs
--
-- *****
```

```
F1AP-PROTOCOL-IES-PAIR ::= CLASS {
    &id          ProtocolIE-ID          UNIQUE,
    &firstCriticality Criticality,
    &firstValue,
    &secondCriticality Criticality,
    &secondValue,
```



```

        &presence          Presence
    }
    WITH SYNTAX {
        ID                  &id
        FIRST CRITICALITY   &firstCriticality
        FIRST TYPE          &FirstValue
        SECOND CRITICALITY  &secondCriticality
        SECOND TYPE         &SecondValue
        PRESENCE            &presence
    }

-- *****
--
-- Class Definition for Protocol Extensions
--
-- *****

F1AP-PROTOCOL-EXTENSION ::= CLASS {
    &id          ProtocolExtensionID          UNIQUE,
    &criticality Criticality,
    &Extension,
    &presence    Presence
}
WITH SYNTAX {
    ID          &id
    CRITICALITY &criticality
    EXTENSION   &Extension
    PRESENCE    &presence
}

-- *****
--
-- Class Definition for Private IEs
--
-- *****

F1AP-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 {F1AP-PROTOCOL-IES : IEsSetParam} ::=
    SEQUENCE (SIZE (0..maxProtocolIEs)) OF
        ProtocolIE-Field {{IEsSetParam}}

ProtocolIE-SingleContainer {F1AP-PROTOCOL-IES : IEsSetParam} ::=
    ProtocolIE-Field {{IEsSetParam}}

ProtocolIE-Field {F1AP-PROTOCOL-IES : IEsSetParam} ::= SEQUENCE {
    id                F1AP-PROTOCOL-IES.&id                ({IEsSetParam}),
    criticality        F1AP-PROTOCOL-IES.&criticality        ({IEsSetParam}{@id}),
    value              F1AP-PROTOCOL-IES.&Value              ({IEsSetParam}{@id})
}

-- *****
--
-- Container for Protocol IE Pairs
--
-- *****

ProtocolIE-ContainerPair {F1AP-PROTOCOL-IES-PAIR : IEsSetParam} ::=
    SEQUENCE (SIZE (0..maxProtocolIEs)) OF
        ProtocolIE-FieldPair {{IEsSetParam}}

ProtocolIE-FieldPair {F1AP-PROTOCOL-IES-PAIR : IEsSetParam} ::= SEQUENCE {
    id                F1AP-PROTOCOL-IES-PAIR.&id                ({IEsSetParam}),
    firstCriticality   F1AP-PROTOCOL-IES-PAIR.&firstCriticality   ({IEsSetParam}{@id}),
    firstValue         F1AP-PROTOCOL-IES-PAIR.&firstValue         ({IEsSetParam}{@id}),
    secondCriticality  F1AP-PROTOCOL-IES-PAIR.&secondCriticality  ({IEsSetParam}{@id}),
    secondValue        F1AP-PROTOCOL-IES-PAIR.&SecondValue        ({IEsSetParam}{@id})
}

-- *****
--
-- Container for Protocol Extensions
--
-- *****

ProtocolExtensionContainer {F1AP-PROTOCOL-EXTENSION : ExtensionSetParam} ::=
    SEQUENCE (SIZE (1..maxProtocolExtensions)) OF
        ProtocolExtensionField {{ExtensionSetParam}}

ProtocolExtensionField {F1AP-PROTOCOL-EXTENSION : ExtensionSetParam} ::= SEQUENCE {
    id                F1AP-PROTOCOL-EXTENSION.&id                ({ExtensionSetParam}),
    criticality        F1AP-PROTOCOL-EXTENSION.&criticality        ({ExtensionSetParam}{@id}),
    extensionValue      F1AP-PROTOCOL-EXTENSION.&Extension        ({ExtensionSetParam}{@id})
}

-- *****
--
-- Container for Private IEs
--
-- *****

```

```
PrivateIE-Container {F1AP-PRIVATE-IES : IEsSetParam } ::=
  SEQUENCE (SIZE (1.. maxPrivateIEs)) OF
    PrivateIE-Field {{IEsSetParam}}

PrivateIE-Field {F1AP-PRIVATE-IES : IEsSetParam} ::= SEQUENCE {
  id                F1AP-PRIVATE-IES.&id                ({IEsSetParam}),
  criticality       F1AP-PRIVATE-IES.&criticality         ({IEsSetParam} {@id}),
  value             F1AP-PRIVATE-IES.&Value              ({IEsSetParam} {@id})
}

END
-- ASN1STOP
```

9.5 Message Transfer Syntax

F1AP shall use the ASN.1 Basic Packed Encoding Rules (BASIC-PER) Aligned Variant as transfer syntax, as specified in ITU-T Recommendation X.691 [5].

9.6 Timers

10 Handling of unknown, unforeseen and erroneous protocol data

Clause 10 of TS 38.413 [3] 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
2017-06	R3 NR#2	R3-172493	-	-	-	First version	0.1.0
2017-07	R3 NR#2	R3-172640	-	-	-	Incorporated agreed TPs from R3 NR#2 Adhoc	0.2.0
2017-08	R3#97	R3-173451	-	-	-	Incorporated agreed TPs from R3#97	0.3.0
2017-10	R3#97b	R3-174247	-	-	-	Incorporated agreed TPs from R3#97b	0.4.0
2017-12	R3#98	R3-175062	-	-	-	Incorporated agreed TPs from R3#98	0.5.0
2017-12	RAN#78	RP-172287				Submitted for approval to RAN	1.0.0
2017-12	RAN#78					TR approved by RAN plenary	15.0.0
2018-03	RP-79	RP-180468	0001	2	B	Baseline CR for March version of TS 38.473 covering agreements of RAN3#99	15.1.0
2018-04						Editorial correction to ASN.1 (correction to id-TimeToWait ProtocolE-ID)	15.1.1
2018-06	RP-80	RP-181237	0011	6	B	Introduction of SA NR (38.473 Baseline CR covering RAN3 agreements)	15.2.0
2018-06	RP-80	RP-181239	0043	3	F	Essential corrections of EN-DC for NSA NR (38.473 Baseline CR covering RAN3 agreements)	15.2.0
2018-06	RP-80	RP-181237	0045	-	B	F1 support for LTE - NR coexistence	15.2.0
2018-06	RP-80					Correction to ASN.1 and to Change History table	15.2.1
2018-09	RP-81	RP-181920	0055	2	F	Introduction of DU Configuration Query	15.3.0
2018-09	RP-81	RP-181921	0056	4	F	CR to 38.473 on further clarifications on System information transfer over F1	15.3.0
2018-09	RP-81	RP-181921	0058	4	F	CR to 38.473 on corrections to System information delivery	15.3.0
2018-09	RP-81	RP-181920	0059	1	F	CR to 38.473 on corrections to PWS transfer over F1	15.3.0
2018-09	RP-81	RP-181921	0063	3	F	CR to 38.473 on PDCCP SN over F1 interface	15.3.0
2018-09	RP-81	RP-181922	0064	3	F	NR Corrections (38.473 Baseline CR covering RAN3-101 agreements)	15.3.0
2018-09	RP-81	RP-181997	0068	-	F	Introduction of UL AMBR on F1	15.3.0
2018-09	RP-81	RP-181921	0072	3	F	Correction on cell management	15.3.0
2018-09	RP-81	RP-181921	0073	2	F	RLC Mode Indication over F1	15.3.0
2018-09	RP-81	RP-181921	0076	3	F	CR to 38.473 on UE Identity Index value	15.3.0
2018-09	RP-81	RP-181920	0077	1	F	Correction for UE Context Modification on presence of ServCellIndex IE	15.3.0
2018-09	RP-81	RP-181920	0078	-	F	Executing duplication for RRC-container	15.3.0
2018-09	RP-81	RP-181921	0079	1	F	Indication of RLC re-establishment at the gNB-DU	15.3.0
2018-09	RP-81	RP-181920	0080	-	F	Exchange of SMTC over F1	15.3.0
2018-09	RP-81	RP-181920	0081	-	F	Solving remaining issues with QoS parameters – TS 38.473	15.3.0
2018-09	RP-81	RP-181921	0090		F	Correction of 5GS TAC	15.3.0
2018-09	RP-81	RP-181921	0095	1	F	Extend the RANAC size to 8bits	15.3.0
2018-09	RP-81	RP-181921	0097	-	F	Corrections of Choice	15.3.0
2018-09	RP-81	RP-181921	0098	1	F	Correction of TNL criticality	15.3.0
2018-09	RP-81	RP-181921	0099	1	F	Corrections of usage of single container	15.3.0
2018-09	RP-81	RP-181921	0105	2	B	RRC version handling	15.3.0
2018-09	RP-81	RP-181921	0106	1	B	Introduction of Overload Handling in F1-C	15.3.0
2018-09	RP-81	RP-181921	0113	-	F	CR to 38.473 on presence of QoS information	15.3.0
2018-09	RP-81	RP-181921	0114	1	F	Correction C-RNTI format	15.3.0
2018-09	RP-81	RP-181921	0115	-	F	Correction of QoS Parameters	15.3.0
2018-09	RP-81	RP-181921	0116	1	F	Correction on F1 Setup Request	15.3.0
2018-12	RP-82	RP-182446	0070	3	F	RRC Delivery Indication	15.4.0
2018-12	RP-82	RP-182446	0117	1	F	Correction of AMBR Enforcement	15.4.0
2018-12	RP-82	RP-182446	0138	-	F	CR for correction on Initial UL RRC message transfer	15.4.0
2018-12	RP-82	RP-182446	0140	1	F	CR to 38.473 on bearer type change indication	15.4.0
2018-12	RP-82	RP-182446	0142	1	F	CR to 38.473 on correction to PWS System Information	15.4.0
2018-12	RP-82	RP-182446	0144	2	F	CR to 38.473 on asymmetric mapping for UL and DL QoS flow	15.4.0
2018-12	RP-82	RP-182447	0145	4	F	Corrections on UE-associated LTE/NR resource coordination	15.4.0
2018-12	RP-82	RP-182446	0147	2	F	CR for F1 Cell Management	15.4.0
2018-12	RP-82	RP-182447	0150	1	F	Missing Transaction ID in non-UE-associated procedures	15.4.0
2018-12	RP-82	RP-182446	0157	1	F	CR to 38.473 on mapping of servingCellMO and Serving Cell	15.4.0
2018-12	RP-82	RP-182446	0160	1	F	CR to 38.473 on UE context modification required procedure	15.4.0
2018-12	RP-82	RP-182447	0165	1	F	Addition of the RLC Mode information for bearer modification	15.4.0
2018-12	RP-82	RP-182448	0167	2	F	Rapporteur CR to align tabular	15.4.0
2018-12	RP-82	RP-182448	0168	2	F	Rapporteur CR to align ASN.1	15.4.0
2018-12	RP-82	RP-182447	0169	2	F	Correction of MaxNoofBPLMNs	15.4.0
2018-12	RP-82	RP-182351	0174	2	F	Correction on PDCCP SN length on F1	15.4.0
2018-12	RP-82	RP-182447	0178	2	F	CR for TS 38.473 for MR-DC coordination	15.4.0

2018-12	RP-82	RP-182447	0179	2	F	Support of system information update for active UE without CSS	15.4.0
2018-12	RP-82	RP-182447	0187	1	F	CR to 38.473 on clarification to the presence of UE AMBR	15.4.0
2018-12	RP-82	RP-182506	0195	2	F	CR on Scell release for RLC failure	15.4.0
2018-12	RP-82	RP-182447	0205	1	F	About bandcombinationindex and featureSetEntryIndex	15.4.0
2018-12	RP-82	RP-182447	0211	1	F	CR to 38.473 on DRB PDCP duplication	15.4.0
2018-12	RP-82	RP-182447	0216	1	F	CR to 38.473 on clarifications on system information update over F1	15.4.0
2018-12	RP-82	RP-182448	0219	-	F	Correction of RRC version handling and UE inactivity notification	15.4.0
2019-01	RP-82					- correction to ASN.1: adding a missing change to "WriteReplaceWarningResponseEs F1AP-PROTOCOL-IES ::= {"	15.4.1
2019-03	RP-83	RP-190555	0202	2	F	Indication that cells are only UL or DL on F1	15.5.0
2019-03	RP-83	RP-190554	0204	1	F	AMF initiated UE Context Release failure cause	15.5.0
2019-03	RP-83	RP-190554	0220	1	F	Correction to reconfiguration with sync for gNB-DU	15.5.0
2019-03	RP-83	RP-190554	0225	1	F	Introduction of PH-InforSCG in DU to CU RRC Information	15.5.0
2019-03	RP-83	RP-190554	0226	1	F	CR to 38.473 on Measurement gap coordination	15.5.0
2019-03	RP-83	RP-190554	0228	1	F	CR for TS 38.473 for MR-DC coordination	15.5.0
2019-03	RP-83	RP-190554	0229	2	F	Condition for inclusion of the Dedicated SI Delivery Needed UE List IE	15.5.0
2019-03	RP-83	RP-190554	0230	1	F	Correction of the Transmission stop/restart indication	15.5.0
2019-03	RP-83	RP-190554	0231	-	F	Corrections on gNB-CU/gNB-DU Configuration Update	15.5.0
2019-03	RP-83	RP-190556	0236	2	F	Correction of QoS Flow Mapping Indication	15.5.0
2019-03	RP-83	RP-190554	0244	-	F	Release due to pre-emption	15.5.0
2019-03	RP-83	RP-190554	0245	2	F	CR on RRC container in UE context modification request message	15.5.0
2019-03	RP-83	RP-190554	0246	2	F	CR on UE context modification refuse	15.5.0
2019-03	RP-83	RP-190554	0247	-	F	Transaction ID in Error Indication procedure	15.5.0
2019-03	RP-83	RP-190554	0249	2	F	Cells to be deactivated over F1	15.5.0
2019-03	RP-83	RP-190554	0251	1	F	CR to 38.473 on SRB duplication and LCID	15.5.0
2019-03	RP-83	RP-190554	0258	-	F	CR to 38.473 on corrections for removal of PDCP duplication for SRB	15.5.0
2019-03	RP-83	RP-190554	0263	1	F	CR to 38.473 on transferring UEAssistanceInformation over F1	15.5.0
2019-03	RP-83	RP-190554	0265	-	F	Rapporteur updates	15.5.0
2019-03	RP-83	RP-190554	0266	1	F	Correction on gNB-DU Resource Coordination	15.5.0
2019-03	RP-83	RP-190554	0267	1	F	Endpoint IP address and port	15.5.0
2019-03	RP-83	RP-190554	0268	1	F	Correction to add paging origin IE	15.5.0
2019-03	RP-83	RP-190555	0269	2	F	Multiple SCTP associations over F1AP	15.5.0
2019-03	RP-83	RP-190554	0272	1	F	About Cells Failed to be Activated IE in gNB-CU Configuration Update Ack	15.5.0
2019-03	RP-83	RP-190556	0273	1	F	gNB-DU UE Aggregate Maximum Bit Rate Uplink correction	15.5.0
2019-03	RP-83	RP-190554	0276	1	F	RRC Reconfiguration failure	15.5.0
2019-03	RP-83	RP-190554	0278	1	F	Node behaviour at reception of DU to CU RRC Information	15.5.0
2019-03	RP-83	RP-190554	0281	-	F	Addition of Transaction ID to Initial UL RRC Message Transfer	15.5.0
2019-07	RP-84	RP-191397	0200	5	F	RAN sharing with multiple Cell ID broadcast	15.6.0
2019-07	RP-84	RP-191397	0270	5	F	Addition of Network Access Rate Reduction message	15.6.0
2019-07	RP-84	RP-191397	0271	3	F	RAN UE ID for F1	15.6.0
2019-07	RP-84	RP-191396	0283	2	F	MR-DC resource coordination in F1	15.6.0
2019-07	RP-84	RP-191396	0316	2	F	Full configuration indication from gNB-CU to gNB-DU.	15.6.0
2019-07	RP-84	RP-191396	0322	2	F	CR to 38.473 on clarification to RRC reconfigure complete indicator	15.6.0
2019-07	RP-84	RP-191394	0326	2	F	CR to 38.473 on deconfiguring CA based PDCP duplication for DRB	15.6.0
2019-07	RP-84	RP-191395	0330	3	F	CR to 38.473 on Removal of Multiple TNLAs	15.6.0
2019-07	RP-84	RP-191396	0348	-	F	Full configuration in UE Context Setup	15.6.0
2019-07	RP-84	RP-191396	0351	2	F	CR on PWS segmentation over F1	15.6.0
2019-07	RP-84	RP-191396	0352	1	F	CR on cell type over F1	15.6.0
2019-07	RP-84	RP-191396	0357	-	F	Rapporteur updates: Alignment and editorials	15.5.0
2019-07	RP-84	RP-191396	0358	-	F	Rapporteur update: Correction of Presence for DRB information	15.6.0
2019-07	RP-84	RP-191396	0359	-	F	Rapporteur updates: Correction of Presence for E-UTRA PRACH Configuration	15.6.0
2019-07	RP-84	RP-191396	0370	-	F	Full configuration IE included in the UE Context Modification Response.	15.6.0
2019-07	RP-84	RP-191396	0376		F	CR to 38.473 on clarification for UP TNL Information IE over F1	15.6.0
2019-07	RP-84	RP-191396	0377	2	F	Procedure description on optional IEs in CU to DU RRC information IE.	15.6.0
2019-09	RP-85	RP-192166	0343	3	F	CR on MR-DC low layer coordination with an MgNB-DU	15.7.0
2019-09	RP-85	RP-192166	0344	2	F	CR on MCG PHR format in MgNB-DU	15.7.0
2019-09	RP-85	RP-192166	0388		F	CR on DC Coordination for PDCCH Blind Detection	15.7.0
2019-09	RP-85	RP-192167	0393	1	F	Rapporteur update - clarification of semantics	15.7.0
2019-09	RP-85	RP-192166	0399	1	F	Clarification for TNLA removal	15.7.0
2019-12	RP-86	RP-192915	0318	5	F	Correction about gNB-CU System Information IE	15.8.0
2019-12	RP-86	RP-192915	0447	1	F	On CellGroupConfig handling	15.8.0

2019-12	RP-86	RP-192915	0458	1	F	Correction of S-NSSAI coding	15.8.0
2019-12	RP-86	RP-192915	0459	1	F	Removal of Requested P-MaxFR2	15.8.0
2019-12	RP-86	RP-192915	0479	2	F	Addition of Message Identifier and Serial Number to PWS Cancel Request	15.8.0
2019-12	RP-86	RP-192916	0482	2	F	Clarifications on SCell lists	15.8.0
2019-12	RP-86	RP-192916	0494	-	F	RRC Container in Modification Procedure	15.8.0
2019-12	RP-86	RP-192916	0508	0	F	CR to 38.473 on applicability of the IE Selected BandCombinationIndex and Selected FeatureSetEntryIndex	15.8.0
2019-12	RP-86	RP-192916	0509	1	F	CR to 38.473 on MeasGapSharingConfig and gNB-CU System Information	15.8.0
2019-12	RP-86	RP-192916	0510	1	F	CR to 38.473 on cause values over F1	15.8.0
2019-12	RP-86	RP-192916	0515	2	F	Clarification on Initial UL RRC Message Transfer procedure	15.8.0
2019-12	RP-86	RP-192913	0280	7	F	Trace function support for F1AP	16.0.0
2019-12	RP-86	RP-192908	0287	7	B	Support for CLI	16.0.0
2019-12	RP-86	RP-192913	0314	5	B	Introduction of Additional RRM Policy Index (ARPI)	16.0.0
2019-12	RP-86	RP-192908	0339	6	B	CR to F1-AP for RIM new message	16.0.0
2019-12	RP-86	RP-192915	0460		F	Removal of unused IEs	16.0.0
2019-12	RP-86	RP-192913	0463	1	C	Extending the MDBV Range	16.0.0
2019-12	RP-86	RP-192910	0514	3	B	CR for TS38.473 on supporting SN Resume during the RRCResume procedure	16.0.0
2019-12	RP-86	RP-192914	0518	2	F	Support for setting up IPsec a priori in F1	16.0.0
2020-03	RP-87-e	RP-200428	0522	1	A	Correction of PWS Failure Indication	16.1.0
2020-03	RP-87-e	RP-200428	0525	-	A	Correction of the presence of UL UP TNL Information to be setup List IE in tabular	16.1.0
2020-03	RP-87-e	RP-200425	0527	2	F	Corrections to CLI	16.1.0
2020-03	RP-87-e	RP-200425	0528	1	D	Rapporteur: Editorial updates	16.1.0
2020-03	RP-87-e	RP-200425	0530	2	B	E2E delay measurement for Qos monitoring for URLLC	16.1.0
2020-03	RP-87-e	RP-200428	0534	1	A	Correction relating to Initial UL RRC Message Transfer procedure CR 38.473	16.1.0
2020-07	RP-88-e	RP-201077	0285	17	B	BL CR to 38.473: Support for IAB	16.2.0
2020-07	RP-88-e	RP-201074	0432	12	B	Support of NR V2X over F1	16.2.0
2020-07	RP-88-e	RP-201082	0441	12	B	Addition of SON features	16.2.0
2020-07	RP-88-e	RP-201079	0477	8	B	Introduction of NR_IOT support to TS 38.473	16.2.0
2020-07	RP-88-e	RP-201075	0481	10	B	Baseline CR for introducing Rel-16 NR mobility enhancement	16.2.0
2020-07	RP-88-e	RP-201082	0492	6	B	Addition of MDT features	16.2.0
2020-07	RP-88-e	RP-201080	0502	7	B	Introduction of NPN	16.2.0
2020-07	RP-88-e	RP-201076	0537	1	B	CR38.473 on TDD pattern for NR-DC power control coordination for sol1	16.2.0
2020-07	RP-88-e	RP-201085	0539	-	F	Rapporteur: Corrections after implementation	16.2.0
2020-07	RP-88-e	RP-201090	0543	2	A	Encoding PLMNs in served cell information NR	16.2.0
2020-07	RP-88-e	RP-201091	0545	1	A	Correction for usage of Cell Broadcast Cancelled List	16.2.0
2020-07	RP-88-e	RP-201091	0548	1	A	Correction on UE CONTEXT MODIFICATION REQUIRED message	16.2.0
2020-07	RP-88-e	RP-201085	0561	1	F	Correction on CLI	16.2.0
2020-07	RP-88-e	RP-201090	0567	-	A	Encoding PLMNs in served cell information IEs - semantics corrections	16.2.0
2020-07	RP-88-e	RP-201092	0570	1	A	Correction for UL UP TNL Information	16.2.0
2020-07	RP-88-e	RP-201092	0572	-	A	Correction on RRC Container in Initial UL RRC Messag Transfer	16.2.0
2020-07	RP-88-e	RP-201092	0576	1	A	Correction on RRC Connection Reconfiguration Complete Indicator	16.2.0
2020-07	RP-88-e	RP-201092	0581	2	F	Corrections of Inactive UE Context stored at gNB-DU	16.2.0
2020-07	RP-88-e	RP-201085	0600	2	F	Correction on RF parameters in NR cell information	16.2.0
2020-07	RP-88-e	RP-201090	0601	4	F	Correction of S-NSSAI range	16.2.0
2020-07	RP-88-e	RP-201092	0603	2	A	Correction for Handover Preparation Information	16.2.0
2020-07	RP-88-e	RP-201092	0607	1	A	CR on Concurrent Warning Message Indicator over F1 (Rel-16)	16.2.0
2020-07	RP-88-e	RP-201092	0615	-	A	Section renumbering for PWS cancel	16.2.0
2020-07	RP-88-e	RP-201092	0616	-	A	Correction on DL RRC MESSAGE TRANSFER	16.2.0
2020-07	RP-88-e	RP-201092	0618		A	Addition of abnormal conditions in PWS Cancel procedure	16.2.0
2020-09	RP-89-e	RP-201850	0495	10	B	Introduction of positioning support over F1AP	16.3.0
2020-09	RP-89-e	RP-201956	0557	2	A	Support of PSCell/SCell-only operation mode	16.3.0
2020-09	RP-89-e	RP-201956	0583	5	F	Cell Creation Rejection when max number of supported cells is exceeded at CU CR 38.473	16.3.0
2020-09	RP-89-e	RP-201956	0587	5	A	Measurement gap deactivation over F1AP CR 38.473	16.3.0
2020-09	RP-89-e	RP-201949	0619	2	F	Slot list length correction in TDD UL-DL Configuration	16.3.0
2020-09	RP-89-e	RP-201956	0625	1	F	Addition of abnormal conditions in Write-Replace Warning procedure	16.3.0
2020-09	RP-89-e	RP-201956	0628	2	A	Correction of PSCell/SCell-only mode	16.3.0
2020-09	RP-89-e	RP-201956	0634	1	A	Correction on UE Context Modification Procedure	16.3.0
2020-09	RP-89-e	RP-201956	0639	1	F	Rapporteur Corrections	16.3.0
2020-09	RP-89-e	RP-201949	0640	-	F	Correction of procedure ID	16.3.0
2020-09	RP-89-e	RP-201956	0642	-	A	Correction of PWS cancel	16.3.0
2020-09	RP-89-e	RP-201949	0643	1	F	Corrections on PC5 Link Aggregated Bit Rate	16.3.0
2020-09	RP-89-e	RP-201949	0660	-	F	Correction on the Maximum Number of CHO Preparations in F1AP	16.3.0

2020-09	RP-89-e	RP-201956	0663	1	F	Corrections to 38.473 on node name type	16.3.0
2020-09	RP-89-e	RP-201947	0664	1	F	Correction on IAB-DU configuration	16.3.0
2020-09	RP-89-e	RP-201982	0671		F	Correction on IAB-DU configuration	16.3.0
2020-09	RP-89-e					Correct wrong numbering of protocol IE-ID in clause 9.4.7	16.3.1
2020-12	RP-90-e	RP-202310	0645	2	F	Uniqueness of BH RLC channel ID	16.4.0
2020-12	RP-90-e	RP-202310	0658	3	F	Correction on V2X related information	16.4.0
2020-12	RP-90-e	RP-202310	0665	2	F	Correction on unsuccessful operations of IAB procedures	16.4.0
2020-12	RP-90-e	RP-202310	0666	1	F	Correction on the identification of IAB-donor-DU	16.4.0
2020-12	RP-90-e	RP-202310	0667	2	F	Correction on the Context Setup procedure for IAB node	16.4.0
2020-12	RP-90-e	RP-202310	0668	1	F	Correction on BAP address	16.4.0
2020-12	RP-90-e	RP-202310	0672	1	F	CR on F1-C transfer for Rel-16 IAB	16.4.0
2020-12	RP-90-e	RP-202311	0677	-	F	Correction of F1AP positioning procedures	16.4.0
2020-12	RP-90-e	RP-202311	0678	1	F	Corrections to tabular and asn.1 for NR positioning (F1AP)	16.4.0
2020-12	RP-90-e	RP-202310	0681	1	F	Correction of alternative QoS profile	16.4.0
2020-12	RP-90-e	RP-202313	0683	-	F	Removal of duplicated imports	16.4.0
2020-12	RP-90-e	RP-202312	0684	2	F	Corrections of UL and DL carrier list	16.4.0
2020-12	RP-90-e	RP-202311	0689	1	F	RRC alignment and various correction including ASN.1	16.4.0
2020-12	RP-90-e	RP-202311	0691	1	F	Correction of RLC Duplication Information over F1	16.4.0
2020-12	RP-90-e	RP-202288	0695	3	A	Correction on value range of UAC reduction Indication	16.4.0
2020-12	RP-90-e	RP-202311	0709	1	F	Coupling TRP ID and Cell ID in Measurement procedures	16.4.0
2021-03	RP-91-e	RP-210123	0431	7	B	Introduction of SFN Offset per cell over F1	16.5.0
2021-03	RP-91-e	RP-210240	0632	6	A	Correction on Overlapping Band Handling over F1	16.5.0
2021-03	RP-91-e	RP-210235	0676	2	F	Correction on PRACH coordination	16.5.0
2021-03	RP-91-e	RP-210239	0702	3	F	Cause value on F1 for insufficient UE capabilities CR 38.473	16.5.0
2021-03	RP-91-e	RP-210239	0711	1	F	Update on QoS monitoring control	16.5.0
2021-03	RP-91-e	RP-210233	0715	2	F	Stage-3 CR on transmission stop for Rel-16 DAPS handover	16.5.0
2021-03	RP-91-e	RP-210232	0720	1	F	Correction of NPN related Cell Information	16.5.0
2021-03	RP-91-e	RP-210231	0721	-	F	Correction on IAB configuration	16.5.0
2021-03	RP-91-e	RP-210231	0722	-	F	Correction on BAP address configuration for IAB-donor-DU	16.5.0
2021-03	RP-91-e	RP-210230	0725	1	F	Including SRS frequency information in Positioning Information Request	16.5.0
2021-03	RP-91-e	RP-210231	0728	2	F	CR to 38.473: Correction on IAB related definitions and unsuccessful establishment of a BH RLC channel	16.5.0
2021-03	RP-91-e	RP-210230	0736	-	F	Correction of the PCI IE presence in the ASN.1 for the SRS Configuration	16.5.0
2021-06	RP-92-e	RP-211334	0704	4	A	How to release SCG configuration between MN-CU and MN-DU CR 38.473	16.6.0
2021-06	RP-92-e	RP-211315	0712	2	F	Clarification on TAI Slice Support List	16.6.0
2021-06	RP-92-e	RP-211323	0740	2	F	Enabling CHO with SCG configuration	16.6.0
2021-06	RP-92-e	RP-211327	0743	-	F	Correction of Spatial Relation Information	16.6.0
2021-06	RP-92-e	RP-211317	0744	-	F	Correction on reference to RACH-Report	16.6.0
2021-06	RP-92-e	RP-211330	0753		F	Stage-3 CR on system information message over F1 (Rel-16)	16.6.0
2021-06	RP-92-e	RP-211333	0760	-	A	Correction on SRB ID	16.6.0
2021-06	RP-92-e	RP-211334	0762	3	A	gNB-DU UE Aggregate Maximum Bit Rate Uplink correction	16.6.0
2021-06	RP-92-e	RP-211322	0763	-	F	Miscellaneous corrections on IAB in TS 38.473	16.6.0
2021-06	RP-92-e	RP-211327	0765	1	F	Correction on SFN Initialisation Time	16.6.0
2021-06	RP-92-e	RP-211327	0766	-	F	Correction on relative cartesian coordinate	16.6.0
2021-06	RP-92-e	RP-211322	0770	1	F	Correction on BH RLC CH configured for BAP control PDU	16.6.0
2021-06	RP-92-e	RP-211322	0771	-	F	Correction on gNB-DU Resource Configuration	16.6.0
2021-06	RP-92-e	RP-211322	0772	1	F	Correction on UL BH information configuration for DRBs support CA based duplication	16.6.0
2021-06	RP-92-e	RP-211317	0776	1	F	Correction on MLB for TS 38.473	16.6.0
2021-09	RP-93-e	RP-211876	0790	1	F	Correction of served cell information for NPN	16.7.0
2021-09	RP-93-e	RP-211880	0792	1	F	Correction of wrong CR implementation for Stage-3 CR on transmission stop for Rel-16 DAPS handover	16.7.0
2021-09	RP-93-e	RP-211883	0796	1	F	Adding procedural text for System Frame Number and Slot Number	16.7.0
2021-09	RP-93-e	RP-211881	0800	-	A	Correction of the IE related to E-UTRA resource coordination in F1AP	16.7.0
2021-12	RP-94-e	RP-212864	0804	1	A	Correction on F1 Removal for RAN Sharing in Rel-16	16.8.0
2021-12	RP-94-e	RP-212864	0811	4	F	Incorrect Node Name IE in ASN.1	16.8.0
2021-12	RP-94-e	RP-213174	0822	3	F	Correction on PRS-only TRP	16.8.0
2021-12	RP-94-e	RP-212867	0827	1	F	Support of providing spatial relation per SRS resource from gNB-CU to gNB-DU	16.8.0
2022-03	RP-95-e	RP-220279	0778	4	F	Support of dynamic ACL during dual connectivity	16.9.0
2022-03	RP-95-e	RP-220276	0837	1	F	Correction on packet delay budget for IAB access link in TS 38.473	16.9.0
2022-03	RP-95-e	RP-220276	0838	-	F	CR to 38.473: Correction on IAB TNL Address Allocation procedure	16.9.0
2022-03	RP-95-e	RP-220242	0844	2	F	CR to TS38.473: Correction on PC5 QoS parameters for NR V2X	16.9.0
2022-03	RP-95-e	RP-220281	0847	1	F	Correction on positioning information configuration	16.9.0
2022-03	RP-95-e	RP-220281	0848	1	F	Correction on Measurement Periodicity	16.9.0
2022-03	RP-95-e	RP-220281	0849	1	F	Correction on PRS Beam Information	16.9.0

2022-03	RP-95-e	RP-220281	0850		F	CR for the correction on measurement gap configuration for position	16.9.0
2022-03	RP-95-e	RP-220278	0854	1	F	Correction of frequency information for DL only or UL only cell	16.9.0
2022-03	RP-95-e	RP-220276	0860		F	(Stage-3) Clarification on IAB Address Remove	16.9.0
2022-03	RP-95-e	RP-220221	0710	9	B	Addition of SON features enhancement	17.0.0
2022-03	RP-95-e	RP-220224	0716	6	B	Introduction of NR MBS	17.0.0
2022-03	RP-95-e	RP-220222	0737	13	B	CP-based Congestion Indication for IAB Networks	17.0.0
2022-03	RP-95-e	RP-220221	0738	7	B	BLCR to 38.473: Support of MDT enhancement	17.0.0
2022-03	RP-95-e	RP-220223	0751	7	B	Introduction of Enhanced IIoT support over F1	17.0.0
2022-03	RP-95-e	RP-220218	0777	10	B	SCG BL CR to TS 38.473	17.0.0
2022-03	RP-95-e	RP-220218	0795	5	B	BLCR to TS 38.473 for Conditional PScell Change/Addition	17.0.0
2022-03	RP-95-e	RP-220228	0803	6	B	Introduction of NR Positioning enhancements	17.0.0
2022-03	RP-95-e	RP-220230	0806	6	B	BL CR to F1AP on Rel-17 RedCap	17.0.0
2022-03	RP-95-e	RP-220236	0817	2	B	Addition of NR Timing Advance reporting for NR UL E-CID [NRTADV]	17.0.0
2022-03	RP-95-e	RP-220229	0826	7	B	Support of QoE information transfer	17.0.0
2022-03	RP-95-e	RP-220233	0833	3	B	CG-SDT BLCR to TS38.473	17.0.0
2022-03	RP-95-e	RP-220233	0834	3	B	Support of RACH-based SDT	17.0.0
2022-03	RP-95-e	RP-220231	0842	3	B	Introduction of SideLink Relay	17.0.0
2022-03	RP-95-e	RP-220219	0852	4	B	Introduction of MultiSIM support over F1	17.0.0
2022-03	RP-95-e	RP-220235	0855	4	B	Support for UE Power Saving Enhancements	17.0.0
2022-03	RP-95-e	RP-220232	0856	1	B	(BLCR to TS 38.473) Supporting network slicing enhancement	17.0.0
2022-03	RP-95-e	RP-220236	0858		D	Editorial corrections	17.0.0
2022-06	RP-96	RP-221143	0862	2	F	QoE Rel-17 Corrections	17.1.0
2022-06	RP-96	RP-221132	0863	-	F	Correction of PDC Measurement Periodicity values	17.1.0
2022-06	RP-96	RP-221141	0864	1	F	Correction of R17 SON features enhancement	17.1.0
2022-06	RP-96	RP-221134	0865	1	F	Corrections on NR MBS in F1AP	17.1.0
2022-06	RP-96	RP-221134	0866	-	F	NR MBS F1AP asn.1 correction	17.1.0
2022-06	RP-96	RP-221136	0868	2	F	Correction on CG based SDT	17.1.0
2022-06	RP-96	RP-221150	0879	1	A	F1AP CR for ACL remaining issues	17.1.0
2022-06	RP-96	RP-221145	0880	4	F	CR to 38.473 on Measurement Amount	17.1.0
2022-06	RP-96	RP-221139	0884	-	F	ASN.1 corrections on NR SL relay for 38.473	17.1.0
2022-06	RP-96	RP-221137	0887	2	F	Correction to MUSIM	17.1.0
2022-06	RP-96	RP-221139	0892	1	F	Corrections for SL relay (F1AP)	17.1.0
2022-06	RP-96	RP-221126	0894	1	F	Correction on RedCap Broadcast Information for TS38.473	17.1.0
2022-06	RP-96	RP-221131	0896	1	F	F1AP ASN.1 review for NR Positioning Enhancements	17.1.0
2022-06	RP-96	RP-221134	0897		F	Remove the editor's notes	17.1.0
2022-06	RP-96	RP-221136	0900	1	F	Correction on SRB SDT indication	17.1.0
2022-06	RP-96	RP-221136	0901	1	F	Correction on SDT termination request in F1	17.1.0
2022-06	RP-96	RP-221141	0902	1	F	Correction on SON feature enhancements - F1AP	17.1.0
2022-06	RP-96	RP-221131	0905	3	F	Positioning corrections for F1AP	17.1.0
2022-06	RP-96	RP-221132	0908	2	F	Correction of PDC Measurement Initiation Failure message	17.1.0
2022-06	RP-96	RP-221805	0910	2	F	Correction for IAB inter-donor DU re-routing and resource multiplexing	17.1.0
2022-06	RP-96	RP-221149	0913	1	A	Correction on IAB-DU cell resource configuration	17.1.0
2022-06	RP-96	RP-221130	0916	2	F	CR to TS38.473: Correction on PC5 DRX parameters for NR V2X	17.1.0
2022-06	RP-96	RP-221139	0920		F	Corrections on Remote UE Local ID	17.1.0
2022-06	RP-96	RP-221141	0921	2	F	F1AP corrections for NR-U	17.1.0
2022-06	RP-96	RP-221152	0923	2	A	Correction for PRS Muting	17.1.0
2022-06	RP-96	RP-221132	0924	2	F	NR-IIoT F1AP correction	17.1.0
2022-06	RP-96	RP-221129	0927	2	F	Supporting network slice AS group	17.1.0
2022-06	RP-96	RP-221129	0928	1	F	Correction of the presence of UE-Slice-MBR	17.1.0
2022-06	RP-96	RP-221141	0929	-	F	Corrections to Load Balancing Enhancements	17.1.0
2022-06	RP-96	RP-221139	0930	2	F	Corrections for SL relay	17.1.0
2022-06	RP-96	RP-221145	0932	2	D	Editorial corrections	17.1.0
2022-06	RP-96	RP-221134	0938	1	F	Correction on MBS features	17.1.0
2022-06	RP-96	RP-221136	0939	1	F	Correction on SDT in F1AP	17.1.0
2022-06	RP-96	RP-221136	0940	1	F	Correction on Rel-17 SDT (F1AP)	17.1.0
2022-06	RP-96	RP-221141	0945	1	F	Correction on update management based MDT user consent	17.1.0
2022-06	RP-96	RP-221131	0948	2	F	Support of multiple measurement instances	17.1.0
2022-06	RP-96	RP-221145	0949	1	F	Supporting the disaster roaming information [MINT]	17.1.0
2022-06	RP-96	RP-221150	0951	2	A	SIB Issues Rel-17	17.1.0
2022-06	RP-96	RP-221150	0953	1	A	gNB-CU and gNB-DU Name in Configuration Update Procedures	17.1.0
2022-06	RP-96	RP-221137	0957	-	F	Clarification on the paging cause	17.1.0
2022-06	RP-96	RP-221143	0958	1	F	CR to 38.473 on ASN.1 corrections of QoE measurement	17.1.0
2022-06	RP-96	RP-221152	0964		A	ASN.1 correction for UL-AoA	17.1.0
2022-06	RP-96	RP-221141	0965	1	F	ASN.1 corrections	17.1.0
2022-06	RP-96	RP-221141	0968	1	F	CCO corrections	17.1.0
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2022-06	RP-96	RP-221628	0971	-	F	Removal of UE Tx TEG Association from F1AP	17.1.0
2022-09	RP-97-e	RP-222201	0889	2	A	Correction on interFrequencyConfig-NoGap	17.2.0

2022-09	RP-97-e	RP-222189	0890	2	F	Correction to SDT for supporting delta signaling	17.2.0
2022-09	RP-97-e	RP-222188	0978	-	F	Correction on Broadcast and Unicast co-existence	17.2.0
2022-09	RP-97-e	RP-222183	0981	1	F	Miscellaneous Correction on IAB	17.2.0
2022-09	RP-97-e	RP-222188	0984	1	F	Further Corrections for NR MBS	17.2.0
2022-09	RP-97-e	RP-222188	0985	2	F	Corrections for the establishment of F1-U ptp retransmission tunnels	17.2.0
2022-09	RP-97-e	RP-222185	0986	3	B	CR for TS38.473 on Extending NR Operation to 71GHz	17.2.0
2022-09	RP-97-e	RP-222186	0988	-	F	Addition of SRS port index	17.2.0
2022-09	RP-97-e	RP-222190	0989	1	F	SL relay corrections	17.2.0
2022-09	RP-97-e	RP-222187	0994	1	F	Correction of UE Paging Capability	17.2.0
2022-09	RP-97-e	RP-222201	0997	1	F	Correction on measurement gap configuration over F1 in Rel-17	17.2.0
2022-09	RP-97-e	RP-222186	0998	2	F	Support of timing error margins for TEGs in F1AP	17.2.0
2022-09	RP-97-e	RP-222188	1000	1	F	Introduction of MBS specific cause values	17.2.0
2022-09	RP-97-e	RP-222188	1001	1	F	Correction on Multicast Group Paging	17.2.0
2022-09	RP-97-e	RP-222188	1002	1	F	Correction on MRB ID Change	17.2.0
2022-09	RP-97-e	RP-222603	1004	4	A	CR to 38.473 on E-CID measurement periodicity	17.2.0
2022-09	RP-97-e	RP-222088	1013	3	F	Correction on RedCap paging capability	17.2.0
2022-09	RP-97-e	RP-222186	1016	1	F	Rel-17 ePos correction for the missing support of SRS-PosRRC-InactiveConfig-r17 configuration	17.2.0
2022-09	RP-97-e	RP-222189	1017	1	F	Transferring CG-SDT configuration and SRS positioning Inactive configuration from DU to CU	17.2.0
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2022-09	RP-97-e	RP-222189	1021	1	F	Correction on Rel-17 SDT	17.2.0
2022-09	RP-97-e	RP-222638	1025	3	F	Introduction of uplink GapFR2 [NR_RF_FR2_req_enh2-Core]	17.2.0
2022-09	RP-97-e	RP-222186	1027	2	F	Correction to positioning gap configuration	17.2.0
2022-09	RP-97-e	RP-222191	1031	-	F	Correction to Report Characteristics	17.2.0
2022-09	RP-97-e	RP-222186	1034	-	F	Correction on Measurement Time Occasion	17.2.0
2022-09	RP-97-e	RP-222191	1035	1	F	Correction on NR-U MLB	17.2.0
2022-12	RP-98-e	RP-222883	0975	4	A	R17CR for DAPS over F1 to TS38.473	17.3.0
2022-12	RP-98-e	RP-222884	1012	1	A	Correction of on-demand SI for connected UE	17.3.0
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2022-12	RP-98-e	RP-222882	1043	3	F	Provision of MBS Multicast F1-U references to UE Context in gNB-CU enabling retrieval of data forwarding progress information	17.3.0
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