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Foreword

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

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

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1 Scope

The present document specifies the radio network layer signalling procedures of the control plane between NG-RAN nodes in NG-RAN. XnAP supports the functions of the Xn interface by signalling procedures defined in this document. XnAP is developed in accordance to the general principles stated in TS 38.401 [2] and TS 38.420 [3].

2 References

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

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document.*

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

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

[3] 3GPP TS 38.420: "NG-RAN; Xn General Aspects and Principles".

[4] 3GPP TS 38.422: "NG-RAN; Xn Signalling Transport".

[5] 3GPP TS 38.413: "NG-RAN; NG Application Protocol (NGAP) ".

[6] 3GPP TS 25.921: "Guidelines and principles for protocol description and error handling".

[7] 3GPP TS 23.501: "System Architecture for the 5G System".

[8] 3GPP TS 37.340: "Evolved Universal Terrestrial Radio Access (E-UTRA) and NR; Multi-connectivity; Stage 2".

[9] 3GPP TS 38.300: "NR; NR and NG-RAN Overall Description; Stage 2".

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

[11] 3GPP TS 38.323: "NR; Packet Data Convergence Protocol (PDCP) specification".

[12] 3GPP TS 36.300: "Evolved Universal Terrestrial Radio Access (E-UTRA) and Evolved Universal Terrestrial Radio Access Network (E-UTRAN); Overall description; Stage 2".

[13] 3GPP TS 23.502: "Procedures for the 5G System; Stage 2".

[14] 3GPP TS 36.331: "Evolved Universal Terrestrial Radio Access (E-UTRA); Radio Resource Control (RRC) protocol specification".

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

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

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

[18] 3GPP TS 29.281: "General Packet Radio Service (GPRS); Tunnelling Protocol User Plane (GTPv1-U)".

[19] 3GPP TS 38.424: "NG-RAN; Xn data transport".

[20] 3GPP TS 38.414: "NG-RAN; NG data transport".

[21] 3GPP TS 38.412: "NG-RAN; NG Signalling Transport".

[22] 3GPP TS 23.003: "Numbering, Addressing and Identification".

[23] 3GPP TS 32.422: "Trace control and configuration management".

[24] 3GPP TS 38.104: "NR; Base Station (BS) radio transmission and reception".

[25] 3GPP TS 36.104: "Base Station (BS) radio transmission and reception ".

[26] 3GPP TS 36.211: "Evolved Universal Terrestrial Radio Access (E-UTRA); Physical Channels and Modulation".

[27] 3GPP TS 36.101: "User Equipment (UE) radio transmission and reception".

[28] 3GPP TS 33.501: "Security architecture and procedures for 5G System".

[29] 3GPP TS 33.401: "3GPP System Architecture Evolution (SAE); Security architecture".

[30] 3GPP TS 24.501: "Non-Access-Stratum (NAS) protocol for 5G System (5GS); Stage 3".

[31] 3GPP TS 36.413: "Evolved Universal Terrestrial Radio Access Network (E-UTRAN); S1 Application Protocol (S1AP)".

[32] 3GPP TS 25.413: "UTRAN Iu interface RANAP signalling".

[33] 3GPP TS 38.304: "NR; User Equipment (UE) procedures in Idle mode and RRC Inactive state".

[34] 3GPP TS 36.304: "Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) procedures in idle mode".

[35] 3GPP TS 38.321: "NR; Medium Access Control (MAC) protocol specification".

[36] 3GPP TS 36.321: "Evolved Universal Terrestrial Radio Access (E-UTRA); Medium Access Control (MAC) protocol specification".

[37] IETF RFC 5905: "Network Time Protocol Version 4: Protocol and Algorithms Specification".

[38] 3GPP TS 23.287: "Architecture enhancements for 5G System (5GS) to support Vehicle-to-Everything (V2X) services".

[39] 3GPP TS 38.211: "NR; Physical channels and modulation".

[40] 3GPP TS 38.213: "NR; Physical layer procedures for control".

[41] 3GPP TS 38.473: "NG-RAN; F1 application protocol (F1AP)".

[42] 3GPP TS 38.314: "NR; Layer 2 measurements".

[43] 3GPP TS 37.320: " Radio measurement collection for Minimization of Drive Tests (MDT),"

[44] 3GPP TS 36.423: " Evolved Universal Terrestrial Radio Access Network (E-UTRAN); X2 application protocol (X2AP)".

[45] 3GPP TS 29.244: "Interface between the Control Plane and the User Plane Nodes; Stage 3".

[46] 3GPP TS 23.247: "Architectural enhancements for 5G multicast-broadcast services; Stage 2".

[47] 3GPP TS 26.247: "Transparent end-to-end Packet-switched Streaming Service (PSS); Progressive Download and Dynamic Adaptive Streaming over HTTP (3GP-DASH) ".

[48] 3GPP TS 23.304: "Proximity based Services (ProSe) in the 5G System (5GS)".

[49] 3GPP TS 38.455: "NG-RAN; NR Positioning Protocol A (NRPPa)".

[50] 3GPP TS 29.571: "5G System; Common Data Types for Service Based Interfaces; Stage 3".

[51] 3GPP TS 37.213: "NR; Physical layer procedures for shared spectrum channel access".

[52] 3GPP TS 38.101-1: "NR; User Equipment (UE) radio transmission and reception; Part 1: Range 1 Standalone".

[53] 3GPP TS 26.114: "IP Multimedia Subsystem (IMS); Multimedia Telephony; Media handling and interaction".

[54] 3GPP TS 26.118: "Virtual Reality (VR) profiles for streaming applications".

[55] 3GPP TS 28.405: "Telecommunication management; Quality of Experience (QoE) measurement collection; Control and configuration".

[56] 3GPP TS 23.256: "Support of Uncrewed Aerial Systems (UAS) connectivity, identification and tracking; Stage 2".

[57] 3GPP TS 23.527: "5G System; Restoration procedures".

[58] 3GPP TS 28.558: "Management and orchestration; UE level measurements for 5G system".

[59] 3GPP TS 37.355: "LTE Positioning Protocol (LPP)".

3 Definitions, symbols and abbreviations

3.1 Definitions

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

Boundary IAB-node: as defined in TS 38.401 [2].

CAG Cell: As defined in TS 38.300 [9].

Complete candidate configuration: As defined in TS 38.331 [10] as one type of a candidate configuration.

Conditional Handover: As defined in TS 38.300 [9].

Conditional PSCell Change: As defined in TS 37.340 [8].

DAPS Handover: As defined in TS 38.300 [9].

Elementary Procedure: XnAP protocol consists of Elementary Procedures (EPs). An XnAP Elementary Procedure is a unit of interaction between two NG-RAN nodes. 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 or failure),
- **Class 2**: Elementary Procedures without response.

F1-terminating IAB-donor: as defined in TS 38.401 [2].

Immediate Handover: Used in the context of Conditional Handover, to refer to a handover that is executed immediately after the UE receives the Handover Command.

MBS Session Resource: As defined in TS 38.401 [2].

Mobile IAB-node: as defined in TS 38.300 [9].

Mobile IAB-MT: as defined in TS 38.300 [9].

NG-RAN MBS session resource context: as defined in TS 38.401 [2].

NG-RAN node: as defined in TS 38.300 [9].

Non-CAG Cell: As defined in TS 38.300 [9].

Non-F1-terminating IAB-donor: as defined in TS 38.401 [2].

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

PDU session split: as defined in TS 37.340 [8].

Public Network Integrated NPN: as defined in TS 23.501 [7].

RRC-terminating IAB-donor: as defined in TS 38.401 [2].

Stand-alone Non-Public Network: as defined in TS 23.501 [7].

Subsequent Conditional PSCell Addition or Change (Subsequent CPAC): as defined in TS 37.340 [8].

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

WAB-MT: as defined in TS 38.401 [2].

3.2 Abbreviations

For the purposes of the present document, the abbreviations given in 3GPP 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 3GPP TR 21.905 [1].

5QI	5G QoS Identifier
AI	Artificial Intelligence
AMF	Access and Mobility Management Function
A2X	Aircraft-to-Everything
BH	Backhaul
CAG	Closed Access Group
CGI	Cell Global Identifier
CHO	Conditional Handover
CLI	Cross Link Interference
CP	Control Plane
CPA	Conditional PSCell Addition
CPAC	Conditional PSCell Addition or Change
CPC	Conditional PSCell Change
DAPS	Dual Active Protocol Stack
DL	Downlink
EN-DC	E-UTRA-NR Dual Connectivity
E-RAB	E-UTRAN Radio Access Bearer
GUAMI	Globally Unique AMF Identifier
IAB	Integrated Access and Backhaul
IMEISV	International Mobile station Equipment Identity and Software Version number
LBT	Listen-Before-Talk
LP-WUSPS	Low Power Wake Up Signal with Paging Subgrouping
MBS	Multicast/Broadcast Service
MCG	Master Cell Group
ML	Machine Learning
MT-SDT	Mobile Terminated Small Data Transmission
M-NG-RAN node	Master NG-RAN node
NGAP	NG Application Protocol
NID	Network Identifier
NPN	Non-Public Network
NSAG	Network Slice AS Group
NSSAI	Network Slice Selection Assistance Information
OD-SIB1	On-demand SIB1
PEIPS	Paging Early Indication with Paging Subgrouping
PNI-NPN	Public Network Integrated Non-Public Network
ProSe	Proximity Services
RANAC	RAN Area Code

RedCap	Reduced Capability
RSN	Redundancy Sequence Number
RSPP	Ranging/SL Positioning Protocol
SCG	Secondary Cell Group
SCTP	Stream Control Transmission Protocol
SNPN	Stand-alone Non-Public Network
S-CPAC	Subsequent CPAC
S-NG-RAN node	Secondary NG-RAN node
S-NSSAI	Single Network Slice Selection Assistance Information
SUL	Supplementary Uplink
SDT	Small Data Transmission
TAC	Tracking Area Code
TAI	Tracking Area Identity
UL	Uplink
UPF	User Plane Function
V2X	Vehicle-to-Everything
WAB	Wireless Access Backhaul

4 General

4.1 Procedure specification principles

The principle for specifying the procedure logic is to specify the functional behaviour of the terminating NG-RAN node exactly and completely. Any rule that specifies the behaviour of the originating NG-RAN 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 initiating 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 section 10.

4.2 Forwards and backwards compatibility

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

4.3 Specification notations

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

Procedure	When referring to an elementary procedure in the specification the Procedure Name is written with the first letters in each word in upper case characters followed by the word "procedure", e.g. Handover Preparation procedure.
Message	When referring to a message in the specification the MESSAGE NAME is written with all letters in upper case characters followed by the word "message", e.g. HANDOVER REQUEST message.
IE	When referring to an information element (IE) in the specification the *Information Element Name* is written with the first letters in each word in upper case characters and all letters in Italic font followed by the abbreviation "IE", e.g. *PDU Session ID* IE.
Value of an IE	When referring to the value of an information element (IE) in the specification the "Value" is written as it is specified in sub clause 9.2 enclosed by quotation marks, e.g. "Value".

5 XnAP services

The present clause describes the services an NG-RAN node offers to its neighbours.

5.1 XnAP procedure modules

The Xn interface XnAP procedures are divided into two modules as follows:

1. XnAP Basic Mobility Procedures;
2. XnAP Global Procedures;

The XnAP Basic Mobility Procedures module contains procedures used to handle the UE mobility within NG-RAN.

The Global Procedures module contains procedures that are not related to a specific UE. The procedures in this module are in contrast to the above module involving two peer NG-RAN nodes.

5.2 Parallel transactions

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

6 Services expected from signalling transport

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

Xn signalling transport is specified in TS 38.422 [4].

7 Functions of XnAP

The functions of XnAP are specified in TS 38.420 [3].

8 XnAP procedures

8.1 Elementary procedures

In the following tables, all EPs are divided into Class 1 and Class 2 EPs.

Table 8.1-1: Class 1 Elementary Procedures

Elementary Procedure	Initiating Message	Successful Outcome	Unsuccessful Outcome
		Response message	Response message
Handover Preparation	HANDOVER REQUEST	HANDOVER REQUEST ACKNOWLEDGE	HANDOVER PREPARATION FAILURE
Retrieve UE Context	RETRIEVE UE CONTEXT REQUEST	RETRIEVE UE CONTEXT RESPONSE	RETRIEVE UE CONTEXT FAILURE
S-NG-RAN node Addition Preparation	S-NODE ADDITION REQUEST	S-NODE ADDITION REQUEST ACKNOWLEDGE	S-NODE ADDITION REQUEST REJECT
M-NG-RAN node initiated S-NG-RAN node Modification Preparation	S-NODE MODIFICATION REQUEST	S-NODE MODIFICATION REQUEST ACKNOWLEDGE	S-NODE MODIFICATION REQUEST REJECT
S-NG-RAN node initiated S-NG-RAN node Modification	S-NODE MODIFICATION REQUIRED	S-NODE MODIFICATION CONFIRM	S-NODE MODIFICATION REFUSE
S-NG-RAN node initiated S-NG-RAN node CHANGE	S-NODE CHANGE REQUIRED	S-NODE CHANGE CONFIRM	S-NODE CHANGE REFUSE
M-NG-RAN node initiated S-NG-RAN node Release	S-NODE RELEASE REQUEST	S-NODE RELEASE REQUEST ACKNOWLEDGE	S-NODE RELEASE REJECT
S-NG-RAN node initiated S-NG-RAN node Release	S-NODE RELEASE REQUIRED	S-NODE RELEASE CONFIRM	
Xn Setup	XN SETUP REQUEST	XN SETUP RESPONSE	XN SETUP FAILURE
NG-RAN node Configuration Update	NG-RAN NODE CONFIGURATION UPDATE	NG-RAN NODE CONFIGURATION UPDATE ACKNOWLEDGE	NG-RAN NODE CONFIGURATION UPDATE FAILURE
Cell Activation	CELL ACTIVATION REQUEST	CELL ACTIVATION RESPONSE	CELL ACTIVATION FAILURE
Reset	RESET REQUEST	RESET RESPONSE	
Xn Removal	XN REMOVAL REQUEST	XN REMOVAL RESPONSE	XN REMOVAL FAILURE
E-UTRA - NR Cell Resource Coordination	E-UTRA - NR CELL RESOURCE COORDINATION REQUEST	E-UTRA - NR CELL RESOURCE COORDINATION RESPONSE	
Resource Status Reporting Initiation	RESOURCE STATUS REQUEST	RESOURCE STATUS RESPONSE	RESOURCE STATUS FAILURE
Mobility Settings Change	MOBILITY CHANGE REQUEST	MOBILITY CHANGE ACKNOWLEDGE	MOBILITY CHANGE FAILURE
IAB Transport Migration Management	IAB TRANSPORT MIGRATION MANAGEMENT REQUEST	IAB TRANSPORT MIGRATION MANAGEMENT RESPONSE	IAB TRANSPORT MIGRATION MANAGEMENT REJECT

Elementary Procedure	Initiating Message	Successful Outcome	Unsuccessful Outcome
		Response message	Response message
IAB Transport Migration Modification	IAB TRANSPORT MIGRATION MODIFICATION REQUEST	IAB TRANSPORT MIGRATION MODIFICATION RESPONSE	
IAB Resource Coordination	IAB RESOURCE COORDINATION REQUEST	IAB RESOURCE COORDINATION RESPONSE	
Partial UE Context Transfer	PARTIAL UE CONTEXT TRANSFER	PARTIAL UE CONTEXT TRANSFER ACKNOWLEDGE	PARTIAL UE CONTEXT TRANSFER FAILURE
Data Collection Reporting Initiation	DATA COLLECTION REQUEST	DATA COLLECTION RESPONSE	DATA COLLECTION FAILURE
OD-SIB1 Configuration Provision	OD-SIB1 CONFIGURATION PROVISION REQUEST	OD-SIB1 CONFIGURATION PROVISION RESPONSE	OD-SIB1 CONFIGURATION PROVISION FAILURE
LTM Configuration Update	LTM CONFIGURATION UPDATE	LTM CONFIGURATION UPDATE ACKNOWLEDGE	LTM CONFIGURATION UPDATE FAILURE
CSI-RS Coordination	CSI-RS COORDINATION REQUEST	CSI-RS COORDINATION RESPONSE	

Table 8.1-2: Class 2 Elementary Procedures

Elementary Procedure	Initiating Message
Handover Cancel	HANDOVER CANCEL
SN Status Transfer	SN STATUS TRANSFER
RAN Paging	RAN PAGING
Xn-U Address Indication	XN-U ADDRESS INDICATION
S-NG-RAN node Reconfiguration Completion	S-NODE RECONFIGURATION COMPLETE
S-NG-RAN node Counter Check	S-NODE COUNTER CHECK REQUEST
UE Context Release	UE CONTEXT RELEASE
RRC Transfer	RRC TRANSFER
Error Indication	ERROR INDICATION
Notification Control Indication	NOTIFICATION CONTROL INDICATION
Activity Notification	ACTIVITY NOTIFICATION
Secondary RAT Data Usage Report	SECONDARY RAT DATA USAGE REPORT
Trace Start	TRACE START
Deactivate Trace	DEACTIVATE TRACE
Handover Success	HANDOVER SUCCESS
Conditional Handover Cancel	CONDITIONAL HANDOVER CANCEL
Early Status Transfer	EARLY STATUS TRANSFER
Failure Indication	FAILURE INDICATION
Handover Report	HANDOVER REPORT
SCG Failure Indication	SCG FAILURE INDICATION
Resource Status Reporting	RESOURCE STATUS UPDATE
Access And Mobility Indication	ACCESS AND MOBILITY INDICATION
Cell Traffic Trace	CELL TRAFFIC TRACE
RAN Multicast Group Paging	RAN MULTICAST GROUP PAGING
SCG Failure Information Report	SCG FAILURE INFORMATION REPORT
SCG Failure Transfer	SCG FAILURE TRANSFER
F1-C Traffic Transfer	F1-C TRAFFIC TRANSFER
Retrieve UE Context Confirm	RETRIEVE UE CONTEXT CONFIRM
Conditional PSCell Change Cancel	CONDITIONAL PSCELL CHANGE CANCEL
RACH Indication	RACH INDICATION
Data Collection Reporting	DATA COLLECTION UPDATE
OD-SIB1 Configuration Provision Status Update	OD-SIB1 CONFIGURATION PROVISION STATUS UPDATE
Cell Switch Notification	CELL SWITCH NOTIFICATION
TA Information Transfer	TA INFORMATION TRANSFER
LTM Cancel	LTM CANCEL
CLI Indication	CLI INDICATION

8.2 Basic mobility procedures

8.2.1 Handover Preparation

8.2.1.1 General

This procedure is used to establish necessary resources in an NG-RAN node for an incoming handover. If the procedure concerns a conditional handover, parallel transactions are allowed. Possible parallel requests are identified by the target cell ID when the source UE AP IDs are the same.

If the procedure concerns an LTM, parallel transactions are allowed only when using the same source UE AP ID. Possible parallel requests are identified by the target cell ID.

The procedure uses UE-associated signalling.

8.2.1.2 Successful Operation

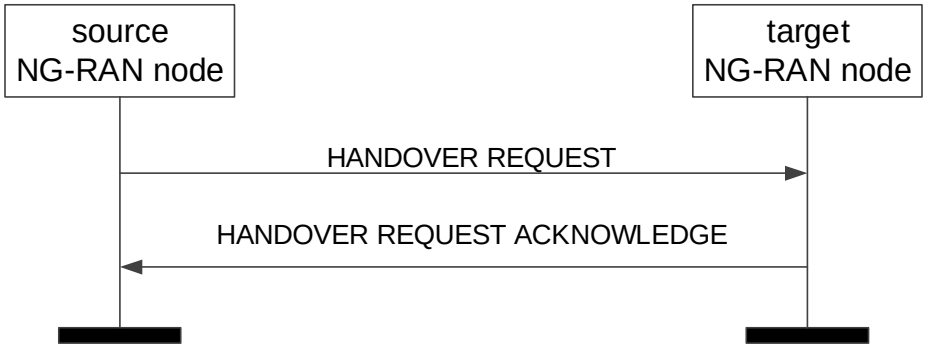

Figure 8.2.1.2-1: Handover Preparation, successful operation

The source NG-RAN node initiates the procedure by sending the HANDOVER REQUEST message to the target NG-RAN node. When the source NG-RAN node sends the HANDOVER REQUEST message, it shall start the timer $TXn_{RELOCprep}$.

If the *Conditional Handover Information Request* IE is contained in the HANDOVER REQUEST message, the target NG-RAN node shall consider that the request concerns a conditional handover and shall include the *Conditional Handover Information Acknowledge* IE in the HANDOVER REQUEST ACKNOWLEDGE message.

If the *Target NG-RAN node UE XnAP ID* IE is contained in the *Conditional Handover Information Request* IE included in the HANDOVER REQUEST message, then the target NG-RAN node shall remove the existing prepared conditional HO identified by the *Target NG-RAN node UE XnAP ID* IE and the *Target Cell Global ID* IE. It is up to the implementation of the target NG-RAN node when to remove the HO information.

Upon reception of the HANDOVER REQUEST ACKNOWLEDGE message, the source NG-RAN node shall stop the timer $TXn_{RELOCprep}$ and terminate the Handover Preparation procedure. If the procedure was initiated for an immediate handover, the source NG-RAN node shall start the timer $TXn_{RELOCoverall}$. The source NG-RAN node is then defined to have a Prepared Handover for that Xn UE-associated signalling.

For each *E-RAB ID* IE included in the *QoS Flows To Be Setup List* IE in the HANDOVER REQUEST message, the target NG-RAN node shall, if supported, store the content of the IE in the UE context and use it for subsequent inter-system handover.

If the *Masked IMEISV* IE is contained in the HANDOVER REQUEST message the target NG-RAN node shall, if supported, use it to determine the characteristics of the UE for subsequent handling.

At reception of the HANDOVER REQUEST message the target NG-RAN node shall prepare the configuration of the AS security relation between the UE and the target NG-RAN node by using the information in the *UE Security Capabilities* IE and the *AS Security Information* IE in the *UE Context Information* IE, as specified in TS 33.501 [28].

Upon reception of the *PDU Session Resources To Be Setup List* IE, contained in the HANDOVER REQUEST message, the target NG-RAN node shall behave the same as specified in TS 38.413 [5] for the PDU Session Resource Setup procedure. The target NG-RAN node shall report in the HANDOVER REQUEST ACKNOWLEDGE message the successful establishment of the result for all the requested PDU session resources. When the target NG-RAN node reports the unsuccessful establishment of a PDU session resource, the cause value should be precise enough to enable the source NG-RAN node to know the reason for the unsuccessful establishment.

For each PDU session if the *PDU Session Aggregate Maximum Bit Rate* IE is included in the *PDU Session Resources To Be Setup List* IE contained in the HANDOVER REQUEST message, the target NG-RAN node shall store the received PDU Session Aggregate Maximum Bit Rate in the UE context and use it when enforcing traffic policing for Non-GBR QoS flows for the concerned UE as specified in TS 23.501 [7].

For each QoS flow for which the source NG-RAN node proposes to perform forwarding of downlink data, the source NG-RAN node shall include the *DL Forwarding* IE set to "DL forwarding proposed" within the *Data Forwarding and Offloading Info from source NG-RAN node* IE in the *PDU Session Resources To Be Setup List* IE in the HANDOVER REQUEST message. The source NG-RAN node shall include the *DL Forwarding* IE set to "DL forwarding proposed" for all the QoS flows mapped to a DRB, if it requests a DAPS handover for that DRB.

For each PDU session for which the target NG-RAN node decides to admit the data forwarding for at least one QoS flow, the target NG-RAN node may include the *PDU Session level DL data forwarding UP TNL Information* IE within the *Data Forwarding Info from target NG-RAN node* IE in the *PDU Session Resource Admitted Info* IE contained in the *PDU Session Resources Admitted List* IE in the HANDOVER REQUEST ACKNOWLEDGE message.

For each QoS flow for which the source NG-RAN node has not yet received the SDAP end marker packet if QoS flow re-mapping happened before handover, the source NG-RAN node shall include the *UL Forwarding Proposal* IE within the *Data Forwarding and Offloading Info from source NG-RAN node* IE in the HANDOVER REQUEST message, and if the target NG-RAN node decides to admit uplink data forwarding for at least one QoS flow, the target NG-RAN node may include the *PDU Session level UL data Forwarding UP TNL Information* IE in the *Data Forwarding Info from target NG-RAN node* IE in the *PDU Session Resources Admitted Item* IE contained in the *PDU Session Resources Admitted List* IE in the HANDOVER REQUEST ACKNOWLEDGE message to indicate that it accepts the uplink data forwarding.

For each PDU session resource successfully setup at the target NG-RAN, the target NG-RAN node may allocate resources for additional Xn-U PDU session resource GTP-U tunnels, indicated in the *Secondary Data Forwarding Info from target NG-RAN node List* IE.

If the direct data forwarding path is available between the target NG-RAN node and the source S-NG-RAN node for a PDU session, the target M-NG-RAN node shall, if supported, include the *Direct Forwarding Path Availability* IE set to "direct path available" in the *Data Forwarding Info from target NG-RAN node* IE or in the *Secondary Data Forwarding Info from target NG-RAN node* IE corresponding to the target node of that PDU session in the HANDOVER REQUEST ACKNOWLEDGE message.

For each PDU session in the HANDOVER REQUEST message, if the *Alternative QoS Parameters Set List* IE is included in the *GBR QoS Flow Information* IE in the *PDU Session Resources To Be Setup List* IE, the target NG-RAN node may accept the setup of the involved QoS flow when notification control has been enabled if the requested QoS parameters set or at least one of the alternative QoS parameters sets can be fulfilled at the time of handover as specified in TS 23.501 [7]. In case the target NG-RAN node accepts the handover fulfilling one of the alternative QoS parameters it shall indicate the alternative QoS parameters set which it can currently fulfil in the *Current QoS Parameters Set Index* IE within the *PDU Session Resources Admitted List* IE of the HANDOVER REQUEST ACKNOWLEDGE message while setting the QoS parameters towards the UE according to the requested QoS parameters set as specified in TS 23.501 [7] , and behave the same as the NG-RAN node in the PDU Session Resource Setup procedure specified in TS 38.413 [5].

For each DRB for which the source NG-RAN node proposes to perform forwarding of downlink data, the source NG-RAN node shall include the *DRB ID* IE and the mapped *QoS Flows List* IE within the *Source DRB to QoS Flow Mapping List* IE contained in the *PDU Session Resources To Be Setup List* IE in the HANDOVER REQUEST message. The source NG-RAN node may include the *QoS Flow Mapping Indication* IE in the *Source DRB to QoS Flow Mapping List* IE to indicate that only the uplink or downlink QoS flow is mapped to the DRB. If the target NG-RAN node decides to use the same DRB configuration and to map the same QoS flows as the source NG-RAN node, the target NG-RAN node includes the *DL Forwarding GTP Tunnel Endpoint* IE within the *Data Forwarding Response DRB List* IE in the HANDOVER REQUEST ACKNOWLEDGE message to indicate that it accepts the proposed forwarding of downlink data for this DRB.

If the HANDOVER REQUEST ACKNOWLEDGE message contains the *UL Forwarding UP TNL Information* IE for a given DRB in the *Data Forwarding Response DRB List* IE within *Data Forwarding Info from target NG-RAN node* IE in the *PDU Session Resources Admitted List* IE and the source NG-RAN node accepts the data forwarding proposed by the target NG-RAN node, the source NG-RAN node shall perform forwarding of uplink data for the DRB.

If the HANDOVER REQUEST includes PDU session resources for PDU sessions associated to S-NSSAIs not supported by target NG-RAN, the target NG-RAN node shall reject such PDU session resources. In this case, and if at least one *PDU Session Resources To Be Setup Item* IE is admitted, the target NG-RAN node shall send the HANDOVER REQUEST ACKNOWLEDGE message including the *PDU Session Resources Not Admitted List* IE listing corresponding PDU sessions rejected at the target NG-RAN.

If the *Mobility Restriction List* IE is

- contained in the HANDOVER REQUEST message, the target NG-RAN node shall
  - store the information received in the *Mobility Restriction List* IE in the UE context;
  - use this information to determine a target for the UE during subsequent mobility action for which the NG-RAN node provides information about the target of the mobility action towards the UE, except when one of the PDU sessions has a particular ARP value (TS 23.501 [7]) in which case the information shall not apply;
  - use this information to select a proper SCG during dual connectivity operation.
  - use this information to select proper RNA(s) for the UE when moving the UE to RRC_INACTIVE.
- not contained in the HANDOVER REQUEST message, the target NG-RAN node shall
  - consider that no roaming and no access restriction apply to the UE except for the PNI-NPN mobility as described in TS 23.501 [7].

The target NG-RAN node shall consider that roaming or access to CAG cells is only allowed if the *Allowed PNI-NPN ID List* IE is contained in the HANDOVER REQUEST message, as described in TS 23.501 [7].

If the *Trace Activation* IE is included in the HANDOVER REQUEST message the target NG-RAN node shall, if supported, initiate the requested trace function as specified in TS 32.422 [23].

If the *Index to RAT/Frequency Selection Priority* IE is contained in the HANDOVER REQUEST message, the target NG-RAN node shall store this information and use it as defined in TS 23.501 [7].

If the *UE Context Reference at the S-NG-RAN node* IE is contained in the HANDOVER REQUEST message the target NG-RAN node may use it as specified in TS 37.340 [8]. In this case, the source NG-RAN node may expect the target NG-RAN node to include the *UE Context Kept Indicator* IE set to "True" in the HANDOVER REQUEST ACKNOWLEDGE message, which shall use this information as specified in TS 37.340 [8].

For each PDU session, if the *Network Instance* IE is included in the *PDU Session Resources To Be Setup List* IE and the *Common Network Instance* IE is not present, the target NG-RAN node shall, if supported, use it when selecting transport network resource as specified in TS 23.501 [7].

Redundant transmission:

- For each PDU session, if the *Redundant UL NG-U UP TNL Information at UPF* IE is included in the *PDU Session Resources To Be Setup List* IE, the target NG-RAN node shall, if supported, use it as the uplink termination point for the user plane data for the redundant transmission for the concerned PDU session.
- For each PDU session, if the *Additional Redundant UL NG-U UP TNL Information at UPF List* IE is included in the *PDU Session Resources To Be Setup List* IE, the target NG-RAN node shall, if supported, use them as the uplink termination points for the user plane data for the redundant transmission for the concerned PDU session.
- For each PDU session, if the *Redundant Common Network Instance* IE is included in the *PDU Session Resources To Be Setup List* IE, the target NG-RAN node shall, if supported, use it when selecting transport network resource for the redundant transmission as specified in TS 23.501 [7].
- For each PDU session, if the *Redundant PDU Session Information* IE is included in the *PDU Session Resources To Be Setup List* IE contained in the HANDOVER REQUEST message, the target NG-RAN node shall, if supported, store the received information in the UE context and set up the redundant user plane for the concerned

PDU session, as specified in TS 23.501 [7]. If the *PDU Session Pair ID* IE is included in the *Redundant PDU Session Information* IE, the target NG-RAN node may store and use it to identify the paired PDU sessions.

If the *TSC Traffic Characteristics* IE is included in the *QoS Flows To Be Setup List* IE in the *PDU Session Resources To Be Setup List* IE, the target NG-RAN node shall, if supported, use it as specified in TS 23.501 [7].

For each PDU session, if the *Common Network Instance* IE is included in the *PDU Session Resources To Be Setup List* IE or in the *Additional UL NG-U UP TNL Information at UPF List* IE, or in the *Additional Redundant UL NG-U UP TNL Information at UPF List* IE, the target NG-RAN node shall, if supported, use it when selecting transport network resource for the concerned NG-U transport bearer as specified in TS 23.501 [7].

For each PDU session for which the *Security Indication* IE is included in the *PDU Session Resources To Be Setup List* IE and the *Integrity Protection Indication* IE or *Confidentiality Protection Indication* IE is set to "required", the target NG-RAN node shall perform user plane integrity protection or ciphering, respectively. If the NG-RAN node is not able to perform the user plane integrity protection or ciphering, it shall reject the setup of the PDU Session Resources with an appropriate cause value.

If the NG-RAN node is an ng-eNB, it shall behave as specified in TS 33.501 [28].

For each PDU session for which the *Security Indication* IE is included in the *PDU Session Resources To Be Setup List* IE and the *Integrity Protection Indication* IE or the *Confidentiality Protection Indication* IE is set to "preferred", the target NG-RAN node should, if supported, perform user plane integrity protection or ciphering, respectively and shall notify the SMF whether it succeeded the user plane integrity protection or ciphering or not for the concerned security policy.

For each PDU session for which the *Maximum Integrity Protected Data Rate* IE is included in the *Security Indication* IE in the *PDU Session Resources To Be Setup List* IE, the NG-RAN node shall store the respective information and, if integrity protection is to be performed for the PDU session, it shall enforce the traffic corresponding to the received *Maximum Integrity Protected Data Rate* IE, for the concerned PDU session and concerned UE, as specified in TS 23.501 [7].

For each PDU session for which the *Security Indication* IE is included in the *PDU Session Resources To Be Setup List* IE and the *Integrity Protection Indication* IE or *Confidentiality Protection Indication* IE is set to "not needed", the target NG-RAN node shall not perform user plane integrity protection or ciphering, respectively, for the concerned PDU session.

For each PDU session, if the *Additional UL NG-U UP TNL Information at UPF List* IE is included in the *PDU Session Resources To Be Setup List* IE contained in the HANDOVER REQUEST message, the target NG-RAN node may forward the UP transport layer information to the target S-NG-RAN node as the uplink termination point for the user plane data for this PDU session split in different tunnel.

If the *Location Reporting Information* IE is included in the HANDOVER REQUEST message, then the target NG-RAN node should initiate the requested location reporting functionality as defined in TS 38.413 [5].

Upon reception of *UE History Information* IE in the HANDOVER REQUEST message, the target NG-RAN node shall collect the information defined as mandatory in the *UE History Information* IE and shall, if supported, collect the information defined as optional in the *UE History Information* IE, for as long as the UE stays in one of its cells, and store the collected information to be used for future handover preparations.

If the *Trace Activation* IE is included in the HANDOVER REQUEST message which includes

- the *MDT Activation* IE set to "Immediate MDT and Trace", then the target NG-RAN node shall if supported, initiate the requested trace session and MDT session as described in TS 32.422 [23].

- the *MDT Activation* IE set to "Immediate MDT Only" or "Logged MDT only", the target NG-RAN node shall, if supported, initiate the requested MDT session as described in TS 32.422 [23] and the target NG-RAN node shall ignore the *Interfaces To Trace* IE, and the *Trace Depth* IE.

- the *MDT Location Information* IE, within the *MDT Configuration* IE, the target NG-RAN node shall, if supported, store this information and take it into account in the requested MDT session.

- the *MDT Activation* IE set to "Immediate MDT Only" or "Logged MDT only", and if the *Signalling based MDT PLMN List* IE is included in the *MDT Configuration* IE, the target NG-RAN node may use it to propagate the MDT Configuration as described in TS 37.320 [43].

NOTE: In case of intra-PLMN handover, if the Signalling based MDT PLMN List within the MDT Configuration-EUTRA is not available in the source NG-RAN node it includes the serving PLMN in the *Signalling based MDT PLMN List* IE within the *MDT Configuration-EUTRA* IE.

- the *Bluetooth Measurement Configuration* IE, within the *MDT Configuration* IE, the target NG-RAN node shall, if supported, take it into account for MDT Configuration as described in TS 37.320 [43].

- the *WLAN Measurement Configuration* IE, within the *MDT Configuration* IE, the target NG-RAN node shall, if supported, take it into account for MDT Configuration as described in TS 37.320 [43].

- the *Sensor Measurement Configuration* IE, within the *MDT Configuration* IE, the target NG-RAN node shall take it into account for MDT Configuration as described in TS 37.320 [43].

- the *MDT Configuration* IE and if the target NG-RAN node is a gNB receiving a *MDT Configuration-EUTRA* IE, or the target NG-RAN node is a ng-eNB receiving a *MDT Configuration-NR* IE, the target NG-RAN node shall store it as part of the UE context, and use it as described in TS 37.320 [43].

- the *MN only MDT collection* IE, within the *MDT Configuration* IE, set to "MN Only", the NG-RAN node considers that the MDT Configuration-NR IE or the MDT Configuration-EUTRA IE is only applicable for the Master Node if the UE is configured with MR-DC.

If the *Area Scope* IE is not present in the *MDT Configuration* IE, the target NG-RAN node shall consider that the MDT Configuration is applied to all PLMNs indicated in the MDT PLMN List, as described in TS 32.422 [23].

If the *Management Based MDT PLMN List* IE is contained in the HANDOVER REQUEST message, the target NG-RAN node 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 [23].

If the HANDOVER REQUEST message includes the *Management Based MDT PLMN List* IE, the target NG-RAN node shall, if supported, store it in the UE context, and take it into account if it includes information regarding the PLMN serving the UE in the target NG-RAN node.

If the *Mobility Information* IE is provided in the HANDOVER REQUEST message, the target NG-RAN node shall, if supported, store this information. The target NG-RAN shall, if supported, store the C-RNTI assigned at the source cell as received in the HANDOVER REQUEST message.

Upon reception of the *UE History Information from the UE* IE in the HANDOVER REQUEST message, the target NG-RAN node shall, if supported, store the collected information and use it for future handover preparations.

For each QoS flow which has been successfully established in the target NG-RAN node, if the *QoS Monitoring Request* IE was included in the *QoS Flow Level QoS Parameters* IE contained in the HANDOVER REQUEST message, the target NG-RAN node shall store this information, and shall, if supported, perform delay measurement and QoS monitoring, as specified in TS 23.501 [7]. If the *QoS Monitoring Reporting Frequency* IE was included in the *QoS Flow Level QoS Parameters* IE contained in the HANDOVER REQUEST message, the target NG-RAN node shall store this information, and shall, if supported, use it for RAN part delay reporting. For each QoS Flow, if the *PDU Set QoS Parameters* IE is included in the *QoS Flow Level QoS Parameters* IE in the *PDU Session Resources To Be Setup List* IE, the target NG-RAN node shall, if supported, use it as specified in TS 23.501 [7].

If the HANDOVER REQUEST message includes the *PDU Set QoS Parameters* IE or the *DL PDU Set Information Marking Support Indication* IE set to "true", the target NG-RAN node shall, if supported, report in the HANDOVER REQUEST ACKNOWLEDGE message the *PDU Set based Handling Indicator* IE.

For each QoS flow which has been successfully established in the target NG-RAN node, if the *ECN Marking or Congestion Information Reporting Request* IE is included in the *PDU Session Resources To Be Setup List* IE contained in the HANDOVER REQUEST message, the target NG-RAN node shall, if supported, use it accordingly for the specific QoS flow.

For a QoS flow established with PDU Set QoS parameters, if the *PDU Set based Handling Indicator* IE set to "supported" is included in the HANDOVER REQUEST ACKNOWLEDGE message, the source NG-RAN node shall, if supported, include the PDU Set Information Container in the data to be forwarded.

If the *5GC Mobility Restriction List Container* IE is included in the HANDOVER REQUEST message, the target NG-RAN node shall, if supported, store this information in the UE context and use it as specified in TS 38.300 [9].

V2X:

- If the *NR V2X Services Authorized* IE is included in the HANDOVER REQUEST message and it contains one or more IEs set to "authorized", the target NG-RAN node shall, if supported, consider that the UE is authorized for the relevant service(s).

- If the *LTE V2X Services Authorized* IE is included in the HANDOVER REQUEST message and it contains one or more IEs set to "authorized", the target NG-RAN 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 included in the HANDOVER REQUEST message, the target NG-RAN node shall, if supported, use the received value 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 included in the HANDOVER REQUEST message, the target NG-RAN node shall, if supported, use the received value for the concerned UE's sidelink communication in network scheduled mode for LTE V2X services.

A2X:

- If the *NR A2X Services Authorized* IE is included in the HANDOVER REQUEST message and it contains one or more IEs set to "authorized", the target NG-RAN node shall, if supported, consider that the UE is authorized for the relevant service(s).

- If the *LTE A2X Services Authorized* IE is included in the HANDOVER REQUEST message and it contains one or more IEs set to "authorized", the target NG-RAN node shall, if supported, consider that the UE is authorized for the relevant service(s).

- If the *NR A2X UE PC5 Aggregate Maximum Bit Rate* IE is included in the HANDOVER REQUEST message, the target NG-RAN node shall, if supported, use the received value for the concerned UE's sidelink communication in network scheduled mode for NR A2X services.

- If the *LTE A2X UE PC5 Aggregate Maximum Bit Rate* IE is included in the HANDOVER REQUEST message, the target NG-RAN node shall, if supported, use the received value for the concerned UE's sidelink communication in network scheduled mode for LTE A2X services.

- If the *A2X PC5 QoS Parameters* IE is included in the HANDOVER REQUEST message, the target NG-RAN node shall, if supported, use it as defined in TS 23.256 [56].

5G ProSe:

- If the *5G ProSe Authorized* IE is included in the HANDOVER REQUEST message and it contains one or more IEs set to "authorized", the target NG-RAN 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 included in the HANDOVER REQUEST message, the target NG-RAN node shall, if supported, use the received value for the concerned UE's sidelink communication in network scheduled mode for 5G ProSe services.

- If the *5G ProSe PC5 QoS Parameters* IE is included in the HANDOVER REQUEST message, the target NG-RAN node shall, if supported, use it as defined in TS 23.304 [48].

Ranging and SL Positioning Services:

- If the *Ranging and Sidelink Positioning Authorized* IE, within the *Ranging and Sidelink Positioning Services Information* IE, is included in the HANDOVER REQUEST message and set to "authorized", the target NG-RAN node shall, if supported, consider that the UE is authorized for the Ranging and Sidelink Positioning services.

If the *PC5 QoS Parameters* IE is included in the HANDOVER REQUEST message, the target NG-RAN node shall, if supported, use it as defined in TS 23.287 [38].

If the *Aerial UE Subscription Information* IE is included in the HANDOVER REQUEST message, the target NG-RAN node shall, if supported, store this information in the UE context and use it as defined in TS 38.300 [9].

If the *Candidate Relay UE Info List* IE is included in the HANDOVER REQUEST message, the target NG-RAN node shall, if supported, use it to configure the path switch to indirect path as specified in TS 38.300 [9].

If the *DAPS Request Information* IE is included for a given DRB in the HANDOVER REQUEST message, the target NG-RAN node shall consider that the request concerns a DAPS handover for that DRB, as described in TS 38.300 [9]. Accordingly, the target NG-RAN node shall include the *DAPS Response Information* IE in the HANDOVER REQUEST ACKNOWLEDGE message.

If the *Maximum Number of CHO Preparations* IE is included in the *Conditional Handover Information Acknowledge* IE contained in the HANDOVER REQUEST ACKNOWLEDGE message, then the source NG-RAN node should not prepare more candidate target cells for a CHO for the same UE towards the target NG-RAN node than the number indicated in the IE.

If the *Estimated Arrival Probability* IE is contained in the *Conditional Handover Information Request* IE included in the HANDOVER REQUEST message, then the target NG-RAN node may use the information to allocate necessary resources for the incoming CHO.

If the *Conditional Handover Time Based Information* IE is contained in the *Conditional Handover Information Request* IE included in the HANDOVER REQUEST message, then the target NG-RAN node may use this information to allocate necessary resources for the incoming CHO.

If the *Maximum Number of Conditional Reconfigurations to Prepare* IE is contained in the *Conditional Handover Information Request* IE included in the HANDOVER REQUEST message, then the target NG-RAN node may use the information to prepare for CHO with candidate PSCell(s) configuration and may include the *CHO-CPAC Information* IE within the *Conditional Handover Information Acknowledge* IE in the HANDOVER REQUEST ACKNOWLEDGE message. The target NG-RAN node may also provide a CHO-only configuration, which is counted as one toward the maximum number indicated by the *Maximum Number of Conditional Reconfigurations to Prepare* IE.

If the *IAB Node Indication* IE is contained in the HANDOVER REQUEST message, the target NG-RAN node shall, if supported, consider that the handover is for an IAB node. In addition:

- If the *No PDU Session Indication* IE is contained in the HANDOVER REQUEST message, the target NG-RAN node shall, if supported, consider the UE as an IAB-node which does not have any PDU sessions activated, and ignore the *PDU Session Resources To Be Setup List* IE, and shall not take any action with respect to PDU session setup. Subsequently, the source NG-RAN node shall, if supported, ignore the *PDU Session Resources Admitted To Be Added List* IE in the HANDOVER REQUEST ACKNOWLEDGE message.

- If the *IAB Authorization Status* IE is contained in the HANDOVER REQUEST message, the target NG-RAN node shall, if supported, store the received IAB authorization status information in the UE context and use it as specified in TS 38.401 [2].

If the *UE Radio Capability ID* IE is contained in the HANDOVER REQUEST message, the target NG-RAN node shall, if supported, store this information in the UE context and use it as defined in TS 23.501 [7] and TS 23.502 [13].

If for a given QoS Flow the *Source DL Forwarding IP Address* IE is included within the *Data Forwarding and Offloading Info from source NG-RAN node* IE in the *PDU Session Resources To Be Setup List* IE contained in the HANDOVER REQUEST message, the target NG-RAN node shall, if supported, store this information and use it as part of its ACL functionality configuration actions, if such ACL functionality is deployed.

If the *MBS Session Information List* IE is contained in the HANDOVER REQUEST message, the target NG-RAN node shall, if supported, establish an NG-RAN MBS session resources context as specified in TS 23.247 [46] and TS 38.300 [9], if applicable.

If the HANDOVER REQUEST message includes the *MBS Area Session ID* IE, the target NG-RAN, if supported, shall use this information as an indication from which MBS Area Session ID the UE is handed over. For each MBS session for which the *Active MBS Session Information* IE is included in the *MBS Session Information Item List* IE, the target NG-RAN shall, if supported, use this information to setup respective MBS session resources. The target NG-RAN node shall, if supported, consider that the MBS sessions for which the *Active MBS Session Information* IE is not included are inactive.

If the HANDOVER REQUEST ACKNOWLEDGE message contains in the *MBS Session Information Response List* IE the *MBS Data Forwarding Response Info from target NG-RAN node* IE that the source NG-RAN node shall use the information for forwarding MBS traffic to the target NG-RAN node.

If the *MBS Session Associated Information List* IE is included in the *PDU Session Resources To Be Setup List* IE in the HANDOVER REQUEST message, the target NG-RAN node shall, if supported, use the information contained in the *Associated QoS Flow Information List* IE as specified in TS 23.247 [46].

For each MRB indicated in the *MBS Mapping and Data Forwarding Request Info from source NG-RAN node* IE, the target NG-RAN node shall use the *MRB ID* IE and, if included, the *MRB Progress Information* IE which includes the highest PDCP SN of the packet which has already been delivered to the UE for the MRB, to decide whether to apply data forwarding for that MRB and to establish respective resources.

The source NG-RAN shall, for each MRB in the *MBS Data Forwarding Response Info from target NG-RAN node* IE in the HANDOVER REQUEST ACKNOWLEDGE message, start data forwarding to the indicated DL Forwarding UP TNL Information. If the *MRB Progress Information* IE is included the source NG-RAN node may use the information to determine when to stop data forwarding.

If the *Time Synchronisation Assistance Information* IE is contained in the HANDOVER REQUEST message, the target NG-RAN node shall, if supported, store this information in the UE context and use it as defined in TS 23.501 [7].

If the *QMC Configuration Information* IE is contained in the HANDOVER REQUEST message, the target NG-RAN node shall, if supported, take it into account for QoE measurements handling, as described in TS 38.300 [9].

If the *SN-related QMC Information at MN* IE is contained in the HANDOVER REQUEST message, the target NG-RAN node shall, if supported, use it for QoE measurements handling, as specified in TS 37.340 [8].

If the *Source SN to Target SN QMC Information* IE is contained in the HANDOVER REQUEST message, the target NG-RAN node shall, if supported, use it for QoE measurements handling, as specified in TS 37.340 [8].

If the *Assistance Information for QoE Measurement* IE is included in the *UE Application Layer Measurement Configuration Information* IE within the *QMC Configuration Information* IE in the HANDOVER REQUEST message, the target NG-RAN node may take it into account for controlling the UE's application layer measurement reporting when the NG-RAN node is overloaded, as described in TS 38.300 [9].

If the *UE Slice Maximum Bit Rate List* IE is contained in HANDOVER REQUEST message, the target NG-RAN node shall, if supported, store the received UE Slice Maximum Bit Rate List in the UE context, and use the received UE Slice Maximum Bit Rate value for each S-NSSAI for the concerned UE as specified in TS 23.501 [7].

If the *Cell Based UE Trajectory Prediction* IE is contained in the HANDOVER REQUEST message, the target NG-RAN node shall, if supported, consider the content of this list as a prediction by the source NG-RAN node of the cells that the UE will be connected to, and may use it for e.g. mobility decisions.

If the *PNI-NPN Area Scope of MDT* IE is included in the *MDT Configuration-NR* IE included in the HANDOVER REQUEST message, the target NG-RAN node shall, if supported, use it to derive the MDT area scope for MDT measurement collection in PNI-NPN. Upon reception of the *PNI-NPN Area Scope of MDT* IE, the target NG-RAN node shall consider that the area scope for MDT measurement collection of PNI-NPN areas is defined only by the areas included in the *PNI-NPN Area Scope of MDT* IE.

If the *RRC Config Indication* IE is contained in the HANDOVER REQUEST ACKNOWLEDGE message, the source NG-RAN node shall, if supported, consider that the target NG-RAN node applied a full configuration or delta configuration, e.g., as part of conditional handover procedure involving dual connectivity operation.

If the *Mobile IAB Authorization Status* IE is included in the HANDOVER REQUEST message, the target NG-RAN node shall, if supported, store the received Mobile IAB authorization status information in the UE context and consider that the handover is for a mobile IAB-node. If the *Mobile IAB Authorization Status* IE is set to "not authorized" for a mobile IAB-MT, the target NG-RAN node shall, if supported, store it and use it as defined in TS 38.401[2].

If the *DL LBT Failure Information Request* IE is included in the HANDOVER REQUEST message, the target NG-RAN node shall, if supported, consider that the source NG-RAN node has requested the DL LBT failure information of the UE in the target cell for MRO analysis, as specified in TS 38.300 [9].

For each GBR QoS flow which has been successfully established in the target NG-RAN node, if the *Monitoring Request on Available Bitrate* IE was included in the *GBR QoS Flow Information* IE in the *PDU Session Resource To Be Setup List* IE contained in HANDOVER REQUEST message, the target NG-RAN node shall, if supported, store this information and perform Available bitrate monitoring, as specified in TS 23.501 [7].

For each QoS flow, if the *MMSID* IE is included in the *QoS Flow Level QoS Parameters* IE contained in the HANDOVER REQUEST message, the target NG-RAN node shall, if supported, consider that the QoS flow is related to a multi-modal service, as described in TS 23.501 [7] and TS 38.300 [9].

For each QoS flow, if the *Indication of Bitrate Adaptation* IE set to "uplink" is included in the *QoS Flow Level QoS Parameters* IE contained in the HANDOVER REQUEST message, the target NG-RAN node shall, if supported, store the received indication and use it for uplink rate control, as defined in TS 38.300 [9].

If the *LTM Handover Information Request* IE included in the HANDOVER REQUEST message and the *LTM Indicator* IE is set to "true", the target NG-RAN node shall, if supported, consider that the source NG-RAN node has requested the LTM information for the UE in the target NG-RAN node and include the *LTM Handover Information Request Acknowledge* IE in the HANDOVER REQUEST ACKNOWLEDGE message.

If the *Reference Configuration* IE is contained in the *LTM Handover Information Request* IE included in the HANDOVER REQUEST message, the target NG-RAN node shall, if supported, take it into account for generating the LTM configuration. If the *Request for CSI-RS Resource Configuration for L1 Measurements* IE set to “true” is included in the HANDOVER REQUEST message, the target NG-RAN node shall, if supported, include the *CSI-RS Resource Configuration for L1 Measurements* IE in the HANDOVER REQUEST ACKNOWLEDGE message.

If the *CSI-RS Resource Configuration for Early CSI Acquisition* IE is included in the HANDOVER REQUEST ACKNOWLEDGE message, the source NG-RAN node shall, if supported, act as specified in TS 38.300 [9].

If the *CSI Resource Configuration* IE is contained in the *LTM Handover Information Request* IE included in the HANDOVER REQUEST message, the target NG-RAN node shall, if supported, use it to generate the LTM CSI reporting configuration included in the *LTM Candidate Configuration* IE for the requested candidate cell.

If the *LTM Configuration ID Mapping List* IE is contained in the HANDOVER REQUEST message, the target NG-RAN node shall, if supported, consider this as the mapping information for the LTM candidate cell(s).

If the *Proposed LTM L2 Reset Configuration List* IE is included in the *LTM Handover Information Request* IE in the HANDOVER REQUEST message, the target NG-RAN node shall, if supported, include the *LTM L2 Reset Configuration* IE in the HANDOVER REQUEST ACKNOWLEDGE message for the accepted candidate cell, and act as specified in TS 38.300 [9].

If the *Proposed LTM No Security Change ID List* IE is contained in the *LTM Handover Information Request* IE included in the HANDOVER REQUEST message, the target NG-RAN node shall, if supported, include the *LTM No Security Change ID* IE in the HANDOVER REQUEST ACKNOWLEDGE message for the accepted candidate cell, and act as specified in TS 38.300 [9].

If the *Complete Candidate Configuration Indicator* IE set to "complete" is contained in the *LTM Handover Information Request Acknowledge* IE included in the HANDOVER REQUEST ACKNOWLEDGE message, the source NG-RAN node shall, if supported, consider that the LTM candidate configuration is a complete candidate configuration.

If the *Target NG-RAN node UE XnAP ID* IE is contained in the *LTM Handover Information Request* IE included in the HANDOVER REQUEST message, the target NG-RAN node shall, consider that the source NG-RAN node requests LTM preparation for an already established UE association.

If the *Early Sync Information Request* IE is included in the HANDOVER REQUEST message, the target NG-RAN node shall, if supported, consider that the source NG-RAN node has requested the early synchronization information for the UE in the target NG-RAN node.

If the *Early Sync Information Response* IE is contained in the HANDOVER REQUEST ACKNOWLEDGE message, the source NG-RAN node shall, if supported, store it and use it as defined in TS 38.300 [9].

If the *LTM CFRA Resource Information* IE is contained in the *LTM Handover Information Request Acknowledge* IE included in the HANDOVER REQUEST ACKNOWLEDGE message, the source NG-RAN node shall, if supported, use it for the LTM cell switch command as specified in TS 38.321 [35].

If the *Network Slice Area Scope of MDT* IE is included in the *MDT Configuration-NR* IE included in the HANDOVER REQUEST message, the target NG-RAN node shall, if supported, use it to derive the MDT area scope for MDT measurement collection. Upon reception of the *Network Slice Area Scope of MDT* IE, the target NG-RAN node shall consider that the area scope for MDT measurement collection is defined only by the *Network Slice Area Scope of MDT* IE and *Area Scope of MDT* IE.

If the *Continuous MDT* IE is contained in the HANDOVER REQUEST message, the target NG-RAN node shall, if supported, take it into account to configure the UE with Continuous Management Based MDT.

If the S-NSSAI dedicated to WAB-MT's backhaul PDU session(s) is included in the *UE Context Information* IE in the HANDOVER REQUEST message, the target NG-RAN node shall act as specified in TS 38.401 [2].

If the *Proposed LTM UE Based TA Measurement ID List* IE is contained in the *LTM Handover Information Request* IE included in the HANDOVER REQUEST message, the target NG-RAN node shall, if supported, include the *UE Based TA Measurement Configuration* IE in the HANDOVER REQUEST ACKNOWLEDGE message for the accepted candidate cell, and act as specified in TS 38.300 [9].

Interaction with SN Status Transfer procedure:

If the *UE Context Kept Indicator* IE set to "True" and the *DRBs transferred to MN* IE are included in the HANDOVER REQUEST ACKNOWLEDGE message, the source NG-RAN node shall, if supported, include the uplink/downlink PDCP SN and HFN status received from the S-NG-RAN node in the SN Status Transfer procedure towards the target NG-RAN node, as specified in TS 37.340 [8].

Interaction with the Data Collection Reporting and the Data Collection Reporting Initiation procedures:

If the *Data Collection ID* IE is contained in the HANDOVER REQUEST message, the target NG-RAN node shall, if supported, report to the source NG-RAN node after successful handover via the Data Collection Reporting procedure and according to clause 8.4.13.2, the requested information configured via the previous Data Collection Reporting Initiation procedure corresponding to the *NG-RAN node1 Measurement ID* IE, allocated by the source NG-RAN node, and the *NG-RAN node2 Measurement ID* IE, allocated by the target NG-RAN node,.

8.2.1.3 Unsuccessful Operation

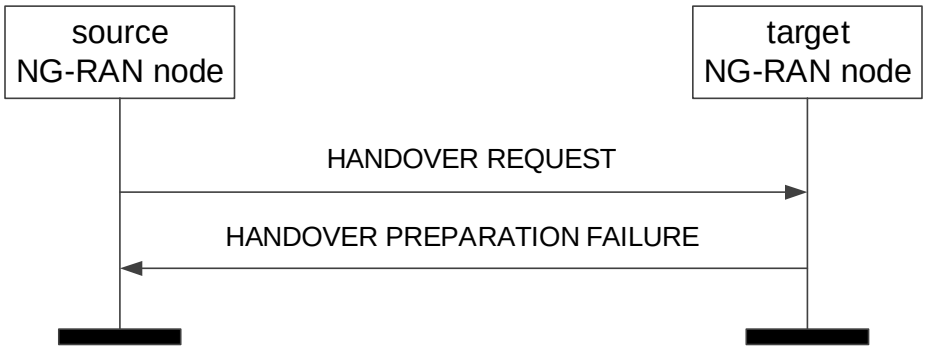

Figure 8.2.1.3-1: Handover Preparation, unsuccessful operation

If the target NG-RAN node does not admit at least one PDU session resource, or a failure occurs during the Handover Preparation, the target NG-RAN node shall send the HANDOVER PREPARATION FAILURE message to the source NG-RAN node. The message shall contain the *Cause* IE with an appropriate value.

If the *Conditional Handover Information Request* IE or the *LTM Handover Information Request* IE is contained in the HANDOVER REQUEST message and the target NG-RAN node rejects the handover or a failure occurs during the Handover Preparation, the target NG-RAN node shall include the *Requested Target Cell ID* IE in the HANDOVER PREPARATION FAILURE message.

Interactions with Handover Cancel procedure:

If there is no response from the target NG-RAN node to the HANDOVER REQUEST message before timer $TXn_{RELOCprep}$ expires in the source NG-RAN node, the source NG-RAN node should cancel the Handover Preparation procedure towards the target NG-RAN node by initiating the Handover Cancel procedure with the appropriate value for the *Cause* IE. The source NG-RAN node shall ignore any HANDOVER REQUEST ACKNOWLEDGE or HANDOVER PREPARATION FAILURE message received after the initiation of the Handover Cancel procedure and remove any reference and release any resources related to the concerned Xn UE-associated signalling.

8.2.1.4 Abnormal Conditions

If the supported algorithms for encryption defined in the *UE Security Capabilities* IE in the *UE Context Information* IE, plus the mandated support of the EEA0 and NEA0 algorithms in all UEs (TS 33.501 [28]), do not match any allowed algorithms defined in the configured list of allowed encryption algorithms in the NG-RAN node (TS 33.501 [28]), the NG-RAN node shall reject the procedure using the HANDOVER PREPARATION FAILURE message.

If the supported algorithms for integrity defined in the *UE Security Capabilities* IE in the *UE Context Information* IE, plus the mandated support of the EIA0 and NIA0 algorithms in all UEs (TS 33.501 [28]), do not match any allowed algorithms defined in the configured list of allowed integrity protection algorithms in the NG-RAN node (TS 33.501 [28]), the NG-RAN node shall reject the procedure using the HANDOVER PREPARATION FAILURE message.

If the *CHO trigger* IE is set to "CHO-replace" in the HANDOVER REQUEST message, but there is no CHO prepared for the included Target NG-RAN node UE XnAP ID, or the candidate cell in the *Target Cell ID* IE was not prepared using the same UE-associated signaling connection, the NG-RAN node shall reject the procedure using the HANDOVER PREPARATION FAILURE message.

If the HANDOVER REQUEST message includes information for a PLMN not serving the UE in the target NG-RAN node in the *Management Based MDT PLMN List* IE, the target NG-RAN node shall ignore information for that PLMN within the Management Based MDT PLMN List.

If both the *PNI-NPN Area Scope of MDT* IE and the *Area Scope of MDT-NR* IE are included in the *MDT Configuration-NR* IE in the HANDOVER REQUEST message, and the *Area Scope of MDT-NR* IE is set to "PNI-NPN based", the target NG-RAN node shall, if supported, use the *Area Scope of MDT-NR* IE to derive the MDT area scope for MDT measurement collections in PNI-NPN areas, and ignore the *PNI-NPN Area Scope of MDT* IE.

If the *PNI-NPN Area Scope of MDT* IE is included in the *MDT Configuration-NR* IE in the HANDOVER REQUEST message, and the *Area Scope of MDT-NR* IE is not included, the target NG-RAN node shall ignore the *PNI-NPN Area Scope of MDT* IE, and consider that the MDT Configuration for NR is applied to all PLMNs indicated in the MDT PLMN List described in TS 32.422 [23].

If the *Network Slice Area Scope of MDT* IE is included in the *MDT Configuration-NR* IE in the HANDOVER REQUEST message, and the *MDT Activation* IE is set to “Logged MDT only”, the NG-RAN node shall ignore the *Network Slice Area Scope of MDT* IE.

8.2.2 SN Status Transfer

8.2.2.1 General

The purpose of the SN Status Transfer procedure is to transfer the uplink PDCP SN and HFN receiver status and the downlink PDCP SN and HFN transmitter status either, from the source to the target NG-RAN node during an Xn handover, between the NG-RAN nodes involved in dual connectivity, or after retrieval of a UE context for RRC reestablishment, for each respective DRB of the source DRB configuration for which PDCP SN and HFN status preservation applies.

In case that the Xn handover is a DAPS handover, the SN Status Transfer procedure may also be used to transfer the uplink PDCP SN and HFN receiver status, and the downlink PDCP SN and HFN transmitter status for a DRB associated with RLC-UM and configured with DAPS as described in TS 38.300 [9].

In case that the Xn handover is a CHO, the SN Status Transfer procedure may also be used to transfer handover related information.

If the SN Status Transfer procedure is applied in the course of dual connectivity or RRC connection re-establishment in the subsequent specification text

- the behaviour of the NG-RAN node from which the DRB context is transferred, i.e. the NG-RAN node involved in dual connectivity or RRC connection re-establishment, from which data is forwarded, is specified by the behaviour of the "source NG-RAN node",

- the behaviour of the NG-RAN node to which the DRB context is transferred, i.e., the NG-RAN node involved in dual connectivity or RRC connection re-establishment, to which data is forwarded, is specified by the behaviour of the "target NG-RAN node".

The procedure uses UE-associated signalling.

8.2.2.2 Successful Operation

Figure 8.2.2.2-1: SN Status Transfer, successful operation

The source NG-RAN node initiates the procedure by stop assigning PDCP SNs to downlink SDUs and stop delivering UL SDUs towards the 5GC and sending the SN STATUS TRANSFER message to the target NG-RAN node at the time point when it considers the transmitter/receiver status to be frozen. The target NG-RAN node using full configuration for this handover as per TS 38.300 [9] or for the MR-DC operations as per TS 37.340 [8] shall ignore the information received in this message. In case of MR-DC, if the target NG-RAN node performs PDCP SN length change or RLC mode change for a DRB as specified in TS 37.340 [8], it shall ignore the information received for that DRB in this message.

In case that the Xn handover is a DAPS handover, the source NG-RAN node may continue assigning PDCP SNs to downlink SDUs and delivering uplink SDUs toward the 5GC when initiating this procedure for DRBs not configured with DAPS as in TS 38.300 [9].

For each DRB in the *DRBs Subject To Status Transfer List* IE, the source NG-RAN node shall include the *DRB ID* IE, the *UL COUNT Value* IE and the *DL COUNT Value* IE.

The source NG-RAN node may also include in the SN STATUS TRANSFER message the missing and the received uplink SDUs in the *Receive Status Of UL PDCP SDUs* IE for each DRB for which the source NG-RAN node has accepted the request from the target NG-RAN node for uplink forwarding.

For each DRB in the *DRBs Subject To Status Transfer List* IE, the target NG-RAN node shall not deliver any uplink packet which has a PDCP-SN lower than the value contained within the *UL COUNT Value* IE.

For each DRB in the *DRBs Subject To Status Transfer List* IE for which the source NG-RAN node has accepted the request from the target NG-RAN node for uplink forwarding, the source NG-RAN node may also include the discarded SDUs via the *Discard Bitmap* IE, and the target NG-RAN node shall, if supported, take it into account when delivering SDUs to the upper layers.

For each DRB in the *DRBs Subject To Status Transfer List* IE, the target NG-RAN node shall use the value of the PDCP SN contained within the *DL COUNT Value* IE for the first downlink packet for which there is no PDCP-SN yet assigned.

If the *Receive Status Of UL PDCP SDUs* IE is included for at least one DRB in the SN STATUS TRANSFER message, the target NG-RAN node may use it in a Status Report message sent to the UE over the radio interface.

If the SN STATUS TRANSFER message contains in the *DRBs Subject To Status Transfer List* IE the *Old QoS Flow List - UL End Marker expected* IE, the target NG-RAN node shall be prepared to receive the SDAP end marker for the QoS flow via the corresponding DRB, as specified in TS 38.300 [9].

If the *CHO Configuration* IE is included in the SN STATUS TRANSFER message, the target NG-RAN node shall, if supported, store this information in the UE context and use it as specified in TS 38.300 [9].

If the *Mobility Information* IE is included in the SN STATUS TRANSFER message, the target NG-RAN node shall, if supported, store this information in the UE context and use it as specified in TS 38.300 [9].

8.2.2.3 Unsuccessful Operation

Not applicable.

8.2.2.4 Abnormal Conditions

If the target NG-RAN node receives this message for a UE for which no prepared handover exists at the target NG-RAN node, the target NG-RAN node shall ignore the message.

8.2.3 Handover Cancel

8.2.3.1 General

The Handover Cancel procedure is used to enable a source NG-RAN node to cancel an ongoing handover preparation or an already prepared handover.

The procedure uses UE-associated signalling.

8.2.3.2 Successful Operation

Figure 8.2.3.2-1: Handover Cancel, successful operation

The source NG-RAN node initiates the procedure by sending the HANDOVER CANCEL message to the target NG-RAN node. The source NG-RAN node shall indicate the reason for cancelling the handover by means of an appropriate cause value.

If the *Candidate Cells To Be Cancelled List* IE is included in the HANDOVER CANCEL message, the target NG-RAN node shall consider that the source NG-RAN node is cancelling only the handover associated to the candidate cells identified by the included NG-RAN CGI and associated to the same UE-associated signaling connection identified by the *Source NG-RAN node UE XnAP ID* IE and, if included, also by the *Target NG-RAN node UE XnAP ID* IE.

If the *LTM Candidate Cells To Be Cancelled List* IE is included in the HANDOVER CANCEL message, the target NG-RAN node shall, if supported, consider that the source NG-RAN node is cancelling the LTM configurations associated to the candidate cells identified by the included NG-RAN CGI and associated to the same UE-associated signaling connection identified by the *Source NG-RAN node UE XnAP ID* IE and, if included, also by the *Target NG-RAN node UE XnAP ID* IE.

8.2.3.3 Unsuccessful Operation

Not applicable.

8.2.3.4 Abnormal Conditions

If the HANDOVER CANCEL message refers to a context that does not exist, the target NG-RAN node shall ignore the message.

If the *Candidate Cells To Be Cancelled List* IE is included in the HANDOVER CANCEL message and the handover is not associated to a conditional handover, the target NG-RAN node shall ignore the *Candidate Cells To Be Cancelled List* IE.

If the *LTM Candidate Cells To Be Cancelled List* IE is included in the HANDOVER CANCEL message and the handover is not associated to LTM, the target NG-RAN node shall ignore the *LTM Candidate Cells To Be Cancelled List* IE.

If one or more candidate cells in the *Candidate Cells To Be Cancelled List* IE or *LTM Candidate Cells To Be Cancelled List* IE included in the HANDOVER CANCEL message were not prepared using the same UE-associated signaling connection, the target NG-RAN node shall ignore those non-associated candidate cells.

8.2.4 Retrieve UE Context

8.2.4.1 General

The purpose of the Retrieve UE Context procedure is to either retrieve the UE context from the old NG-RAN node and transfer it to the NG-RAN node where the UE RRC Connection has been requested to be established, or to enable the old NG-RAN node to forward an RRC message to the UE via the new NG-RAN node without context transfer, or to request for small data transmission. The procedure can also be used to transfer the authorization status information of the mobile IAB-node.

The procedure uses UE-associated signalling.

8.2.4.2 Successful Operation

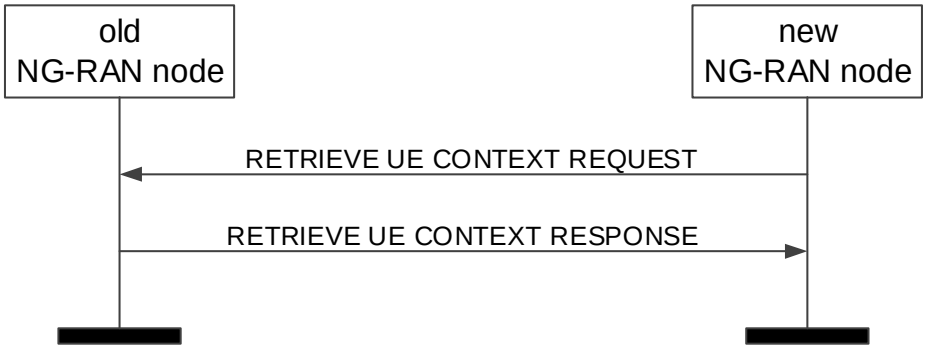

Figure 8.2.4.2-1: Retrieve UE Context, successful operation

The new NG-RAN node initiates the procedure by sending the RETRIEVE UE CONTEXT REQUEST message to the old NG-RAN node.

If the old NG-RAN node is able to identify the UE context by means of the UE Context ID, and to successfully verify the UE by means of the integrity protection contained in the RETRIEVE UE CONTEXT REQUEST message, and decides to provide the UE context to the new NG-RAN node, it shall respond to the new NG-RAN node with the RETRIEVE UE CONTEXT RESPONSE message.

If the *Trace Activation* IE is included in the RETRIEVE UE CONTEXT RESPONSE message, the new NG-RAN node shall, if supported, initiate the requested trace function as specified in TS 32.422 [23].

If the *Location Reporting Information* IE is included in the RETRIEVE UE CONTEXT RESPONSE message, then the new NG-RAN node should initiate the requested location reporting functionality as defined in TS 38.413 [5].

If the *Trace Activation* IE is included in the RETRIEVE UE CONTEXT RESPONSE message which includes

- the *MDT Activation* IE set to "Immediate MDT and Trace", then the new NG-RAN node shall if supported, initiate the requested trace session and MDT session as described in TS 32.422 [23].

- the *MDT Activation* IE set to "Immediate MDT Only" or "Logged MDT only", the new NG-RAN node shall, if supported, initiate the requested MDT session as described in TS 32.422 [23] and the target NG-RAN node shall ignore the *Interfaces To Trace* IE, and the *Trace Depth* IE.

- the *MDT Location Information* IE, within the *MDT Configuration* IE, the new NG-RAN node shall, if supported, store this information and take it into account in the requested MDT session.

- the *MDT Activation* IE set to "Immediate MDT Only" or "Logged MDT only", and if the *Signalling based MDT PLMN List* IE is included in the *MDT Configuration* IE, the new NG-RAN node may use it to propagate the MDT Configuration as described in TS 37.320 [43].

NOTE: If the Signalling based MDT PLMN List within the MDT Configuration-EUTRA is not available in the old NG-RAN node, it includes the current serving PLMN in the *Signalling based MDT PLMN List* IE within the *MDT Configuration-EUTRA* IE.

- the *Bluetooth Measurement Configuration* IE, within the *MDT Configuration* IE, the new NG-RAN node shall, if supported, take it into account for MDT Configuration as described in TS 37.320 [43].

- the *WLAN Measurement Configuration* IE, within the *MDT Configuration* IE, the new NG-RAN node shall, if supported, take it into account for MDT Configuration as described in TS 37.320 [43].

- the *Sensor Measurement Configuration* IE, within the *MDT Configuration* IE, take it into account for MDT Configuration as described in TS 37.320 [43].

- the *MDT Configuration* and if the new NG-RAN node is a gNB receiving a *MDT Configuration-EUTRA* IE, or the target NG-RAN node is a ng-eNB receiving a *MDT Configuration-NR* IE, the new NG-RAN node shall store it as part of the UE context, and use it as described in TS 37.320 [43].

- the *MN only MDT collection* IE, within the *MDT Configuration* IE, set to "MN Only", the NG-RAN node consider that the MDT Configuration-NR IE or the MDT Configuration-EUTRA IE is only applicable for Master the Node if the UE is configured with MR-DC.

If the *Area Scope* IE is not present in the *MDT Configuration* IE, the new NG-RAN node shall consider that the MDT Configuration is applied to all PLMNs indicated in the MDT PLMN List, as described in TS 32.422 [23].

For each QoS flow in the RETRIEVE UE CONTEXT RESPONSE message, if the *QoS Monitoring Request* IE is included in the *QoS Flow Level QoS Parameters* IE in the *PDU Session Resources To Be Setup List* IE, the new NG-RAN node shall store this information, and shall, if supported, perform delay measurement and QoS monitoring, as specified in TS 23.501 [7]. If the *QoS Monitoring Reporting Frequency* IE is included in the *QoS Flow Level QoS Parameters* IE in the *PDU Session Resources To Be Setup List* IE, the new NG-RAN node shall store this information, and shall, if supported, use it for RAN part delay reporting. For each QoS Flow, if the *PDU Set QoS Parameters* IE is included in the *QoS Flow Level QoS Parameters* IE in the *PDU Session Resources To Be Setup List* IE, the new NG-RAN node shall, if supported, use it as specified in TS 23.501 [7].

For each QoS flow which has been successfully established in the new NG-RAN node, if the *ECN Marking or Congestion Information Reporting Request* IE is included in the *PDU Session Resources To Be Setup List* IE contained in the RETRIEVE UE CONTEXT RESPONSE message, the new NG-RAN node shall, if supported, use it accordingly for the specific QoS flow.

V2X:

- If the *NR V2X Services Authorized* IE is included in the RETRIEVE UE CONTEXT RESPONSE message and it contains one or more IEs set to "authorized", the new NG-RAN node shall, if supported, consider that the UE is authorized for the relevant service(s).

- If the *LTE V2X Services Authorized* IE is included in the RETRIEVE UE CONTEXT RESPONSE message and it contains one or more IEs set to "authorized", the new NG-RAN 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 included in the *UE Context Information Retrieve UE Context Response* IE in the RETRIEVE UE CONTEXT RESPONSE message, the new NG-RAN node shall, if supported, use the received value 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 included in the *UE Context Information Retrieve UE Context Response* IE in the RETRIEVE UE CONTEXT RESPONSE message, the new NG-RAN node shall, if supported, use the received value for the concerned UE's sidelink communication in network scheduled mode for LTE V2X services.

A2X:

- If the *NR A2X Services Authorized* IE is included in the RETRIEVE UE CONTEXT RESPONSE message and it contains one or more IEs set to "authorized", the new NG-RAN node shall, if supported, consider that the UE is authorized for the relevant service(s).

- If the *LTE A2X Services Authorized* IE is included in the RETRIEVE UE CONTEXT RESPONSE message and it contains one or more IEs set to "authorized", the new NG-RAN node shall, if supported, consider that the UE is authorized for the relevant service(s).

- If the *NR A2X UE PC5 Aggregate Maximum Bit Rate* IE is included in the *UE Context Information – Retrieve UE Context Response* IE in the RETRIEVE UE CONTEXT RESPONSE message, the new NG-RAN node shall, if supported, use the received value for the concerned UE's sidelink communication in network scheduled mode for NR A2X services.

- If the *LTE A2X UE PC5 Aggregate Maximum Bit Rate* IE is included in the *UE Context Information – Retrieve UE Context Response* IE in the RETRIEVE UE CONTEXT RESPONSE message, the new NG-RAN node shall, if supported, use the received value for the concerned UE's sidelink communication in network scheduled mode for LTE A2X services.

- If the *A2X PC5 QoS Parameters* IE is included in the RETRIEVE UE CONTEXT RESPONSE message, the new NG-RAN node shall, if supported, use it as defined in TS 23.256 [56].

5G ProSe:

- If the *5G ProSe Authorized* IE is included in the RETRIEVE UE CONTEXT RESPONSE message and it contains one or more IEs set to "authorized", the new NG-RAN 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 included in the *UE Context Information – Retrieve UE Context Response* IE in the RETRIEVE UE CONTEXT RESPONSE message, the new NG-RAN node shall, if supported, use the received value for the concerned UE's sidelink communication in network scheduled mode for 5G ProSe services.

- If the *5G ProSe PC5 QoS Parameters* IE is included in the RETRIEVE UE CONTEXT RESPONSE message, the new NG-RAN node shall, if supported, use it as defined in TS 23.304 [48].

If the *PC5 QoS Parameters* IE is included in the RETRIEVE UE CONTEXT RESPONSE message, the new NG-RAN node shall, if supported, use it as defined in TS 23.287 [38].

Ranging and SL Positioning Services:

- If the Ranging *and Sidelink Positioning Authorized* IE, within the *Ranging and Sidelink Positioning Services Information* IE is included in the RETRIEVE UE CONTEXT RESPONSE message and set to "authorized", the new NG-RAN node shall, if supported, consider that the UE is authorized for the Ranging and Sidelink Positioning services.

In case of RRC Re-establishment, the old NG-RAN may include the *UE History Information* IE or the *UE History Information from the UE* IE in the RETRIEVE UE CONTEXT RESPONSE message. Upon reception of the *UE History Information* IE or the *UE History Information from the UE* IE in the RETRIEVE UE CONTEXT RESPONSE message, the new NG-RAN node shall, if supported, store the collected information and use it for future handover preparations.

If the *Aerial UE Subscription Information* IE is included in the RETRIEVE UE CONTEXT RESPONSE message, the new NG- RAN node shall, if supported, store this information in the UE context and use it as defined in TS 38.300 [9].

If the *Management Based MDT PLMN List* IE is contained in the RETRIEVE UE CONTEXT RESPONSE message, the new NG-RAN node shall, if supported, store it in the UE context, and use this information to allow subsequent selection of the UE for management based MDT defined in TS 32.422 [23].

If the RETRIEVE UE CONTEXT RESPONSE message includes the *MBS Area Session ID* IE, the new NG-RAN node shall, if supported, use this information as an indication in which MBS Area Session ID the UE has been suspended. For each MBS session for which the *Active MBS Session Information* IE is included in the *MBS Session Information Item* IE, the new NG-RAN node shall, if supported, use this information to setup respective MBS session resources. The new NG-RAN node shall, if supported, consider that the MBS sessions for which the *Active MBS Session Information* IE is not included are inactive.

If the *IAB Node Indication* IE set to "true" is contained in the RETRIEVE UE CONTEXT RESPONSE message, the new NG-RAN node shall, if supported, consider that the procedure is performed for an IAB-node. In addition:

- If the *No PDU Session Indication* IE set to "true" is contained in the *UE Context Information – Retrieve UE Context Response* IE of the RETRIEVE UE CONTEXT RESPONSE message, the new NG-RAN node shall, if supported, consider the UE as an IAB-node which does not have any PDU sessions activated, and ignore the *PDU Session Resources To Be Setup List* IE in the *UE Context Information – Retrieve UE Context Response* IE, and shall not take any action with respect to PDU session setup.

If the *Time Synchronisation Assistance Information* IE is contained in the RETRIEVE UE CONTEXT RESPONSE message, the new NG-RAN node shall, if supported, store this information in the UE context and use it as defined in TS 23.501 [7].

If the *QMC Configuration Information* IE is contained in the RETRIEVE UE CONTEXT RESPONSE message, the new NG-RAN node shall, if supported, take it into account for QoE measurements handling, as described in TS 38.300 [9].

If the *Assistance Information for QoE Measurement* IE is included in the *UE Application Layer Measurement Configuration Information* IE within the *QMC Configuration Information* IE in the RETRIEVE UE CONTEXT RESPONSE message, the new NG-RAN node may store this information and consider it for controlling the UE reporting when the new NG-RAN node is overloaded, as described in TS 38.300 [9].

If the *SDT Support Request* IE is included in the RETRIEVE UE CONTEXT REQUEST message, the old NG-RAN node shall, if supported, consider that the UE has requested for SDT as defined in TS 38.300 [9].

If the *SRS Positioning Configuration Or Activation Request* IE set to "true" is included in the RETRIEVE UE CONTEXT REQUEST message, the old NG-RAN may include the *NRPPa Positioning Information* IE within the *UE Context Information – Retrieve UE Context Response* IE in the RETRIEVE UE CONTEXT RESPONSE message.

If the *PNI-NPN Area Scope of MDT* IE is included in the *MDT Configuration-NR* IE included in the RETRIEVE UE CONTEXT RESPONSE message, the new NG-RAN node shall, if supported, use it to derive the MDT area scope for MDT measurement collection in PNI-NPN. Upon reception of the *PNI-NPN Area Scope of MDT* IE, the new NG-RAN node shall consider that the area scope for MDT measurement collections of PNI-NPN areas is defined only by the areas included in the *PNI-NPN Area Scope of MDT* IE.

If the UE is a mobile IAB-node, the old NG-RAN node shall include the *Mobile IAB Authorization Status* IE in the RETRIEVE UE CONTEXT RESPONSE message. If the *Mobile IAB Authorization Status* IE is included in the RETRIEVE UE CONTEXT RESPONSE message, the new NG-RAN node shall, if supported, consider that the UE is a mobile IAB-node, then store it and use it accordingly as defined in TS 38.401 [2].

For each GBR QoS flow in the new NG-RAN node, if the *Monitoring Request on Available Bitrate* IE was included in the *GBR QoS Flow Information* IE in the *PDU Session Resource To Be Setup List* IE contained in RETRIEVE UE CONTEXT RESPONSE message, the new NG-RAN node shall if supported, store this information and perform Available bitrate monitoring, as specified in TS 23.501 [7].

For each QoS flow in the RETRIEVE UE CONTEXT RESPONSE message, if the *MMSID* IE is included in the *QoS Flow Level QoS Parameters* IE in the *PDU Session Resources To Be Setup List* IE, the new NG-RAN node shall, if supported, consider that the QoS flow is related to a multi-modal service, as described in TS 23.501 [7] and TS 38.300 [9].

For each QoS flow in the RETRIEVE UE CONTEXT RESPONSE message, if the *Indication of Bitrate Adaptation* IE set to "uplink" is included in the *QoS Flow Level QoS Parameters* IE in the *PDU Session Resources To Be Setup List* IE, the new NG-RAN node shall, if supported, store the received indication and use it for uplink rate control, as defined in TS 38.300 [9].

If the *Network Slice Area Scope of MDT* IE is included in the *MDT Configuration-NR* IE included in the RETRIEVE UE CONTEXT RESPONSE message, the new NG-RAN node shall, if supported, use it to derive the MDT area scope for MDT measurement collection. Upon reception of the *Network Slice Area Scope of MDT* IE, the new NG-RAN node shall consider that the area scope for MDT measurement collection is defined only by the *Network Slice Area Scope of MDT* IE and *Area Scope of MDT* IE.

If the *UE context information – Retrieve UE Context Response* IE in the RETRIEVE UE CONTEXT RESPONSE message includes:

- *Mobility Restriction List* IE, the new NG-RAN node shall, if supported, store this information in the UE context and use it as specified in TS 38.300 [9].

- *Index to RAT/Frequency Selection Priority* IE, the new NG-RAN node shall store this information and use it as defined in TS 23.501 [7].

- *5GC Mobility Restriction List Container* IE, the new NG-RAN node shall, if supported, store this information in the UE context and use it as specified in TS 38.300 [9].

- *UE Radio Capability ID* IE, the new NG- RAN node shall, if supported store this information in the UE context and use it as defined in TS 23.501 [7] and TS 23.502 [13].

- *MBS Session Information List* IE, the new NG-RAN node shall, if supported, use this information to establish an NG-RAN MBS session resources context, if applicable.

- *UE Slice Maximum Bit Rate List* IE, the new NG-RAN node shall, if supported, store the received UE Slice Maximum Bit Rate List in the UE context, and use the received UE Slice Maximum Bit Rate value for each S-NSSAI for the concerned UE as specified in TS 23.501 [7].

- *Positioning Information* IE, the new NG-RAN node shall, if supported, take it into account to allocate proper SRS resources and make corresponding response to LMF when positioning a UE.

If the *Continuous MDT* IE is contained in the RETRIEVE UE CONTEXT RESPONSE message, the new NG-RAN node shall, if supported, take it into account to configure the UE with Continuous Management Based MDT.

Interaction with the Retrieve UE Context Confirm procedure

If the *UE Context Reference at the S-NG-RAN node* IE is contained in the RETRIEVE UE CONTEXT RESPONSE message, the new NG-RAN node may use it to establish dual connectivity with the S-NG-RAN node and shall trigger the Retrieve UE Context Confirm procedure to the old NG-RAN node when the UE successfully resumes on the new NG-RAN node.

8.2.4.3 Unsuccessful Operation

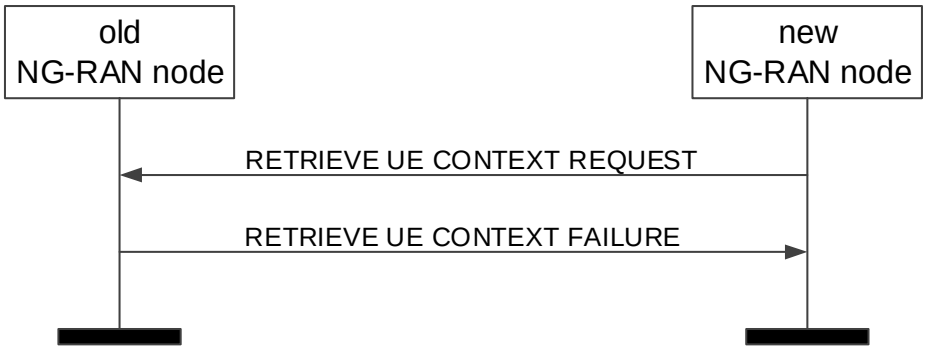

Figure 8.2.4.3-1: Retrieve UE Context, unsuccessful operation

If the old NG-RAN node is not able to identify the UE context by means of the UE Context ID, or if the integrity protection contained in the RETRIEVE UE CONTEXT REQUEST message is not valid, or, if it decides not to provide the UE context to the new NG-RAN node, it shall respond to the new NG-RAN node with the RETRIEVE UE CONTEXT FAILURE message.

If the old NG-RAN node decides to keep the UE context in case of periodic RNAU or in case of RACH based SDT, it shall store the *Allocated C-RNTI* IE and the *Access PCI* IE in the *UE Context ID* IE, as described in TS 38.300 [9].

If the *Old NG-RAN node to New NG-RAN node Resume Container* IE is included in the RETRIEVE UE CONTEXT FAILURE message, the new NG-RAN node should transparently forward the content of this IE to the UE as described in TS 38.300 [9].

If the *Semi-persistent Positioning Information* IE is included in the RETRIEVE UE CONTEXT FAILURE message, the new NG-RAN node shall, if supported, take it into account to activate or deactivate the semi-persistent SRS transmission for area-specific SRS configuration.

Interaction with Partial UE Context Transfer procedure

In case of RACH based SDT, if the old NG-RAN node decides to not transfer/relocate the UE Context to the new NG-RAN node, it may trigger the Partial UE Context Transfer procedure as specified in TS 38.300 [9]. After the old NG-RAN node has decided to end the SDT session, it shall terminate the Retrieve UE Context procedure by sending the RETRIEVE UE CONTEXT FAILURE message.

8.2.4.4 Abnormal Conditions

If both the *PNI-NPN Area Scope of MDT* IE and the *Area Scope of MDT-NR* IE are included in the *MDT Configuration-NR* IE in the RETRIEVE UE CONTEXT RESPONSE message, and the *Area Scope of MDT-NR* IE is set to "PNI-NPN based", the new NG-RAN node shall, if supported, use the *Area Scope of MDT-NR* IE to derive the MDT area scope for MDT measurement collection in PNI-NPN areas, and ignore the *PNI-NPN Area Scope of MDT* IE.

If the *PNI-NPN Area Scope of MDT* IE is included in the *MDT Configuration-NR* IE in the RETRIEVE UE CONTEXT RESPONSE message, and the *Area Scope of MDT-NR* IE is not included, the target NG-RAN node shall ignore the *PNI-NPN Area Scope of MDT* IE, and consider that the MDT Configuration for NR is applied to all PLMNs indicated in the MDT PLMN List described in TS 32.422 [23].

If the *Network Slice Area Scope of MDT* IE is included in the *MDT Configuration-NR* IE in the HANDOVER REQUEST message, and the *MDT Activation* IE is set to “Logged MDT only”, the NG-RAN node shall ignore the *Network Slice Area Scope of MDT* IE.

8.2.5 RAN Paging

8.2.5.1 General

The purpose of the RAN Paging procedure is to enable the NG-RAN node$_1$ to request paging of a UE in the NG-RAN node$_2$.

The procedure uses non UE-associated signalling.

8.2.5.2 Successful operation

Figure 8.2.5.2-1: RAN Paging: successful operation

The RAN Paging procedure is triggered by the NG-RAN node$_1$ by sending the RAN PAGING message to the NG-RAN node$_2$, in which the necessary information e.g. UE RAN Paging Identity should be provided. When available at the NG-RAN node$_1$, the following IEs should be included:

- the *Extended UE Identity Index Value* IE;
- the *E-UTRA Paging eDRX Information* IE;
- the *UE Specific DRX* IE;
- the *NR Paging eDRX Information* IE;
- the *Paging Cause* IE;
- the *Hashed UE Identity Index Value* IE;
- the *PEIPS Assistance Information* IE;

- the *LP-WUSPS Assistance Information* IE;
- the *Further Extended UE Identity Index Value* IE.

If the *Paging Priority* IE is included in the RAN PAGING message, the NG-RAN node$_2$ may use it to prioritize paging.

If the *Assistance Data for RAN Paging* IE is included in the RAN PAGING message, the NG-RAN node$_2$ may use it according to TS 38.300 [9].

If the *UE Radio Capability for Paging* IE is included in the RAN PAGING message, the NG-RAN node$_2$ may use it to apply specific paging schemes.

If the *Extended UE Identity Index Value* IE is included in the RAN PAGING message, the NG-RAN node$_2$ may use it according to TS 36.304 [34], and for eDRX or the UE_ID based subgrouping according to TS 38.304 [33].

If the *E-UTRA Paging eDRX Information* IE is included in the RAN PAGING message, the NG-RAN node$_2$ shall, if supported, use it according to TS 36.304 [34].

If the *UE Specific DRX* IE is included in the RAN PAGING message, the NG-RAN node$_2$ shall, if supported, use it according to TS 36.304 [34].

If the *NR Paging eDRX Information* IE is included in the RAN PAGING message, the NG-RAN node$_2$ shall, if supported, use it according to TS 38.304 [33].

If the *NR Paging eDRX Information for RRC INACTIVE* IE is included in the RAN PAGING message, the NG-RAN node$_2$ shall, if supported, use it according to TS 38.304 [33].

If the *Paging Cause* IE is included in the RAN PAGING message, the NG-RAN node$_2$ shall, if supported, use it according to TS 38.331 [10].

If the *Hashed UE Identity Index Value* IE is included in the RAN PAGING message, the NG-RAN node$_2$ shall, if supported, use it according to TS 38.304 [33] or TS 36.304 [34].

If the *PEIPS Assistance Information* IE is included in the RAN PAGING message, the NG-RAN node$_2$ shall, if supported, use it according to TS 38.300 [9].

If the *MT-SDT Information* IE is included in the RAN PAGING message, the NG-RAN node$_2$ shall, if supported, use it according to TS 38.300 [9].

If the *NR Paging Long eDRX Information for RRC INACTIVE* IE is included in the RAN PAGING message, the NG-RAN node$_2$ shall, if supported, use it according to TS 38.304 [33].

If the *LP-WUSPS Assistance Information* IE is included in the RAN PAGING message, the NG-RAN node$_2$ shall, if supported, use it according to TS 38.300 [9].

If the *Further Extended UE Identity Index Value* IE is included in the RAN PAGING message, the NG-RAN node$_2$ shall, if supported, use it according to TS 38.304 [33].

If the *LP-WUS Disable Indication* IE is included in the RAN PAGING message, the NG-RAN node$_2$ shall, if supported, disable LP-WUS as described in TS 38.300 [9].

8.2.5.3 Unsuccessful Operation

Not applicable.

8.2.5.4 Abnormal Condition

Void.

8.2.6 XN-U Address Indication

8.2.6.1 General

For the retrieval of a UE context, the Xn-U Address Indication procedure is used to provide forwarding addresses from the new NG-RAN node to the old NG-RAN node for all PDU session resources successfully established at the new NG-RAN node for which forwarding was requested, and/or all MBS session resources successfully established at the new NG-RAN node for which forwarding was requested.

For MR-DC with 5GC, the Xn-U Address Indication procedure is used to provide data forwarding related information, and Xn-U bearer address information for completion of setup of SN terminated bearers from the M-NG-RAN node to the S-NG-RAN node as specified in TS 37.340 [8].

The procedure uses UE-associated signalling.

8.2.6.2 Successful Operation

Figure 8.2.6.2-1: Xn-U Address Indication, successful operation for UE context retrieval

Figure 8.2.6.2-2: Xn-U Address Indication, successful operation for MR-DC with 5GC

UE Context Retrieval

The Xn-U Address Indication procedure is initiated by the new NG-RAN node. Sending the XN-U ADDRESS INDICATION message, the new NG-RAN node informs the old NG-RAN node of successfully established PDU Session Resource contexts, or MBS session resource contexts, or both, to which user data pending at the old NG-RAN node can be forwarded.

The new NG-RAN node may include *Secondary Data Forwarding Info from target NG-RAN node List* IE for an additional Xn-U tunnel for data forwarding.

Upon reception of the XN-U ADDRESS INDICATION message, the old NG-RAN node should forward pending user data to the indicated TNL addresses.

If the XN-U ADDRESS INDICATION message includes the *MBS Data Forwarding Indicator* IE set to "MBS-only", the old NG-RAN node shall, if supported, consider that the XN-U ADDRESS INDICATION message only concerns data forwarding of the indicated MBS sessions.

If the XN-U ADDRESS INDICATION message includes the *MBS Session Information Response List* IE, the old NG-RAN node shall, if supported, use the information for forwarding MBS traffic to the new NG-RAN node.

Interaction with Retrieve UE Context procedure

If the RETRIEVE UE CONTEXT RESPONSE message incudes the *PDU Set QoS Parameters* IE or the *DL PDU Set Information Marking Support Indication* IE set to "true", the new NG-RAN node shall, if supported, include in the XN-U ADDRESS INDICATION message the *PDU Set based Handling Indicator* IE set to "supported".

For a QoS flow established with PDU Set QoS parameters, if the *PDU Set based Handling Indicator* IE set to "supported" is included in the XN-U ADDRESS INDICATION message, the old NG-RAN node shall, if supported, include the PDU Set Information Container in the data to be forwarded.

MR-DC with 5GC

The Xn-U Address Indication procedure is initiated by the M-NG-RAN node.

Upon reception of the XN-U ADDRESS INDICATION message, in case of data forwarding, the S-NG-RAN node should forward pending DL user data to the indicated TNL addresses; in case *Data Forwarding Info from target E-UTRAN node* IE is received, the S-NG-RAN node should perform inter-system direct data forwarding to the indicated TNL addresses as specified in TS 38.300 [9]; in case of completion of Xn-U bearer establishment for SN terminated bearers, the S-NG-RAN node may start delivery of user data to the indicated TNL address, and shall, if supported, use the received *QoS Mapping Information* IE within the *DRBs to Be Setup List* IE in the *PDU Session Resource Setup Complete Info – SN terminated* IE to set DSCP and/or IPv6 flow label fields for the delivery of user data to the indicated TNL address.

If the XN-U ADDRESS INDICATION message includes the *DRB IDs taken into use* IE, the S-NG-RAN node shall, if applicable, act as specified in TS 37.340 [8].

If the XN-U ADDRESS INDICATION message includes the *CHO MR-DC Indicator* IE, the S-NG-RAN node shall, if supported, consider that the XN-U ADDRESS INDICATION message concerns a Conditional Handover, and act as specified in TS 37.340 [8].

If the XN-U ADDRESS INDICATION message includes the *CHO MR-DC Early Data Forwarding Indicator* IE set to "stop", the S-NG-RAN node shall, if supported and if already initiated, stop early data forwarding for the provided Data Forwarding Address information.

If the XN-U ADDRESS INDICATION message includes the *CPC Data Forwarding indicator* IE set to "triggered", the S-NG-RAN node shall, if supported, consider that the XN-U ADDRESS INDICATION message concerns a Conditional PSCell Change, and act as specified in TS 37.340 [8]. If the *CPC Data Forwarding indicator* IE is present and value set to "early data transmission stop", the S-NG-RAN node shall, if supported and if already initiated, stop early data forwarding for the provided Data Forwarding Address information.

If the XN-U ADDRESS INDICATION message includes the *LTM DC Data Forwarding Indicator* IE set to "triggered", the S-NG-RAN node shall, if supported, consider that the XN-U ADDRESS INDICATION message concerns an Inter-CU MCG LTM, and act as specified in TS 37.340 [8].

Interaction with the S-NG-RAN node initiated S-NG-RAN node Modification procedure:

If the *CHO MR-DC Indicator* IE or the *CPC Data Forwarding indicator* IE is set to "coordination-only" in the XN-U ADDRESS INDICATION message and if any SCG reconfiguration is executed, the S-NG-RAN node shall, if supported, trigger the S-NG-RAN node initiated S-NG-RAN node Modification procedure to inform the M-NG-RAN node as specified in TS 37.340 [8].

8.2.6.3 Unsuccessful Operation

Not applicable.

8.2.6.4 Abnormal Conditions

Void.

8.2.7 UE Context Release

8.2.7.1 General

For handover, the UE Context Release procedure is initiated by the target NG-RAN node to indicate to the source NG-RAN node that radio and control plane resources for the associated UE context are allowed to be released.

For dual connectivity, the UE Context Release procedure is initiated by the M-NG-RAN node to initiate the release the UE context at the S-NG-RAN node. For dual connectivity specific mobility scenarios specified in TS 37.340 [8], where SCG radio resources in the S-NG-RAN node are kept, only resources related to the UE-associated signalling connection between the M-NG-RAN node and the S-NG-RAN node are released.

For UE context retrieval, the UE Context Release procedure is initiated by the new NG-RAN node to indicate to the old NG-RAN node that radio and control plane resources for the associated UE context are allowed to be released.

The procedure uses UE-associated signalling.

8.2.7.2 Successful Operation

Figure 8.2.7.2-1: UE Context Release, successful operation for handover

Figure 8.2.7.2-2: UE Context Release, successful operation for dual connectivity

Figure 8.2.7.2-3: UE Context Release, successful operation for UE context retrieval

Handover

The UE Context Release procedure is initiated by the target NG-RAN node. By sending the UE CONTEXT RELEASE message the target NG-RAN node informs the source NG-RAN node of Handover success and triggers the release of resources.

Upon reception of the UE CONTEXT RELEASE message, the source NG-RAN node may release radio and control plane related resources associated to the UE context. If data forwarding has been performed, the source NG-RAN node should continue forwarding of user plane data as long as packets are received at the source NG-RAN node.

Dual Connectivity

The UE Context Release procedure is initiated by the M-NG-RAN node. By sending the UE CONTEXT RELEASE message the M-NG-RAN node informs the S-NG-RAN node that the UE Context can be removed.

Upon reception of the UE CONTEXT RELEASE message, the S-NG-RAN node may release radio and control plane related resources associated to the UE context. If data forwarding has been performed, the S-NG-RAN node should continue forwarding of user plane data as long as packets are received at the S-NG-RAN node.

UE Context Retrieval

The UE Context Release procedure is initiated by the new NG-RAN node. By sending the UE CONTEXT RELEASE message the new NG-RAN node informs the old NG-RAN node of RRC connection reestablishment success or RRC connection resumption success and triggers the release of resources.

Interaction with the M-NG-RAN node initiated S-NG-RAN node Release procedure:

The S-NG-RAN node may receive the S-NODE RELEASE REQUEST message including the *UE Context Kept Indicator* IE set to "True", upon which the S-NG-RAN node shall, if supported, only release the resources related to the UE-associated signalling connection between the M-NG-RAN node and the S-NG-RAN node, as specified in TS 37.340 [8].

8.2.7.3 Unsuccessful Operation

Not applicable.

8.2.7.4 Abnormal Conditions

If the UE Context Release procedure is not initiated towards the source NG-RAN node from any prepared NG-RAN node before the expiry of the timer $TXn_{RELOCoverall}$, the source NG-RAN node shall request the AMF to release the UE context.

If the UE returns to source NG-RAN node before the reception of the UE CONTEXT RELEASE message or the expiry of the timer $TXn_{RELOCoverall}$, the source NG-RAN node shall stop the $TXn_{RELOCoverall}$ and continue to serve the UE.

8.2.8 Handover Success

8.2.8.1 General

The Handover Success procedure is used during a conditional handover or a DAPS handover or LTM to enable a target NG-RAN node to inform the source NG-RAN node that the UE has successfully accessed the target NG-RAN node.

The procedure uses UE-associated signalling.

8.2.8.2 Successful Operation

Figure 8.2.8.2-1: Handover Success, successful operation

The target NG-RAN node initiates the procedure by sending the HANDOVER SUCCESS message to the source NG-RAN node.

If late data forwarding was configured for this UE, the source NG-RAN node shall start data forwarding using the tunnel information related to the global target cell ID provided in the HANDOVER SUCCESS message.

When the source NG-RAN node receives the HANDOVER SUCCESS message, it shall consider all other CHO preparations accepted for this UE under the same UE-associated signalling connection in the target NG-RAN node as cancelled.

Interactions with other procedures

If a CONDITIONAL HANDOVER CANCEL message was received for this UE prior the reception of the HANDOVER SUCCESS message, the source NG-RAN node shall consider that the UE successfully executed the handover.

The source NG-RAN node may initiate Handover Cancel procedure towards the other signalling connections or other candidate target NG-RAN nodes for this UE, if any.

8.2.8.3 Unsuccessful Operation

Not applicable.

8.2.8.4 Abnormal Conditions

If the HANDOVER SUCCESS message refers to a context that does not exist, the source NG-RAN node shall ignore the message.

8.2.9 Conditional Handover Cancel

8.2.9.1 General

The Conditional Handover Cancel procedure is used to enable a target NG-RAN node to cancel an already prepared conditional handover or an already prepared conditional reconfiguration.

The procedure uses UE-associated signalling.

8.2.9.2 Successful Operation

Figure 8.2.9.2-1: Conditional Handover Cancel, successful operation

The target NG-RAN node initiates the procedure by sending the CONDITIONAL HANDOVER CANCEL message to the source NG-RAN node. The target NG-RAN node shall indicate the reason for cancelling the conditional handover or the conditional reconfiguration by means of an appropriate cause value.

At the reception of the CONDITIONAL HANDOVER CANCEL message, the source NG-RAN node shall consider that the target NG-RAN node is about to remove any reference to, and release any resources previously reserved for candidate cells associated to the UE-associated signalling identified by the *Source NG-RAN node UE XnAP ID* IE and the *Target NG-RAN node UE XnAP ID* IE. If the *Candidate Cells To Be Cancelled List* IE is included in CONDITIONAL HANDOVER CANCEL message, the source NG-RAN node shall consider that only the resources reserved for the cells identified by the included NG-RAN CGI are about to be released.

If the *Conditional Reconfigurations To Be Cancelled List* IE is included in the CONDITIONAL HANDOVER CANCEL message, the source NG-RAN node shall, if supported, consider that only the resources reserved for the cell(s) identified by the included NG-RAN CGI(s) are about to be released.

8.2.9.3 Unsuccessful Operation

Not applicable.

8.2.9.4 Abnormal Conditions

If the CONDITIONAL HANDOVER CANCEL message refers to a context that does not exist, the source NG-RAN node shall ignore the message.

If one or more candidate cells in the *Candidate Cells To Be Cancelled List* IE included in the CONDITIONAL HANDOVER CANCEL message were not prepared using the same UE-associated signaling connection, the source NG-RAN node shall ignore those non-associated candidate cells.

8.2.10 Early Status Transfer

8.2.10.1 General

The purpose of the Early Status Transfer procedure is to transfer the COUNT of the first downlink SDU that the source NG-RAN node forwards to the target NG-RAN node or the COUNT for discarding of already forwarded downlink SDUs for respective DRB during DAPS Handover or Conditional Handover.

For MR-DC with 5GC, the Early Status Transfer procedure is also used from the source S-NG-RAN node to the source M-NG-RAN node during a Conditional Handover as specified in TS 37.340 [8].

For Conditional PSCell Addition in MR-DC with NR SCG, the Early Status Transfer procedure is also used, from the M-NG-RAN node to the S-NG-RAN node as specified in TS 37.340 [8].

For Conditional PSCell Change in MR-DC with NR SCG, the Early Status Transfer procedure is also used from the source S-NG-RAN node to the M-NG-RAN node, and from the M-NG-RAN node to the target S-NG-RAN node as specified in TS 37.340 [8].

The procedure uses UE-associated signalling.

8.2.10.2 Successful Operation

Figure 8.2.10.2-1: Early Status Transfer during DAPS Handover or Conditional Handover, successful operation

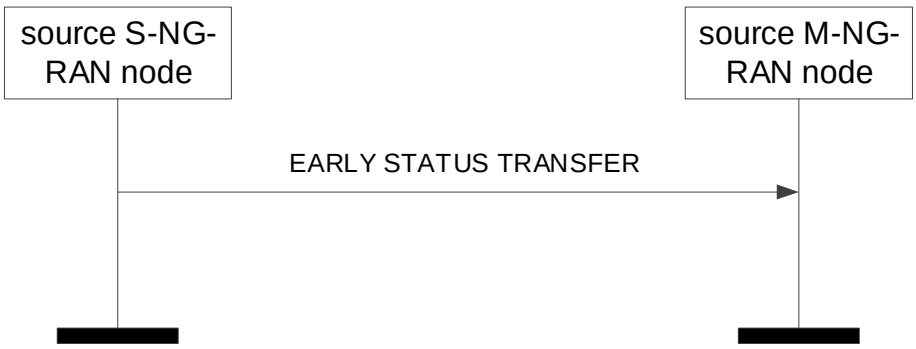

Figure 8.2.10.2-2: Early Status Transfer during Conditional Handover in MR-DC operation, successful operation

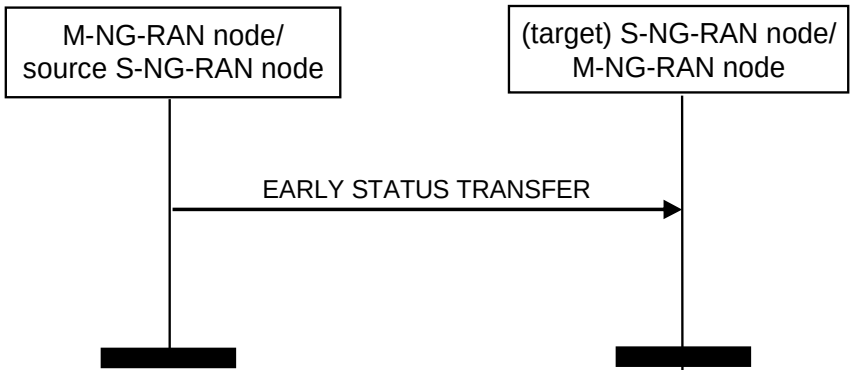

Figure 8.2.10.2-3: Early Status Transfer during CPAC, successful operation

From source NG-RAN node to target NG-RAN node

The *DRBs Subject To Early Status Transfer List* IE included in the EARLY STATUS TRANSFER message contains the DRB ID(s) corresponding to the DRB(s) subject to be simultaneously served by the source and the target NG-RAN nodes during DAPS Handover or the DRB(s) transferred during Conditional Handover.

For each DRB in the *DRBs Subject To Early Status Transfer List* IE, the target NG-RAN node shall use the value of the *FIRST DL COUNT Value* IE as the COUNT of the first downlink SDU that the source NG-RAN node forwards to the target NG-RAN node.

For each DRB in the *DRBs Subject To DL Discarding List* IE for which the *DISCARD DL COUNT Value* IE is received in the EARLY STATUS TRANSFER message, the target NG-RAN node does not transmit forwarded downlink SDUs to the UE whose COUNT is less than the provided and discards them if transmission has not been attempted.

From source S-NG-RAN node to source M-NG-RAN node, for Conditional Handover

The *DRBs Subject To Early Status Transfer List* IE included in the EARLY STATUS TRANSFER message contains the DRB ID(s) corresponding to the DRB(s) transferred during Conditional Handover.

For each DRB in the *DRBs Subject To Early Status Transfer List* IE, the source M-NG-RAN node shall forward to the target, the value of the received *FIRST DL COUNT Value* IE; for each DRB in the *DRBs Subject To DL Discarding List* IE, the source M-NG-RAN node shall forward to the target, the value of the received *DISCARD DL COUNT Value* IE.

From M-NG-RAN node to S-NG-RAN node, for Conditional PSCell Addition

The *DRBs Subject To Early Status Transfer List* IE included in the EARLY STATUS TRANSFER message contains the DRB ID(s) corresponding to the DRB(s) transferred during Conditional PSCell Addition.

For each DRB in the *DRBs Subject To Early Status Transfer List* IE, the M-NG-RAN node shall forward to the S-NG-RAN node, the value of the received *FIRST DL COUNT Value* IE; for each DRB in the *DRBs Subject To DL Discarding List* IE, the M-NG-RAN node shall forward to the S-NG-RAN node, the value of the received *DISCARD DL COUNT Value* IE.

From source S-NG-RAN node to M-NG-RAN node, and from M-NG-RAN node to target S-NG-RAN node, for Conditional PSCell Change

The *DRBs Subject To Early Status Transfer List* IE included in the EARLY STATUS TRANSFER message contains the DRB ID(s) corresponding to the DRB(s) transferred during Conditional PSCell Change.

For each DRB in the *DRBs Subject To Early Status Transfer List* IE, the source S-NG-RAN node shall forward to the M-NG-RAN node and the M-NG-RAN node shall forward to the target S-NG-RAN node, during Conditional PSCell Change, the value of the received *FIRST DL COUNT Value* IE; for each DRB in the *DRBs Subject To DL Discarding List* IE, the source S-NG-RAN node shall forward to the M-NG-RAN node and the M-NG-RAN node shall forward to the target S-NG-RAN node, during Conditional PSCell Change, the value of the received *DISCARD DL COUNT Value* IE.

8.2.10.3 Unsuccessful Operation

Not applicable.

8.2.10.4 Abnormal Conditions

If the target NG-RAN node receives this message for a UE for which no prepared DAPS Handover or Conditional Handover exists at the target NG-RAN node, the target NG-RAN node shall ignore the message.

8.2.11 RAN Multicast Group Paging

8.2.11.1 General

The purpose of the RAN Multicast Group Paging procedure is to enable the NG-RAN $node_1$ to request paging of UEs that have joined an MBS Session in the NG-RAN $node_2$.

The procedure uses non UE-associated signalling.

8.2.11.2 Successful operation

Figure 8.2.11.2-1: RAN Multicast Group Paging, successful operation

The RAN Multicast Group Paging procedure is triggered by the NG-RAN node$_1$ by sending the RAN MULTICAST GROUP PAGING message to the NG-RAN node$_2$.

If the RAN MULTICAST GROUP PAGING message includes the *Paging DRX* IE, the NG-RAN node$_2$.shall, if supported, use it according to TS 38.304 [33].

8.2.12 Retrieve UE Context Confirm

8.2.12.1 General

The Retrieve UE Context Confirm procedure is used by the new NG-RAN node to inform the old NG-RAN node whether the S-NG-RAN node associated with the old NG-RAN node for the UE that was indicated during UE context retrieval is kept or not by the new NG-RAN node during RRC resumption.

In case of RACH based SDT without UE context relocation, the Retrieve UE Context Confirm procedure is also used to request the termination of SDT session from the new NG-RAN node to the old NG-RAN node.

The procedure uses UE-associated signalling.

8.2.12.2 Successful Operation

Figure 8.2.12.2-1: Retrieve UE Context Confirm, successful operation

The new NG-RAN node initiates the procedure by sending the RETRIEVE UE CONTEXT CONFIRM message to the old NG-RAN node.

If the *UE Context Kept Indicator* IE is included and set to "True", the old NG-RAN node shall consider that the S-NG-RAN node was kept by the new NG-RAN node and use this information as specified in TS 37.340 [8].

If the old NG-RAN node receives the *SDT Termination Request* IE in the RETRIEVE UE CONTEXT CONFIRM message, the old NG-RAN node shall, if supported, consider that the termination of the ongoing SDT session is requested from the new NG-RAN node for this UE and act as specified in TS 38.300 [9]. If the *SDT Termination Request* IE set to "Large SDT volume from BSR" is included, the old NG-RAN node shall, if supported, consider that

the UL SDT data size in the BSR received from the UE is larger than the SDT volume threshold of the new NG-RAN node, and act as specified in TS 38.300 [9].

8.2.12.3 Unsuccessful Operation

Not applicable.

8.2.12.4 Abnormal Conditions

If the RETRIEVE UE CONTEXT CONFIRM message refers to a context that does not exist, the old NG-RAN node shall ignore the message.

8.2.13 Partial UE Context Transfer

8.2.13.1 General

The purpose of the Partial UE Context Transfer procedure is to partially transfer the UE context from the old NG-RAN node to the new NG-RAN node.

The procedure uses UE-associated signalling.

8.2.13.2 Successful Operation

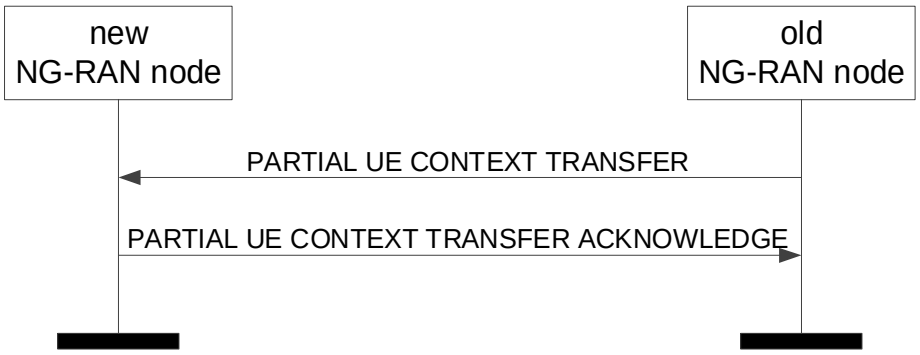

Figure 8.2.13.2-1: Partial UE Context Transfer, successful operation

The old NG-RAN node initiates the procedure by sending the PARTIAL UE CONTEXT TRANSFER message to the new NG-RAN node.

If the new NG-RAN node is able to accept the SDT session without anchor relocation, it shall, if supported, respond to the old NG-RAN node with the PARTIAL UE CONTEXT TRANSFER ACKNOWLEDGE message.

If the *Partial UE Context Information for SDT* IE is included in the PARTIAL UE CONTEXT TRANSFER message, the new NG-RAN node may include data forwarding related information in the *SDT Data Forwarding DRB List* IE in the PARTIAL UE CONTEXT TRANSFER ACKNOWLEDGE message.

If the *Partial UE Context Information for Positioning* IE is contained in the PARTIAL UE CONTEXT TRANSFER message, the new NG-RAN node may take it into account to allocate proper SRS resources and include the *SRS Configuration* IE in the PARTIAL UE CONTEXT TRANSFER ACKNOWLEDGE message.

8.2.13.3 Unsuccessful Operation

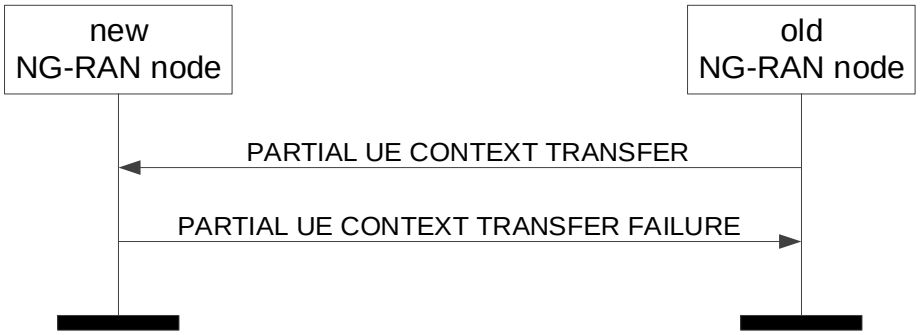

Figure 8.2.13.3-1: Partial UE Context Transfer, unsuccessful operation

If the new NG-RAN is not able to accept the SDT session without anchor relocation, it shall respond to the old NG-RAN node with the PARTIAL UE CONTEXT TRANSFER FAILURE message.

8.2.13.4 Abnormal Condition

Void.

8.3 Procedures for Dual Connectivity

8.3.1 S-NG-RAN node Addition Preparation

8.3.1.1 General

The purpose of the S-NG-RAN node Addition Preparation procedure is to request the S-NG-RAN node to allocate resources for dual connectivity operation for a specific UE. Possible parallel requests are identified by the PCell ID when the initiating NG-RAN node UE AP IDs are the same.

The procedure uses UE-associated signalling.

8.3.1.2 Successful Operation

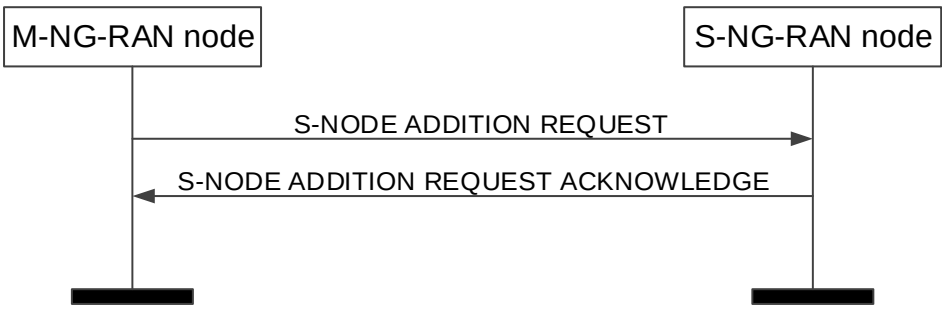

Figure 8.3.1.2-1: S-NG-RAN node Addition Preparation, successful operation

The M-NG-RAN node initiates the procedure by sending the S-NODE ADDITION REQUEST message to the S-NG-RAN node.

When the M-NG-RAN node sends the S-NODE ADDITION REQUEST message, it shall start the timer TXn_{DCprep}.

The allocation of resources according to the values of the *Allocation and Retention Priority* IE included in the *QoS Flow Level QoS Parameters* IE for each QoS flow shall follow the principles specified for the PDU Session Resource Setup procedure in TS 38.413 [5].

The S-NG-RAN node shall choose the ciphering algorithm based on the information in the *UE Security Capabilities* IE and locally configured priority list of AS encryption algorithms and apply the key indicated in the *S-NG-RAN node Security Key* IE as specified in TS 33.501 [28].

If the *TSC Traffic Characteristics* IE is included for a QoS flow in the S-NODE ADDITION REQUEST message, the S-NG-RAN node shall behave the same as the NG-RAN node in the PDU Session Resource Setup procedure, specified in TS 38.413 [5].

If the *Additional QoS Flow Information* IE is included for a QoS flow in the S-NODE ADDITION REQUEST message, the S-NG-RAN node shall behave the same as the NG-RAN node in the PDU Session Resource Setup procedure, specified in TS 38.413 [5].

For each GBR QoS flow, if the *Alternative QoS Parameters Set List* IE is included in the *GBR QoS Flow Information* IE, the S-NG-RAN node shall, if supported, behave the same as the NG-RAN node in the PDU Session Resource Setup procedure specified in TS 38.413 [5].

For each PDU session, if the *Network Instance* IE is included in the *PDU Session Resource Setup Info – SN terminated* IE contained in the *PDU Session Resources To Be Added List* IE and the *Common Network Instance* IE is not present, the S-NG-RAN node shall, if supported, use it when selecting transport network resource as specified in TS 23.501 [7].

For each GBR QoS flow, if the *Offered GBR QoS Flow Information* IE is included in the *QoS Flows To Be Setup List* IE contained in the *PDU Session Resource Setup Info – SN terminated* IE, the S-NG-RAN node may request the M-NG-RAN node to configure the DRB to which that QoS flow is mapped with MCG resources.

For each PDU session, if the *Non-GBR Resources Offered* IE is included in the *PDU Session Resource Setup Info – SN terminated* IE contained in the *PDU Session Resources To Be Added List* IE and set to "true", the S-NG-RAN node may request the M-NG-RAN node to configure DRBs to which non-GBR QoS flows of the PDU session are mapped with MCG resources.

For each PDU session, if the *Common Network Instance* IE is included in the *PDU Session Resource Setup Info – SN terminated* IE contained in the *PDU Session Resources To Be Added List* IE, the S-NG-RAN node shall, if supported, use it when selecting transport network resource as specified in TS 23.501 [7].

Redundant transmission:

- For each PDU session, if the *Redundant UL NG-U UP TNL Information at UPF* IE is included in the *PDU Session Resource Setup Info – SN terminated* IE, the S-NG-RAN node shall, if supported, use it as the uplink termination point for the user plane data for this PDU session for the redundant transmission and it shall include the *Redundant DL NG-U UP TNL Information at NG-RAN* IE in the *PDU Session Resource Setup Response Info – SN terminated* IE as described in TS 23.501 [7].

- For each PDU session, if the *Redundant Common Network Instance* IE is included in the *PDU Session Resource Setup Info – SN terminated* IE the S-NG-RAN node shall, if supported, use it when selecting transport network resource for the redundant transmission as specified in TS 23.501 [7].

- For each PDU session for which the *Redundant QoS Flow Indicator* IE is include in *QoS Flows To Be Setup List* IE contained in the *S-NODE ADDITION REQUEST* message, the S-NG-RAN node shall, if supported, store and use it as specified in TS 23.501 [7].

- For each PDU session, if the *Redundant PDU Session Information* IE is included in the *PDU Session Resource Setup Info - SN terminated* IE in the S-NODE ADDITION REQUEST message, the S-NODE-RAN node shall, if supported, store the received information in the UE context and setup the redundant user plane resources for the concerned PDU session, as specified in TS 23.501 [7].

- For each PDU session resource successfully setup for which the *Redundant PDU Session Information* IE is included in the S-NODE ADDITION REQUEST message, the S-NG-RAN node shall, if supported, include the *Used RSN Information* IE in the *PDU Session Resource Setup Response Info – SN terminated* IE in the S-NODE ADDITION REQUEST ACKNOWLEDGE message. If the *PDU Session Pair ID* IE is included in the *Redundant PDU Session Information* IE, the S-NG-RAN node may store and use it to identify the paired PDU sessions.

If the S-NODE ADDITION REQUEST message contains the *Selected PLMN* IE, the S-NG-RAN node may use it for RRM purposes. If the S-NODE ADDITION REQUEST message also contains the *Selected NID* IE, the S-NG-RAN node may decide to use the SNPN identified by the *Selected PLMN* IE and *Selected NID* IE for its own usage.

If the S-NODE ADDITION REQUEST message contains the *Expected UE Behaviour* IE, the S-NG-RAN node shall, if supported, store this information and may use it to optimize resource allocation.

If the S-NODE ADDITION REQUEST message contains the *Mobility Restriction List* IE, the S-NG-RAN node, if supported, shall store this information and use it to select an appropriate SCG.

If the S-NODE ADDITION REQUEST message contains the *Index to RAT/Frequency Selection Priority* IE, the S-NG-RAN node may use it for RRM purposes.

If the S-NG-RAN node is a gNB and the S-NODE ADDITION REQUEST message contains the *PCell ID* IE, the S-NG-RAN node shall search for the target NR cell among the NR neighbour cells of the PCell indicated, as specified in the TS 37.340 [8].

If the S-NODE ADDITION REQUEST message contains the *S-NG-RAN node PDU Session Aggregate Maximum Bit Rate* IE, the S-NG-RAN node may use it for RRM purposes.

If the S-NODE ADDITION REQUEST message contains the *MR-DC Resource Coordination Information* IE, the S-NG-RAN node should forward it to lower layers and it may use it for the purpose of resource coordination with the M-NG-RAN node, or to coordinate with sidelink resources used in the M-NG-RAN node. The S-NG-RAN node shall consider the value of the received *UL Coordination Information* IE valid until reception of a new update of the IE for the same UE. The S-NG-RAN node shall consider the value of the received *DL Coordination Information* IE valid until reception of a new update of the IE for the same UE. If the *E-UTRA Coordination Assistance Information* IE or the *NR Coordination Assistance Information* IE is contained in the *MR-DC Resource Coordination Information* IE, the S-NG-RAN node shall, if supported, use the information to determine further coordination of resource utilisation between the S-NG-RAN node and the M-NG-RAN node.

If the S-NODE ADDITION REQUEST message contains the *NE-DC TDM Pattern* IE, the S-NG-RAN node should forward it to lower layers and use it for the purpose of single uplink transmission. The S-NG-RAN node shall consider the value of the received *NE-DC TDM Pattern* IE valid until reception of a new update of the IE for the same UE.

If the S-NODE ADDITION REQUEST message contains the *QoS Flow Mapping Indication* IE, the S-NG-RAN node may take it into account that only the uplink or downlink QoS flow is mapped to the DRB.

For each bearer for which allocation of the PDCP entity is requested at the S-NG-RAN node:

- the M-NG-RAN node may propose to apply forwarding of downlink data by including the *DL Forwarding* IE within *PDU Session Resource Setup Info – SN terminated* IE of the S-NODE ADDITION REQUEST message. For each bearer that it has decided to admit, the S-NG-RAN node may include the *DL Forwarding GTP Tunnel Endpoint* IE within the *PDU Session Resource Setup Response Info – SN terminated* IE of the S-NODE ADDITION REQUEST ACKNOWLEDGE message to indicate that it accepts the proposed forwarding of downlink data for this bearer.

- the S-NG-RAN node may include for each bearer in the *PDU Session Resource Setup Response Info – SN terminated* IE the *UL Forwarding GTP Tunnel Endpoint* IE to indicates it request data forwarding of uplink packets to be performed for that bearer.

- the M-NG-RAN node shall include *RLC Mode* IE for each bearer offloaded from M-NG-RAN node to S-NG-RAN node in the *DRBs to QoS Flow Mapping List* IE within the *PDU Session Resource Setup Info – SN terminated* IE of the S-NODE ADDTION REQUEST message, and the *RLC Mode* IE indicates the mode that the M-NG-RAN used for the DRB when it was hosted at the M-NG-RAN node.

For each bearer for which the PDCP entity is at the M-NG-RAN node:

- the M-NG-RAN node shall include the *RLC mode* IE for each bearer in the *DRBs To Be Setup List* IE within the *PDU Session Resource Setup Info – MN terminated* IE of the S-NODE ADDTION REQUEST message to indicate the RLC mode has been configured at the M-NG-RAN node, so that the S-NG-RAN node shall configure the same RLC mode for this MN terminated split bearer.

The M-NG-RAN node may also propose to apply forwarding of UL data when offloading QoS flows for which in-order delivery is requested by including the *UL Forwarding Proposal* IE in the *Data Forwarding and Offloading Info from source NG-RAN node* IE within the *PDU Session Resource Setup Info – SN terminated* IE of the S-NODE ADDITION REQUEST message. The S-NG-RAN node may include the *PDU Session level UL data Forwarding UP TNL Information* IE in the *Data Forwarding Info from target NG-RAN node* IE within the *PDU Session Resource Setup Response Info – SN terminated* IE of the S-NODE ADDITION REQUEST ACKNOWLEDGE message to indicate that it accepts the proposed forwarding.

If the *Masked IMEISV* IE is contained in the S-NODE ADDITION REQUEST message the S-NG-RAN node shall, if supported, use it to determine the characteristics of the UE for subsequent handling.

If the *UE Radio Capability ID* IE is contained in the S-NODE ADDITION REQUEST message, the S-NG-RAN node shall, if supported, store this information in the UE context and use it as defined in TS 23.501 [7] and TS 23.502 [13].

The S-NG-RAN node shall report to the M-NG-RAN node, in the S-NODE ADDITION REQUEST ACKNOWLEDGE message, the result for all the requested PDU session resources in the following way:

- A list of PDU session resources which are successfully established shall be included in the *PDU Session Resources Admitted To Be Added List* IE.
- A list of PDU session resources which failed to be established shall be included in the *PDU Session Resources Not Admitted List* IE.

Upon reception of the S-NODE ADDITION REQUEST ACKNOWLEDGE message the M-NG-RAN node shall stop the timer TXn_{DCprep}.

If the S-NODE ADDITION REQUEST ACKNOWLEDGE message contains the *MR-DC Resource Coordination Information* IE, the M-NG-RAN node may use it for the purpose of resource coordination with the S-NG-RAN node. The M-NG-RAN node shall consider the value of the received *UL Coordination Information* IE valid until reception of a new update of the IE for the same UE. The M-NG-RAN node shall consider the value of the received *DL Coordination Information* IE valid until reception of a new update of the IE for the same UE. If the *E-UTRA Coordination Assistance Information* IE or the *NR Coordination Assistance Information* IE is contained in the *MR-DC Resource Coordination Information* IE, the M-NG-RAN node shall, if supported, use the information to determine further coordination of resource utilisation between the M-NG-RAN node and the S-NG-RAN node.

The S-NG-RAN node may include for each bearer in the *DRBs To Be Setup List* IE in the S-NODE ADDITION REQUEST ACKNOWLEDGE message the *PDCP SN Length* IE to indicate the PDCP SN length for that DRB.

If the *S-NG-RAN node UE XnAP ID* IE is contained in the S-NODE ADDITION REQUEST message, the S-NG-RAN node shall, if supported, store this information and use it as defined in TS 37.340 [8].

If the S-NODE ADDITION REQUEST message contains the *PDCP SN Length* IE, the S-NG-RAN node shall, if supported, store this information and use it for lower layer configuration of the concerned MN terminated bearer.

If the S-NODE ADDITION REQUEST message contains the *SN Addition Trigger Indication* IE, the S-NG-RAN node shall include the *RRC config indication* IE in the S-NODE ADDITION REQUEST ACKNOWLEDGE message to inform the M-NG-RAN node if the S-NG-RAN node applied full or delta configuration, as specified in TS 37.340 [8].

If the S-NODE ADDITION REQUEST message contains the *S-NG-RAN node Maximum Integrity Protected Data Rate Uplink* IE or the *S-NG-RAN node Maximum Integrity Protected Data Rate Downlink* IE, the S-NG-RAN node shall use the received information when enforcing the maximum integrity protected data rate for the UE.

If the *Security Indication* IE is included in the *PDU Session Resource Setup Info – SN terminated* IE of the S-NODE ADDITION REQUEST message, the behaviour of the S-NG-RAN node shall be the same as specified for the same IE in the *PDU Session Resources To Be Setup List* IE in the Handover Preparation procedure, for the concerned PDU session, and the S-NG-RAN node shall include the *Security Result* IE in the *PDU Session Resource Setup Response Info – SN terminated* IE. If either the S-NG-RAN node or the M-NG-RAN node is an ng-eNB, the S-NG-RAN node shall behave as specified in TS 33.501 [28].

If the *Security Result* IE is included in the *PDU Session Resource Setup Info – SN terminated* IE of the S-NODE ADDITION REQUEST message, the S-NG-RAN node may take the information into account when deciding whether to perform user plane integrity protection or ciphering for the DRBs that it establishes for the concerned PDU session, except if the *Split Session Indicator* IE is included in the *PDU Session Resource Setup Info – SN terminated* IE and set to "split", in which case it shall perform user plane integrity protection or ciphering according to the information in the *Security Result* IE.

The S-NG-RAN node may include the *Location Information at S-NODE* IE in the S-NODE ADDITION REQUEST ACKNOWLEDGE message, if respective information is available at the S-NG-RAN node.

If the *Location Information at S-NODE reporting* IE set to "pscell" is included in the S-NODE ADDITION REQUEST, the S-NG-RAN node shall, start providing information about the current location of the UE. If the *Location Information at S-NODE* IE is included in the S-NODE ADDITION REQUEST ACKNOWLEDGE, the M-NG-RAN node shall store the included information so that it may be transferred towards the AMF.

If the *Default DRB Allowed* IE is included in the *PDU Session Resource Setup Info – SN terminated* IE of the S-NODE ADDITION REQUEST message and set to "true", the S-NG-RAN node may configure the default DRB for the PDU session.

If the S-NODE ADDITION REQUEST ACKNOWLEDGE message includes the *DRB IDs taken into use* IE, the M-NG-RAN node, if applicable, shall act as specified in TS 37.340 [8].

If *Trace Activation* IE has previously been received for this UE, it shall be included in the S-NODE ADDITION REQUEST message. If the *Trace Activation* IE is included in the S-NODE ADDITION REQUEST message, the S-NG-RAN node shall, if supported, initiate the requested trace function as described in TS 32.422 [23].

If the *Trace Activation* IE is included in the S-NODE ADDITION REQUEST message which includes

- the *MDT Activation* IE set to "Immediate MDT and Trace", then the S-NG-RAN node shall if supported, initiate the requested trace session and MDT session as described in TS 32.422 [23].

- the *MDT Activation* IE set to "Immediate MDT Only", the S-NG-RAN node shall, if supported, initiate the requested MDT session as described in TS 32.422 [23] and the S-NG-RAN node shall ignore the *Interfaces To Trace* IE, and the *Trace Depth* IE.

- the *MDT Location Information* IE, within the *MDT Configuration* IE, the S-NG-RAN node shall, if supported, store this information and take it into account in the requested MDT session.

- the *MDT Activation* IE set to "Immediate MDT Only", and if the *Signalling based MDT PLMN List* IE is included in the *MDT Configuration* IE, the S-NG-RAN node may use it to propagate the MDT Configuration as described in TS 37.320 [43].

NOTE: If the Signalling based MDT PLMN List within the MDT Configuration-EUTRA is not available in the M-NG-RAN node, it includes the current serving PLMN in the *Signalling based MDT PLMN List* IE within the *MDT Configuration-EUTRA* IE.

- the *Bluetooth Measurement Configuration* IE, within the *MDT Configuration* IE, the S-NG-RAN node shall, if supported, take it into account for MDT Configuration as described in TS 37.320 [43].

- the *WLAN Measurement Configuration* IE, within the *MDT Configuration* IE, the S-NG-RAN node shall, if supported, take it into account for MDT Configuration as described in TS 37.320 [43].

- the *Sensor Measurement Configuration* IE, within the *MDT Configuration* IE, the S-NG-RAN node shall take it into account for MDT Configuration as described in TS 37.320 [43].

- the *MDT Configuration* IE and if the S-NG-RAN node is a gNB at least *the MDT Configuration-NR* IE shall be present, while if the S-NG-RAN Node is an ng-eNB at least the *MDT Configuration-EUTRA* IE shall be present.

If the *Area Scope* IE is not present in the *MDT Configuration* IE, the S-NG-RAN node shall consider that the MDT Configuration is applied to all PLMNs indicated in the MDT PLMN List, as described in TS 32.422 [23].

If the *Requested Fast MCG recovery via SRB3* IE set to "true" is included in the S-NODE ADDITION REQUEST message and the S-NG-RAN node decides to configure fast MCG link recovery via SRB3 as specified in TS 37.340 [8], the S-NG-RAN node shall, if supported, include the *Available fast MCG recovery via SRB3* IE set to "true" in the S-NODE ADDITION REQUEST ACKNOWLEDGE message.

If the *QoS Monitoring Request* IE is included in the *QoS Flow Level QoS Parameters* IE for a QoS flow contained in the *DRBs To Be Setup List* IE of the *PDU Session Resource Setup Info – MN terminated* IE, the S-NG-RAN node shall, if supported, use it to configure lower layers for the purpose of delay measurement and QoS monitoring as specified in TS 23.501 [7]. If the *QoS Monitoring Reporting Frequency* IE is included in the *QoS Flow Level QoS Parameters* IE for a QoS flow contained in the *DRBs To Be Setup List* IE of the *PDU Session Resource Setup Info – MN terminated* IE, the S-NG-RAN node shall, if supported, use it for RAN part delay reporting.

For each QoS flow which has been successfully established in the S-NG-RAN node, if the *QoS Monitoring Request* IE was included in the *QoS Flow Level QoS Parameters* IE contained in the *PDU Session Resource Setup Info – SN terminated* IE, the S-NG-RAN node shall store this information, and shall, if supported, perform delay measurement and QoS monitoring as specified in TS 23.501 [7]. If the *QoS Monitoring Reporting Frequency* IE was included in the *QoS Flow Level QoS Parameters* IE contained in the *PDU Session Resource Setup Info – SN terminated* IE, the S-NG-RAN node shall store this information, and shall, if supported, use it for RAN part delay reporting. In case such a QoS flow is included in the *DRBs To Be Setup List* IE of the *PDU Session Resource Setup Response Info – SN terminated* IE,

the M-NG-RAN node shall, if supported, use it to configure lower layers for the purpose of delay measurement and QoS monitoring. If the *QoS Monitoring Reporting Frequency* IE is included in the *DRBs To Be Setup List* IE of the *PDU Session Resource Setup Response Info – SN terminated* IE, the M-NG-RAN node shall, if supported, use it for RAN part delay reporting.

For each DRB configured as MN-terminated split bearer/SCG bearer, if the *QoS Mapping Information* IE is included in the *DRBs Admitted List* IE in the *PDU Session Resource Setup Response Info – MN terminated* IE of the S-NODE ADDITION REQUEST ACKNOWLEDGE message, the M-NG-RAN node shall, if supported, use it to set DSCP and/or IPv6 flow label fields for the downlink IP packets which are transmitted from M-NG-RAN node to S-NG-RAN node through the GTP tunnels indicated by the *UP Transport Layer Information* IE.

If the *Source NG-RAN Node ID* IE is included in the S-NODE ADDITION REQUEST message, the S-NG-RAN node shall, if supported, use it to decide the direct data path availability with the indicated source NG-RAN node, and if the direct data forwarding path is available, include the *Direct Forwarding Path Availability* IE set to "direct path available" in the S-NODE ADDITION REQUEST ACKNOWLEDGE message.

If for a given QoS Flow the *Source DL Forwarding IP Address* IE or both, the *Source DL Forwarding IP Address* IE and the *Source Node DL Forwarding IP Address* IE are included within the *Data Forwarding and Offloading Info from source NG-RAN node* IE in the *PDU Session Resource Setup Info – SN terminated* IE contained in the S-NODE ADDITION REQUEST message, the S-NG-RAN node shall, if supported, store this information and use it as part of its ACL functionality configuration actions, if such ACL functionality is deployed.

If for a given QoS Flow the *Source DL Forwarding IP Address* IE is included within the *QoS Flows Mapped To DRB List* IE in the *PDU Session Resource Setup Response Info – SN terminated* IE contained in the S-NODE ADDITION REQUEST ACKNOWLEDGE message, the M-NG-RAN node shall, if supported, store this information and use it as part of its ACL functionality to identify source TNL address for data forwarding in case of subsequent handover preparation, if such ACL functionality is deployed.

If the *Management Based MDT PLMN List* IE is contained in the S-NODE ADDITION REQUEST message, the S-NG-RAN node 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 [23].

Upon reception of the S-NODE ADDITION REQUEST message, the S-NG-RAN node shall, if supported, start collecting SCG information and continue for as long as the UE stays in one of its cells.

If the *UE History Information* IE is included in the S-NODE ADDITION REQUEST message, the S-NG-RAN node shall, if supported, store this information.

If the *UE History Information from the UE* IE is included in the S-NODE ADDITION REQUEST message, the S-NG-RAN node shall, if supported, store this information.

If the *PSCell Change History* IE set to "reporting full history" is included in the S-NODE ADDITION REQUEST message, the S-NG-RAN node shall, if supported, signal the latest SCG UE History Information upon each PSCell change, to the M-NG-RAN node, using the S-NG-RAN node initiated S-NG-RAN node Modification procedure.

If the *IAB Node Indication* IE set to "true" is contained in the S-NODE ADDITION REQUEST message, the S-NG-RAN node shall, if supported, consider that dual connectivity operation is requested for an IAB-node. In addition:

- If the *No PDU Session Indication* IE is contained in the S-NODE ADDITION REQUEST message, the S-NG-RAN node shall, if supported, consider the UE as an IAB-node which does not have any PDU sessions activated, and ignore the *PDU Session Resources To Be Added List* IE, and shall not take any action with respect to PDU session setup. Subsequently, the M-NG-RAN node shall, if supported, ignore the *PDU Session Resources Admitted To Be Added List* IE in the S-NODE ADDITION REQUEST ACKNOWLEDGE message.

- If the *F1-terminating IAB-donor Indicator* IE set to "true" is contained in the S-NODE ADDITION REQUEST message, the S-NG-RAN node shall, if supported, assume that it will become the F1-terminating IAB-donor of the IAB-node, and act as described in TS 38.401 [2].

If the *CHO Information SN Addition* IE is included in the S-NODE ADDITION REQUEST message, the S-NG-RAN node shall consider that the S-NG-RAN node Addition Preparation procedure has been triggered as part of a conditional handover. It may use the *Source M-NG-RAN node ID* IE and the *Source M-NG-RAN node UE XnAP ID* IE to identify other active S-NG-RAN node Addition Preparations related to this UE. If the *PCell ID* IE is also included in the S-NODE ADDITION REQUEST message, then the S-NG-RAN node shall, if supported, include the *PCell ID* IE within the *CHO Information SN Addition Acknowledge* IE of the S-NODE ADDITION REQUEST ACKNOWLEDGE

message. If the *Estimated Arrival Probability* IE is contained in the *CHO Information SN Addition* IE included in the S-NODE ADDITION REQUEST message, then the S-NG-RAN node may use the information to allocate necessary resources for the UE. If the *Direct Forwarding Path Availability with source M-NG-RAN node* IE set to "direct path available" is included in the S-NODE ADDITION REQUEST ACKNOWLEDGE message, the M-NG-RAN node shall, if supported, consider that the direct forwarding path is available between the target S-NG-RAN node and the source M-NG-RAN node.

If the *SCG Activation Request* IE is included in the S-NODE ADDITION REQUEST message, the S-NG-RAN node may use it to configure SCG resources as specified in TS 37.340 [8], and shall, if supported, include the *SCG Activation Status* IE in the S-NODE ADDITION REQUEST ACKNOWLEDGE message. If the *SCG Activation Request* IE in the S-NODE ADDITION REQUEST message is set to "Activate SCG", the S-NG-RAN node shall, if supported, activate the SCG resources and set the *SCG Activation Status* IE in the S-NODE ADDITION REQUEST ACKNOWLEDGE message to "SCG activated".

If the *Conditional PSCell Addition Information Request* IE is included in the S-NODE ADDITION REQUEST message, the S-NG-RAN node shall, if supported, consider that the request concerns CPAC, as described in TS 37.340 [8]. Accordingly, the S-NG-RAN node shall, if supported, include the *Conditional PSCell Addition Information Acknowledge* IE in the S-NODE ADDITION REQUEST ACKNOWLEDGE message.

If *the S-CPAC Request Information* IE is contained in the *Conditional PSCell Addition Information Request* IE included in the S-NODE ADDITION REQUEST message, the S-NG-RAN node shall, if supported, consider that the procedure is triggered for S-CPAC preparation. If the S-NG-RAN node accepts the request as a S-CPAC preparation, it shall include the *Candidate PSCell with Other Information List* IE in the *Conditional PSCell Addition Information Acknowledge* IE.

If the *S-CPAC Reference Configuration Request* IE set to "request" is contained in the *Conditional PSCell Addition Information Request* IE included in the S-NODE ADDITION REQUEST message, the S-NG-RAN node shall, if supported, provide the SCG reference configuration for S-CPAC.

If the *S-CPAC Multiple Target S-NG-RAN Node List* IE is contained within the *S-CPAC Request Information* IE in the *Conditional PSCell Addition Information Request* IE included in the S-NODE ADDITION REQUEST message, the S-NG-RAN node shall, if supported, consider that the information pertains to a list of PSCells suggested for other candidate SN(s) may also be prepared for S-CPAC, and act as described in TS 37.340 [8].

If the *Conditional PSCell Addition Information Acknowledge* IE is included in the S-NODE ADDITION REQUEST ACKNOWLEDGE message, the M-NG-RAN node shall, if supported, consider the indicated PSCells are selected by the target SN as candidate PSCells for CPAC or S-CPAC.

If the S-NG-RAN node applied a complete candidate configuration for a specific PSCell, e.g., as part of preparation of S-CPAC, the S-NG-RAN node shall inform the M-NG-RAN node by including the *S-CPAC Complete Candidate Configuration Indicator* IE in the *Candidate PSCell with Other Information Item* IE in the *Conditional PSCell Addition Information Acknowledge* IE in the S-NODE ADDITION REQUEST ACKNOWLEDGE message.

If the *CG-CandidateList* is included in the *S-NG-RAN node to M-NG-RAN node Container* IE in the S-NODE ADDITION REQUEST ACKNOWLEDGE message, the M-NG-RAN node shall, if supported, use it for the purpose of CPAC or S-CPAC.

If the *Estimated Arrival Probability* IE is contained in the *Conditional PSCell Addition Information Request* IE included in the S-NODE ADDITION REQUEST message, then the candidate target S-NG-RAN node may use the information to allocate necessary resources for the incoming CPAC or S-CPAC procedure.

If the *S-NG-RAN node UE Slice Maximum Bit Rate* IE for a specific S-NSSAI is included in the S-NODE ADDITION REQUEST message, the S-NG-RAN node shall, if supported, store and use the received S-NG-RAN node UE Slice Maximum Bit Rate for all PDU sessions associated with the S-NSSAI for the concerned UE as defined in TS 23.501 [7].

If the S-NODE ADDITION REQUEST ACKNOWLEDGE message includes the *SN Mobility Information* IE, the M-NG-RAN node shall, if supported, store this information and use it as defined in TS 37.340 [8].

If the *QMC Coordination Request* IE is contained in the S-NODE ADDITION REQUEST message, the S-NG-RAN node may use it as specified in TS 37.340 [8], and shall, if supported, include the *QMC Coordination Response* IE in the S-NODE ADDITION REQUEST ACKNOWLEDGE message.

If the *Source SN to Target SN QMC Information* IE is contained in the S-NODE ADDITION REQUEST message, the S-NG-RAN node shall, if supported, use it for QoE measurements handling, as specified in TS 37.340 [8].

If the *Source M-NG-RAN node ID* IE is included in the S-NODE ADDITION REQUEST message, the S-NG-RAN node may use it to deduce direct data path availability with the source M-NG-RAN node, and if the direct data forwarding path is available, may include the *Direct Forwarding Path Availability with source M-NG-RAN node* IE in the S-NODE ADDITION REQUEST ACKNOWLEDGE message.

If the S-NODE ADDITION REQUEST message contains the *IAB Authorization status* IE, the S-NG-RAN node shall, if supported, store it and use it as defined in TS 38.401[2].

For each QoS flow, if the *PDU Set QoS Parameters* IE is included in the *QoS Flow Level QoS Parameters* IE in the *PDU Session Resource Setup Info – SN terminated* IE of the S-NODE ADDITION REQUEST message, the S-NG-RAN node shall, if supported, store this information and use it as specified in TS 23.501 [7].

For each DRB configured as MN-terminated split bearer/SCG bearer, if the *PDU Set QoS Parameters* IE is included in the *DRB QoS* IE in the *PDU Session Resource Setup Info – MN terminated* IE of the S-NODE ADDITION REQUEST message, the S-NG-RAN node shall, if supported, store this information and use it as specified in TS 23.501 [7].

For each DRB configured as MN-terminated split bearer/SCG bearer, if the *ECN Marking or Congestion Information Reporting Request* IE is included in the *PDU Session Resource Setup Info – MN terminated* IE contained in the S-NODE ADDITION REQUEST message, the S-NG-RAN node shall, if supported, use it accordingly for the specific DRB. If the *ECN Marking or Congestion Information Reporting Status* IE is included in the *PDU Session Resource Setup Response Info – MN terminated* IE, the M-NG-RAN node shall, if supported, use it to deduce if ECN marking or congestion information reporting is active or not active.

For each QoS flow for which the *ECN Marking or Congestion Information Reporting Request* IE is included in the *PDU Session Resource Setup Info – SN terminated* IE contained in the S-NODE ADDITION REQUEST message, the S-NG-RAN node shall, if supported, use it accordingly for the specific QoS flow.

If the *ECN Marking or Congestion Information Reporting Status* IE is included in the *PDU Session Resource Setup Response Info – SN terminated* IE, contained in the S-NODE ADDITION REQUEST ACKNOWLEDGE message, the M-NG-RAN node shall, if supported, use it to deduce if ECN marking at NG-RAN or ECN marking at UPF or congestion information reporting is active or not active.

For each DRB configured as MN-terminated split bearer/SCG bearer, if the *PSI based SDU Discard UL* IE is included in the *PDU Session Resource Setup Info – MN terminated* IE contained in the S-NODE ADDITION REQUEST message, the S-NG-RAN node shall, if supported, use it accordingly for the specific DRB.

For each DRB configured as SN-terminated split bearer/MCG bearer, if the *PSI based SDU Discard UL* IE is included in the *PDU Session Resource Setup Response Info – SN terminated* IE contained in the S-NODE ADDITION REQUEST ACKNOWLEDGE message, the M-NG-RAN node shall, if supported, use it accordingly for the specific DRB.

If the S-NODE ADDITION REQUEST message includes the *PDU Set QoS Parameters* IE or the *DL PDU Set Information Marking Support Indication* IE set to "true", the S-NG-RAN node shall, if supported, report in the S-NODE ADDITION REQUEST ACKNOWLEDGE message the *PDU Set based Handling Indicator* IE.

For a QoS flow established with PDU Set QoS parameters, if the *PDU Set based Handling Indicator* IE set to "supported" is included in S-NODE ADDITION REQUEST ACKNOWLEDGE message, the M-NG-RAN node shall, if supported, include the PDU Set Information Container in the data to be forwarded to the S-NG-RAN node.

For each DRB configured as MN-terminated split bearer/SCG bearer, if the *PSI based SDU Discard DL* IE is included in the *PDU Session Resource Setup Info – MN terminated* IE contained in the S-NODE ADDITION REQUEST message, the S-NG-RAN node shall, if supported, use it accordingly for the specific DRB.

For each DRB configured as SN-terminated split bearer/MCG bearer, if the *PSI based SDU Discard DL* IE is included in the *PDU Session Resource Setup Response Info – SN terminated* IE contained in the S-NODE ADDITION REQUEST ACKNOWLEDGE message, the M-NG-RAN node shall, if supported, use it accordingly for the specific DRB.

If the *Monitoring Request on Available Bitrate* IE is included in the *GBR QoS Flow Information* IE for a QoS flow contained in the *DRBs To Be Setup List* IE of the *PDU Session Resource Setup Info – MN terminated* IE, the S-NG-RAN node shall, if supported, store this information and perform Available bitrate monitoring, as specified in TS 23.501 [7].

For each GBR QoS flow which has been successfully established in the S-NG-RAN node, if the *Monitoring Request on Available Bitrate* IE was included in the *GBR QoS Flow Information* IE contained in the *PDU Session Resource Setup Info – SN terminated* IE, the S-NG-RAN node shall store this information, and shall, if supported, store this information and perform Available bitrate monitoring, as specified in TS 23.501 [7].

For each QoS flow to be added, if the *MMSID* IE was included in the *QoS Flow Level QoS Parameters* IE contained in the *PDU Session Resource Setup Info – SN terminated* IE or the *PDU Session Resource Setup Info – MN terminated* IE, the S-NG-RAN node shall, if supported, consider that the QoS flow is related to a multi-modal service, as described in TS 23.501 [7] and TS 38.300 [9].

For each QoS flow to be added, if the *Indication of Bitrate Adaptation* IE set to "uplink" was included in the *QoS Flow Level QoS Parameters* IE contained in the *PDU Session Resource Setup Info – SN terminated* IE or the *PDU Session Resource Setup Info – MN terminated* IE, the S-NG-RAN node shall, if supported, store the received indication and use it for uplink rate control, as defined in TS 38.300 [9].

If the *LTM Candidate PSCell Addition Information Request* IE is included in the S-NODE ADDITION REQUEST message, the S-NG-RAN node shall, if supported, use the information to prepare for LTM candidate PSCell(s) configuration, and include the *LTM Candidate PSCell Addition Information Acknowledge* IE in the S-NODE ADDITION REQUEST ACKNOWLEDGE message.

If the *Proposed LTM L2 Reset Configuration List* IE is contained in the *LTM Candidate PSCell Addition Information Request* IE included in the S-NODE ADDITION REQUEST message, the S-NG-RAN node shall, if supported, include the *LTM L2 Reset Configuration* IE in the S-NODE ADDITION REQUEST ACKNOWLEDGE message for the prepared LTM candidate PSCell(s), as described in TS 37.340 [8].

If the *CSI Resource Configuration* IE is contained in the *LTM Candidate PSCell Addition Information Request* IE included in the S-NODE ADDITION REQUEST message, the S-NG-RAN node shall, if supported, use it to generate the LTM CSI reporting configuration.

If the *SCG Reference Configuration Request* IE set to "request" is contained in the *LTM Candidate PSCell Addition Information Request* IE included in the S-NODE ADDITION REQUEST message, the S-NG-RAN node shall, if supported, provide the SCG reference configuration for LTM.

If the *LTM Configuration ID Mapping List* IE is contained in in the *LTM Candidate PSCell Addition Information Request* IE included in the S-NODE ADDITION REQUEST message, the S-NG-RAN node shall, if supported, consider this as the mapping information for the suggested LTM candidate PSCell(s).

If the *LTM Information SN Addition* IE is included in the S-NODE ADDITION REQUEST message, the S-NG-RAN node shall, if supported, consider that the S-NG-RAN node Addition Preparation procedure has been triggered as part of an MCG LTM.

If the *Proposed LTM UE Based TA Measurement ID List* IE is contained in the *LTM Candidate PSCell Addition Information Request* IE included in the S-NODE ADDITION REQUEST message, the S-NG-RAN node shall, if supported, include the *UE Based TA Measurement Configuration* IE in the S-NODE ADDITION REQUEST ACKNOWLEDGE message for the prepared LTM candidate PSCell(s), as described in TS 37.340 [8].

Interactions with the S-NG-RAN node Reconfiguration Completion procedure:

If the S-NG-RAN node admits at least one PDU session resource, the S-NG-RAN node shall start the timer $TXn_{DCoverall}$ when sending the S-NODE ADDITION REQUEST ACKNOWLEDGE message to the M-NG-RAN node with the exception of a request for conditional configuration or LTM. The reception of the S-NODE RECONFIGURATION COMPLETE message shall stop the timer $TXn_{DCoverall}$ if $TXn_{DCoverall}$ is running.

Interaction with the Activity Notification procedure

Upon receiving an S-NODE ADDITION REQUEST message containing the *Desired Activity Notification Level* IE, the S-NG-RAN node shall, if supported, use this information to decide whether to trigger subsequent Activation Notification procedures according to the requested notification level.

Interaction with the Data Collection Reporting Initiation and the Data Collection Reporting procedures:

If the *Data Collection ID* IE is contained in the S-NODE ADDITION REQUEST message, the S-NG-RAN node shall, if supported, report to the M-NG-RAN node after successful S-NG-RAN node addition, via the Data Collection Reporting procedure, the requested information configured via the previous Data Collection Reporting Initiation

procedure corresponding to the *NG-RAN node1 Measurement ID* IE, allocated by the M-NG-RAN node, and the *NG-RAN node2 Measurement ID* IE, allocated by the S-NG-RAN node.

8.3.1.3 Unsuccessful Operation

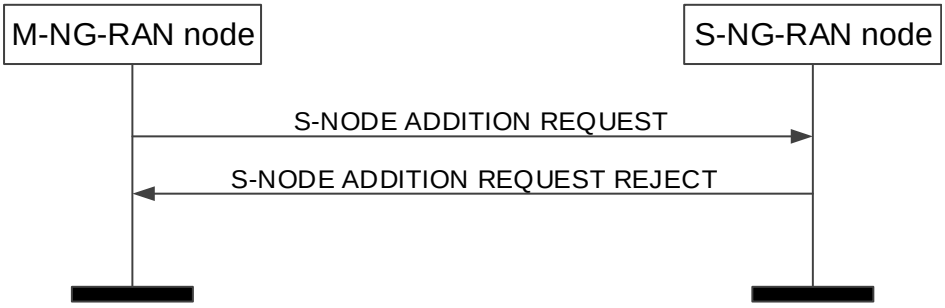

Figure 8.3.1.3-1: S-NG-RAN node Addition Preparation, unsuccessful operation

If the S-NG-RAN node is not able to accept any of the bearers or a failure occurs during the S-NG-RAN node Addition Preparation, the S-NG-RAN node sends the S-NODE ADDITION REQUEST REJECT message with an appropriate cause value to the M-NG-RAN node.

If the *CHO Information SN Addition* IE is included in the S-NODE ADDITION REQUEST message and the *PCell ID* IE is also included, but the S-NG-RAN node is not able to accept any of the bearers or a failure occurs during the S-NG-RAN node Addition Preparation, the S-NG-RAN node shall, if supported, include the *PCell ID* IE in the S-NODE ADDITION REQUEST REJECT message.

8.3.1.4 Abnormal Conditions

If the S-NG-RAN node receives an S-NODE ADDITION REQUEST message containing in a *PDU Session Resources To Be Added Item* IE neither the *PDU Session Resource Setup Info – SN terminated* IE nor the *PDU Session Resource Setup Info – MN terminated* IE, the S-NG-RAN node shall fail the S-NG-RAN node Addition Preparation procedure indicating an appropriate cause.

If the supported algorithms for encryption defined in the *NR Encryption Algorithms* IE in the *NR UE Security Capabilities* IE, plus the mandated support of NEA0 in all UEs (TS 33.501 [28]), do not match any algorithms defined in the configured list of allowed encryption algorithms in the S-NG-RAN node (TS 33.501 [28]), the S-NG-RAN node shall reject the procedure using the S-NODE ADDITION REQUEST REJECT message.

If the supported algorithms for integrity defined in the *NR Integrity Protection Algorithms* IE in the *NR UE Security Capabilities* IE do not match any algorithms defined in the configured list of allowed integrity protection algorithms in the S-NG-RAN node (TS 33.501 [28]), the S-NG-RAN node shall reject the procedure using the S-NODE ADDITION REQUEST REJECT message.

If the S-NG-RAN node receives an S-NODE ADDITION REQUEST message containing a *S-NG-RAN node UE XnAP ID* IE that does not match any existing UE Context that has such ID, the S-NG-RAN node shall reject the procedure using the S-NODE ADDITION REQUEST REJECT message.

If the M-NG-RAN node receives an S-NODE ADDITION REQUEST ACKNOWLEGE message containing a value for the *PDU Session ID* in the *PDU Session Resources Admitted To Be Added List* IE and in *PDU Session Resources Not Admitted List* IE, the M-NG-RAN node shall regard setup of S-NG-RAN node resources of that PDU Session as being failed.

If the S-NG-RAN node receives an S-NODE ADDITION REQUEST message containing, for a PDU session, a *PDU Session Resource Setup Info – SN terminated* IE for which the *Split Session Indicator* IE is included and set to "split", the *Security Result* IE is not included, and either the *Integrity Protection Indication* IE or the *Confidentiality Protection Indication* IE is set to "preferred", it shall reject the PDU session.

Interaction with the M-NG-RAN node initiated S-NG-RAN node Release procedure:

If the M-NG-RAN node receives an S-NODE ADDITION REQUEST ACKNOWLEDGE message containing in a *PDU Session Resource Admitted To Be Added Item* IE neither the *PDU Session Resource Setup Response Info – SN*

terminated IE nor the *PDU Session Resource Setup Response Info – MN terminated* IE, the M-NG-RAN node shall trigger the M-NG-RAN node initiated S-NG-RAN node Release procedure indicating an appropriate cause.

If the timer TXn_{DCprep} expires before the M-NG-RAN node has received the S-NODE ADDITION REQUEST ACKNOWLEDGE message, the M-NG-RAN node shall regard the S-NG-RAN node Addition Preparation procedure as being failed and shall trigger the M-NG-RAN node initiated S-NG-RAN node Release procedure.

Interactions with the S-NG-RAN node Reconfiguration Completion and S-NG-RAN node initiated S-NG-RAN node Release procedure:

If the timer $TXn_{DCoverall}$ expires before the S-NG-RAN node has received the S-NODE RECONFIGURATION COMPLETE or the S-NODE RELEASE REQUEST message, the S-NG-RAN node shall regard the requested RRC connection reconfiguration as being not applied by the UE and shall trigger the S-NG-RAN node initiated S-NG-RAN node Release procedure.

8.3.2 S-NG-RAN node Reconfiguration Completion

8.3.2.1 General

The purpose of the S-NG-RAN node Reconfiguration Completion procedure is to provide information to the S-NG-RAN node whether the requested configuration was successfully applied by the UE.

The procedure uses UE-associated signalling.

8.3.2.2 Successful Operation

Figure 8.3.2.2-1: S-NG-RAN node Reconfiguration Complete procedure, successful operation.

The M-NG-RAN node initiates the procedure by sending the S-NODE RECONFIGURATION COMPLETE message to the S-NG-RAN node.

The S-NODE RECONFIGURATION COMPLETE message may contain information that

- either the UE has successfully applied the configuration requested by the S-NG-RAN node. The M-NG-RAN node may also provide configuration information in the *M-NG-RAN node to S-NG-RAN node Container* IE.
- or the configuration requested by the S-NG-RAN node has been rejected. The M-NG-RAN node shall provide information with sufficient precision in the included *Cause* IE to enable the S-NG-RAN node to know the reason for an unsuccessful reconfiguration. The M-NG-RAN node may also provide configuration information in the *M-NG-RAN node to S-NG-RAN node Container* IE.

Upon reception of the S-NODE RECONFIGURATION COMPLETE message the S-NG-RAN node shall stop the timer $TXn_{DCoverall}$ if $TXn_{DCoverall}$ is running.

If the *SK-counter* IE is included in the S-NODE RECONFIGURATION COMPLETE message, the S-NG-RAN node shall, if supported, use it to choose $S\text{-}K_{SN}$ as specified in TS 33.501 [28]

8.3.2.3 Abnormal Conditions

Void.

8.3.3 M-NG-RAN node initiated S-NG-RAN node Modification Preparation

8.3.3.1 General

This procedure is used to enable an M-NG-RAN node to request an S-NG-RAN node to either modify the UE context at the S-NG-RAN node or to query the current SCG configuration for supporting delta signalling in M-NG-RAN node initiated S-NG-RAN node change, or to provide the S-RLF-related information to the S-NG-RAN node.

The procedure uses UE-associated signalling.

8.3.3.2 Successful Operation

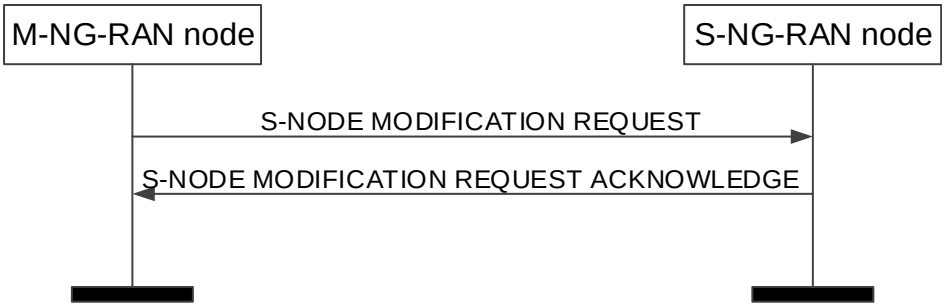

Figure 8.3.3.2-1: M-NG-RAN node initiated S-NG-RAN node Modification Preparation, successful operation

The M-NG-RAN node initiates the procedure by sending the S-NODE MODIFICATION REQUEST message to the S-NG-RAN node.

When the M-NG-RAN node sends the S-NODE MODIFICATION REQUEST message, it shall start the timer TXn_{DCprep}.

The S-NODE MODIFICATION REQUEST message may contain

- within the *UE Context Information* IE;
  - PDU session resources to be added within the *PDU Session Resources To Be Added Item* IE;
  - PDU session resources to be modified within the *PDU Session Resources To Be Modified Item* IE;
  - PDU session resources to be released within the *PDU Session Resources To Be Released Item* IE;
  - the *S-NG-RAN node Security Key* IE;
  - the *S-NG-RAN node UE Aggregate Maximum Bit Rate* IE;
- the *M-NG-RAN node to S-NG-RAN node Container* IE;
- the *PDCP Change Indication* IE;
- the *SCG Configuration Query* IE;
- the *Requested split SRBs IE*;
- the *Requested split SRBs release* IE;
- the *Requested fast MCG recovery via SRB3 IE*;
- the *Requested fast MCG recovery via SRB3 Release* IE;
- the *Additional DRB IDs* IE;
- the *MR-DC Resource Coordination Information* IE.

If the S-NODE MODIFICATION REQUEST message contains the *Selected PLMN* IE, the S-NG-RAN node may use it for RRM purposes. If the S-NODE MODIFICATION REQUEST message also contains the *Selected NID* IE, the S-NG-RAN node may decide to use the SNPN identified by the *Selected PLMN* IE and *Selected NID* IE for its own usage.

If the S-NODE MODIFICATION REQUEST message contains the *Mobility Restriction List* IE, the S-NG-RAN node shall

- replace the previously provided Mobility Restriction List by the received Mobility Restriction List in the UE context;
- use this information to select an appropriate SCG.

If the *S-NG-RAN node UE Aggregate Maximum Bit Rate* IE is included in the S-NODE MODIFICATION REQUEST message, the S-NG-RAN node shall:

- replace the previously provided S-NG-RAN node UE Aggregate Maximum Bit Rate by the received S-NG-RAN node UE Aggregate Maximum Bit Rate in the UE context;
- use the received S-NG-RAN node UE Aggregate Maximum Bit Rate for Non-GBR Bearers for the concerned UE as defined in TS 37.340 [8].

If the *S-NG-RAN node UE Slice Maximum Bit Rate* IE is included in the S-NODE MODIFICATION REQUEST message, the S-NG-RAN node shall, if supported:

- store and replace the previously provided S-NG-RAN node UE Slice Maximum Bit Rate, if any, by the received S-NG-RAN node UE Slice Maximum Bit Rate for each S-NSSAI for the concerned UE;
- use the received S-NG-RAN node UE Slice Maximum Bit Rate for all PDU sessions associated with the S-NSSAI for the concerned UE as defined in TS 23.501 [7].

If the S-NODE MODIFICATION REQUEST message contains the *Index to RAT/Frequency Selection Priority* IE, the S-NG-RAN node may use it for RRM purposes.

If the S-NODE MODIFICATION REQUEST message contains the *S-NG-RAN node PDU Session Aggregate Maximum Bit Rate* IE, the S-NG-RAN node may use it for RRM purposes.

If the S-NODE MODIFICATION REQUEST message contains the *MR-DC Resource Coordination Information* IE, the S-NG-RAN node should forward it to lower layers and it may use it for the purpose of resource coordination with the M-NG-RAN node, or to coordinate with sidelink resources used in the M-NG-RAN node. The S-NG-RAN node shall consider the value of the received *UL Coordination Information* IE valid until reception of a new update of the IE for the same UE. The S-NG-RAN node shall consider the value of the received *DL Coordination Information* IE valid until reception of a new update of the IE for the same UE. If the *E-UTRA Coordination Assistance Information* IE or the *NR Coordination Assistance Information* IE is contained in the *MR-DC Resource Coordination Information* IE, the S-NG-RAN node shall, if supported, use the information to determine further coordination of resource utilisation between the S-NG-RAN node and the M-NG-RAN node.

If the S-NODE MODIFICATION REQUEST message contains the *NE-DC TDM Pattern* IE, the S-NG-RAN node should forward it to lower layers and use it for the purpose of single uplink transmission. The S-NG-RAN node shall consider the value of the received *NE-DC TDM Pattern* IE valid until reception of a new update of the IE for the same UE.

The allocation of resources according to the values of the *Allocation and Retention Priority* IE included in the *QoS Flow Level QoS Parameters* IE for each QoS flow shall follow the principles specified for the PDU Session Resource Setup procedure in TS 38.413 [5].

If the *Additional QoS Flow Information* IE is included for a QoS flow in the S-NODE MODIFICATION REQUEST message, the S-NG-RAN node shall behave the same as the NG-RAN node in the PDU Session Resource Setup procedure, specified in TS 38.413 [5].

For each GBR QoS flow, if the *Alternative QoS Parameters Set List* IE is included in the *GBR QoS Flow Information* IE, the S-NG-RAN node shall, if supported, behave the same as the NG-RAN node in the PDU Session Resource Setup procedure specified in TS 38.413 [5].

If the *TSC Traffic Characteristics* IE is included for a QoS flow in the S-NODE MODIFICATION REQUEST message, the S-NG-RAN node shall behave the same as the NG-RAN node in the PDU Session Resource Setup procedure, specified in TS 38.413 [5].

For each PDU session, if the *Network Instance* IE is included in the *PDU Session Resource Setup Info – SN terminated* IE and in the *PDU Session Resource Modification Info – SN terminated* IE and the *Common Network Instance* IE is not present, the S-NG-RAN node shall, if supported, use it when selecting transport network resource as specified in TS 23.501 [7].

For each PDU session, if the *Common Network Instance* IE is included in the *PDU Session Resource Setup Info – SN terminated* IE and in the *PDU Session Resource Modification Info – SN terminated* IE, the S-NG-RAN node shall, if supported, use it when selecting transport network resource as specified in TS 23.501 [7].

For each GBR QoS flow, if the *Offered GBR QoS Flow Information* IE is included in the *QoS Flows To Be Setup List* IE contained in the *PDU Session Resource Setup Info – SN terminated* IE, the S-NG-RAN node may request the M-NG-RAN node to configure the DRB to which that QoS flow is mapped with MCG resources.

For each PDU session, if the *Non-GBR Resources Offered* IE is included in the *PDU Session Resource Modification Info – SN terminated* IE contained in the *PDU Session Resources To Be Added List* IE and set to "true", the S-NG-RAN node may request the M-NG-RAN node to configure the DRBs to which non-GBR QoS flows of the PDU session are mapped with MCG resources.

If at least one of the requested modifications is admitted by the S-NG-RAN node, the S-NG-RAN node shall modify the related part of the UE context accordingly and send the S-NODE MODIFICATION REQUEST ACKNOWLEDGE message back to the M-NG-RAN node.

The M-NG-RAN node shall include *RLC Mode* IE for each bearer offloaded from M-NG-RAN node to S-NG-RAN node in the *DRBs to QoS Flow Mapping List* IE within the *PDU Session Resource Setup Info – SN terminated* IE of the S-NODE MODIFICATION REQUEST message, and the *RLC Mode* IE indicates the mode that the M-NG-RAN used for the DRB when it was hosted at the M-NG-RAN node.

The S-NG-RAN node shall include the PDU sessions for which resources have been either added or modified or released at the S-NG-RAN node either in the *PDU Session Resources Admitted To Be Added List* IE or the *PDU Session Resources Admitted To Be Modified List* IE or the *PDU Session Resources Admitted To Be Released List* IE. The S-NG-RAN node shall include the PDU sessions that have not been admitted in the *PDU Session Resources Not Admitted List* IE with an appropriate cause value.

If the M-NG-RAN node requests transfer of the PDCP hosting from the S-NG-RAN node to the M-NG-RAN node for a PDU session, in which case the S-NODE MODIFICATION REQUEST message contains an PDU session resource to be released which is configured with the SCG bearer option within the *PDU Session Resources To Be Released List* IE, the S-NG-RAN node shall include the *RLC Mode* IE within the *DRBs To Be Released List* IE in the *PDU Session Resources admitted to be released List – SN terminated* IE in the S-NODE MODIFICATION REQUEST ACKNOWLEDGE message. The *RLC Mode* IE indicates the RLC mode that the S-NG-RAN node uses for the DRB.

If the *QoS Flow Mapping Indication* IE is included in the S-NODE MODIFICATION REQUEST message for a QoS flow to be modified, the S-NG-RAN node may replace and take it into account that only the uplink or downlink QoS flow is mapped to the DRB.

If the S-NODE MODIFICATION REQUEST message contains for a PDU session resource to be modified which is configured with the SN terminated bearer option, the *UL NG-U UP TNL Information at UPF* IE the S-NG-RAN node shall use it as the new UL NG-U address.

If the S-NODE MODIFICATION REQUEST message contains for a PDU session resource to be modified which is configured with the MN terminated bearer option, the *MN UL PDCP UP TNL Information* IE the S-NG-RAN node shall use it as the new UL Xn-U address.

Redundant transmission:

- If the S-NODE MODIFICATION REQUEST message contains for a PDU session resource to be modified which is configured with the SN terminated bearer option, the *Redundant UL NG-U UP TNL Information at UPF* IE, the S-NG-RAN node shall, if supported, use it as the new UL NG-U address for the redundant transmission as specified in TS 23.501 [7].

- For each PDU session, if the *Redundant Common Network Instance* IE is included in the *PDU Session Resource Setup Info – SN terminated* IE or in the *PDU Session Resource Modification Info – SN terminated* IE, the S-NG-

RAN node shall, if supported, use it when selecting transport network resource for the redundant transmission as specified in TS 23.501 [7].

- For each PDU session, if the *Redundant QoS Flow Indicator* IE is set to false for all QoS flows, the S-NG-RAN node shall, if supported, stop the redundant transmission and release the redundant tunnel for the concerned PDU Session as specified in TS 23.501 [7].

- For each PDU session for which the *Redundant QoS Flow Indicator* IE is included in the *S-NODE MODIFICATION REQUEST* message, the S-NG-RAN node shall, if supported, store and use it as specified in TS 23.501 [7].

- For each PDU session, if the *Redundant PDU Session Information* IE is included in the *PDU Session Resource Setup Info - SN terminated* IE in the S-NODE MODIFICATION REQUEST message, the S-NODE-RAN node shall, if supported, store the received information in the UE context and setup the redundant user plane for the concerned PDU session, as specified in TS 23.501 [7]. If the *PDU Session Pair ID* IE is included in the *Redundant PDU Session Information* IE, the S-NG-RAN node may store and use it to identify the paired PDU sessions.

- For each PDU session resource successfully setup for which the *Redundant PDU Session Information* IE is included in the S-NODE MODIFICATION REQUEST message, the S-NG-RAN node shall, if supported, include the *Used RSN Information* IE in the *PDU Session Resource Setup Response Info – SN terminated* IE in the S-NODE MODIFICATION REQUEST ACKNOWLEDGE message.

If the S-NODE MODIFICATION REQUEST message contains the *QoS flows To Be Released List* within the *PDU Session Resource Modification Info – SN terminated* IE, the S-NG-RAN node may propose to apply forwarding of UL data for the QoS flows for which in-order delivery is requested by including the *UL Forwarding Proposal* IE in the *Data Forwarding and Offloading Info from source NG-RAN node* IE within the *PDU Session Resource Modification Response Info – SN terminated* IE of the S-NODE MODIFICATION REQUEST ACKNOWLEDGE message.

For a PDU session resource to be modified which is configured with the SN terminated bearer option the S-NG-RAN node may include in the S-NODE MODIFICATION REQUEST ACKNOWLEDGE message the *DL NG-U UP TNL Information at NG-RAN* IE.

For a PDU session resource to be modified which is configured with the MN terminated bearer option the S-NG-RAN node may include in the S-NODE MODIFICATION REQUEST ACKNOWLEDGE message the *SN DL SCG UP TNL Information* IE.

If the *PDCP Change Indication* IE is included in the S-NODE MODIFICATION REQUEST message, the S-NG-RAN node shall act as specified in TS 37.340 [8].

Upon reception of the S-NODE MODIFICATION REQUEST ACKNOWLEDGE message the M-NG-RAN node shall stop the timer TXn_{DCprep}. If the S-NODE MODIFICATION REQUEST ACKNOWLEDGE message has included the *S-NG-RAN node to M-NG-RAN node Container* IE, the M-NG-RAN node is then defined to have a Prepared S-NG-RAN node Modification for that Xn UE-associated signalling.

If the *SCG Configuration Query* IE is included in the S-NODE MODIFICATION REQUEST message, the S-NG-RAN node shall provide corresponding radio configuration information within the *S-NG-RAN node to M-NG-RAN node Container* IE and may provide the corresponding data forwarding related information within the *PDU Session Resources with Data Forwarding List* IE as specified in TS 37.340 [8].

For each bearer for which allocation of the PDCP entity is requested at the S-NG-RAN node:

- if applicable, the M-NG-RAN node may propose to apply forwarding of downlink data by including the DL Forwarding IE within the PDU Session Resource Setup Info – SN terminated IE of the S-NODE MODIFICATION REQUEST message. For each bearer that it has decided to admit, the S-NG-RAN node may include the *DL Forwarding GTP Tunnel Endpoint* IE within the *PDU Session Resource Setup Response Info – SN terminated* IE of the S-NODE MODIFICATION REQUEST ACKNOWLEDGE message to indicate that it accepts the proposed forwarding of downlink data for this bearer.

- the S-NG-RAN node may include for each bearer in the PDU Session Resource Setup Response Info – SN terminated IE the UL Forwarding GTP Tunnel Endpoint IE to indicate it requests data forwarding of uplink packets to be performed for that bearer.

The M-NG-RAN node may propose to apply forwarding of UL data when offloading QoS flows for which in-order delivery is requested by including the *UL Forwarding Proposal* IE in the *Data Forwarding and Offloading Info from*

source NG-RAN node IE within the *PDU Session Resource Setup Info – SN terminated* IE or *PDU Session Resource Modification Info – SN terminated* IE of the S-NODE MODIFICATION REQUEST message. The S-NG-RAN node may include the *PDU Session level UL data Forwarding UP TNL Information* IE in the *Data Forwarding Info from target NG-RAN node* IE within the *PDU Session Resource Setup Response Info – SN terminated* IE or *PDU Session Resource Modification Response Info – SN terminated* IE of the S-NODE MODIFICATION REQUEST ACKNOWLEDGE message to indicate that it accepts the proposed forwarding.

If the S-NODE MODIFICATION REQUEST message contains the *Requested Split SRBs* IE, the S-NG-RAN node may use it to add split SRBs. If the S-NODE MODIFICATION REQUEST message contains the *Requested Split SRBs release* IE, the S-NG-RAN node may use it to release split SRBs.

If the *Requested Fast MCG recovery via SRB3* IE set to "true" is included in the S-NODE MODIFICATION REQUEST message and the S-NG-RAN decides to configure fast MCG link recovery via SRB3 as specified in TS 37.340 [8], the S-NG-RAN node shall, if supported, include the *Available fast MCG recovery via SRB3* IE set to "true" in the S-NODE MODIFICATION REQUEST ACKNOWLEDGE message. If the *Requested Fast MCG recovery via SRB3 Release* IE set to "true" is included in the S-NODE MODIFICATION REQUEST message and the S-NG-RAN decides to release fast MCG link recovery via SRB3, the S-NG-RAN node shall, if supported, include the *Release fast MCG recovery via SRB3* IE set to "true" in the S-NODE MODIFICATION REQUEST ACKNOWLEDGE message.

If the *Lower Layer presence status change* IE set to "release lower layers" is included in the S-NODE MODIFICATION REQUEST message, the S-NG-RAN node shall act as specified in TS 37.340 [8].

If the *Lower Layer presence status change* IE set to "re-establish lower layers" is included in the S-NODE MODIFICATION REQUEST message, the S-NG-RAN node shall act as specified in TS 37.340 [8].

If the *Lower Layer presence status change* IE set to "suspend lower layers" is included in the S-NODE MODIFICATION REQUEST message, the S-NG-RAN node shall act as specified in TS 37.340 [8].

If the *Lower Layer presence status change* IE set to "resume lower layers" is included in the S-NODE MODIFICATION REQUEST message, the S-NG-RAN node shall act as specified in TS 37.340 [8].

The M-NG-RAN node may include for each bearer in the *DRBs To Be Modified List* IE in the S-NODE MODIFICATION REQUEST message the *RLC Status* IE to indicate that RLC has been reestablished at the M-NG-RAN node and the S-NG-RAN node may trigger PDCP data recovery.

If the S-NODE MODIFICATION REQUEST message contains the *PDCP SN Length* IE in the *DRBs To Be Setup List* IE, the S-NG-RAN node shall, if supported, store this information and use it for lower layer configuration of the concerned MN terminated bearer.

If the *PDCP Duplication Configuration* IE in the *PDU Session Resource Modification Info – MN terminated* IE is contained in the S-NODE MODIFICATION REQUEST message and set to "configured", the S-NG-RAN node shall, if supported, add the RLC entity of secondary path and the RLC entity of all additional path(s) for the indicated DRB. And if the S-NODE MODIFICATION REQUEST message contains the *Duplication Activation* IE, the S-NG-RAN node shall, if supported, store this information and use it for the purpose of PDCP duplication.

If the S-NODE MODIFICATION REQUEST message contains *RLC Duplication Information* IE, the S-NG-RAN node shall, if supported, store this information and use it for the purpose of PDCP duplication for the indicated DRB with more than two RLC entities.

If the *PDCP Duplication Configuration* IE in the *PDU Session Resource Modification Info – MN terminated* IE is contained in the S-NODE MODIFICATION REQUEST message and set to "de-configured", the S-NG-RAN node shall, if supported, delete the RLC entity of secondary path and the RLC entity of all additional path(s) for the indicated DRB.

The S-NG-RAN node may include for each bearer in the *DRBs To Be Setup List* IE in the S-NODE MODIFICATION REQUEST ACKNOWLEDGE message the *PDCP SN Length* IE to indicate the PDCP SN length for that DRB.

The S-NG-RAN node may include the *QoS Flow Mapping Indication* IE for a QoS flow in the S-NODE MODIFICATION REQUEST ACKNOWLEDGE message to indicate that only the uplink or downlink QoS flow is mapped to the DRB.

If the *Additional DRB* IDs IE is included in the S-NODE MODIFICATION REQUEST message, the S-NG-RAN node shall store this information and use it together with previously provided DRB IDs if any, for SN terminated bearers.

If the S-NODE MODIFICATION REQUEST message contains the *S-NG-RAN node Maximum Integrity Protected Data Rate Uplink* IE or the *S-NG-RAN node Maximum Integrity Protected Data Rate Downlink* IE, the S-NG-RAN node shall use the received information when enforcing the maximum integrity protected data rate for the UE.

If the *Security Indication* IE is included in the *PDU Session Resource Setup Info – SN terminated* IE of the S-NODE MODIFICATION REQUEST message, the behaviour of the S-NG-RAN node shall be the same as specified for the same IE in the *PDU Session Resources To Be Setup List* IE in the Handover Preparation procedure, for the concerned PDU session, and the S-NG-RAN node shall include the *Security Result* IE in the *PDU Session Resource Setup Response Info – SN terminated* IE. If either the S-NG-RAN node or the M-NG-RAN node is an ng-eNB, the S-NG-RAN node shall behave as specified in TS 33.501 [28].

If the *Security Result* IE is included in the *PDU Session Resource Setup Info – SN terminated* IE of the S-NODE MODIFICATION REQUEST message, the S-NG-RAN node may take the information into account when deciding whether to perform user plane integrity protection or ciphering for the DRBs that it establishes for the concerned PDU session, except if the *Split Session Indicator* IE is included in the *PDU Session Resource Setup Info – SN terminated* IE and set to "split", in which case it shall perform user plane integrity protection or ciphering according to the information in the *Security Result* IE.

The S-NG-RAN node may include the *Location Information at S-NODE* IE in the S-NODE MODIFICATION REQUEST ACKNOWLEDGE message, if respective information is available at the S-NG-RAN node.

If the *Location Information at S-NODE reporting* IE set to "pscell" is included in the S-NODE MODIFICATION REQUEST, the S-NG-RAN node shall start providing information about the current location of the UE. If the *Location Information at S-NODE* IE is included in the S-NODE MODIFICATION REQUEST ACKNOWLEDGE, the M-NG-RAN node shall store the included information so that it may be transferred towards the AMF.

If the *S-NSSAI* IE is included in the *PDU Session Resources To Be Modified List* IE in the S-NODE MODIFICATION REQUEST message, the S-NG-RAN node shall replace the previously *S-NSSAI* IE by the received *S-NSSAI I*E.

If the S-NODE MODIFICATION REQUEST ACKNOWLEDGE message contains the *MR-DC Resource Coordination Information* IE, the M-NG-RAN node may use it for the purpose of resource coordination with the S-NG-RAN node. The M-NG-RAN node shall consider the value of the received *UL Coordination Information* IE valid until reception of a new update of the IE for the same UE. The M-NG-RAN node shall consider the value of the received *DL Coordination Information* IE valid until reception of a new update of the IE for the same UE. If the *E-UTRA Coordination Assistance Information* IE or the *NR Coordination Assistance Information* IE is contained in the *MR-DC Resource Coordination Information* IE, the M-NG-RAN node shall, if supported, use the information to determine further coordination of resource utilisation between the M-NG-RAN node and the S-NG-RAN node.

If the S-NODE MODIFICATION REQUEST message contains the *PCell ID* IE, the S-NG-RAN node may search for the target cell among the neighbour cells of the PCell indicated, as specified in the TS 37.340 [8].

If the S-NG-RAN node applied a full configuration or delta configuration, e.g., as part of mobility procedure involving a change of DU, the S-NG-RAN node shall inform the M-NG-RAN node by including the *RRC config indication* IE in the S-NODE MODIFICATION REQUEST ACKNOWLEDGE message.

If the *Default DRB Allowed* IE is included in the *PDU Session Resource Setup Info – SN terminated* IE or *PDU Session Resource Modification Info – SN terminated* IE of the S-NODE MODIFICATION REQUEST message and set to "true", the S-NG-RAN node may configure the default DRB for the PDU session.

If the *Default DRB Allowed* IE is included in the *PDU Session Resource Setup Info – SN terminated* IE or *PDU Session Resource Modification Info – SN terminated* IE of the S-NODE MODIFICATION REQUEST message and set to "false", the S-NG-RAN node shall not configure the default DRB for the PDU session and the S-NG-RAN node shall reconfigure the default DRB into a normal DRB if it has configured the default DRB before.

If the S-NODE MODIFICATION REQUEST ACKNOWLEDGE message includes the *DRB IDs taken into use* IE, the M-NG-RAN node, if applicable, shall act as specified in TS 37.340 [8].

If the *QoS Monitoring Request* IE is included in the *QoS Flow Level QoS Parameters* IE for a QoS flow contained in the *DRBs To Be Setup List* IE or the *DRBs To Be Modified List* IE within the *PDU Session Resource Setup Info – MN terminated* IE or the *PDU Session Resource Modification Info – MN terminated* IE, the S-NG-RAN node shall, if supported, use it to configure lower layers for the purpose of delay measurement and QoS monitoring as specified in TS 23.501 [7]. If the *QoS Monitoring Reporting Frequency* IE is included in the *QoS Flow Level QoS Parameters* IE for a QoS flow contained in the *DRBs To Be Setup List* IE or the *DRBs To Be Modified List* IE within the *PDU Session*

Resource Setup Info – MN terminated IE or the *PDU Session Resource Modification Info – MN terminated* IE, the S-NG-RAN node shall, if supported, use it for RAN part delay reporting.

For each QoS flow which has been successfully added or modified in the S-NG-RAN node, if the *QoS Monitoring Request* IE was included in the *QoS Flow Level QoS Parameters* IE contained in the *PDU Session Resource Setup Info – SN terminated* IE or the *PDU Session Resource Modification Info – SN terminated* IE, the S-NG-RAN node shall store this information, and shall, if supported, perform delay measurement and QoS monitoring as specified in TS 23.501 [7]. If the *QoS Monitoring Reporting Frequency* IE was included in the *QoS Flow Level QoS Parameters* IE contained in the *PDU Session Resource Setup Info – SN terminated* IE or the *PDU Session Resource Modification Info – SN terminated* IE, the S-NG-RAN node shall store this information, and shall, if supported, use it for RAN part delay reporting. In case such a QoS flow is included in the *DRBs To Be Setup List* IE or the *DRBs To Be Modified List* IE within the *PDU Session Resource Setup Response Info – SN terminated* IE or the *PDU Session Resource Modification Response Info – SN terminated* IE, the M-NG-RAN node shall, if supported, use it to configure lower layers for the purpose of delay measurement and QoS monitoring. If the *QoS Monitoring Reporting Frequency* IE is included in the *DRBs To Be Setup List* IE or the *DRBs To Be Modified List* IE within the *PDU Session Resource Setup Response Info – SN terminated* IE or the *PDU Session Resource Modification Response Info – SN terminated* IE, the M-NG-RAN node shall, if supported, use it for RAN part delay reporting.

If the *PDU Session Expected UE Activity Behaviour* IE is included in the *PDU Session Resources To Be Added List* IE or the *PDU Session Resources To Be Modified List* IE of the S-NODE MODIFICATION REQUEST message, the S-NG-RAN node shall, if supported, use it for the concerned PDU session as specified in TS 23.501 [7].

If the *User Plane Failure Indication* IE is included in the *PDU Session Resources To Be Modified List* IE of the S-NODE MODIFICATION REQUEST message, the S-NG-RAN node shall, if supported, allocate the new NG-U DL endpoint address for the concerned GTP-U tunnel PDU session as specified in TS 23.527 [57].

If the M-NG-RAN node receives in the S-NODE MODIFICATION REQUEST ACKNOWLEDGE message within the *PDU Session Resource Modification Response Info –MN terminated* IE a DRBs Admitted to be Setup or Modified Item with DRB ID(s) that it has not requested to be setup or modified, the M-NG-RAN node shall ignore the contained information.

For each DRB configured as MN-terminated split bearer/SCG bearer, if the *QoS Mapping Information* IE is included in the *DRBs Admitted List* IE in the *PDU Session Resource Setup Response Info – MN terminated* IE of the S-NODE MODIFICATION REQUEST ACKNOWLEDGE message, the M-NG-RAN node shall, if supported, use it to set DSCP and/or IPv6 flow label fields for the downlink IP packets which are transmitted from M-NG-RAN node to S-NG-RAN node through the GTP tunnels indicated by the *UP Transport Layer Information* IE.

For each DRB configured as MN-terminated split bearer/SCG bearer, if the *QoS Mapping Information* IE is included in the *DRBs Admitted to be Setup or Modified List* IE in the *PDU Session Resource Modification Response Info – MN terminated* IE of the S-NODE MODIFICATION REQUEST ACKNOWLEDGE message, the M-NG-RAN node shall, if supported, use it to set DSCP and/or IPv6 flow label fields for the downlink IP packets which are transmitted from M-NG-RAN node to S-NG-RAN node through the GTP tunnels indicated by the *UP Transport Layer Information* IE.

For each DRB configured as SN-terminated split bearer/MCG bearer, if the *QoS Mapping Information* IE is included in the *DRBs To Be Modified List* IE in the *PDU Session Resource Modification Info – SN terminated* IE of the S-NODE MODIFICATION REQUEST message, the S-NG-RAN node shall, if supported, use it to set DSCP and/or IPv6 flow label fields for the downlink IP packets which are transmitted from S-NG-RAN node to M-NG-RAN node through the GTP tunnels indicated by the *UP Transport Layer Information* IE.

If the *Security Indication* IE is included in the *PDU Session Resource Modification Info – SN terminated* IE of the S-NODE MODIFICATION REQUEST message, the S-NG-RAN node shall, if supported, replace any existing security indication, and enable/disable ciphering or integrity protection as specified in TS 38.331 [10], for the concerned PDU session, and the S-NG-RAN node shall include the *Security Result* IE in the *PDU Session Resource Modification Response Info – SN terminated* IE. If either the S-NG-RAN node or the M-NG-RAN node is an ng-eNB, the S-NG-RAN node shall behave as specified in TS 33.501 [28].

If the *Target Node ID* IE is included in the S-NODE MODIFICATION REQUEST message, the S-NG-RAN node shall, if supported, include the *Direct Forwarding Path Availability* IE set to "direct path available" in the S-NODE MODIFICATION REQUEST ACKNOWLEDGE message if the direct forwarding path is available between the S-NG-RAN node and the indicated target node.

If the *PSCell History Information Retrieve* IE set to "query" is included in the S-NODE MODIFICATION REQUEST message, the S-NG-RAN node shall, if supported, use this information as specified in TS 37.340 [8].

If the *UE History Information from the UE* IE is included in the S-NODE MODIFICATION REQUEST message, the S-NG-RAN node shall, if supported, store this information.

If the *SCG UE History Information* IE is included in the S-NODE MODIFICATION REQUEST ACKNOWLEDGE message, the M-NG-RAN node shall, if supported, use the information to update UE History Information with PSCell history.

If the *CHO Information SN Modification* IE is included in the S-NODE MODIFICATION REQUEST message, the S-NG-RAN node shall consider that the M-NG-RAN node initiated S-NG-RAN node Modification Preparation procedure has been triggered as part of a conditional handover. If the *Estimated Arrival Probability* IE is contained in the *CHO Information SN Modification* IE included in the S-NODE MODIFICATION REQUEST message, then the S-NG-RAN node may use the information to allocate necessary resources for the UE.

If the *SCG Activation Request* IE is included in the S-NODE MODIFICATION REQUEST message, the S-NG-RAN node may use it to configure SCG resources as specified in TS 37.340 [8], and shall, if supported, include the *SCG Activation Status* IE in the S-NODE MODIFICATION REQUEST ACKNOWLEDGE message.

If the *Conditional PSCell Change Information Update* IE is included in the S-NODE MODIFICATION REQUEST message, the S-NG-RAN node shall, if supported, consider that the request provides the list of PSCells prepared at the target S-NG-RAN node, as described in TS 37.340 [8].

If the *Conditional PSCell Addition Information Modification Request* IE is included in the S-NODE MODIFICATION REQUEST message, the S-NG-RAN node shall, if supported, consider that the request concerns an update of the previous CPAC preparation or an S-CPAC if source SN is configured as a candidate SN, as described in TS 37.340 [8]. Accordingly, the S-NG-RAN shall, if supported, include the *Conditional PSCell Addition Information Modification Acknowledge* IE in the S-NODE MODIFICATION REQUEST ACKNOWLEDGE message.

If the *S-CPAC Request Information* IE is contained in the *Conditional PSCell Addition Information Modification Request* IE included in the S-NODE MODIFICATION REQUEST message, the S-NG-RAN node shall, if supported, consider that the procedure is triggered for S-CPAC preparation or modification.

If the S-NG-RAN node applied a complete candidate configuration for a specific PSCell, e.g., as part of preparation or modification of S-CPAC, the S-NG-RAN node shall inform the M-NG-RAN node by including the *S-CPAC Complete Candidate Configuration Indicator* IE in the *Candidate PSCell with Other Information Item* IE in the *Conditional PSCell Addition Information Modification Acknowledge* IE in the S-NODE MODIFICATION REQUEST ACKNOWLEDGE message.

If the *S-CPAC Reference Configuration Request* IE set to "request" is contained in the *Conditional PSCell Addition Information Modification Request* IE included in the S-NODE MODIFICATION REQUEST message, the S-NG-RAN node shall, if supported, provide the SCG reference configuration for S-CPAC.

If the *S-CPAC Multiple Target S-NG-RAN Node List* IE is contained within the *S-CPAC Request Information* IE in the *Conditional PSCell Addition Information Modification Request* IE included in the S-NODE MODIFICATION REQUEST message, the S-NG-RAN node shall, if supported, consider that the information pertains to a list of PSCells suggested for other candidate SN(s) may also be prepared for S-CPAC, and act as described in TS 37.340 [8].

If the *S-CPAC Inter-SN Execution Notification* IE set to "executed" is contained in the *Conditional PSCell Addition Information Modification Request* IE included in the S-NODE MODIFICATION REQUEST message, the S-NG-RAN node shall, if supported, consider that the UE has been moved to another candidate SN due to inter-SN S-CPAC execution and may stop data transmission to the UE. If the *Data Forwarding and Offloading Info from source NG-RAN node* IE within the *PDU Session Resource Modification Info – SN terminated* IE is also included for some PDU session in the *PDU Session Resources To Be Modified List* IE of the S-NODE MODIFICATION REQUEST message, the S-NG-RAN node may include the *Data Forwarding Info from target NG-RAN node* IE within the *PDU Session Resource Modification Response Info – SN terminated* IE of the corresponding PDU sessions in the *PDU Session Resources Admitted To Be Modified List* IE of the S-NODE MODIFICATION REQUEST ACKNOWLEDGE message to provide the new data forwarding address information for S-CPAC.

If the *CG-CandidateList* is included in the *S-NG-RAN node to M-NG-RAN node Container* IE in the S-NODE MODIFICATION REQUEST ACKNOWLEDGE message, the M-NG-RAN node shall, if supported, use it for the purpose of CPAC or S-CPAC.

If the *Estimated Arrival Probability* IE is contained in the *Conditional PSCell Addition Information Modification Request* IE included in the S-NODE MODIFICATION REQUEST message, then the candidate target S-NG-RAN node may use the information to allocate necessary resources for the incoming CPAC or S-CPAC procedure.

If for a given QoS Flow the *Source DL Forwarding IP Address* IE is included within the *Data Forwarding and Offloading Info from source NG-RAN node* IE in the *PDU Session Resource Setup Info – SN terminated* IE and/or in the *PDU Session Resource Modification Info – SN terminated* IE contained in the S-NODE MODIFICATION REQUEST message, the S-NG-RAN node shall, if supported, store this information and use it as part of its ACL functionality configuration actions, if such ACL functionality is deployed.

If for a given QoS Flow the *Source DL Forwarding IP Address* IE is included within the *QoS Flows Mapped To DRB List* IE in the *PDU Session Resource Setup Response Info – SN terminated* IE and/or in the *PDU Session Resource Modification Response Info – SN terminated* IE contained in the S-NODE MODIFICATION REQUEST ACKNOWLEDGE message, the M-NG-RAN node shall, if supported, store this information and use it as part of its ACL functionality to identify source TNL address for data forwarding in case of subsequent handover preparation, if such ACL functionality is deployed.

If the *Management Based MDT PLMN Modification List* IE is contained in the S-NODE MODIFICATION REQUEST message, the S-NG-RAN node 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 [23].

If the *QMC Coordination Request* IE is contained in the S-NODE MODIFICATION REQUEST message, the S-NG-RAN node may use it as specified in TS 37.340 [8], and shall, if supported, include the *QMC Coordination Response* IE in the S-NODE MODIFICATION REQUEST ACKNOWLEDGE message.

If the *Source SN to Target SN QMC Information Inquiry* IE set to "true" is contained in the S-NODE MODIFICATION REQUEST message, the S-NG-RAN node shall, if supported, include the *Source SN to Target SN QMC Information* IE in the S-NODE MODIFICATION REQUEST ACKNOWLEDGE message.

If the S-NODE MODIFICATION REQUEST message contains the *IAB Authorization status* IE, the S-NG-RAN node shall, if supported, store it and use it as defined in TS 38.401[2].

For each QoS flow, if the *PDU Set QoS Parameters* IE is included in the *QoS Flow Level QoS Parameters* IE in the *PDU Session Resource Setup Info – SN terminated* IE or the *PDU Session Resource Modification Info – SN terminated* IE of the S-NODE MODIFICATION REQUEST message, the S-NG-RAN node shall, if supported, store this information and use it as specified in TS 23.501 [7].

For each DRB configured as MN-terminated split bearer/SCG bearer, if the *PDU Set QoS Parameters* IE is included in the *DRB QoS* IE in the *PDU Session Resource Setup Info – MN terminated* IE or the *PDU Session Resource Modification Info – MN terminated* IE of the S-NODE MODIFICATION REQUEST message, the S-NG-RAN node shall, if supported, store this information and use it as specified in TS 23.501 [7].

For each DRB configured as MN-terminated split bearer/SCG bearer, if the *ECN Marking or Congestion Information Reporting Request* IE is included in the *PDU Session Resource Setup Info – MN terminated* IE or the *PDU Session Resource Modification Info – MN terminated* IE contained in the S-NODE MODIFICATION REQUEST message, the S-NG-RAN node shall, if supported, use it accordingly for the specific DRB. If the *ECN Marking or Congestion Information Reporting Status* IE is included in the *PDU Session Resource Setup Response Info – MN terminated* IE or the *PDU Session Resource Modification Response Info – MN terminated* IE, the M-NG-RAN node shall, if supported, use it to deduce if ECN marking or congestion information reporting is active or not active.

For each QoS flow for which the *ECN Marking or Congestion Information Reporting Request* IE is included in the *PDU Session Resource Setup Info – SN terminated* IE and/or in the *PDU Session Resource Modification Info – SN terminated* IE contained in the S-NODE MODIFICATION REQUEST message, the S-NG-RAN node shall, if supported, use it accordingly for the specific QoS flow.

If the *ECN Marking or Congestion Information Reporting Status* IE is included in the *PDU Session Resource Setup Response Info – SN terminated* IE and/or in the in the *PDU Session Resource Modification Response Info – SN terminated* IE contained in the S-NODE MODIFICATION REQUEST ACKNOWLEDGE message, the M-NG-RAN node shall, if supported, use it to deduce if ECN marking at NG-RAN or ECN marking at UPF or congestion information reporting is active or not active.

For each DRB configured as MN-terminated split bearer/SCG bearer, if the *PSI based SDU Discard UL* IE is included in the *PDU Session Resource Modification Info – MN terminated* IE contained in the S-NODE MODIFICATION REQUEST message, the S-NG-RAN node shall, if supported, use it accordingly for the specific DRB.

For each DRB configured as SN-terminated split bearer/MCG bearer, if the *PSI based SDU Discard UL* IE is included in the *PDU Session Resource Modification Response Info – SN terminated* IE contained in the S-NODE

MODIFICATION REQUEST ACKNOWLEDGE message, the M-NG-RAN node shall, if supported, use it accordingly for the specific DRB.

If the S-NODE MODIFICATION REQUEST message includes the *PDU Set QoS Parameters* IE or the *DL PDU Set Information Marking Support Indication* IE set to "true", the S-NG-RAN node shall, if supported, report in the S-NODE MODIFICATION REQUEST ACKNOWLEDGE message the *PDU Set based Handling Indicator* IE.

For a QoS flow established with PDU Set QoS parameters, if the *PDU Set based Handling Indicator* IE set to "supported" is included in S-NODE MODIFICATION REQUEST ACKNOWLEDGE message, the M-NG-RAN node shall, if supported, include the PDU Set Information Container in the data to be forwarded to the S-NG-RAN node.

For each DRB configured as MN-terminated split bearer/SCG bearer, if the *PSI based SDU Discard DL* IE is included in the *PDU Session Resource Modification Info – MN terminated* IE contained in the S-NODE MODIFICATION REQUEST message, the S-NG-RAN node shall, if supported, use it accordingly for the specific DRB.

For each DRB configured as SN-terminated split bearer/MCG bearer, if the *PSI based SDU Discard DL* IE is included in the *PDU Session Resource Modification Response Info – SN terminated* IE contained in the S-NODE MODIFICATION REQUEST ACKNOWLEDGE message, the M-NG-RAN node shall, if supported, use it accordingly for the specific DRB.

If the *Monitoring Request on Available Bitrate* IE is included in the *GBR QoS Flow Information* IE for a QoS flow contained in the *DRBs To Be Setup List* IE or the *DRBs To Be Modified List* IE within the *PDU Session Resource Setup Info – MN terminated* IE or the *PDU Session Resource Modification Info – MN terminated* IE, the S-NG-RAN node shall, if supported, store this information and perform Available bitrate monitoring, as specified in TS 23.501 [7]

For each GBR QoS flow which has been successfully added or modified in the S-NG-RAN node, if the *Monitoring Request on Available Bitrate* IE was included in the *GBR QoS Flow Information* IE contained in the *PDU Session Resource Setup Info – SN terminated* IE or the *PDU Session Resource Modification Info – SN terminated* IE, the S-NG-RAN node shall, if supported, store this information and perform Available bitrate monitoring, as specified in TS 23.501 [7].

For each QoS flow to be added or modified in the S-NG-RAN node, if the *MMSID* IE was included in the *QoS Flow Level QoS Parameters* IE contained in the *PDU Session Resource Setup Info – SN terminated* IE or the *PDU Session Resource Modification Info – SN terminated* IE or the *PDU Session Resource Setup Info – MN terminated* IE or the *PDU Session Resource Modification Info – MN terminated* IE, the S-NG-RAN node shall, if supported, consider that the QoS flow is related to a multi-modal service, as described in TS 23.501 [7] and TS 38.300 [9].

For each QoS flow to be added or modified in the S-NG-RAN node, if the *Indication of Bitrate Adaptation* IE set to "uplink" was included in the *QoS Flow Level QoS Parameters* IE contained in the *PDU Session Resource Setup Info – SN terminated* IE or the *PDU Session Resource Modification Info – SN terminated* IE or the *PDU Session Resource Setup Info – MN terminated* IE or the *PDU Session Resource Modification Info – MN terminated* IE, the S-NG-RAN node shall, if supported, store the received indication and use it for uplink rate control, as defined in TS 38.300 [9].

If the *LTM Candidate PSCell Information Update Request* IE is included in the S-NODE MODIFICATION REQUEST message, the S-NG-RAN node shall, if supported, consider that the included information provides the SCG LTM related information of the prepared candidate PSCells and may include the *LTM Candidate PSCell Information Update Acknowledge* IE in the S-NODE MODIFICATION REQUEST ACKNOWLEDGE message, as described in TS 37.340 [8].

If the *CSI Resource Configuration* IE is contained in the *LTM Candidate PSCell Information Update Request* IE included in the S-NODE MODIFICATION REQUEST message, the S-NG-RAN node shall, if supported, use it to generate the LTM CSI reporting configuration.

If the *LTM Configuration ID Mapping List* IE is contained in the *LTM Candidate PSCell Information Update Request* IE included in the S-NODE MODIFICATION REQUEST message, the S-NG-RAN node shall, if supported, consider this as the mapping information for the prepared LTM candidate PSCell(s).

If the *Proposed LTM No Security Change ID List* IE is contained in the *LTM Candidate PSCell Information Update Request* IE included in the S-NODE MODIFICATION REQUEST message, the S-NG-RAN node shall, if supported, use this information for preparing LTM candidate PSCells, as described in TS 37.340 [8].

If the *LTM SCG Security Configuration* IE is contained in the *LTM Candidate PSCell Information Update Request* IE included in the S-NODE MODIFICATION REQUEST message, the S-NG-RAN node shall, if supported, use this information to apply security during SCG LTM.

If the *LTM Candidate PSCell To be Cancelled List* IE is contained in the *LTM Candidate PSCell Information Update Request* IE included in the S-NODE MODIFICATION REQUEST message, the S-NG-RAN node shall, if supported, consider that the request concerns the cancellation of LTM candidate PSCell(s) indicated, and may provide the updated information for SCG LTM in the *LTM Candidate PSCell Information Update Acknowledge* IE of the S-NODE MODIFICATION REQUEST ACKNOWLEDGE message.

If the *LTM Information SN Modification* IE set to "intra-MN-LTM" is included in the S-NODE MODIFICATION REQUEST message, the S-NG-RAN node shall, if supported, consider that the M-NG-RAN node initiated S-NG-RAN node Modification Preparation procedure has been triggered as part of an MCG LTM.

If the *LTM Inter-SN Execution Notification* IE set to "executed" is included in the S-NODE MODIFICATION REQUEST message, the S-NG-RAN node shall, if supported, consider that the UE has been successfully accessed to another candidate SN and may stop data transmission to the UE. If the *Data Forwarding and Offloading Info from source NG-RAN node* IE within the *PDU Session Resource Modification Info – SN terminated* IE is also included for some PDU session in the *PDU Session Resources To Be Modified List* IE of the S-NODE MODIFICATION REQUEST message, the S-NG-RAN node may include the *Data Forwarding Info from target NG-RAN node* IE within the *PDU Session Resource Modification Response Info – SN terminated* IE of the corresponding PDU sessions in the *PDU Session Resources Admitted To Be Modified List* IE of the S-NODE MODIFICATION REQUEST ACKNOWLEDGE message to provide the new data forwarding address information for inter-SN SCG LTM.

If the *Proposed LTM L2 Reset Configuration List* IE is contained in the *LTM Candidate PSCell Information Update Request* IE included in the S-NODE MODIFICATION REQUEST message, the S-NG-RAN node shall, if supported, include the *LTM L2 Reset Configuration* IE in the S-NODE MODIFICATION REQUEST ACKNOWLEDGE message for the prepared LTM candidate PSCell(s), as described in TS 37.340 [8].

If the *Proposed LTM UE Based TA Measurement ID List* IE is contained in the *LTM Candidate PSCell Information Update Request* IE included in the S-NODE MODIFICATION REQUEST message, the S-NG-RAN node shall, if supported, include the *UE Based TA Measurement Configuration* IE in the S-NODE MODIFICATION REQUEST ACKNOWLEDGE message for the prepared LTM candidate PSCell(s), as described in TS 37.340 [8].

Interactions with the S-NG-RAN node Reconfiguration Completion procedure:

If the S-NG-RAN node admits a modification of the UE context requiring the M-NG-RAN node to report about the success of the RRC connection reconfiguration procedure, the S-NG-RAN node shall start the timer $TXn_{DCoverall}$ when sending the S-NODE MODIFICATION REQUEST ACKNOWLEDGE message to the M-NG-RAN node with the exception of a request for conditional configuration or LTM. The reception of the S-NODE RECONFIGURATION COMPLETE message shall stop the timer $TXn_{DCoverall}$ if $TXn_{DCoverall}$ is running.

Interaction with the Activity Notification procedure

Upon receiving an S-NODE MODIFICATION REQUEST message containing the *Desired Activity Notification Level* IE, the S-NG-RAN node shall, if supported, use this information to decide whether to trigger subsequent Activity Notification procedures, or stop or modify ongoing triggering of these procedures due to a previous request.

Interaction with the Xn-U Address Indication procedure

For QoS flow mapped to DRBs configured with an SN terminated bearer option and removed from the SDAP in the S-NG-RAN node the S-NG-RAN node may provide data forwarding related information in the S-NODE MODIFICATION REQUEST ACKNOWLEDGE within the *Data Forwarding and offloading Info from source NG-RAN node* IE, in which case the M-NG-RAN node may decide to provide data forwarding addresses to the S-NG-RAN node and trigger the Xn-U Address Indication procedure as specified in TS 37.340 [8].

For QoS flow offloading from the S-NG-RAN node to the M-NG-RAN, the S-NG-RAN node may provide the data forwarding related information in the S-NODE MODIFICATION REQUEST ACKNOWLEDGE within the *Data Forwarding and offloading Info from source NG-RAN node* IE, in which case the M-NG-RAN node may decide to provide data forwarding addresses to the S-NG-RAN node and trigger the Xn-U Address Indication procedure as specified in TS 37.340 [8].

Interactions with the S-NG-RAN node initiated S-NG-RAN node Modification:

If the *SN triggered* IE set to "TRUE" is included in the S-NODE MODIFICATION REQUEST message, the S-NG-RAN node shall consider that the procedure has been initiated in response to the previously initiated S-NG-RAN node initiated S-NG-RAN node Modification procedure.

Interaction with the Path Switch Request procedure as specified in TS 38.413 [5]:

For a split PDU session, if the *Integrity Protection Indication* IE and/or the *Confidentiality Protection Indication* IE included in the PATH SWITCH REQUEST ACKNOWLEDGE message is set to "preferred", the M-NG-RAN node may keep the current UP integrity protection and ciphering policy.

8.3.3.3 Unsuccessful Operation

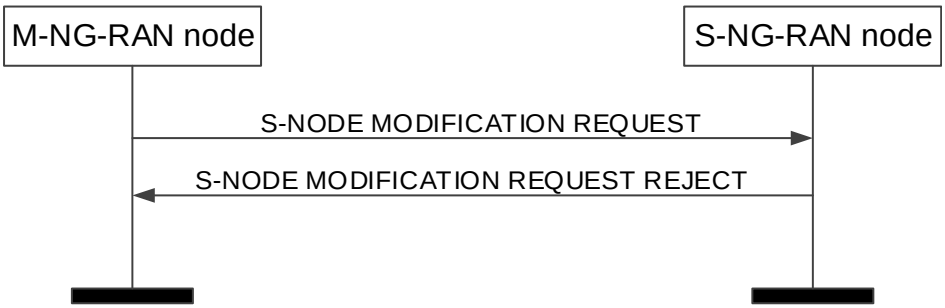

Figure 8.3.3.3-1: M-NG-RAN node initiated S-NG-RAN node Modification Preparation, unsuccessful operation

If the S-NG-RAN node does not admit any modification requested by the M-NG-RAN node, or a failure occurs during the M-NG-RAN node initiated S-NG-RAN node Modification Preparation, the S-NG-RAN node shall send the S-NODE MODIFICATION REQUEST REJECT message to the M-NG-RAN node. The message shall contain the *Cause* IE with an appropriate value.

If the S-NG-RAN node receives a S-NODE MODIFICATION REQUEST message containing the *M-NG-RAN node to S-NG-RAN node Container* IE that does not include required information as specified in TS 37.340 [8], the S-NG-RAN node shall send the S-NODE MODIFICATION REQUEST REJECT message to the M-NG-RAN node.

8.3.3.4 Abnormal Conditions

If the S-NG-RAN node receives an S-NODE MODIFICATION REQUEST message including a *PDU Session Resources To Be Added Item* IE, containing neither the *PDU Session Resource Setup Info – SN terminated* IE nor the *PDU Session Resource Setup Info – MN terminated* IE, the S-NG-RAN node shall fail the S-NG-RAN node Modification Preparation procedure indicating an appropriate cause.

If the S-NG-RAN node receives an S-NODE MODIFICATION REQUEST message including a *PDU Session Resources To Be Modified Item* IE, containing neither the *PDU Session Resource Modification Info – SN terminated* IE nor the *PDU Session Resource Modification Info – MN terminated* IE, the S-NG-RAN node shall fail the S-NG-RAN node Modification Preparation procedure indicating an appropriate cause.

If the S-NG-RAN node receives an S-NODE MODIFICATION REQUEST message containing multiple *PDU Session ID* IEs (in the *PDU Session Resources To Be Released List* IE) set to the same value, the S-NG-RAN node shall initiate the release of one corresponding PDU Session and ignore the duplication of the instances of the selected corresponding PDU Sessions.

If the supported algorithms for encryption defined in the *NR Encryption Algorithms* IE in the *NR UE Security Capabilities* IE in the *UE Context Information* IE, plus the mandated support of NEA0 in all UEs (TS 33.501 [28]), do not match any algorithms defined in the configured list of allowed encryption algorithms in the S-NG-RAN node (TS 33.501 [28]), the S-NG-RAN node shall reject the procedure using the S-NODE MODIFICATION REQUEST REJECT message.

If the supported algorithms for integrity defined in the *NR Integrity Protection Algorithms* IE in the *NR UE Security Capabilities* IE in the *UE Context Information* IE do not match any algorithms defined in the configured list of allowed integrity protection algorithms in the S-NG-RAN node (TS 33.501 [28]), the S-NG-RAN node shall reject the procedure using the S-NODE MODIFICATION REQUEST REJECT message.

If the timer TXn_{DCprep} expires before the M-NG-RAN node has received the S-NODE MODIFICATION REQUEST ACKNOWLEDGE message, the M-NG-RAN node shall regard the M-NG-RAN node initiated S-NG-RAN node Modification Preparation procedure as being failed and shall release the UE Context at the S-NG-RAN node.

If the *Lower Layer presence status change* IE set to "re-establish lower layers" is included in the S-NODE MODIFICATION REQUEST message and was not set to "release lower layers" before, the S-NG-RAN node shall ignore the IE.

If the S-NG-RAN node receives an S-NODE MODIFICATION REQUEST message containing, for a PDU session, a *PDU Session Resource Setup Info – SN terminated* IE for which the *Split Session Indicator* IE is included and set to "split", the *Security Result* IE is not included, and either the *Integrity Protection Indication* IE or the *Confidentiality Protection Indication* IE is set to "preferred", it shall reject the PDU session.

Interactions with the S-NG-RAN node Reconfiguration Completion and S-NG-RAN node initiated S-NG-RAN node Release procedure:

If the timer $TXn_{DCoverall}$ expires before the S-NG-RAN node has received the S-NODE RECONFIGURATION COMPLETE or the S-NODE RELEASE REQUEST message, the S-NG-RAN node shall regard the requested modification RRC connection reconfiguration as being not applied by the UE and shall trigger the S-NG-RAN node initiated S-NG-RAN node Release procedure.

Interaction with the S-NG-RAN node initiated S-NG-RAN node Modification Preparation procedure:

If the M-NG-RAN node, after having initiated the M-NG-RAN node initiated S-NG-RAN node Modification procedure, receives the S-NODE MODIFICATION REQUIRED message, the M-NG-RAN node shall refuse the S-NG-RAN node initiated S-NG-RAN node Modification procedure with an appropriate cause value in the *Cause* IE.

If the M-NG-RAN node has a Prepared S-NG-RAN node Modification and receives the S-NODE MODIFICATION REQUIRED message, the M-NG-RAN node shall respond with the S-NODE MODIFICATION REFUSE message to the S-NG-RAN node with an appropriate cause value in the *Cause* IE.

Interaction with the M-NG-RAN node initiated S-NG-RAN node Release procedure:

If the M-NG-RAN node receives an S-NODE MODIFICATION REQUEST ACKNOWLEDGE message including a *PDU Session Resources Admitted To Be Added Item* IE, containing neither the *PDU Session Resource Setup Response Info – SN terminated* IE nor the *PDU Session Resource Setup Response Info – MN terminated* IE, the M-NG-RAN node shall trigger the M-NG-RAN node initiated S-NG-RAN node Release procedure indicating an appropriate cause.

If the M-NG-RAN node receives an S-NODE MODIFICATION REQUEST ACKNOWLEDGE message including a *PDU Session Resources Admitted To Be Modified Item* IE, containing neither the *PDU Session Resource Modification Response Info – SN terminated* IE nor the *PDU Session Resource Modification Response Info – MN terminated* IE, the M-NG-RAN node shall trigger the M-NG-RAN node initiated S-NG-RAN node Release procedure indicating an appropriate cause.

If the timer TXn_{DCprep} expires before the M-NG-RAN node has received the S-NODE MODIFICATION REQUEST ACKNOWLEDGE message, the M-NG-RAN node shall regard the S-NG-RAN node Modification Preparation procedure as being failed and may trigger the M-NG-RAN node initiated S-NG-RAN node Release procedure.

8.3.4 S-NG-RAN node initiated S-NG-RAN node Modification

8.3.4.1 General

This procedure is used by the S-NG-RAN node to modify the UE context in the S-NG-RAN node.

The procedure uses UE-associated signalling.

8.3.4.2 Successful Operation

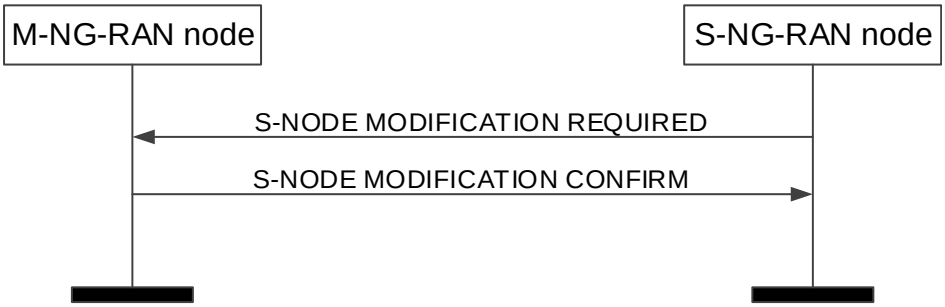

Figure 8.3.4.2-1: S-NG-RAN node initiated S-NG-RAN node Modification, successful operation.

The S-NG-RAN node initiates the procedure by sending the S-NODE MODIFICATION REQUIRED message to the M-NG-RAN node.

When the S-NG-RAN node sends the S-NODE MODIFICATION REQUIRED message, it shall start the timer $TXn_{DCoverall.}$

The S-NODE MODIFICATION REQUIRED message may contain

- the *S-NG-RAN node to M-NG-RAN node Container* IE.
- PDU session resources to be modified within the *PDU Session Resources To Be Modified Item* IE;
- PDU session resources to be released within the *PDU Session Resources To Be Released Item* IE;
- the *PDCP Change Indication* IE;

- the Spare DRB IDs IE;
  - the *Required Number of DRB IDs* IE;
  - the *QoS Flow Mapping Indication* IE;
  - the *MR-DC Resource Coordination Information* IE.

If the M-NG-RAN node receives a S-NODE MODIFICATION REQUIRED message containing the *PDCP Change Indication* IE, the M-NG-RAN node shall act as specified in TS 37.340 [8].

If the S-NODE MODIFICATION REQUIRED message contains the *MR-DC Resource Coordination Information* IE, the M-NG-RAN node may use it for the purpose of resource coordination with the S-NG-RAN node. The M-NG-RAN node shall consider the value of the received *UL Coordination Information* IE valid until reception of a new update of the IE for the same UE. The M-NG-RAN node shall consider the value of the received *DL Coordination Information* IE valid until reception of a new update of the IE for the same UE. If the *E-UTRA Coordination Assistance Information* IE or the *NR Coordination Assistance Information* IE is contained in the *MR-DC Resource Coordination Information* IE, the M-NG-RAN node shall, if supported, use the information to determine further coordination of resource utilisation between the M-NG-RAN node and the S-NG-RAN node.

If the M-NG-RAN node receives an S-NODE MODIFICATION REQUIRED message containing the *Spare DRB IDs* IE, the M-NG-RAN node may take those into consideration to be used for MN-terminated bearers.

If the M-NG-RAN node receives an S-NODE MODIFICATION REQUIRED message containing the *Required Number of DRB IDs* IE, the M-NG-RAN node shall provide new DRB IDs to be used by the S-NG-RAN node for SN-terminated bearers , if such DRB IDs are available, in the *Additional DRB IDs* IE included in the S-NODE MODIFICATION CONFIRM message.

If the M-NG-RAN node is able to perform the modifications requested by the S-NG-RAN node, the M-NG-RAN node shall send the S-NODE MODIFICATION CONFIRM message to the S-NG-RAN node. The S-NODE MODIFICATION CONFIRM message may contain the *M-NG-RAN node to S-NG-RAN node Container* IE.

If the *PDCP Duplication Configuration* IE in the *PDU Session Resource Modification Required Info – SN terminated* IE is contained in the S-NODE MODIFICATION REQUIRED message and set to "configured", the M-NG-RAN node

shall, if supported, add the RLC entity of secondary path and the RLC entity of all additional path(s) for the indicated DRB. And if the S-NODE MODIFICATION REQUIRED message contains the *Duplication Activation* IE, the M-NG-RAN node shall, if supported, store this information and use it for the purpose of PDCP duplication.

If the S-NODE MODIFICATION REQUIRED message contains the *RLC Duplication Information* IE, the S-NG-RAN node shall, if supported, store this information and use it for the purpose of PDCP duplication for the indicated DRB with more than two RLC entities.

If the *PDCP Duplication Configuration* IE in the *PDU Session Resource Modification Required Info – SN terminated* IE is contained in the S-NODE MODIFICATION REQUIRED message and set to "de-configured", the M-NG-RAN node shall, if supported, delete the RLC entity of secondary path and the RLC entity of all additional path(s) for the indicated DRB.

The S-NG-RAN node may include for each DRB in the *DRBs To Be Modified List* IE in the S-NODE MODIFICATION REQUIRED message the *RLC Status* IE to indicate that RLC has been reestablished at the S-NG-RAN node and the M-NG-RAN node may trigger PDCP data recovery.

If the S-NODE MODIFICATION REQUIRED message contains the *QoS flows To Be Released List* within the *PDU Session Resource Modification Info – SN terminated* IE, the S-NG-RAN node may also propose to apply forwarding of UL data for which in-order delivery is requested by including the *UL Forwarding Proposal* IE in the *Data Forwarding and Offloading Info from source NG-RAN node* IE within the *PDU Session Resource Modification Required Info – SN terminated* IE of the S-NODE MODIFICATION REQUIRED message. The M-NG-RAN node may include the *PDU Session level UL data Forwarding UP TNL Information* IE in the *Data Forwarding Info from target NG-RAN node* IE within the *PDU Session Resource Modification Confirm Info – SN terminated* IE of the S-NODE MODIFICATION CONFIRM message to indicate that it accepts the proposed forwarding.

Upon reception of the S-NODE MODIFICATION CONFIRM message the S-NG-RAN node shall stop the timer $TXn_{DCoverall}$.

If the S-NODE MODIFICATION CONFIRM message contains the *MR-DC Resource Coordination Information* IE, the S-NG-RAN node should forward it to lower layers and it may use it for the purpose of resource coordination with the M-NG-RAN node, or to coordinate with sidelink resources used in the M-NG-RAN node. The S-NG-RAN node shall consider the value of the received *UL Coordination Information* IE valid until reception of a new update of the IE for the same UE. The S-NG-RAN node shall consider the value of the received *DL Coordination Information* IE valid until reception of a new update of the IE for the same UE. If the *E-UTRA Coordination Assistance Information* IE or the *NR Coordination Assistance Information* IE is contained in the *MR-DC Resource Coordination Information* IE, the S-NG-RAN node shall, if supported, use the information to determine further coordination of resource utilisation between the S-NG-RAN node and the M-NG-RAN node.

If the S-NODE MODIFICATION REQUIRED message contains a PDU session resource to be released which is configured with the SCG bearer option within the *PDU sessions to be released List – SN terminated* IE, the S-NG-RAN node shall include the *RLC Mode* IE within the *DRBs To Be Released List* IE in the *PDU Session to be released List – SN terminated* IE in the S-NODE MODIFICATION REQUIRED message. The *RLC Mode* IE indicates the RLC mode used in the S-NG-RAN node for the DRB.

If the *Location Information at S-NODE* IE is included in the S-NODE MODIFICATION REQUIRED, the M-NG-RAN node shall store the included information so that it may be transferred towards the AMF.

If the *QoS Flows Mapped To DRB List* IE is included in the S-NODE MODIFICATION REQUIRED message for a DRB to be modified, the M-NG-RAN node shall replace any existing QoS flow mapping for that DRB with the one received.

If the S-NG-RAN node applied a full configuration or delta configuration, e.g., as part of mobility procedure involving a change of DU, the S-NG-RAN node shall inform the M-NG-RAN node by including the *RRC config indication* IE in the S-NODE MODIFICATION REQUIRED message.

If the S-NODE MODIFICATION CONFIRM message includes the *DRB IDs taken into use* IE, the S-NG-RAN node shall, if applicable, act as specified in TS 37.340 [8]

If the *SCG Indicator* IE is contained in the S-NODE MODIFICATION REQUIRED message and it is set to "released", the M-NG-RAN node shall, if supported, deduce that the SCG is removed.

For each DRB configured as MN-terminated split bearer/SCG bearer, if the *QoS Mapping Information* IE is included in the *DRBs To Be Modified List* IE in the *PDU Session Resource Modification Required Info – MN terminated* IE of the

S-NODE MODIFICATION REQUIRED message, the M-NG-RAN node shall, if supported, use it to set DSCP and/or IPv6 flow label fields for the downlink IP packets which are transmitted from M-NG-RAN node to S-NG-RAN node through the GTP tunnels indicated by the *UP Transport Layer Information* IE.

For each DRB configured as SN-terminated split bearer/MCG bearer, if the *QoS Mapping Information* IE is included in the *DRBs Admitted to be Setup or Modified List* IE in the *PDU Session Resource Modification Confirm Info – SN terminated* IE of the S-NODE MODIFICATION CONFIRM message, the S-NG-RAN node shall, if supported, use it to set DSCP and/or IPv6 flow label fields for the downlink IP packets which are transmitted from S-NG-RAN node to M-NG-RAN node through the GTP tunnels indicated by the *UP Transport Layer Information* IE.

If the S-NG-RAN node receives in the S-NODE MODIFICATION CONFIRM message within the *PDU Session Resource Modification Confirm Info – SN terminated* IE a *DRBs Admitted to be Setup or Modified Item* IE with DRB ID(s) that it has not requested to be setup or modified, the S-NG-RAN node shall ignore the contained information.

If the S-NODE MODIFICATION REQUIRED message includes the *SCG UE History Information* IE, the M-NG-RAN node shall, if supported, use the information to update UE History Information with PSCell history.

If the *SCG Activation Request* IE is included in the S-NODE MODIFICATION REQUIRED message, the M-NG-RAN node shall consider that the S-NG-RAN node is about to reconfigure the SCG resources as specified in TS 37.340 [8].

If the *CPAC Information Required* IE is included in the S-NODE MODIFICATION REQUIRED message, the M-NG-RAN node shall, if supported, consider that the request provides the configuration update for the list of PSCells prepared at the candidate SN, as described in TS 37.340 [8].

If the S-NG-RAN node applied a complete candidate configuration for a specific PSCell, e.g., as part of modification of S-CPAC, the S-NG-RAN node shall inform the M-NG-RAN node by including the *S-CPAC Complete Candidate Configuration Indicator* IE in the *Candidate PSCell with Other Information Item* IE in the *CPAC Information Required* IE in the S-NODE MODIFICATION REQUIRED message.

If the *CG-CandidateList* is included in the *S-NG-RAN node to M-NG-RAN node Container* IE in the S-NODE MODIFICATION REQUIRED message, the M-NG-RAN node shall, if supported, use it for the purpose of CPAC or S-CPAC.

If the *S-CPAC Request* IE set to "initiation" is included in the S-NODE MODIFICATION REQUIRED message, the M-NG-RAN node shall, if supported, consider that the procedure is triggered for intra-SN S-CPAC preparation in MN RRC format, as described in TS 37.340 [8].

If the *SCG Reconfiguration Notification* IE is included in the S-NODE MODIFICATION REQUIRED message the M-NG-RAN node shall, if supported, consider the request is sent to coordinate CHO or MN-initiated CPC with SCG reconfigurations:

- If the *SCG Reconfiguration Notification* IE is set to "executed", the M-NG-RAN node shall, if supported, consider that a reconfiguration of the SCG resources using SRB3 has been executed. If the *S-NG-RAN node to M-NG-RAN node Container* IE is also included in the S-NODE MODIFICATION REQUIRED message, the M-NG-RAN node shall, if supported, consider that the received SCG configuration has already been applied in the UE and should not be forwarded to the UE.

- If the *SCG Reconfiguration Notification* IE is set to "executed-deleted", the M-NG-RAN node shall, if supported, consider that a reconfiguration with sync of the SCG resources has been executed and earlier CHO or MN-initiated CPC configuration has been deleted in the UE. If the *S-NG-RAN node to M-NG-RAN node Container* IE is also included in the S-NODE MODIFICATION REQUIRED message, the M-NG-RAN node shall, if supported, consider that the received SCG configuration has already been applied in the UE and should not be forwarded to the UE.

- If the *SCG Reconfiguration Notification* IE is set to "deleted", the M-NG-RAN node shall, if supported, consider that an earlier CHO or MN-initiated CPC configuration will be deleted in the UE when the SCG configuration provided in the *S-NG-RAN node to M-NG-RAN node Container* IE is delivered to the UE and executed.

If the *SPR availability in UE* IE set to "spr-available" is included in the S-NODE MODIFICATION REQUIRED message, the M-NG-RAN node may consider that the UE has generated an SPR for a PSCell change, and may retrieve the SPR from the UE.

If the *QMC Coordination Request* IE is contained in the S-NODE MODIFICATION REQUIRED message, the M-NG-RAN node may use it to determine how to configure the management-based QoE measurements and reporting, as

specified in TS 37.340 [8], and shall, if supported, include the *QMC Coordination Response* IE in the S-NODE MODIFICATION CONFIRM message.

If the S-NODE MODIFICATION REQUIRED message contains the *User Plane Error Indicator* IE within the *PDU Sessions List To be Released - UPError* IE set to "GTP-U Error Indication Received", the M-NG-RAN node shall, if supported, consider that the PDU session is released due to GTP-U Error Indication received over the NG-U tunnel, and inform the SMF as specified in 3GPP TS 23.527 [57].

If the *ECN Marking or Congestion Information Reporting Status* IE is included in the *PDU Session Resource Modification Required Info – MN terminated* IE contained in the S-NODE MODIFICATION REQUIRED message, the M-NG-RAN node shall, if supported, use it to deduce if ECN marking or congestion information reporting is active or not active.

If the *ECN Marking or Congestion Information Reporting Status* IE is included in the *PDU Session Resource Modification Required Info – SN terminated* IE contained in the S-NODE MODIFICATION REQUIRED message, the M-NG-RAN node shall, if supported, use it to deduce if ECN marking or congestion information reporting is active or not active.

For each DRB configured as SN-terminated split bearer/MCG bearer, if the *PSI based SDU Discard UL* IE is included in the *PDU Session Resource Modification Required Info – SN terminated* IE contained in the S-NODE MODIFICATION REQUIRED message, the M-NG-RAN node shall, if supported, use it accordingly for the specific DRB.

For each DRB configured as SN-terminated split bearer/MCG bearer, if the *PSI based SDU Discard DL* IE is included in the *PDU Session Resource Modification Required Info – SN terminated* IE contained in the S-NODE MODIFICATION REQUIRED message, the M-NG-RAN node shall, if supported, use it accordingly for the specific DRB.

If the *LTM Candidate PSCell To be Cancelled List* IE is contained in the *LTM Candidate PSCell Information Update Required* IE included in the S-NODE MODIFICATION REQUIRED message, the M-NG-RAN node shall, if supported, consider that the request concerns the cancellation of LTM candidate PSCell(s) indicated, and may provide the updated information for SCG LTM in the *LTM Candidate PSCell Information Update Confirm* IE of the S-NODE MODIFICATION CONFIRM message.

Interaction with the M-NG-RAN node initiated S-NG-RAN node Modification Preparation procedure:

If applicable, as specified in TS 37.340 [8], the S-NG-RAN node may receive, after having initiated the S-NG-RAN node initiated S-NG-RAN node Modification procedure, the S-NODE MODIFICATION REQUEST message including the *measGapConfig* contained in the *CG-ConfigInfo* message as defined in TS 38.331 [10] within the *M-NG-RAN node to S-NG-RAN node Container* IE.

If applicable, the S-NG-RAN node may receive, after having initiated the S-NG-RAN node initiated S-NG-RAN node Modification procedure, the S-NODE MODIFICATION REQUEST message including the *SN triggered* IE.

8.3.4.3 Unsuccessful Operation

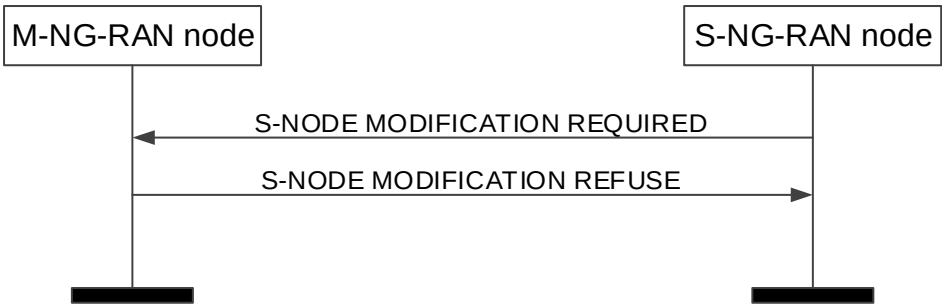

Figure 8.3.4.3-1: S-NG-RAN node initiated S-NG-RAN node Modification, unsuccessful operation.

In case the requested modification cannot be performed successfully the M-NG-RAN node shall respond with the S-NODE MODIFICATION REFUSE message to the S-NG-RAN node with an appropriate cause value in the *Cause* IE.

In case that the *Required Number of DRB IDs* IE was included in the S-NODE MODIFICATION REQUIRED message and if the M-NG-RAN node is not able to provide additional DRB IDs, the M-NG-RAN node shall respond with the S-NODE MODIFICATION REFUSE with an appropriate cause value in the Cause IE.

The M-NG-RAN node may also provide configuration information in the *M-NG-RAN node to S-NG-RAN node Container* IE.

8.3.4.4 Abnormal Conditions

If the M-NG-RAN node receives an S-NODE MODIFICATION REQUIRED message including a *PDU Session Resources To Be Modified Item* IE, containing neither the *PDU Session Resource Modification Required Info – SN terminated* IE nor the *PDU Session Resource Modification Required Info – MN terminated* IE, the M-NG-RAN node shall fail the S-NG-RAN node initiated S-NG-RAN node Modification procedure indicating an appropriate cause.

If the timer $TXn_{DCoverall}$ expires before the S-NG-RAN node has received the S-NODE MODIFICATION CONFIRM or the S-NODE MODIFICATION REFUSE message, the S-NG-RAN node shall regard the requested modification as failed and may take further actions like triggering the S-NG-RAN node initiated S-NG-RAN node Release procedure to release all S-NG-RAN node resources allocated for the UE.

If the value received in the *PDU Session ID* IE of any of the *PDU Sessions Resources To Be Released Items* IE is not known at the M-NG-RAN node, the M-NG-RAN node shall regard the procedure as failed and may take appropriate actions like triggering the M-NG-RAN node initiated S-NG-RAN node Release procedure.

Interaction with the S-NG-RAN node initiated S-NG-RAN node Release procedure:

If the S-NG-RAN node receives an S-NODE MODIFICATION CONFIRM message including a *PDU Session Resources Admitted To Be Modified Item* IE, containing neither the *PDU Session Resource Modification Confirm Info – SN terminated* IE nor the *PDU Session Resource Modification Confirm Info – MN terminated* IE, the S-NG-RAN node shall trigger the S-NG-RAN node initiated S-NG-RAN node Release procedure indicating an appropriate cause.

Interaction with the M-NG-RAN node initiated S-NG-RAN node Modification Preparation procedure:

If the S-NG-RAN node, after having initiated the S-NG-RAN node initiated S-NG-RAN node Modification procedure, receives the S-NODE MODIFICATION REQUEST message including other IEs than an applicable *S-NG-RAN node Security Key* IE and/or LCID applicable for PDCP duplication and/or the *SN triggered* IE set to "TRUE", the S-NG-RAN node shall

- regard the S-NG-RAN node initiated S-NG-RAN node Modification Procedure as being failed;
- stop the $TXn_{DCoverall}$, which was started to supervise the S-NG-RAN node initiated S-NG-RAN node Modification procedure;
- be prepared to receive the S-NODE MODIFICATION REFUSE message from the M-NG-RAN node and;
- continue with the M-NG-RAN node initiated S-NG-RAN node Modification Preparation procedure as specified in section 8.3.

Interaction with the M-NG-RAN node initiated handover procedure:

If the M-NG-RAN node, after having initiated the handover procedure, receives the S-NODE MODIFICATION REQUIRED message, the M-NG-RAN node shall refuse the S-NG-RAN node modification procedure with an appropriate cause value in the *Cause* IE.

8.3.5 S-NG-RAN node initiated S-NG-RAN node Change

8.3.5.1 General

This procedure is used by the S-NG-RAN node to trigger the change of the S-NG-RAN node.

The procedure uses UE-associated signalling.

8.3.5.2 Successful Operation

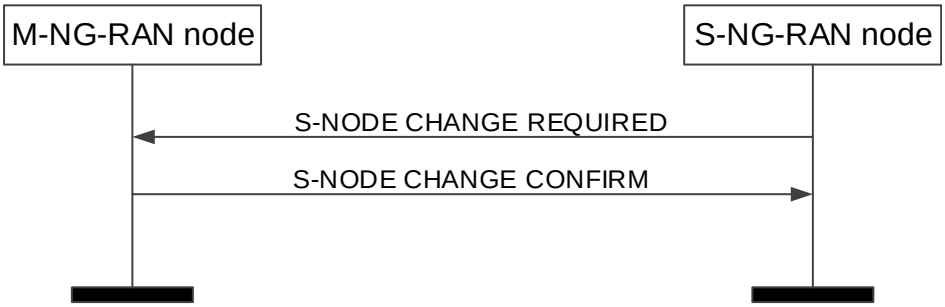

Figure 8.3.5.2-1: S-NG-RAN node initiated S-NG-RAN node Change, successful operation.

The S-NG-RAN node initiates the procedure by sending the S-NODE CHANGE REQUIRED message to the M-NG-RAN node including the *Target S-NG-RAN node ID* IE. When the S-NG-RAN node sends the S-NODE CHANGE REQUIRED message, it shall start the timer $TXn_{DCoverall}$.

The S-NODE CHANGE REQUIRED message may contain

- the *S-NG-RAN node to M-NG-RAN node Container* IE.

If the M-NG-RAN node is able to perform the change requested by the S-NG-RAN node, the M-NG-RAN node shall send the S-NODE CHANGE CONFIRM message to the S-NG-RAN node. For DRBs configured with the PDCP entity in the S-NG-RAN node, the M-NG-RAN node may include data forwarding related information in the *Data Forwarding Info from target NG-RAN node* IE.

If the S-NODE CHANGE CONFIRM message includes the *DRB IDs taken into use* IE, the S-NG-RAN node shall, if applicable, act as specified in TS 37.340 [8].

The S-NG-RAN node may start data forwarding and stop providing user data to the UE and shall stop the timer $TXn_{DCoverall}$ upon reception of the S-NODE CHANGE CONFIRM message.

If the S-NODE CHANGE REQUIRED message includes the *SCG UE History Information* IE, the M-NG-RAN node shall, if supported, use the information to update UE History Information with PSCell history.

If the S-NODE CHANGE REQUIRED message includes the *SN Mobility Information* IE, the M-NG-RAN node shall, if supported, store this information and use it as defined in TS 37.340 [8].

If the S-NODE CHANGE REQUIRED message includes the *Source PSCell ID* IE, the M-NG-RAN node shall, if supported, store the information and act as specified in TS 38.300 [9].

The M-NG-RAN node may also provide configuration information in the *M-NG-RAN node to S-NG-RAN node Container* IE.

If the *Conditional PSCell Change Information Required* IE is included in the S-NODE CHANGE REQUIRED message, the M-NG-RAN node shall, if supported, consider that the requirement concerns CPAC, as described in TS 37.340 [8]. If *the S-CPAC Request* IE set to "initiation" is also contained in the *Conditional PSCell Change Information Required* IE included in the S-NODE CHANGE REQUIRED message, the M-NG-RAN node shall, if supported, consider that the procedure is triggered for S-CPAC preparation, as described in TS 37.340 [8]. The *S-NG-RAN node to M-NG-RAN node Container* IE within the *Conditional PSCell Change Information Required* IE contains at least the suggested PSCell list for each candidate target S-NG-RAN node. Accordingly, the M-NG-RAN node may include the *Conditional PSCell Change Information Confirm* IE in the S-NODE CHANGE CONFIRM message. If the *CPAC Preparation Type* IE is included in the *Conditional PSCell Change Information Confirm* IE for a candidate target S-NG-RAN node, the S-NG-RAN node shall, if supported, consider that the candidate target S-NG-RAN node accepted the S-CPAC request and that the S-NG-RAN node may remain prepared for S-CPAC after PSCell change execution to that candidate target S-NG-RAN node, as described in TS 37.340 [8].

If the *Estimated Arrival Probability* IE is contained in the *Conditional PSCell Change Information Required* IE included in the S-NODE CHANGE REQUIRED message, the M-NG-RAN node shall, if supported, forward this information to the candidate target S-NG-RAN node, then the candidate target S-NG-RAN node may use the information to allocate necessary resources for the incoming CPAC or S-CPAC procedure.

If the *Multiple Target S-NG-RAN Node List* IE is included in the S-NODE CHANGE REQUIRED message, if multiple Target S-NG-RAN nodes are prepared, the M-NG-RAN node may include the *Additional List of PDU Session Resource Change Confirm Info – SN Terminated* IE in the S-NODE CHANGE CONFIRM message to provide different data forwarding addresses for different Target S-NG-RAN nodes.

If the *Source SN to Target SN QMC Information* IE is contained in the S-NODE CHANGE REQUIRED message, the M-NG-RAN node shall, if supported, use it for QoE measurements handling, as specified in TS 37.340 [8].

If the *LTM Candidate PSCell Change Information Required* IE is included in the S-NODE CHANGE REQUIRED message, the M-NG-RAN node shall, if supported, consider that the request concerns inter-SN SCG LTM as described in TS 37.340 [8].

If the *Multiple S-NG-RAN Node List* IE in the S-NODE CHANGE REQUIRED message includes multiple candidate S-NG-RAN nodes that are prepared for inter-SN SCG LTM, the M-NG-RAN node may include the *Additional List of PDU Session Resource Change Confirm Info – SN Terminated* IE in the S-NODE CHANGE CONFIRM message to provide different data forwarding addresses for different candidate S-NG-RAN nodes.

If the *LTM Configuration ID Mapping List* IE is contained in the *LTM Candidate PSCell Change Information Required* IE included in the S-NODE CHANGE REQUIRED message, the M-NG-RAN node shall, if supported, consider this as the mapping information for the suggested LTM candidate PSCell(s).

If the *CSI Resource Configuration* IE is contained in the *LTM Candidate PSCell Change Information Required* IE included in the S-NODE CHANGE REQUIRED message, the M-NG-RAN node shall, if supported, consider this as the CSI resource information for inter-SN SCG LTM and use it for preparing the LTM CSI reporting configuration with other candidate S-NG-RAN node(s) as described in TS 37.340 [8].

If the *LTM SCG Security Configuration* IE is contained in the *LTM Candidate PSCell Change Information Confirm* IE included in the S-NODE CHANGE CONFIRM message, the S-NG-RAN node shall, if supported, use this information to apply security during SCG LTM.

Interaction with M-NG-RAN node initiated S-NG-RAN node Release:

If the M-NG-RAN node receives the S-NODE CHANGE REQUIRED message indicating releasing target S-NG-RAN node(s) and cancelling all prepared PSCells in the target S-NG-RAN node(s), the M-NG-RAN shall, if supported, trigger the M-NG-RAN node initiated S-NG-RAN node release procedure to the target S-NG-RAN node(s) and cancel all the prepared PSCells at the target S-NG-RAN node(s).

8.3.5.3 Unsuccessful Operation

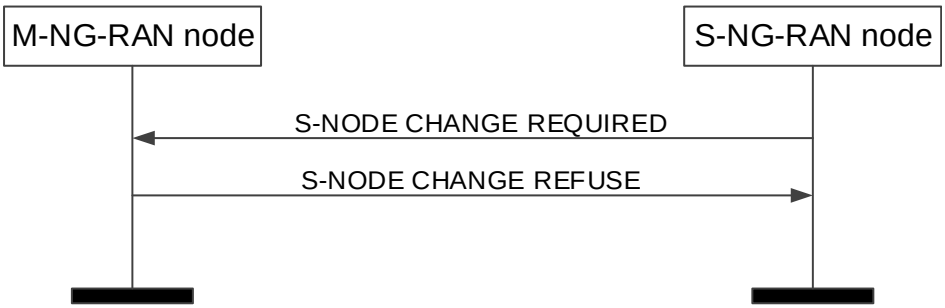

Figure 8.3.5.3-1: S-NG-RAN node initiated S-NG-RAN node Change, unsuccessful operation.

In case the request modification cannot accept the request to change the S-NG-RAN node the M-NG-RAN node shall respond with the S-NODE CHANGE REFUSE message to the S-NG-RAN node with an appropriate cause value in the *Cause* IE.

8.3.5.4 Abnormal Conditions

If the timer $TXn_{DCoverall}$ expires before the S-NG-RAN node has received the S-NODE CHANGE CONFIRM or the S-NODE CHANGE REFUSE message, the S-NG-RAN node shall regard the requested change as failed and may take further actions like triggering the S-NG-RAN node initiated S-NG-RAN node Release procedure to release all S-NG-RAN node resources allocated for the UE.

If the M-NG-RAN node receives an S-NODE CHANGE REQUIRED message including a *PDU Session SN Change Required Item* IE, not containing the *PDU Session Resource Change Required Info – SN terminated* IE, the M-NG-RAN node shall fail the S-NG-RAN node initiated S-NG-RAN node Change procedure indicating an appropriate cause.

Interaction with the M-NG-RAN node initiated Handover Preparation procedure:

If the M-NG-RAN node, after having initiated the Handover Preparation procedure, receives the S-NODE CHANGE REQUIRED message, the M-NG-RAN node shall refuse the S-NG-RAN node initiated S-NG-RAN node Change procedure with an appropriate cause value in the *Cause* IE.

Interaction with the S-NG-RAN node initiated S-NG-RAN node Release procedure:

If the S-NG-RAN node receives an S-NODE CHANGE CONFIRM message including a *PDU Session SN Change Confirm Item* IE, not containing the *PDU Session Resource Change Confirm Info – SN terminated* IE, the S-NG-RAN node shall trigger the S-NG-RAN node initiated S-NG-RAN node Release procedure indicating an appropriate cause.

8.3.6 M-NG-RAN node initiated S-NG-RAN node Release

8.3.6.1 General

The M-NG-RAN node initiated S-NG-RAN node Release procedure is triggered by the M-NG-RAN node to initiate the release of the resources for a specific UE.

The procedure uses UE-associated signalling.

8.3.6.2 Successful Operation

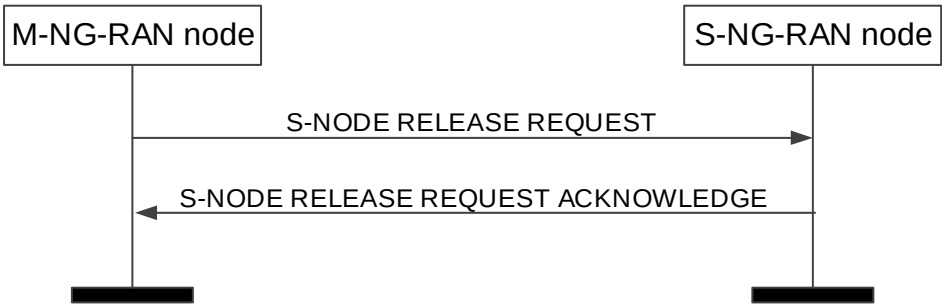

Figure 8.3.6.2-1: M-NG-RAN node initiated S-NG-RAN node Release, successful operation

The M-NG-RAN node initiates the procedure by sending the S-NODE RELEASE REQUEST message. Upon reception of the S-NODE RELEASE REQUEST message the S-NG-RAN node shall stop providing user data to the UE.

The *S-NG-RAN node UE XnAP ID* IE shall be included if it has been obtained from the S-NG-RAN node. The M-NG-RAN node shall provide appropriate information within the *Cause* IE. The M-NG-RAN node may also provide appropriate information per PDU session resource within the *Cause* IE of the *PDU Session Resources To Be Released List* IE.

Upon reception of the S-NODE RELEASE REQUEST message containing *UE Context Kept Indicator* IE set to "True", the S-NG-RAN node shall, if supported, only initiate the release of the resources related to the UE-associated signalling connection between the M-NG-RAN node and the S-NG-RAN node.

If the S-NG-RAN node confirms the request to release S-NG-RAN node resources, it shall send the S-NODE RELEASE REQUEST ACKNOWLEDGE message to the M-NG-RAN node.

If the S-NODE RELEASE REQUEST message contains a PDU session resource to be released which is configured with the SCG bearer option within the *PDU Session Resources To Be Released List* IE, the S-NG-RAN node shall include the *RLC Mode* IE within the *DRBs To Be Released List* IE in the S-NODE RELEASE REQUEST ACKNOWLEDGE message. The *RLC Mode* IE indicates the RLC mode used in the S-NG-RAN node for the DRB.

If the S-NODE RELEASE REQUEST message contains the *SCG UE History Information* IE, the S-NG-RAN node may use it to optimise the S-CPAC configuration.

If the S-NODE RELEASE REQUEST ACKNOWLEDGE message includes the *SCG UE History Information* IE, the M-NG-RAN node shall, if supported, use the information to update UE History Information with PSCell history.

If the S-NODE RELEASE REQUEST ACKNOWLEDGE message includes the *SN Mobility Information* IE, the M-NG-RAN node shall, if supported, store this information and use it as defined in TS 37.340 [8].

Interaction with the Xn-U Address Indication procedure

If the S-NG-RAN node provides data forwarding related information in the S-NODE RELEASE REQUEST ACKNOWLEDGE message for QoS flows mapped to DRBs configured with an SN terminated bearer option in the *PDU Sessions To Be Released List - SN terminated* IE, the M-NG-RAN node may decide to provide data forwarding addresses to the S-NG-RAN node and trigger the Xn-U Address Indication procedure as specified in TS 37.340 [8].

If the S-NODE RELEASE REQUEST message concerns a UE for which a Conditional PSCell Change has been triggered, the S-NG-RAN node shall, if supported, consider that the triggered Conditional PSCell Change has been executed, and M-NG-RAN node triggers the Xn-U Address Indication procedure as specified in TS 37.340 [8].

Interaction with the SN Status Transfer procedure

If the *UE Context Kept Indicator* IE set to "True" and the *DRBs transferred to MN* IE are included in the S-NODE RELEASE REQUEST message, the S-NG-RAN node shall, if supported, provide the uplink/downlink PDCP SN and HFN status for the listed DRBs, as specified in TS 37.340 [8].

8.3.6.3 Unsuccessful Operation

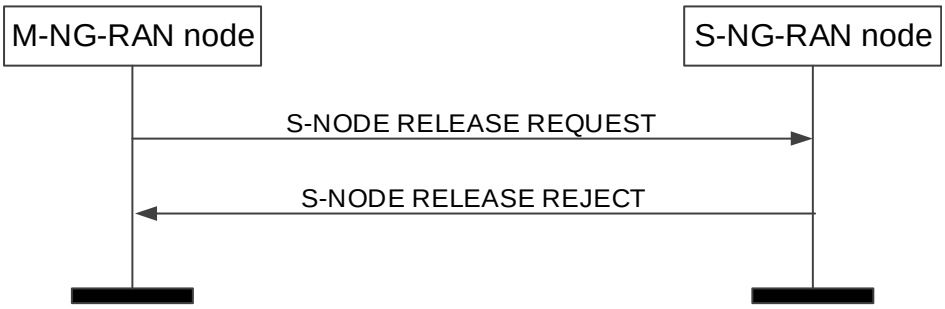

Figure 8.3.6.3-1: M-NG-RAN node initiated S-NG-RAN node Release, unsuccessful operation

If the S-NG-RAN node cannot confirm the request to release S-NG-RAN node resources, it shall send the S-NODE RELEASE REJECT message to the M-NG-RAN node with an appropriate cause indicated in the *Cause* IE.

8.3.6.4 Abnormal Conditions

If the S-NODE RELEASE REQUEST message refer to a context that does not exist, the S-NG-RAN node shall ignore the message.

When the M-NG-RAN node has initiated the procedure and did not include the *S-NG-RAN node UE XnAP ID* IE the M-NG-RAN node shall regard the resources for the UE at the S-NG-RAN node as being fully released.

Interactions with the UE Context Release procedure:

If the M-NG-RAN node does not receive the reply from the S-NG-RAN node before it has to release the EN-DC connection, or it receives S-NODE RELEASE REQUEST REJECT, it may trigger the UE Context Release procedure. If the S-NG-RAN node received the UE CONTEXT RELEASE right after receiving the S-NODE RELEASE REQUEST (and before or after responding to it), the S-NG-RAN node shall consider the related M-NG-RAN node initiated S-NG-RAN node Release procedure as being the resolution of abnormal conditions and release the related UE context immediately.

8.3.7 S-NG-RAN node initiated S-NG-RAN node Release

8.3.7.1 General

This procedure is triggered by the S-NG-RAN node to initiate the release of the resources for a specific UE.

The procedure uses UE-associated signalling.

8.3.7.2 Successful Operation

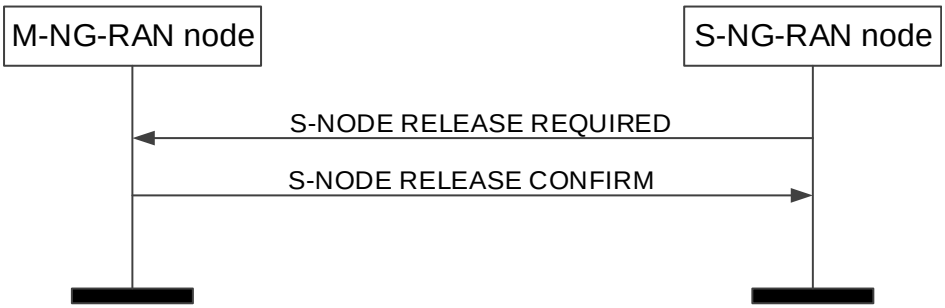

Figure 8.3.7.2-1: S-NG-RAN node initiated S-NG-RAN node Release, successful operation.

The S-NG-RAN node initiates the procedure by sending the S-NODE RELEASE REQUIRED message to the M-NG-RAN node.

Upon reception of the S-NODE RELEASE REQUIRED message, the M-NG-RAN node replies with the S-NODE RELEASE CONFIRM message.

For each SN-terminated PDU session resource, the M-NG-RAN node may include the *DL Forwarding UP Address* IE and the *UL Forwarding UP Address* IE within the *PDU Session Resources To Be Released Item* IE to indicate that it requests data forwarding of uplink and downlink packets to be performed for that bearer.

The S-NG-RAN node may start data forwarding and stop providing user data to the UE upon reception of the S-NODE RELEASE CONFIRM message,

If the S-NODE RELEASE REQUIRED message contains an PDU session resource to be released which is configured with the SCG bearer option within the *PDU sessions to be released List – SN terminated* IE, the S-NG-RAN node shall include the *RLC Mode* IE within the *DRBs To Be Released List* IE in the *PDU Session to be released List – SN terminated* IE in the S-NODE RELEASE REQUIRED message. The *RLC Mode* IE indicates the RLC mode used in the S-NG-RAN node for the DRB.

If the S-NODE RELEASE CONFIRM message includes the *DRB IDs taken into use* IE, the S-NG-RAN node shall, if applicable, act as specified in TS 37.340 [8].

If the *S-NG-RAN node to M-NG-RAN node Container* IE is included in the S-NODE RELEASE REQUIRED message, the M-NG-RAN node may use the contained information to apply delta configuration.

If the S-NODE RELEASE REQUIRED message includes the *SCG UE History Information* IE, the M-NG-RAN node shall, if supported, use the information to update UE History Information with PSCell history.

If the S-NODE RELEASE REQUIRED message contains the *User Plane Error Indicator* IE within the *PDU Sessions List To be Released - UPError* IE set to "GTP-U Error Indication Received", the M-NG-RAN node shall, if supported, consider that the PDU session is released due to GTP-U Error Indication received over the NG-U tunnel, and inform the SMF as specified in 3GPP TS 23.527 [57].

If the S-NODE RELEASE CONFIRM message contains the *SCG UE History Information* IE, the S-NG-RAN node may use it to optimise the S-CPAC configuration.

8.3.7.3 Unsuccessful Operation

Not applicable.

8.3.7.4 Abnormal Conditions

Void.

8.3.8 S-NG-RAN node Counter Check

8.3.8.1 General

This procedure is initiated by the S-NG-RAN node to request the M-NG-RAN node to execute a counter check procedure to verify the value of the PDCP COUNTs associated with SN terminated bearers established in the S-NG-RAN node.

The procedure uses UE-associated signalling.

8.3.8.2 Successful Operation

Figure 8.3.8.2-1: S-NG-RAN node Counter Check procedure, successful operation.

The S-NG-RAN node initiates the procedure by sending the S-NODE COUNTER CHECK REQUEST message to the M-NG-RAN node.

Upon reception of the S-NODE COUNTER CHECK REQUEST message, the M-NG-RAN node may perform the RRC counter check procedure as specified in TS 33.401 [29] and TS 33.501 [28].

8.3.8.3 Unsuccessful Operation

Not applicable.

8.3.8.4 Abnormal Conditions

Void.

8.3.9 RRC Transfer

8.3.9.1 General

The purpose of the RRC Transfer procedure is to deliver a PDCP-C PDU encapsulating an LTE RRC message or NR RRC message to the S-NG-RAN-NODE that it may then be forwarded to the UE, or from the S-NG-RAN-NODE, if it was received from the UE. The delivery status may also be provided from the S-NG-RAN-NODE to the M-NG-RAN-NODE using the RRC Transfer.

The procedure is also used to enable transfer one of the following messages from the M-NG-RAN-NODE to the S-NG-RAN-NODE, when received from the UE:

- the NR RRC message container with the NR measurements;
- the E-UTRA RRC message container with the E-UTRA measurements;
- the NR RRC message container with the NR failure information;

- the NR RRC message container with the *RRCReconfigurationComplete* message;
- the NR RRC message container with the UE assistance information;
- the NR RRC message container with the IAB other information.

In case of RACH based SDT without UE context relocation, this procedure is also used to deliver a PDCP-C PDU encapsulating an NR RRC message between the new NG-RAN node and the old NG-RAN node.

The procedure uses UE-associated signalling.

8.3.9.2 Successful Operation

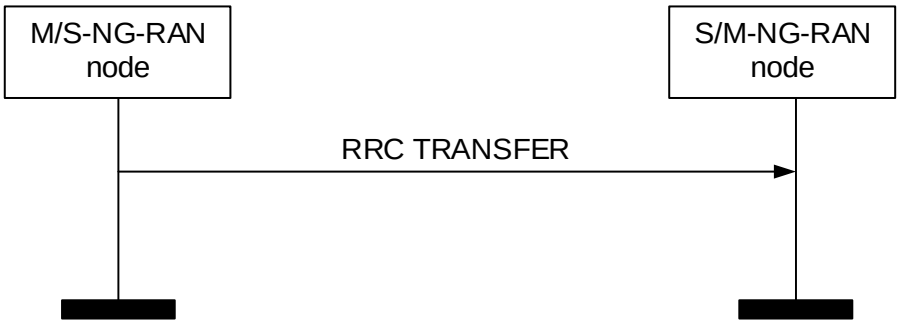

Figure 8.3.9.2-1: RRC Transfer procedure for dual connectivity, successful operation.

Figure 8.3.9.2-2: RRC Transfer procedure for SDT, successful operation.

Dual Connectivity

The M-NG-RAN-NODE initiates the procedure by sending the RRC TRANSFER message to the S-NG-RAN-NODE or the S-NG-RAN-NODE initiates the procedure by sending the RRC TRANSFER message to the M-NG-RAN-NODE.

If the S-NG-RAN-NODE receives an RRC TRANSFER message which does not include the *RRC Container* IE in the *Split SRB* IE, or the *RRC Container* IE in the *UE Report* IE, or the *RRC Container* IE in the *Fast MCG Recovery via SRB3 from MN to SN* IE, or the *RRC Container* IE in the *Fast MCG Recovery via SRB3 from SN to MN* IE, it shall ignore the message. If the S-NG-RAN-NODE receives an RRC TRANSFER message with the *Delivery Status* IE in the *Split SRB* IE, it shall ignore the message. If the S-NG-RAN-NODE receives the *RRC Container* IE in the *Split SRB* IE, it shall deliver the contained PDCP-C PDU encapsulating an RRC message to the UE. If the S-NG-RAN-NODE receives the *RRC Container* IE in the *Fast MCG Recovery via SRB3 from MN to SN* IE, the S-NG-RAN-NODE shall deliver the contained RRC container encapsulating an RRC message to the UE.

If the M-NG-RAN-NODE receives the *Delivery Status* IE in the *Split SRB* IE, the M-NG-RAN-NODE shall consider RRC messages up to the indicated NR PDCP SN as having been successfully delivered to UE by S-NG-RAN-NODE. If the M-NG-RAN-NODE receives the *RRC Container* IE in the *Fast MCG Recovery via SRB3 from SN to MN* IE, the M-NG-RAN-NODE shall consider MCG link failure detected at the UE as specified in TS 37.340 [8].

SDT

The new NG-RAN-NODE initiates the procedure by sending the RRC TRANSFER message to the old NG-RAN-NODE or the old NG-RAN-NODE initiates the procedure by sending the RRC TRANSFER message to the new NG-RAN-NODE.

If the new NG-RAN node receives the *RRC Container* IE in the *SDT SRB between New NG-RAN node and Old NG-RAN node* IE, it shall deliver the contained PDCP-C PDU encapsulating an RRC message to the UE. If the old NG-RAN-NODE receives the *RRC Container* IE in the *SDT SRB between New NG-RAN node and Old NG-RAN node* IE, it shall consider the contained PDCP-C PDU encapsulating an RRC message from the UE.

8.3.9.3 Unsuccessful Operation

Not applicable.

8.3.9.4 Abnormal Conditions

In case of the split SRBs, the receiving node may ignore the message, if the M-NG-RAN-NODE has not indicated possibility of RRC transfer at the bearer setup.

8.3.10 Notification Control Indication

8.3.10.1 General

The purpose of the Notification Control indication procedure is to provide information that for already established GBR QoS flow(s) for which notification control has been requested, the NG-RAN node involved in Dual Connectivity cannot fulfil the GBR QoS anymore or that it can fulfil the GBR QoS again.

The procedure uses UE-associated signalling.

8.3.10.2 Successful Operation – M-NG-RAN node initiated

Figure 8.3.10.2-1: Notification Control Indication procedure, M-NG-RAN node initiated, successful operation.

The M-NG-RAN node initiates the procedure by sending the NOTIFICATION CONTROL INDICATION message to the S-NG-RAN node.

This procedure is triggered to notify the S-NG-RAN node for SN-terminated bearers, that resources requested from the M-NG-RAN node can either not fulfil the GBR QoS anymore or that the GBR QoS can be fulfilled again, as specified in TS 37.340 [8]. For a QoS flow indicated as not fulfilled anymore the M-NG-RAN node may also indicate an alternative QoS parameter set which it can currently fulfil in the *Current QoS Parameters Set Index* IE and behave the same as the NG-RAN node in the PDU Session Resource Notify procedure specified in TS 38.413 [5].

8.3.10.3 Successful Operation – S-NG-RAN node initiated

Figure 8.3.10.3-1: Notification Control Indication procedure, S-NG-RAN node initiated, successful operation.

The S-NG-RAN node initiates the procedure by sending the NOTIFICATION CONTROL INDICATION message to the M-NG-RAN node.

This procedure is triggered to notify the M-NG-RAN node that for MN-terminated bearers resources requested from the S-NG-RAN node can either not fulfil the GBR QoS anymore or that the GBR QoS can be fulfilled again, as specified in TS 37.340 [8]. For a QoS flow indicated as not fulfilled anymore the S-NG-RAN node may also indicate an alternative QoS parameters set which it can currently fulfil in the *Current QoS Parameters Set Index* IE and behave the same as the NG-RAN node in the PDU Session Resource Notify procedure specified in TS 38.413 [5].

This procedure is triggered to notify the M-NG-RAN node that resources requested for SN-terminated bearers can either not fulfil the GBR QoS anymore or that the GBR QoS can be fulfilled again, as specified in TS 37.340 [8]. For a QoS flow indicated as not fulfilled anymore the S-NG-RAN node may also indicate an alternative QoS parameters set which it can currently fulfil in the *Current QoS Parameters Set Index* IE.

8.3.10.4 Abnormal Conditions

Void.

8.3.11 Activity Notification

8.3.11.1 General

The purpose of the Activity Notification procedure is to allow an NG-RAN node to send notification to another NG-RAN node concerning:

- user data traffic activity for the UE, or
- user data traffic activity of already established QoS flows or PDU sessions, or
- RAN Paging failure.

The procedure uses UE-associated signalling.

8.3.11.2 Successful Operation

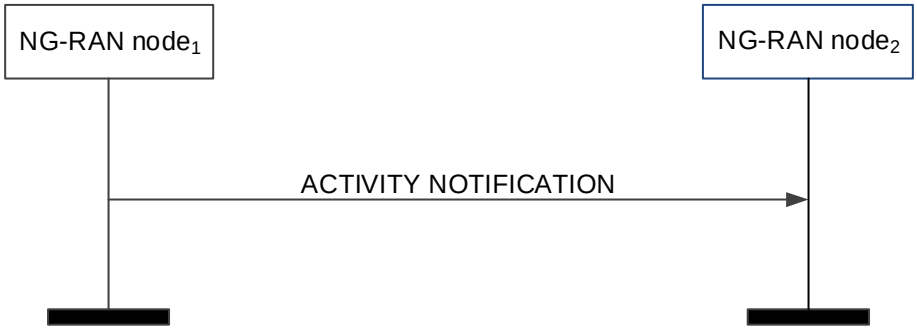

Figure 8.3.11.2-1: Activity Notification, successful operation

NG-RAN node$_1$ initiates the procedure by sending the ACTIVITY NOTIFICATION message to NG-RAN node$_2$.

The ACTIVITY NOTIFICATION message may contain one or more of the below:

- notification for UE context level user plane activity in the *UE Context level user plane activity report* IE.
- notification of user plane activity for the already established PDU sessions within the *PDU Session Resource Activity Notify List* IE.
- notification of user plane activity for the already established QoS flows within the *PDU Session Resource Activity Notify List* IE.
- notification of RAN Paging failure.

If the ACTIVITY NOTIFICATION message contains the *RAN Paging Failure* IE set to "true", NG-RAN node$_2$ shall consider that RAN Paging has failed in NG-RAN node$_1$ for the UE. NG-RAN node$_2$ may discard the user plane data for that UE and consider that the UE context is unchanged.

NOTE: As specified in TS 37.340 [8], in case of user data activity notification, NG-RAN node$_1$ acts as a Secondary Node, while in case of RAN Paging failure indication, NG-RAN node$_1$ acts as a Master Node.

8.3.11.3 Abnormal Conditions

If the *User Plane traffic activity report* IE for a reporting object is reported by NG-RAN node$_1$ as "re-activated" and the reporting object was not reported as "inactive", the report for the concerned reporting object shall be ignored by NG-RAN node$_2$.

8.3.12 E-UTRA - NR Cell Resource Coordination

8.3.12.1 General

The purpose of the E-UTRA - NR Cell Resource Coordination procedure is to enable coordination of radio resource allocation between an ng-eNB and a gNB that are sharing spectrum and whose coverage areas are fully or partially overlapping. During the procedure, the ng-eNB and gNB shall exchange their intended resource allocations for data traffic, and, if possible, converge to a shared resource. The procedure is only to be used for the purpose of E-UTRA – NR spectrum sharing.

The procedure uses non-UE-associated signalling.

8.3.12.2 Successful Operation

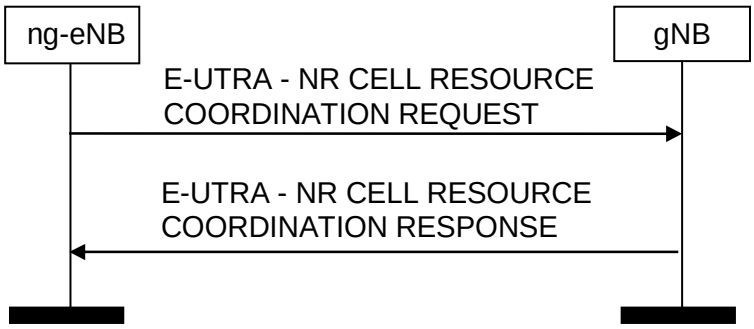

Figure 8.3.12.2-1: ng-eNB-initiated E-UTRA - NR Cell Resource Coordination request, successful operation

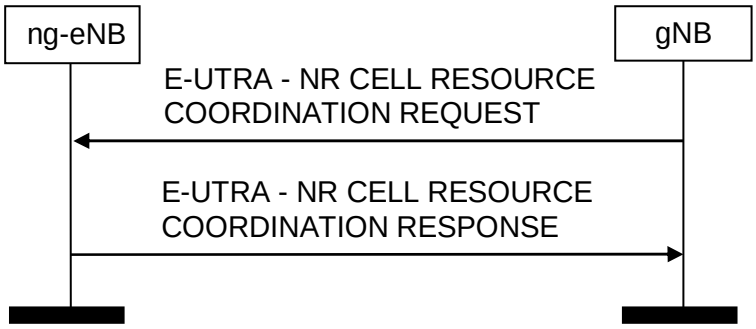

Figure 8.3.12.2-2: gNB-initiated E-UTRA - NR Cell Resource Coordination request, successful operation

If case of network sharing with multiple cell ID broadcast with shared Xn-C signalling transport, as specified in TS 38.300 [9], the E-UTRA - NR CELL RESOURCE COORDINATION REQUEST message and the E-UTRA - NR CELL RESOURCE COORDINATION RESPONSE message shall include the *Interface Instance Indication* IE to identify the corresponding interface instance.

ng-eNB initiated E-UTRA - NR Cell Resource Coordination:

An ng-eNB initiates the procedure by sending the E-UTRA - NR CELL RESOURCE COORDINATION REQUEST message to an gNB over the Xn interface. The gNB extracts the *Data Traffic Resource Indication* IE and it replies by sending the E-UTRA - NR CELL RESOURCE COORDINATION RESPONSE message. The gNB shall calculate the full ng-eNB resource allocation by combining the *Data Traffic Resource Indication* IE and the *Protected E-UTRA Resource Indication* IE that were most recently received from the ng-eNB.

In case of conflict between the most recently received *Data Traffic Resource Indication* IE and the most recently received *Protected E-UTRA Resource Indication* IE, the gNB shall give priority to the *Protected E-UTRA Resource Indication* IE.

gNB initiated E-UTRA - NR Cell Resource Coordination:

An gNB initiates the procedure by sending the E-UTRA - NR CELL RESOURCE COORDINATION REQUEST message to an ng-eNB. The ng-eNB replies with the E-UTRA - NR CELL RESOURCE COORDINATION RESPONSE message.

In case of conflict between the most recently received *Data Traffic Resource Indication* IE and the most recently received *Protected E-UTRA Resource Indication* IE, the gNB shall give priority to the *Protected E-UTRA Resource Indication* IE.

8.3.13 Secondary RAT Data Usage Report

8.3.13.1 General

This procedure is initiated by the S-NG-RAN node to provide information on the used resources of the secondary RAT (e.g. NR resources during MR-DC operation) as specified in TS 23.501 [7].

The procedure uses UE-associated signalling.

8.3.13.2 Successful Operation

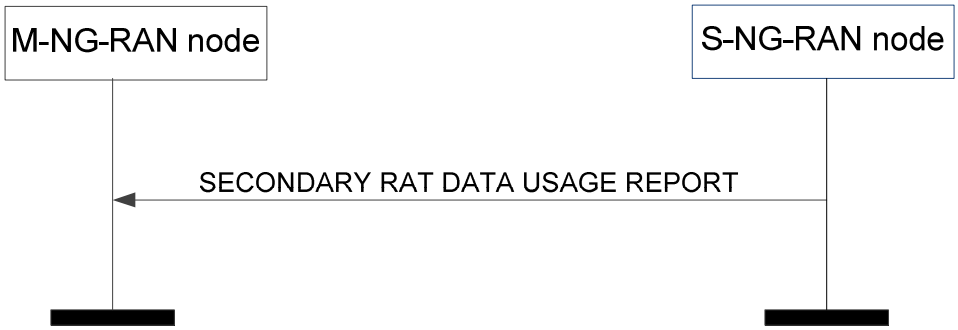

Figure 8.3.13.2-1: Secondary RAT Data Usage Report procedure, successful operation.

The S-NG-RAN node initiates the procedure by sending the SECONDARY RAT DATA USAGE REPORT message to the M-NG-RAN node.

8.3.13.3 Unsuccessful Operation

Not applicable.

8.3.13.4 Abnormal Conditions

Not applicable.

8.3.14 Trace Start

8.3.14.1 General

The purpose of the Trace Start procedure is to allow the M-NG-RAN node to request the S-NG-RAN node to initiate a trace session for a UE. The procedure uses UE-associated signalling.

8.3.14.2 Successful Operation

Figure 8.3.14.2-1: Trace Start, successful operation

The Trace Start procedure is initiated by the M-NG-RAN sending the TRACE START message to the S-NG-RAN for that specific UE. Upon reception of the TRACE START message, the S-NG-RAN node shall initiate the requested trace session as described in TS 32.422 [23].

If the *Trace Activation* IE includes

- the *MDT Activation* IE set to "Immediate MDT and Trace", and if the S-NG-RAN node is a gNB, it shall, if supported, initiate the requested trace session and MDT session as described in TS 32.422[23].

- the *MDT Activation* IE set to "Immediate MDT Only" or "Logged MDT only", and if the S-NG-RAN node is a gNB, it shall, if supported, initiate the requested MDT session as described in TS 32.422[23] and the S-NG-RAN node shall ignore the *Interfaces To Trace* IE and the *Trace Depth* IE.

- the *MDT Location Information* IE, within the *MDT Configuration* IE, and if the S-NG-RAN node is a gNB, it shall, if supported, store this information and take it into account in the requested MDT session.

- the *MDT Activation* IE set to "Immediate MDT Only" or "Logged MDT only", and if the *Signalling based MDT PLMN List* IE is included in the *MDT Configuration* IE, and if the S-NG-RAN node is gNB, it may use it to propagate the MDT Configuration as described in TS 37.320 [43].

NOTE: If the Signalling based MDT PLMN List within the MDT Configuration-EUTRA is not available in the M-NG-RAN node, it includes the current serving PLMN in the *Signalling based MDT PLMN List* IE within the *MDT Configuration-EUTRA* IE.

- the *Bluetooth Measurement Configuration* IE, within the *MDT Configuration* IE, and if the S-NG-RAN node is a gNB, it shall, if supported, take it into account for MDT Configuration as described in TS 37.320 [43].

- the *WLAN Measurement Configuration* IE, within the *MDT Configuration* IE, and if the S-NG-RAN node is a gNB, it shall, if supported, take it into account for MDT Configuration as described in TS 37.320 [43].

- the *Sensor Measurement Configuration* IE, within the *MDT Configuration* IE, the S-NG-RAN node shall take it into account for MDT Configuration as described in TS 37.320 [43].

- the *MDT Configuration* IE, and if the S-NG-RAN Node is a gNB at least *the MDT Configuration-NR* IE shall be present, while if the S-NG-RAN Node is an ng-eNB at least the *MDT Configuration-EUTRA* IE shall be present.

If the *Area Scope* IE is not present in the *MDT Configuration* IE, the S-NG-RAN node shall consider that the MDT Configuration is applied to all PLMNs indicated in the MDT PLMN List, as described in TS 32.422 [23].

If the *PNI-NPN Area Scope of MDT* IE is included in the *MDT Configuration-NR* IE included in the TRACE START message, the S-NG-RAN node shall, if supported, use it to derive the MDT area scope for MDT measurement collection in PNI-NPN. Upon reception of the *PNI-NPN Area Scope of MDT* IE, the S-NG-RAN node shall consider that the area scope for MDT measurement collection of PNI-NPN areas is defined only by the areas included in the *PNI-NPN Area Scope of MDT* IE.

If the *Network Slice Area Scope of MDT* IE is included in the *MDT Configuration-NR* IE included in the TRACE START message, the S-NG-RAN node shall, if supported, use it to derive the MDT area scope for MDT measurement collection. Upon reception of the *Network Slice Area Scope of MDT* IE, the S-NG-RAN node shall consider that the area scope for MDT measurement collection is defined only by the *Network Slice Area Scope of MDT* IE and *Area Scope of MDT* IE.

8.3.14.3 Abnormal Conditions

If the *Trace Activation* IE is not included in the TRACE START message, the S-NG-RAN node shall ignore the message.

If both the *PNI-NPN Area Scope of MDT* IE and the *Area Scope of MDT-NR* IE are included in the *MDT Configuration-NR* IE in the TRACE START message, and the *Area Scope of MDT-NR* IE is set to "PNI-NPN based", the S-NG-RAN node shall, if supported, use the *Area Scope of MDT-NR* IE to derive the MDT area scope for MDT measurement collection in PNI-NPN areas, and ignore the *PNI-NPN Area Scope of MDT* IE.

If the *PNI-NPN Area Scope of MDT* IE is included in the *MDT Configuration-NR* IE in the TRACE START message, and the *Area Scope of MDT-NR* IE is not included, the target NG-RAN node shall ignore the *PNI-NPN Area Scope of MDT* IE, and consider that the MDT Configuration for NR is applied to all PLMNs indicated in the MDT PLMN List described in TS 32.422 [23].

If the *Network Slice Area Scope of MDT* IE is included in the *MDT Configuration-NR* IE in the HANDOVER REQUEST message, and the *MDT Activation* IE is set to "Logged MDT only", the NG-RAN node shall ignore the *Network Slice Area Scope of MDT* IE.

8.3.15 Deactivate Trace

8.3.15.1 General

The purpose of the Deactivate Trace procedure is to allow the M-NG-RAN node to request the S-NG-RAN node to stop the trace session for the indicated trace reference. The procedure uses UE-associated signalling.

8.3.15.2 Successful Operation

Figure 8.3.15.2-1: Deactivate Trace, successful operation

The Deactivate Trace procedure is initiated by the M-NG-RAN by sending the DEACTIVATE TRACE to the S-NG-RAN node for that specific UE. Upon reception of the DEACTIVATE TRACE message, the S-NG-RAN shall stop the trace session for the indicated trace reference in the *NG-RAN Trace ID I*E.

8.3.15.3 Abnormal Conditions

Void.

8.3.16 Cell Traffic Trace

8.3.16.1 General

The purpose of the Cell Traffic Trace procedure is to send the allocated Trace Recording Session Reference and the Trace Reference to the M-NG-RAN node. The procedure uses UE-associated signalling.

8.3.16.2 Successful Operation

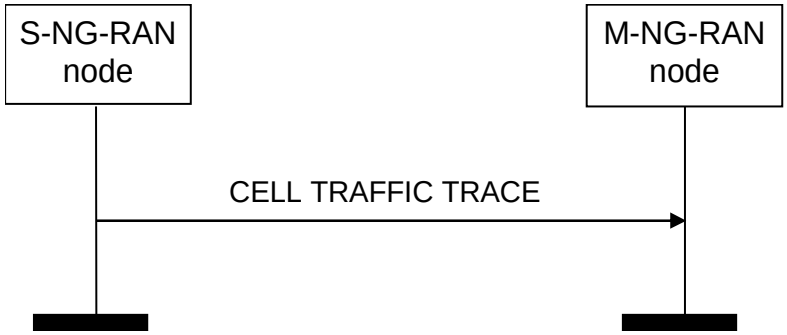

Figure 8.3.16.2-1: Cell Traffic Trace procedure, successful operation

The procedure is initiated with a CELL TRAFFIC TRACE message sent from the S-NG-RAN node to the M-NG-RAN node.

If the *Privacy Indicator* IE set to "Immediate MDT" is included in the message, the M-NG-RAN node shall take the information into account for anonymisation of MDT data as specified in TS 32.422 [23].

8.3.17 SCG Failure Information Report

8.3.17.1 General

The purpose of the SCG Failure Information Report procedure is to provide SCG mobility related information to the S-NG-RAN node.

The procedure uses UE-associated signalling.

8.3.17.2 Successful Operation

Figure 8.3.17.2-1: SCG Failure Information Report, successful operation

The M-NG-RAN node initiates the procedure by sending the SCG FAILURE INFORMATION REPORT message to the S-NG-RAN node. Upon receiving the message, the S-NG-RAN node shall assume that a PSCell change failure event was detected.

The SCG FAILURE INFORMATION REPORT message may include:

- the *SN Mobility Information* IE, if the *SN Mobility Information* IE was sent for the PSCell change procedure from the S-NG-RAN node;
- the *Source PSCell CGI* IE, if the *Source PSCell CGI* IE was sent for the PSCell change procedure from the S-NG-RAN node.

If the SCG FAILURE INFORMATION REPORT message includes the *Source PSCell CGI* IE, the S-NG-RAN node shall, if supported, store the information.

If the SCG FAILURE INFORMATION REPORT message includes the *Failed PSCell CGI* IE, the S-NG-RAN node shall, if supported, store the information and act as specified in TS 37.340 [8].

If the SCG FAILURE INFORMATION REPORT message includes the *CPAC Configuration* IE, the S-NG-RAN node shall, if supported, store the information and act as specified in TS 37.340 [8].

If the SCG FAILURE INFORMATION REPORT message includes the *Time SCG Failure* IE, the S-NG-RAN node shall, if supported, store the information and act as specified in TS 37.340 [8].

If received, the S-NG-RAN node uses the above information for SCG failure reason detection and optimisation.

8.3.17.3 Unsuccessful Operation

Not applicable.

8.3.17.4 Abnormal Conditions

Void.

8.3.18 SCG Failure Transfer

8.3.18.1 General

The purpose of the SCG Failure Transfer procedure is to indicate to the M-NG-RAN node that the root cause of the SCG failure may have occurred in the other nodes.

The procedure uses UE-associated signalling.

8.3.18.2 Successful Operation

Figure 8.3.18.2-1: SCG Failure Information Transfer, successful operation

S-NG-RAN node initiates the procedure by sending the SCG FAILURE TRANSFER message to M-NG-RAN node.

If received, M-NG-RAN node uses the information according to TS 38.300 [9].

8.3.18.3 Unsuccessful Operation

Not applicable.

8.3.18.4 Abnormal Conditions

Void.

8.3.19 Conditional PSCell Change Cancel

8.3.19.1 General

This procedure is used by the M-NG-RAN node to inform the source S-NG-RAN node that all the prepared PSCells are cancelled in the target S-NG-RAN node during a Conditional PSCell Change.

The procedure uses UE-associated signalling.

8.3.19.2 Successful Operation

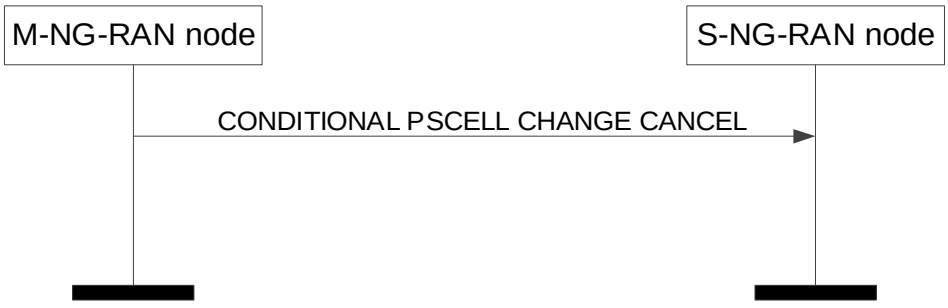

Figure 8.3.19.2-1: Conditional PSCell Change Cancel, successful operation

The M-NG-RAN node initiates the procedure by sending the CONDITIONAL PSCELL CHANGE CANCEL message to the S-NG-RAN node including the *Target S-NG-RAN node ID* IE.

8.3.19.3 Unsuccessful Operation

Not applicable.

8.3.19.4 Abnormal Conditions

Void.

8.3.20 RACH Indication

8.3.20.1 General

This message is sent by the S-NG-RAN node to the M-NG-RAN node to inform of one or more performed random access procedures at the S-NG-RAN, due to which one or more RA reports are available at the UE.

8.3.20.2 Successful Operation

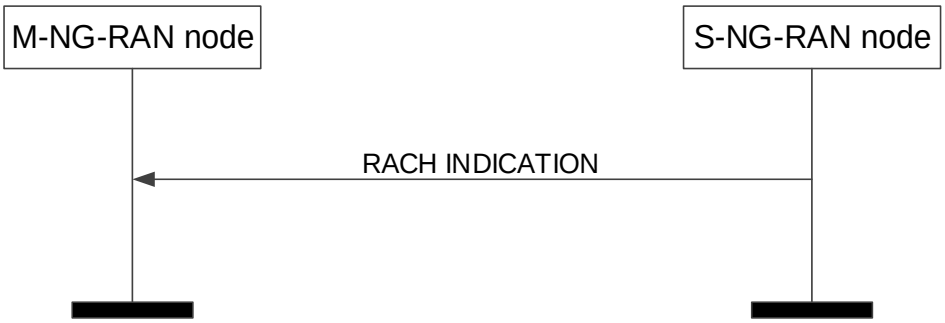

Figure 8.3.20.2-1: RACH Indication procedure, successful operation.

The S-NG-RAN node initiates the procedure by sending the RACH INDICATION message to M-NG-RAN node.

The RACH INDICATION message contains information concerning one or more performed random access procedures and existence of one or more RA report at the UE.

Upon reception of the RACH INDICATION message the M-NG-RAN node may fetch the RA report from the UE.

8.3.20.3 Abnormal Conditions

Not applicable.

8.4 Global procedures

8.4.1 Xn Setup

8.4.1.1 General

The purpose of the Xn Setup procedure is to exchange application level configuration data needed for two NG-RAN nodes to interoperate correctly over the Xn-C interface.

NOTE 1: If Xn-C signalling transport is shared among multiple Xn-C interface instances, one Xn Setup procedure is issued per Xn-C interface instance to be setup, i.e. several Xn Setup procedures may be issued via the same TNL association after that TNL association has become operational.

NOTE 2: Exchange of application level configuration data also applies between two NG-RAN nodes in case the SN (i.e. the gNB) does not broadcast system information other than for radio frame timing and SFN, as specified in the TS 37.340 [8]. How to use this information when this option is used is not explicitly specified.

The procedure uses non UE-associated signalling.

8.4.1.2 Successful Operation

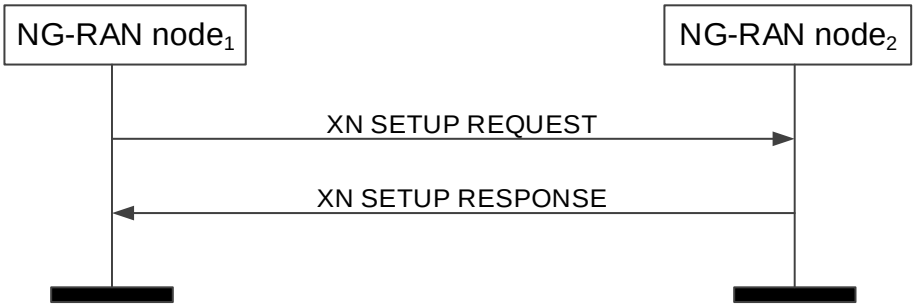

Figure 8.4.1.2: Xn Setup, successful operation

The NG-RAN node$_1$ initiates the procedure by sending the XN SETUP REQUEST message to the candidate NG-RAN node$_2$. The candidate NG-RAN node$_2$ replies with the XN SETUP RESPONSE message.

The *AMF Region Information* IE in the XN SETUP REQUEST message shall contain a complete list of Global AMF Region IDs to which the NG-RAN node$_1$ belongs. The *AMF Region Information* IE in the XN SETUP RESPONSE message shall contain a complete list of Global AMF Region IDs to which the NG-RAN node$_2$ belongs.

The *List of Served Cells NR* IE and the *List of Served Cells E-UTRA* IE, if contained in the XN SETUP REQUEST message, shall contain a complete list of cells served by NG-RAN node$_1$ or, if supported, a partial list of served cells together with the *Partial List Indicator* IE. The *List of Served Cells NR* IE and the *List of Served Cells E-UTRA* IE, if contained in the XN SETUP RESPONSE message, shall contain a complete list of cells served by NG-RAN node$_2$ or, if supported, a partial list of served cells together with the *Partial List Indicator* IE.

If Supplementary Uplink is configured at the NG-RAN node$_1$, the NG-RAN node$_1$ shall include in the XN SETUP REQUEST message the *SUL Information* IE and the *Supported SUL band List* IE for each served cell where supplementary uplink is configured.

If Supplementary Uplink is configured at the NG-RAN node$_2$, the candidate NG-RAN node$_2$ shall include in the XN SETUP RESPONSE message the *SUL Information* IE and the *Supported SUL band List* IE for each served cell where supplementary uplink is configured.

If the NG-RAN node$_1$ is an ng-eNB, it may include the *Protected E-UTRA Resource Indication* IE into the XN SETUP REQUEST. If the XN SETUP REQUEST sent by an ng-eNB contains the *Protected E-UTRA Resource Indication* IE, the receiving gNB should take this into account for cell-level resource coordination with the ng-eNB. The gNB shall consider the received *Protected E-UTRA Resource Indication* IE content valid until reception of a new update of the IE for the same ng-eNB.

The protected resource pattern indicated in the *Protected E-UTRA Resource Indication* IE is not valid in subframes indicated by the *Reserved Subframes* IE, as well as in the non-control region of the MBSFN subframes i.e. it is valid only in the control region therein. The size of the control region of MBSFN subframes is indicated in the *Protected E-UTRA Resource Indication* IE.

In case of network sharing with multiple cell ID broadcast with shared Xn-C signalling transport, as specified in TS 38.300 [9], the XN SETUP REQUEST message and the XN SETUP RESPONSE message shall include the *Interface Instance Indication* IE to identify the corresponding interface instance.

If the *Intended TDD DL-UL Configuration NR* IE is included in the XN SETUP REQUEST or XN SETUP RESPONSE message, the receiving NG-RAN node should take this information into account for cross-link interference management and/or NR-DC power coordination with the sending NG-RAN node. The receiving NG-RAN node shall consider the received *Intended TDD DL-UL Configuration NR* IE content valid until reception of an update of the IE for the same cell(s).

If the *TNL Configuration Info* IE is contained in the XN SETUP REQUEST message, the NG-RAN node$_2$ shall, if supported, take this IE into account for IPSec establishment. In case the *IP-Sec Transport Layer Address* IE within the *Extended UP Transport Layer Addresses To Add List* IE is present and the *GTP Transport Layer Address Info* IE within the *GTP Transport Layer Addresses To Add List* IE is not empty, GTP traffic is conveyed within an IP-Sec tunnel terminated at the IP-Sec tunnel endpoint given in the *IP-Sec Transport Layer Address* IE. In case the *IP-Sec Transport Layer Address* IE is not present, GTP traffic is terminated at the endpoints given by the list of addresses in the *GTP Transport Layer Address Info* IE within the *GTP Transport Layer Addresses To Add List* IE if present.

If the *TNL Configuration Info* IE is contained in the XN SETUP RESPONSE message, the NG-RAN node$_1$ shall, if supported, take this IE into account for IPSec establishment. In case the *IP-Sec Transport Layer Address* IE within the *Extended UP Transport Layer Addresses To Add List* IE is present and the *GTP Transport Layer Address Info* IE within the *GTP Transport Layer Addresses To Add List* IE is not empty, GTP traffic is conveyed within an IP-Sec tunnel terminated at the IP-Sec tunnel endpoint given in the *IP-Sec Transport Layer Address* IE. In case the *IP-Sec Transport Layer Address* IE is not present, GTP traffic is terminated at the endpoints given by the list of addresses in the *GTP Transport Layer Address Info* IE within the *GTP Transport Layer Addresses To Add List* IE if present.

If the *Partial List Indicator NR* IE or the *Partial List Indicator E-UTRA* IE is set to "partial" in the XN SETUP REQUEST message the candidate NG-RAN node$_2$ shall, if supported, assume that the *List of Served Cells NR* IE or the *List of Served Cells E-UTRA* IE in the XN SETUP REQUEST message includes a partial list of cells.

If the *Partial List Indicator NR* IE or the *Partial List Indicator E-UTRA* IE is set to "partial" in the XN SETUP RESPONSE message from the candidate NG-RAN node$_2$, the NG-RAN node$_1$ shall, if supported, assume that the *List of Served Cells NR* IE or the *List of Served Cells E-UTRA* IE in the XN SETUP RESPONSE message includes a partial list of cells.

If the *Cell and Capacity Assistance Information NR* IE or the *Cell and Capacity Assistance Information E-UTRA* IE is present in the XN SETUP REQUEST message the candidate NG-RAN node$_2$ shall, if supported, use it when generating the list of NG-RAN served cell information to include in the XN SETUP RESPONSE message.

If the *Cell and Capacity Assistance Information NR* IE or the *Cell and Capacity Assistance Information E-UTRA* IE is present in the XN SETUP RESPONSE message from the candidate NG-RAN node$_2$, the NG-RAN node$_1$ shall, if supported, store the collected information to be used for future NG-RAN node interface management.

If the *CSI-RS Transmission Indication* IE is contained in the XN SETUP REQUEST message, the NG-RAN node$_2$ shall, if supported, take this IE into account for neighbour cell's CSI-RS measurement.

If the *CSI-RS Transmission Indication* IE is contained in the XN SETUP RESPONSE message, the NG-RAN node$_1$ shall, if supported, take this IE into account for neighbour cell's CSI-RS measurement.

The initiating NG-RAN node$_1$ may include the *PRACH Configuration* IE (for served E-UTRA cells) or the *NR Cell PRACH Configuration* IE (for served NR cells) or the *NPRACH Configuration* IE (for served NB-IoT cells) in the XN SETUP REQUEST message. The candidate NG-RAN node$_2$ may also include the *PRACH Configuration* IE (for served E-UTRA cells) or *NR Cell PRACH Configuration* IE (for served NR cells) or the *NPRACH Configuration* IE (for served NB-IoT cells) in the XN SETUP RESPONSE message. The NG-RAN node receiving the IE may use this information for RACH optimisation.

The XN SETUP REQUEST message may contain for each cell served by NG-RAN node$_1$ NPN related broadcast information. The XN SETUP RESPONSE message may contain for each cell served by NG-RAN node$_2$ NPN related broadcast information.

If the *SFN Offset* IE is included in the XN SETUP REQUEST or XN SETUP RESPONSE message, the receiving NG-RAN node shall, if supported, use this information to deduce the SFN0 time offset of the reported cell.The receiving NG-RAN node shall consider the received *SFN Offset* IE content valid until reception of an update of the IE for the same cell(s).

The NG-RAN node receiving the *Supported MBS FSA ID List* IE in the XN SETUP REQUEST message or the in XN SETUP RESPONSE message may use it according to TS 38.300 [9].

If the *Additional Measurement Timing Configuration List* IE is contained in the XN SETUP REQUEST message, the NG-RAN node$_2$ shall, if supported, take this IE into account for neighbour cell's CSI-RS measurement.

If the *Additional Measurement Timing Configuration List* IE is contained in the XN SETUP RESPONSE message, the NG-RAN node$_1$ shall, if supported, take this IE into account for neighbour cell's CSI-RS measurement.

If the *Local NG-RAN Node Identifier* IE is present in the XN SETUP REQUEST message, the NG-RAN $node_2$ shall, if supported, take this into account for future retrieval of the UE contexts from the NG-RAN $node_1$.

If the *Local NG-RAN Node Identifier* IE is present in the XN SETUP RESPONSE message, the NG-RAN $node_1$ shall, if supported, take this into account for future retrieval of the UE contexts from the NG-RAN $node_2$.

If the *Neighbour NG-RAN Node List* IE is present in the XN SETUP REQUEST message, the NG-RAN $node_2$ may take this into account for Local NG-RAN Node Identifier conflict detection.

If the *Neighbour NG-RAN Node List* IE is present in the XN SETUP RESPONSE message, the NG-RAN $node_1$ may take this into account for Local NG-RAN Node Identifier conflict detection.

If the *Served Cell Specific Info Request* IE is included in the XN SETUP REQUEST message and if the NG-RAN $node_2$ is a gNB, the NG-RAN $node_2$ shall, if supported, include the *Additional Measurement Timing Configuration List* IE for the requested NR cells in the XN SETUP RESPONSE message.

If the *RedCap Broadcast Information* IE is included in the *Served Cell Information NR* IE in the XN SETUP REQUEST message or the XN SETUP RESPONSE message, the receiving NG-RAN node 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 contained in the XN SETUP REQUEST or in the XN SETUP RESPONSE message, the receiving NG-RAN node shall, if supported, take this IE into account for slice aware cell reselection.

If the *TAI Slice Unavailable Cell List* IE is contained in the XN SETUP REQUEST or in the XN SETUP RESPONSE message, the receiving NG-RAN node shall, if supported, take this IE into account to deduce slice resource allocation.

If the *eRedCap Broadcast Information* IE is included in the *Served Cell Information NR* IE in the XN SETUP REQUEST message or the XN SETUP RESPONSE message, the receiving NG-RAN node may use this information to determine a suitable target in case of subsequent outgoing mobility involving eRedCap UEs.

If the *Mobile IAB Cell* IE is included in the *Served Cell Information NR* IE in the XN SETUP REQUEST message or in the XN SETUP RESPONSE message, the receiving NG-RAN node may use it accordingly.

If the *XR Broadcast Information* IE is included in the *Served Cell Information NR* IE in the XN SETUP REQUEST message or the XN SETUP RESPONSE message, the receiving NG-RAN node shall, if supported, consider the indicated cell does not allow 2Rx XR UEs in case of subsequent outgoing mobility involving XR UEs.

If the *Barring Exemption for Emergency Call Information* IE is included in the *Served Cell Information NR* IE in the XN SETUP REQUEST message or the XN SETUP RESPONSE message, the receiving NG-RAN node may use this information to determine a suitable target in case of subsequent outgoing mobility during emergency call.

If the *WAB-MT Identifier* IE is included in the XN SETUP REQUEST message or in the XN SETUP RESPONSE message, the receiving NG-RAN node shall, if supported, consider that the transmitting NG-RAN node is a WAB-node. If the receiving NG-RAN node serves the WAB-MT identified by the *WAB-MT Identifier* IE, the receiving NG-RAN node, shall, if supported, conclude that the WAB-MT is co-located with the WAB-gNB functionality of the transmitting NG-RAN node.

Interactions with other procedures:

If the NG-RAN $node_1$ receives a XN SETUP RESPONSE message containing a Local NG-RAN Node Identifier identical to the Local NG-RAN Node Identifier included in the corresponding XN SETUP REQUEST message, the NG-RAN $node_1$ may initiate the NG-RAN node Configuration Update procedure including in the NG-RAN NODE CONFIGURATION UPDATE message a new Local NG-RAN Node Identifier, different from the Local NG-RAN Node Identifier of each of its neighbour NG-RAN Nodes.

If the NG-RAN $node_1$ receives a XN SETUP RESPONSE message containing a Local NG-RAN Node Identifier within the *Neighbour NG-RAN Node List* IE identical to the Local NG-RAN Node Identifier included in the corresponding XN SETUP REQUEST message, the NG-RAN $node_1$ may initiate the NG-RAN node Configuration Update procedure including in the NG-RAN NODE CONFIGURATION UPDATE message a new Local NG-RAN Node Identifier, different from the Local NG-RAN Node Identifier of each of its neighbour NG-RAN Nodes.

8.4.1.3 Unsuccessful Operation

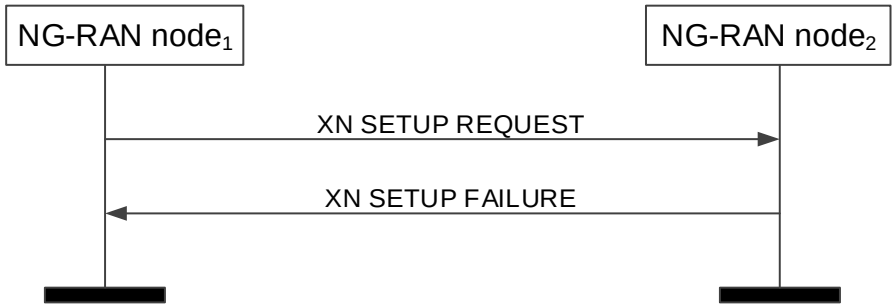

Figure 8.4.1.3-1: Xn Setup, unsuccessful operation

If the candidate NG-RAN node$_2$ cannot accept the setup it shall respond with the XN SETUP FAILURE message with appropriate cause value.

If the XN SETUP FAILURE message includes the *Time To Wait* IE, the initiating NG-RAN node$_1$ shall wait at least for the indicated time before reinitiating the Xn Setup procedure towards the same NG-RAN node$_2$.

If case of network sharing with multiple Cell ID broadcast with shared Xn-C signalling transport, as specified in TS 38.300 [9], the XN SETUP REQUEST message and the XN SETUP REQUEST FAILURE message shall include the *Interface Instance Indication* IE to identify the corresponding interface instance.

If the *Message Oversize Notification* IE is included in the XN SETUP FAILURE, the initiating node shall, if supported, deduce that the failure is due to a too large XN SETUP REQUEST message and ensure that the total number of served cells in following XN SETUP REQUEST message is equal to or lower than the value of the *Maximum Cell List Size* IE.

If the *WAB-MT Identifier* IE is included in the XN SETUP REQUEST message, and if the NG-RAN node$_2$ determines that it should avoid Xn establishment with a WAB-gNB (based on, e.g. configuration or implementation), the NG-RAN node$_2$ shall reject the Xn setup and send the XN SETUP FAILURE message to the NG-RAN node$_1$ with an appropriate cause value.

8.4.1.4 Abnormal Conditions

If the first message received for a specific TNL association is not an XN SETUP REQUEST, XN SETUP RESPONSE, or XN SETUP FAILURE message then this shall be treated as a logical error.

If the initiating NG-RAN node$_1$ does not receive either XN SETUP RESPONSE message or XN SETUP FAILURE message, the NG-RAN node$_1$ may reinitiate the Xn Setup procedure towards the same NG-RAN node, provided that the content of the new XN SETUP REQUEST message is identical to the content of the previously unacknowledged XN SETUP REQUEST message.

If the initiating NG-RAN node$_1$ receives an XN SETUP REQUEST message from the peer entity on the same Xn interface:

- In case the NG-RAN node$_1$ answers with an XN SETUP RESPONSE message and receives a subsequent Xn SETUP FAILURE message, the NG-RAN node$_1$ shall consider the Xn interface as non operational and the procedure as unsuccessfully terminated according to sub clause 8.4.1.3.

- In case the NG-RAN node$_1$ answers with an XN SETUP FAILURE message and receives a subsequent XN SETUP RESPONSE message, the NG-RAN node$_1$ shall ignore the XN SETUP RESPONSE message and consider the Xn interface as non operational.

8.4.2 NG-RAN node Configuration Update

8.4.2.1 General

The purpose of the NG-RAN node Configuration Update procedure is to update application level configuration data needed for two NG-RAN nodes to interoperate correctly over the Xn-C interface.

NOTE: Update of application level configuration data also applies between two NG-RAN nodes in case the SN (i.e. the gNB) does not broadcast system information other than for radio frame timing and SFN, as specified in the TS 37.340 [8]. How to use this information when this option is used is not explicitly specified.

The procedure uses non UE-associated signalling.

8.4.2.2 Successful Operation

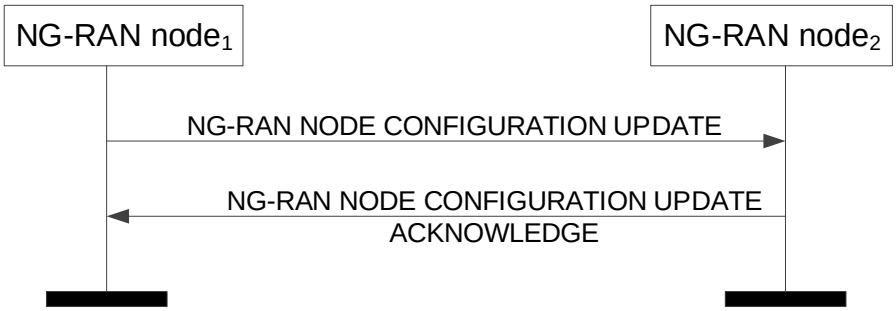

Figure 8.4.2.2-1: NG-RAN node Configuration Update, successful operation

The NG-RAN node$_1$ initiates the procedure by sending the NG-RAN NODE CONFIGURATION UPDATE message to a peer NG-RAN node$_2$.

If Supplementary Uplink is configured at the NG-RAN node$_1$, the NG-RAN node$_1$ shall include in the NG-RAN NODE CONFIGURATION UPDATE message the *SUL Information* IE and the *Supported SUL band List* IE for each cell added in the *Served NR Cells To Add* IE and in the *Served NR Cells To Modify* IE.

If Supplementary Uplink is configured at the NG-RAN node$_2$, the NG-RAN node$_2$ shall include in the NG-RAN NODE CONFIGURATION UPDATE ACKNOWLEDGE message the *SUL Information* IE and the *Supported SUL band List* IE for each cell added in the *Served NR Cells* IE if any.

If the *TAI Support List* IE is included in the NG-RAN NODE CONFIGURATION UPDATE message, the receiving node shall replace the previously provided *TAI Support List* IE by the received *TAI Support List* IE.

If the *Cell Assistance Information NR* IE is present, the NG-RAN node$_2$ shall, if supported, use it to generate the *Served NR Cells* IE and include the list in the NG-RAN NODE CONFIGURATION UPDATE ACKNOWLEDGE message.

If the *Cell Assistance Information E-UTRA* IE is present, the NG-RAN node$_2$ shall, if supported, use it to generate the *Served E-UTRA Cells* IE and include the list in the NG-RAN NODE CONFIGURATION UPDATE ACKNOWLEDGE message.

If the *Partial List Indicator NR* IE is included in the NG-RAN NODE CONFIGURATION UPDATE ACKNOWLEDGE message and set to "partial" the NG-RAN node$_1$ shall, if supported, assume that the *Served NR Cells* IE in the NG-RAN NODE CONFIGURATION UPDATE ACKNOWLEDGE message includes a partial list of NR cells.

If the *Partial List Indicator E-UTRA* IE is included in the NG-RAN NODE CONFIGURATION UPDATE ACKNOWLEDGE message and set to "partial" the NG-RAN node$_1$ shall, if supported, assume that the *Served E-UTRA Cells* IE in the NG-RAN NODE CONFIGURATION UPDATE ACKNOWLEDGE message includes a partial list of NR cells.

If the *Cell and Capacity Assistance Information NR* IE is present in the NG-RAN NODE CONFIGURATION UPDATE ACKNOWLEDGE message from the candidate NG-RAN node$_2$, the NG-RAN node$_1$ shall, if supported, store the collected information to be used for future NG-RAN node interface management.

If the *Cell and Capacity Assistance Information E-UTRA* IE is present in the NG-RAN NODE CONFIGURATION UPDATE ACKNOWLEDGE message from the candidate NG-RAN node$_2$, the NG-RAN node$_1$ shall, if supported, store the collected information to be used for future NG-RAN node interface management.

Upon reception of the NG-RAN NODE CONFIGURATION UPDATE message, NG-RAN node$_2$ shall update the information for NG-RAN node$_1$ as follows:

If case of network sharing with multiple cell ID broadcast with shared Xn-C signalling transport, as specified in TS 38.300 [9], the NG-RAN NODE CONFIGURATION UPDATE message and the NG-RAN NODE CONFIGURATION UPDATE ACKNOWLEDGE message shall include the *Interface Instance Indication* IE to identify the corresponding interface instance.

If the *TNL Configuration Info* IE is contained in the NG-RAN NODE CONFIGURATION UPDATE message, the NG-RAN node$_2$ shall take this IE into account for IPSec establishment. In case the *IP-Sec Transport Layer Address* IE within the *Extended UP Transport Layer Addresses To Add List* IE is present and the *GTP Transport Layer Address Info* IE within the *GTP Transport Layer Addresses To Add List* IE is not empty, GTP traffic is conveyed within an IP-Sec tunnel terminated at the IP-Sec tunnel endpoint given in the *IP-Sec Transport Layer Address* IE. In case the *IP-Sec Transport Layer Address* IE is not present, GTP traffic is terminated at the endpoints given by the list of addresses in the *GTP Transport Layer Address Info* IE within the *GTP Transport Layer Addresses To Add List* IE if present.

If the *TNL Configuration Info* IE is contained in the NG-RAN NODE CONFIGURATION UPDATE ACKNOWLEDGE message, the NG-RAN node$_1$ shall take this IE into account for IPSec establishment. In case the *IP-Sec Transport Layer Address* IE within the *Extended UP Transport Layer Addresses To Add List* IE is present and the *GTP Transport Layer Address Info* IE within the *GTP Transport Layer Addresses To Add List* IE is not empty, GTP traffic is conveyed within an IP-Sec tunnel terminated at the IP-Sec tunnel endpoint given in the *IP-Sec Transport Layer Address* IE. In case the *IP-Sec Transport Layer Address* IE is not present, GTP traffic is terminated at the endpoints given by the list of addresses in the *GTP Transport Layer Address Info* IE within the *GTP Transport Layer Addresses To Add List* IE if present.

If the *CSI-RS Transmission Indication* IE is contained in the NG-RAN NODE CONFIGURATION UPDATE message, the NG-RAN node$_2$ shall take this IE into account for neighbour cell's CSI-RS measurement.

The NG-RAN NODE CONFIGURATION UPDATE message may contain for each cell served by NG-RAN node$_1$ NPN related broadcast information. The NG-RAN NODE CONFIGURATION UPDATE ACKNOWLEDGE message may contain for each cell served by NG-RAN node$_2$ NPN related broadcast information.

If the *Additional Measurement Timing Configuration List* IE is contained in the NG-RAN NODE CONFIGURATION UPDATE message, the NG-RAN node$_2$ shall take this IE into account for neighbour cell's CSI-RS measurement.

If the *Local NG-RAN Node Identifier* IE is present in the NG-RAN NODE CONFIGURATION UPDATE message, the NG-RAN node$_2$ shall, if supported, take this into account for future retrieval of the UE contexts from the NG-RAN node$_1$.

If the *Local NG-RAN Node Identifier* IE is present in the NG-RAN NODE CONFIGURATION UPDATE ACKNOWLEDGE message, the NG-RAN node$_1$ shall, if supported, take this into account for future retrieval of the UE contexts from the NG-RAN node$_2$.

If the *Neighbour NG-RAN Node List* IE is present in the NG-RAN NODE CONFIGURATION UPDATE message, the NG-RAN node$_2$ may take this into account for Local NG-RAN Node Identifier conflict detection.

If the *Neighbour NG-RAN Node List* IE is present in the NG-RAN NODE CONFIGURATION UPDATE ACKNOWLEDGE message, the NG-RAN node$_1$ may take this into account for Local NG-RAN Node Identifier conflict detection.

If the *Local NG-RAN Node Identifier Removal* IE is present in the NG-RAN NODE CONFIGURATION UPDATE message, the NG-RAN node$_2$ shall, if supported, discard it from its context and not use it for future retrieval of the UE contexts from the NG-RAN node$_1$.

If the *Local NG-RAN Node Identifier Removal* IE is present in the NG-RAN NODE CONFIGURATION UPDATE ACKNOWLEDGE message, the NG-RAN node$_1$ shall, if supported, discard it from its context and not use it for future retrieval of the UE contexts from the NG-RAN node$_2$.

If the *Served Cell Specific Info Request* IE is included in the NG-RAN NODE CONFIGURATION UPDATE message and if the NG-RAN node$_2$ is a gNB, the NG-RAN node$_2$ shall, if supported, include the *Additional Measurement Timing Configuration List* IE for the requested NR cells in the NG-RAN NODE CONFIGURATION UPDATE ACKNOWLEDGE message.

If the *TAI NSAG Support List* IE is contained in the NG-RAN NODE CONFIGURATION UPDATE message, the NG-RAN node shall, if supported, take this IE into account for slice aware cell reselection.

If the *TAI Slice Unavailable Cell List* IE is contained in the NG-RAN NODE CONFIGURATION UPDATE message, the NG-RAN node$_2$ shall, if supported, take this IE into account to deduce slice resource allocation.

If the *WAB-MT Identifier* IE is included in the NG-RAN NODE CONFIGURATION UPDATE message or in the NG-RAN NODE CONFIGURATION UPDATE ACKNOWLEDGE message, the receiving NG-RAN node shall, if supported, consider that the transmitting NG-RAN node is a WAB-node. If the receiving NG-RAN node serves the WAB-MT identified by the *WAB-MT Identifier* IE, the receiving NG-RAN node, shall, if supported, conclude that the WAB-MT is co-located with the WAB-gNB functionality of the transmitting NG-RAN node.

Update of Served Cell Information NR:

- If *Served Cells NR To Add* IE is contained in the NG-RAN NODE CONFIGURATION UPDATE message, NG-RAN $node_2$ shall add cell information according to the information in the *Served Cell Information NR* IE.

- If *Served Cells NR To Modify* IE is contained in the NG-RAN NODE CONFIGURATION UPDATE message, NG-RAN $node_2$ shall modify information of cell indicated by *Old NR-CGI* IE according to the information in the *Served Cell Information NR* IE.

- When either served cell information or neighbour information of an existing served cell in NG-RAN $node_1$ need to be updated, the whole list of neighbouring cells, if any, shall be contained in the *Neighbour Information NR* IE or the *Neighbour Information E-UTRAN* IE or both. The NG-RAN $node_2$ shall overwrite the served cell information and the whole list of neighbour cell information for the affected served cell.

- If the *Deactivation Indication* IE set to "deactivated" is contained in the *Served Cells NR To Modify* IE, it indicates that the concerned cell was switched off to lower energy consumption.

- If *Served Cells NR To Delete* IE is contained in the NG-RAN NODE CONFIGURATION UPDATE message, NG-RAN $node_2$ shall delete information of cell indicated by *Old NR-CGI* IE.

- If the *Intended TDD DL-UL Configuration NR* IE is contained in the NG-RAN NODE CONFIGURATION UPDATE message, the NG-RAN $node_2$ should take this information into account for cross-link interference management and/or NR-DC power coordination with the NG-RAN $node_1$. The NG-RAN $node_2$ shall consider the received *Intended TDD DL-UL Configuration NR* IE content valid until reception of a new update of the IE for the same NG-RAN $node_2$.

- If the *NR Cell PRACH Configuration* IE is contained in the *Served Cell Information NR* IE in the NG-RAN NODE CONFIGURATION UPDATE message, the NG-RAN node receiving the IE may use this information for RACH optimisation.

- If the *SFN Offset* IE is contained in the NG-RAN NODE CONFIGURATION UPDATE message, the NG-RAN node receiving the IE shall, if supported, use this information to update the SFN0 time offset of the reported cell.

- If the *Supported MBS FSA ID List* IE is contained in the *Served Cell Information NR* IE in the NG-RAN NODE CONFIGURATION UPDATE message, the NG-RAN node receiving the IE may use it according to TS 38.300 [9].

- If the *RedCap Broadcast Information* IE is contained in the *Served Cell Information NR* IE in the NG-RAN NODE CONFIGURATION UPDATE message, the NG-RAN $node_2$ may use this information to determine a suitable target in case of subsequent outgoing mobility involving RedCap UEs.

- If the *eRedCap Broadcast Information* IE is contained in the *Served Cell Information NR* IE in the NG-RAN NODE CONFIGURATION UPDATE message, the NG-RAN $node_2$ may use this information to determine a suitable target in case of subsequent outgoing mobility involving eRedCap UEs.

- If the *Mobile IAB Cell* IE is included in the *Served Cell Information NR* IE in the NG-RAN NODE CONFIGURATION UPDATE message or the NG-RAN NODE CONFIGURATION UPDATE ACKNOWLEDGE message, the receiving NG-RAN node may use it accordingly.

- If the *XR Broadcast Information* IE is contained in the *Served Cell Information NR* IE in the NG-RAN NODE CONFIGURATION UPDATE message, the NG-RAN $node_2$ shall, if supported, consider the indicated cell does not allow 2Rx XR UEs in case of subsequent outgoing mobility involving XR UEs.

- If the *Barring Exemption for Emergency Call Information* IE is included in the *Served Cell Information NR* IE in the NG-RAN NODE CONFIGURATION UPDATE message or the NG-RAN NODE CONFIGURATION UPDATE ACKNOWLEDGE message, the receiving NG-RAN node may use this information to determine a suitable target in case of subsequent outgoing mobility during emergency call.

Update of Served Cell Information E-UTRA:

- If *Served Cells E-UTRA To Add* IE is contained in the NG-RAN NODE CONFIGURATION UPDATE message, NG-RAN node$_2$ shall add cell information according to the information in the *Served Cell Information E-UTRA* IE.

- If *Served Cells E-UTRA To Modify* IE is contained in the NG-RAN NODE CONFIGURATION UPDATE message, NG-RAN node$_2$ shall modify information of cell indicated by *Old ECGI* IE according to the information in the *Served Cell Information E-UTRA* IE.

- When either served cell information or neighbour information of an existing served cell in NG-RAN node$_1$ need to be updated, the whole list of neighbouring cells, if any, shall be contained in the *Neighbour Information E-UTRA* IE or the *Neighbour Information NR* IE or both. The NG-RAN node$_2$ shall overwrite the served cell information and the whole list of neighbour cell information for the affected served cell.

- If the *Deactivation Indication* IE set to "deactivated" is contained in the *Served Cells E-UTRA To Modify* IE, it indicates that the concerned cell was switched off to lower energy consumption.

- If the *Served Cells E-UTRA To Delete* IE is contained in the NG-RAN NODE CONFIGURATION UPDATE message, NG-RAN node$_2$ shall delete information of cell indicated by *Old ECGI* IE.

- If the *Protected E-UTRA Resource Indication* IE is included into the NG-RAN NODE CONFIGURATION UPDATE (inside the *Served Cell Information E-UTRA* IE), the receiving gNB should take this into account for cell-level resource coordination with the ng-eNB. The gNB shall consider the received *Protected E-UTRA Resource Indication* IE content valid until reception of a new update of the IE for the same ng-eNB. The protected resource pattern indicated in the *Protected E-UTRA Resource Indication* IE is not valid in subframes indicated by the *Reserved Subframes* IE (contained in E-UTRA - NR CELL RESOURCE COORDINATION REQUEST messages), as well as in the non-control region of the MBSFN subframes i.e. it is valid only in the control region therein. The size of the control region of MBSFN subframes is indicated in the *Protected E-UTRA Resource Indication* IE.

- If the *PRACH Configuration* IE is contained in the *Served Cell Information E-UTRA* IE in the NG-RAN NODE CONFIGURATION UPDATE message, the NG-RAN node receiving the IE may use this information for RACH optimisation.

- If the *NPRACH Configuration* IE is contained in the *Served Cell Information E-UTRA* IE in the NG-RAN NODE CONFIGURATION UPDATE message, the NG-RAN node receiving the IE may use this information for RACH optimisation.

- If the *SFN Offset* IE is contained in *Served Cell Information E-UTRA* IE in the NG-RAN NODE CONFIGURATION UPDATE message, the NG-RAN node receiving the IE shall, if supported, use this information to update the SFN0 time offset of the reported cell.

Update of TNL addresses for SCTP associations:

If the *TNLA To Add List* IE is included in the NG-RAN NODE CONFIGURATION UPDATE message, the NG-RAN node$_2$ shall, if supported, use it to establish the TNL association(s) with the NG-RAN node$_1$. If the *TNLA To Add List* IE does not include the *Port Number* IE, the NG-RAN node$_2$ shall assume that port number value 38422 is used for the endpoint. The NG-RAN node$_2$ shall report to the NG-RAN node$_1$, in the NG-RAN NODE CONFIGURATION UPDATE ACKNOWLEDGE message, the successful establishment of the TNL association(s) with the NG-RAN node$_1$ as follows:

- A list of successfully established TNL associations shall be included in the *TNLA Setup List* IE;

- A list of TNL associations that failed to be established shall be included in the *TNLA Failed to Setup List* IE.

If the *TNLA To Remove List* IE is included in the NG-RAN NODE CONFIGURATION UPDATE message the NG-RAN node$_2$ shall, if supported, initiate removal of the TNL association(s) indicated by the received Transport Layer information towards the NG-RAN node$_1$.

- If the received *TNLA Transport Layer Address* IE includes the *Port Number* IE, the NG-RAN node$_1$ TNL endpoint is identified by the *Endpoint IP Address* IE and the *Port Number* IE. Otherwise, the NG-RAN node$_1$ TNL endpoints correspond to all NG-RAN node$_1$ TNL endpoints identified by the *Endpoint IP Address* IE and any Port Number(s).

If the *TNLA To Update List* IE is included in the NG-RAN NODE CONFIGURATION UPDATE message the NG-RAN node$_2$ shall, if supported, update the TNL association(s) indicated by the received Transport Layer information towards the NG-RAN node$_1$.

- If the received *TNLA Transport Layer Address* IE includes the *Port Number* IE, the NG-RAN node$_1$ TNL endpoint is identified by the *Endpoint IP Address* IE and the *Port Number* IE. Otherwise, the NG-RAN node$_1$ TNL endpoints correspond to all NG-RAN node$_1$ TNL endpoints identified by the *Endpoint IP Address* IE and any Port Number(s).

Update of AMF Region Information:

- If *AMF Region Information To Add* IE is contained in the NG-RAN NODE CONFIGURATION UPDATE message, the NG-RAN node$_2$ shall add the AMF Regions to its AMF Region List.

- If *AMF Region Information To Delete* IE is contained in the NG-RAN NODE CONFIGURATION UPDATE message, the NG-RAN node$_2$ shall remove the AMF Regions from its AMF Region List.

Update of Cell Coverage:

If the *Coverage Modification List* IE is present in the NG-RAN NODE CONFIGURATION UPDATE message, the NG-RAN node$_2$ may use the information in the *Cell Coverage State* IE to identify the cell deployment configuration enabled by the NG-RAN node$_1$ and for configuring the mobility towards the cell(s) indicated by the *Global NG-RAN Cell Identity* IE, as described in TS 38.300 [9].

- If the *Cell Deployment Status Indicator* IE is present in the *Coverage Modification List* IE, the NG-RAN node$_2$ shall consider the cell deployment configuration of the cell to be modified as the next planned configuration and shall remove any planned configuration stored for this cell.

- If the *Cell Deployment Status Indicator* IE is present and the *Cell Replacing Info* IE contains non-empty cell list, the NG-RAN node$_2$ may use this list to avoid connection or re-establishment failures during the reconfiguration, e.g. consider the cells in the list as possible alternative handover targets.

- If the *Cell Deployment Status Indicator* IE is not present, the NG-RAN node$_2$ shall consider the cell deployment configuration of cell to be modified as activated and replace any previous configuration for the cells indicated in the *Coverage Modification List* IE.

If the *SSB Coverage Modification List* IE is present in the *Coverage Modification List* IE, the NG-RAN node$_2$ may use the information in the *SSB Coverage State* IE to identify the SSB beam deployment configuration enabled by the NG-RAN node$_1$ and for configuring the mobility towards the beam(s) indicated by the *SSB Index* IE, as described in TS 38.300 [9].

If the *Coverage Modification Cause* IE set to "coverage" or "cell edge capacity" is present in the NG-RAN NODE CONFIGURATION UPDATE message, the NG-RAN node$_2$ may use the information for deducing the CCO issue detected at NG-RAN node$_1$ and for configuring coverage state of its served cell(s).

If the *Coverage Modification Cause* IE set to "network energy saving" is present and the *SSB Coverage State* IE is zero for a set of SSB beams in the NG-RAN NODE CONFIGURATION UPDATE message, the NG-RAN node$_2$ may use the information to decide the SSB beam activation for the concerned beams when necessary.

Update of Future Cell Coverage:

If the *Future Coverage Modification List* IE is present in the NG-RAN NODE CONFIGURATION UPDATE message, the NG-RAN node$_2$ may use the information to identify the future cell deployment configuration to be enabled by the NG-RAN node$_1$ at a time indicated by *Time for Future Coverage State* IE and for configuring mobility towards the cell(s) indicated by the *NR CGI* IE, as described in TS 38.300 [9].

If the *Future SSB Coverage Modification List* IE is present in the *Future Coverage Modification List* IE, the NG-RAN node$_2$ may use the information to identify the future SSB beam deployment configuration to be enabled by the NG-RAN node$_1$ at a time indicated by *Time for Future Coverage State* IE and for configuring the mobility towards the beam(s) indicated by the *SSB Index* IE, as described in TS 38.300 [9].

If the *Predicted Coverage Modification Cause* IE set to "coverage" or "cell edge capacity" is present in the NG-RAN NODE CONFIGURATION UPDATE message, the NG-RAN node$_2$ may use the information for deducing the CCO issue predicted in NG-RAN node$_1$ and for configuring coverage state of its served cell(s).

If the *Predicted Coverage Modification Cause* IE set to "cancel" is contained in the NG-RAN NODE CONFIGURATION UPDATE message, the NG-RAN node$_2$ shall, if supported, consider it as a notification of cancellation of the future coverage modifications associated to the cell(s) and optionally beam(s) listed in the *Future Coverage Modification List* IE, as described in TS 38.300 [9].

Interactions with other procedures:

If the NG-RAN node$_1$ receives a NG-RAN NODE CONFIGURATION UPDATE ACKNOWLEDGE message containing a Local NG-RAN Node Identifier identical to the Local NG-RAN Node Identifier included in the corresponding NG-RAN NODE CONFIGURATION UPDATE message, the NG-RAN node$_1$ may initiate the NG-RAN node Configuration Update procedure including in the NG-RAN NODE CONFIGURATION UPDATE message a new Local NG-RAN Node Identifier, different from the Local NG-RAN Node Identifier of each of its neighbour NG-RAN Nodes.

If the NG-RAN node$_1$ receives a NG-RAN NODE CONFIGURATION UPDATE ACKNOWLEDGE message containing a Local NG-RAN Node Identifier within the *Neighbour NG-RAN Node List* IE identical to the Local NG-RAN Node Identifier included in the corresponding NG-RAN NODE CONFIGURATION UPDATE message, the NG-RAN node$_1$ may initiate the NG-RAN node Configuration Update procedure including in the NG-RAN NODE CONFIGURATION UPDATE message a new Local NG-RAN Node Identifier, different from the Local NG-RAN Node Identifier of each of its neighbour NG-RAN Nodes.

8.4.2.3 Unsuccessful Operation

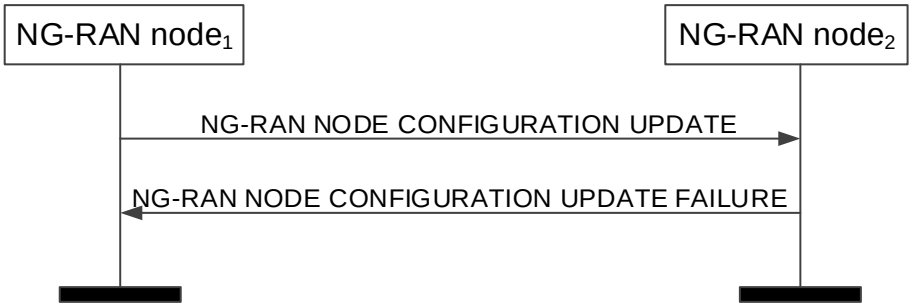

Figure 8.4.2.3-1: NG-RAN node Configuration Update, unsuccessful operation

If the NG-RAN node$_2$ cannot accept the update it shall respond with the NG-RAN NODE CONFIGURATION UPDATE FAILURE message and appropriate cause value.

If the NG-RAN NODE CONFIGURATION UPDATE FAILURE message includes the *Time To Wait* IE, the NG-RAN node$_1$ shall wait at least for the indicated time before reinitiating the NG-RAN Node Configuration Update procedure towards the same NG-RAN node$_2$. Both nodes shall continue to operate the Xn with their existing configuration data.

If case of network sharing with multiple cell ID broadcast with shared Xn-C signalling transport, as specified in TS 38.300 [9], the NG-RAN NODE CONFIGURATION UPDATE message and the NG-RAN NODE CONFIGURATION UPDATE FAILURE message shall include the *Interface Instance Indication* IE to identify the corresponding interface instance.

8.4.2.4 Abnormal Conditions

If the NG-RAN node$_1$ after initiating NG-RAN node Configuration Update procedure receives neither NG-RAN NODE CONFIGURATION UPDATE ACKNOWLEDGE message nor NG-RAN NODE CONFIGURATION UPDATE FAILURE message, the NG-RAN node$_1$ may reinitiate the NG-RAN node Configuration Update procedure towards the same NG-RAN node$_2$, provided that the content of the new NG-RAN NODE CONFIGURATION UPDATE message is identical to the content of the previously unacknowledged NG-RAN NODE CONFIGURATION UPDATE message.

If the *Future Coverage Modification List* IE is contained in the NG-RAN NODE CONFIGURATION UPDATE message and includes cells and beams for which the *Predicted Coverage Modification Cause* IE is set to "cancel":

- if the list of cells and beams associated with the "cancel" codepoint is not the same as the list of cells and beams in a previously received *Future Coverage Modification List* IE,

then the NG-RAN node$_2$ shall ignore the list of cells and beams associated with the "cancel" codepoint in the *Future Coverage Modification List* IE.

8.4.3 Cell Activation

8.4.3.1 General

The purpose of the Cell Activation procedure is to enable an NG-RAN node to request a neighbouring NG-RAN node to switch on all the SSB beams or only some of the SSB beams within one or more cells, previously reported as inactive due to energy saving.

The procedure uses non UE-associated signalling.

8.4.3.2 Successful Operation

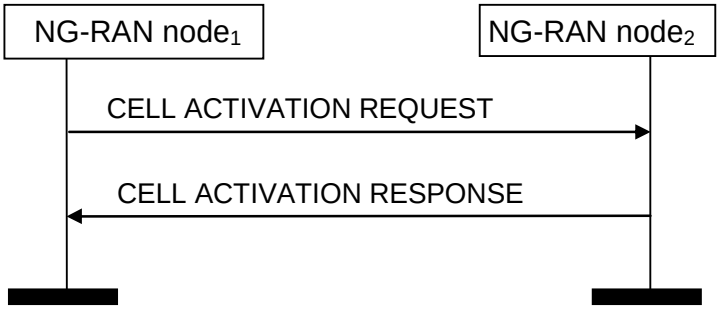

Figure 8.4.3.2-1: Cell Activation, successful operation

The NG-RAN node$_1$ initiates the procedure by sending the CELL ACTIVATION REQUEST message to the peer NG-RAN node$_2$.

If either the *NR Cells* IE or the *E-UTRA Cells* IE is included in the CELL ACTIVATION REQUEST message, the NG-RAN node$_2$ should activate the cell/s indicated in the CELL ACTIVATION REQUEST message and shall indicate in the CELL ACTIVATION RESPONSE message for which cells the request was fulfilled.

If case of network sharing with multiple cell ID broadcast with shared Xn-C signalling transport, as specified in TS 38.300 [9], the CELL ACTIVATION REQUEST message and the CELL ACTIVATION RESPONSE message shall include the *Interface Instance Indication* IE to identify the corresponding interface instance.

If the *NR Cells and SSBs* IE is included in the CELL ACTIVATION REQUEST message

- and for an NR cell the *SSBs to be Activated List* IE is included, the NG-RAN node$_2$ shall, if supported, activate only the SSB beams indicated by the *SSBs to be Activated List* IE. Otherwise, the NG-RAN node$_2$ shall, if supported, activate all the SSB beams in the cell.

- and if at least one SSB beam requested in the *SSBs to be Activated List* IE is activated, the NG-RAN node$_2$ shall include the *SSBs Activated List* IE in the CELL ACTIVATION RESPONSE message. The NG-RAN node$_1$ shall consider only the SSB beams indicated by the *SSBs Activated List* IE as activated.

Interactions with NG-RAN Configuration Update procedure:

The NG-RAN node$_2$ shall not send the NG-RAN CONFIGURATION UPDATE message to the NG-RAN node$_1$ just for the reason of the cell(s) or the SSB beam(s) indicated in the CELL ACTIVATION REQUEST message changing cell or SSB beam activation state, as the receipt of the CELL ACTIVATION RESPONSE message by the NG-RAN node$_1$ is used to update the information about the activation state of NG-RAN node$_2$ cell(s) or SSB beam(s) in the NG-RAN node$_1$.

8.4.3.3 Unsuccessful Operation

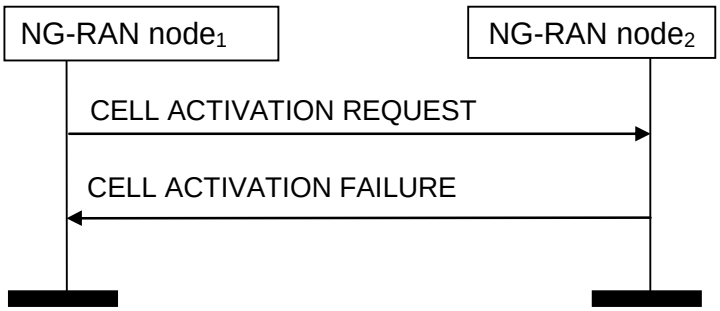

Figure 8.4.3.3-1: Cell Activation, unsuccessful operation

If the NG-RAN node$_2$ cannot activate any of the cells or any of the SSB beams indicated in the CELL ACTIVATION REQUEST message, it shall respond with the CELL ACTIVATION FAILURE message with an appropriate cause value.

If case of network sharing with multiple cell ID broadcast with shared Xn-C signalling transport, as specified in TS 38.300 [9], the CELL ACTIVATION REQUEST message and the CELL ACTIVATION FAILURE message shall include the *Interface Instance Indication* IE to identify the corresponding interface instance.

8.4.3.4 Abnormal Conditions

Void.

8.4.4 Reset

8.4.4.1 General

The purpose of the Reset procedure is to align the resources in the NG-RAN node$_1$ and the NG-RAN node$_2$ in the event of an abnormal failure. The procedure either resets the Xn interface or selected UE contexts. This procedure doesn't affect the application level configuration data exchanged during, e.g., the Xn Setup procedure.

The procedure uses non UE-associated signalling.

8.4.4.2 Successful Operation

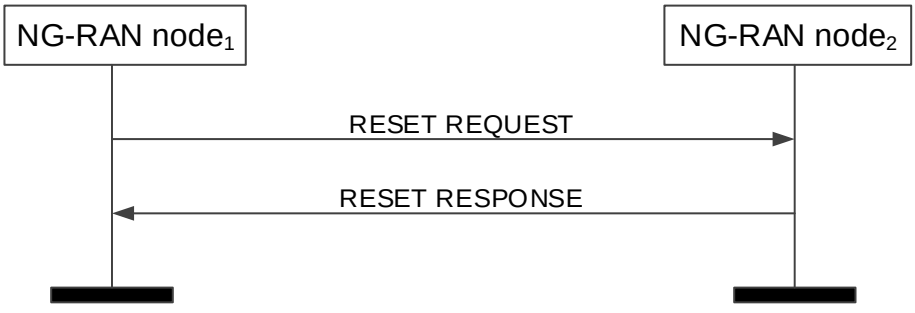

Figure 8.4.4.2-1: Reset, successful operation

The procedure is initiated with the RESET REQUEST message sent from the NG-RAN node$_1$ to the NG-RAN node$_2$. Upon receipt of this message,

- if the RESET REQUEST message indicates full reset the NG-RAN node$_2$ shall abort any other ongoing procedures over Xn between the NG-RAN node$_1$ and the NG-RAN node$_2$. The NG-RAN node$_2$ shall delete all the context information related to the NG-RAN node$_1$, except the application level configuration data exchanged during the Xn Setup or the NG-RAN node Configuration Update procedures and release the corresponding resources. After completion of release of the resources, the NG-RAN node$_2$ shall respond with the RESET RESPONSE message.

- if the RESET REQUEST message indicates partial reset, the NG-RAN node$_2$ shall abort any other ongoing procedures only for the indicated UE associated signalling connections identified either by the *NG-RAN node1 UE XnAP ID* IE or the *NG-RAN node1 UE XnAP ID* IE or both, for which the NG-RAN node$_2$ shall delete all the context information related to the NG-RAN node$_1$ and release the corresponding resources. After completion of release of the resources, the NG-RAN node$_2$ shall respond with the RESET RESPONSE message indicating the UE contexts admitted to be released. The NG-RAN node$_2$ receiving the request for partial reset does not need to wait for the release or reconfiguration of radio resources to be completed before returning the RESET RESPONSE message. The NG-RAN node$_2$ receiving the request for partial reset shall include in the RESET RESPONSE message, for each UE association to be released, the same list of UE-associated logical Xn-connections over Xn. The list shall be in the same order as received in the RESET REQUEST message and shall include also unknown UE-associated logical Xn-connections.

If case of network sharing with multiple cell ID broadcast with shared Xn-C signalling transport, as specified in TS 38.300 [9], the RESET REQUEST message and the RESET RESPONSE message shall include the *Interface Instance Indication* IE to identify the corresponding interface instance.

Interactions with other procedures:

If the RESET REQUEST message indicates full reset, the NG-RAN node$_2$ shall abort any other ongoing procedure (except for a Reset procedures).

If the RESET REQUEST message indicates partial reset, the NG-RAN node$_2$ shall abort any other ongoing procedure (except for a Reset procedures) on the same Xn interface related to a UE associated signalling connection indicated in the RESET REQUEST message.

8.4.4.3 Unsuccessful Operation

Void.

8.4.4.4 Abnormal Conditions

If the RESET REQUEST message is received, any other ongoing procedure (except another Reset procedure) on the same Xn interface shall be aborted.

If the Reset procedure is ongoing and the responding node receives the RESET REQUEST message from the peer entity on the same Xn interface, it shall respond with the RESET RESPONSE message as specified in 8.4.4.2.

If the initiating node does not receive the RESET RESPONSE message, the initiating node may reinitiate the Reset procedure towards the same NG-RAN node, provided that the content of the new RESET REQUEST message is identical to the content of the previously unacknowledged RESET REQUEST message.

8.4.5 Error Indication

8.4.5.1 General

The Error Indication procedure is initiated by an NG-RAN node 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.

8.4.5.2 Successful Operation

Figure 8.4.5.2-1: Error Indication, successful operation.

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

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 UE associated signalling, in the course of handover signalling and signalling for dual connectivity, the *Old NG-RAN node UE XnAP ID* IE and the *New NG-RAN node UE XnAP ID* IE shall be included in the ERROR INDICATION message. If any of the *Old NG-RAN node UE XnAP ID* IE and the *New NG-RAN node UE XnAP ID* IE is not correct, the cause shall be set to an appropriate value.

If case of network sharing with multiple cell ID broadcast with shared Xn-C signalling transport, as specified in TS 38.300 [9], the ERROR INDICATION message shall include the *Interface Instance Indication* IE to identify the corresponding interface instance.

8.4.5.3 Unsuccessful Operation

Not applicable.

8.4.5.4 Abnormal Conditions

Void.

8.4.6 Xn Removal

8.4.6.1 General

The purpose of the Xn Removal procedure is to remove the interface instance between two NG-RAN nodes 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 Xn-C interface instances, and the TNL association is still used by one or more Xn-C interface instances, the initiating NG-RAN node should not initiate the removal of the TNL association.

The procedure uses non UE-associated signaling.

8.4.6.2 Successful Operation

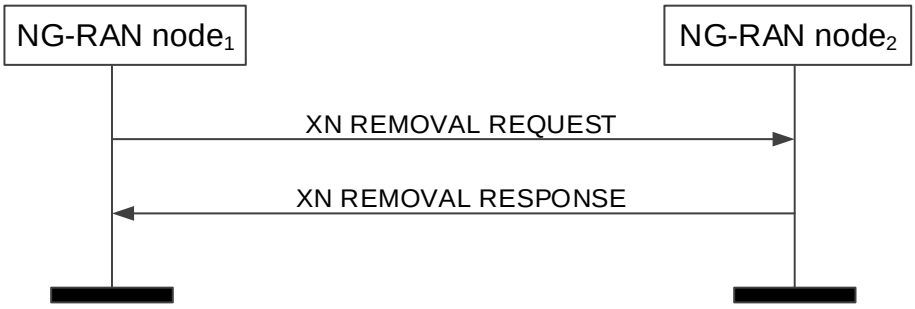

Figure 8.4.6.2-1: Xn Removal, successful operation

An NG-RAN node$_1$ initiates the procedure by sending the XN REMOVAL REQUEST message to a candidate NG-RAN node$_2$. Upon reception of the XN REMOVAL REQUEST message the candidate NG-RAN node$_2$ shall reply with the XN REMOVAL RESPONSE message. After receiving the XN REMOVAL RESPONSE message, the initiating NG-RAN node$_1$ shall initiate removal of the TNL association towards NG-RAN node$_2$ and may remove all resources associated with that interface instance. The candidate NG-RAN node$_2$ may then remove all resources associated with that interface instance.

If the *Xn Removal Threshold* IE is included in the XN REMOVAL REQUEST message, the candidate NG-RAN node$_2$ shall, if supported, accept to remove the interface instance with NG-RAN node$_1$ if the Xn Benefit Value of the interface instance determined at the candidate NG-RAN node$_2$ is lower than the value of the *Xn Removal Threshold* IE.

If case of network sharing with multiple cell ID broadcast with shared Xn-C signalling transport, as specified in TS 38.300 [9], the XN REMOVAL REQUEST message and the XN REMOVAL RESPONSE message shall include the *Interface Instance Indication* IE to identify the corresponding interface instance.

8.4.6.3 Unsuccessful Operation

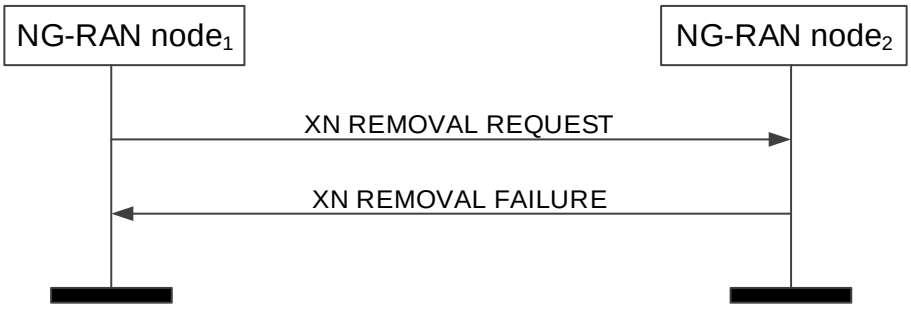

Figure 8.4.6.3-1: Xn Removal, unsuccessful operation

If the candidate NG-RAN node$_2$ cannot accept to remove the interface instance with NG-RAN node$_1$ it shall respond with an XN REMOVAL FAILURE message with an appropriate cause value.

If case of network sharing with multiple cell ID broadcast with shared Xn-C signalling transport, as specified in TS 38.300 [9], the XN REMOVAL REQUEST message and the XN REMOVAL FAILURE message shall include the *Interface Instance Indication* IE to identify the corresponding interface instance.

8.4.6.4 Abnormal Conditions

Void.

8.4.7 Failure Indication

8.4.7.1 General

The purpose of the Failure Indication procedure is to transfer information regarding RRC re-establishment attempts, or received RLF Reports, between NG-RAN nodes. The signalling takes place from the NG-RAN node at which a re-establishment attempt is made, or an RLF Report is received, to an NG-RAN node to which the UE concerned may have previously been attached prior to the connection failure. This may aid the detection of radio link failure, handover failure cases.

The procedure uses non UE-associated signalling.

8.4.7.2 Successful Operation

Figure 8.4.7.2-1: Failure Indication, successful operation

NG-RAN node$_2$ initiates the procedure by sending the FAILURE INDICATION message to NG-RAN node$_1$, following a re-establishment attempt or an RLF Report reception from a UE at NG-RAN node$_2$, when NG-RAN node$_2$ considers that the UE may have previously suffered a connection failure at a cell controlled by NG-RAN node$_1$.

If the *UE RLF Report Container* IE is included in the FAILURE INDICATION message, NG-RAN node$_1$ shall use it to derive failure case information.

8.4.7.3 Unsuccessful Operation

Not applicable.

8.4.7.4 Abnormal Conditions

Void.

8.4.8 Handover Report

8.4.8.1 General

The purpose of the Handover Report procedure is to transfer mobility related information between NG-RAN nodes.

The procedure uses non UE-associated signalling.

8.4.8.2 Successful Operation

Figure 8.4.8.2-1: Handover Report, successful operation

NG-RAN node$_1$ initiates the procedure by sending the HANDOVER REPORT message to NG-RAN node$_2$. When receiving the message NG-RAN node$_2$ shall assume that a mobility-related problem was detected.

If the *Handover Report Type* IE is set to "HO too early" or "HO to wrong cell", then NG-RAN node$_1$ indicates to NG-RAN node$_2$ that, following a successful handover from a cell of NG-RAN node$_2$ to a cell of NG-RAN node$_1$, a radio link failure occurred and the UE attempted RRC Re-establishment or re-connected either at the original cell of NG-RAN node$_2$ (Handover Too Early), or at another cell (Handover to Wrong Cell). The detection of Handover Too Early and Handover to Wrong Cell events is made according to TS 38.300 [9].

If the *Handover Report Type* IE is set to "Too Late CHO with candidate SCG", then NG-RAN node$_2$ shall deduce that a too late CHO with candidate SCG from a cell of NG-RAN node$_1$ to a suitable cell of NG-RAN node$_2$ occurred. The detection of Too Late CHO with candidate SCG event is made according to TS 38.300 [9].

The HANDOVER REPORT message may include:

- the *Mobility Information* IE, if the *Mobility Information* IE was sent for this handover from NG-RAN node$_2$ (in case the NG-RAN node$_2$ provided it more than once, the most recent *Mobility Information* IE is included in the HANDOVER REPORT message);
- the *Source cell C-RNTI* IE.
- the *CHO Configuration* IE, if the *CHO Configuration* IE was sent for this handover from NG-RAN node$_2$.

If received, NG-RAN node$_2$ uses the above information according to TS 38.300 [9].

If the *Handover Report Type* IE is set to "Inter-system ping-pong", then NG-RAN node$_2$ shall deduce that a completed handover from a cell of NG-RAN node$_2$ to a cell in another system might have resulted in an inter-system ping-pong and the UE was successfully handed over to a cell of NG-RAN node$_1$ (indicated with *Target cell CGI* IE).

If the *Target cell C-RNTI* IE and the *Time Since Failure* IE are received, NG-RAN node$_2$ uses the information as specified in TS 38.300 [9].

Interaction with the Failure Indication procedure:

If NG-RAN node$_1$ receives a UE RLF Report from an NG-RAN node via the FAILURE INDICATION message, as described in TS 38.300 [9], NG-RAN node$_1$ may also include it in the *UE RLF Report Container* IE included in the HANDOVER REPORT message.

8.4.8.3 Unsuccessful Operation

Not applicable.

8.4.8.4 Abnormal Conditions

Void.

8.4.9 Mobility Settings Change

8.4.9.1 General

This procedure enables an NG-RAN node to negotiate the handover trigger settings with a peer NG-RAN node controlling neighbouring cells.

The procedure uses non UE-associated signalling.

8.4.9.2 Successful Operation

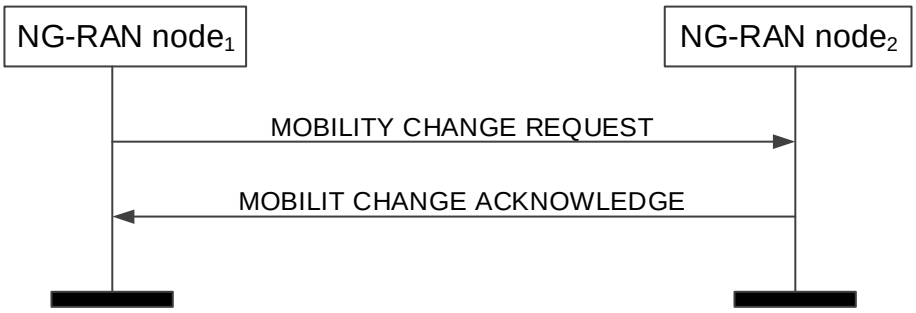

Figure 8.4.9.2-1: Mobility Settings Change, successful operation

NG-RAN node$_1$ initiates the procedure by sending the MOBILITY CHANGE REQUEST message to NG-RAN node$_2$.

Upon receipt, NG-RAN node$_2$ shall evaluate if the proposed NG-RAN node$_2$ handover trigger modification may be accepted. If NG-RAN node$_2$ is able to successfully complete the request it shall reply with MOBILITY CHANGE ACKNOWLEDGE message.

If the *NG-RAN node1 SSB Offset Information* IE is included in the MOBILITY CHANGE REQUEST, the NG-RAN node$_2$ should take into account the included value of the SSB Offset for UE measurements received for the SSB Area indicated by the *SSB Index* IE.

If the *NG-RAN node2 Proposed SSB Offset Information* IE is included in the MOBILITY CHANGE REQUEST, the NG-RAN node$_2$ shall, if supported, evaluate if the proposed value of *SSB Offset* IE may be accepted for the SSB Area indicated by the *SSB Index* IE. If NG-RAN node$_2$ is able to successfully complete the request it shall reply with MOBILITY CHANGE ACKNOWLEDGE message.

8.4.9.3 Unsuccessful Operation

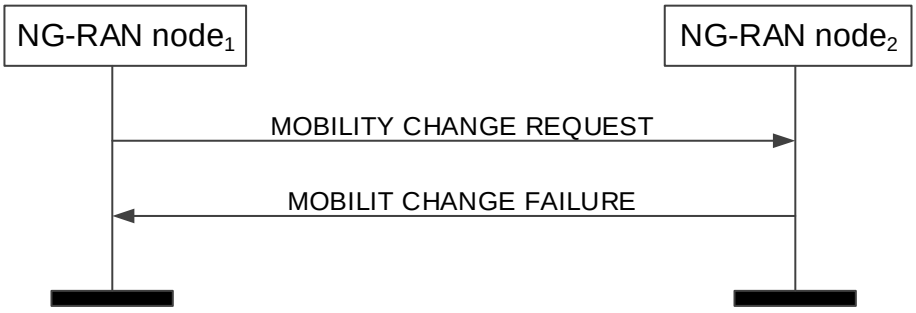

Figure 8.4.9.3-1: Mobility Settings Change, unsuccessful operation

If the requested parameter modification is refused by NG-RAN node$_2$, or if NG-RAN node$_2$ is not able to complete the procedure, NG-RAN node$_2$ shall send the MOBILITY CHANGE FAILURE message with the *Cause* IE set to an appropriate value. NG-RAN node$_2$ may include the *Mobility Parameters Modification Range* IE in the MOBILITY CHANGE FAILURE message, for example in cases when the proposed change is out of the permitted range.

NG-RAN node$_2$ may include the *SSB Offset Modification Range* IE in the MOBILITY CHANGE FAILURE message, for example in cases when the proposed change is out of the permitted range.

8.4.9.4 Abnormal Conditions

Void.

8.4.10 Resource Status Reporting Initiation

8.4.10.1 General

This procedure is used by an NG-RAN node to request the reporting of load measurements to another NG-RAN node.

The procedure uses non UE-associated signalling.

8.4.10.2 Successful Operation

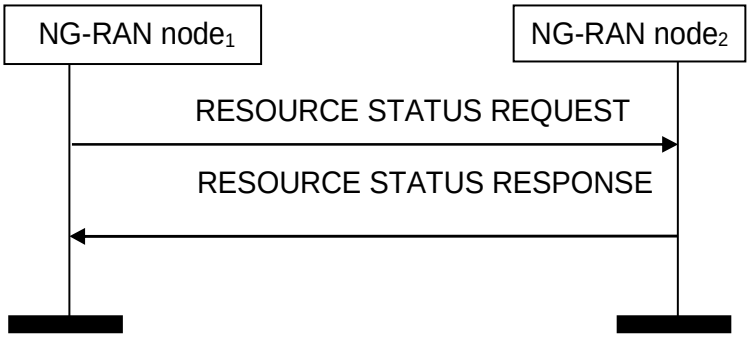

Figure 8.4.10.2-1: Resource Status Reporting Initiation, successful operation

NG-RAN node$_1$ initiates the procedure by sending the RESOURCE STATUS REQUEST message to NG-RAN node$_2$ to start a measurement, stop a measurement or add cells to report for a measurement. Upon receipt, NG-RAN node$_2$:

- 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 NG-RAN node$_2$ is capable to provide all requested resource status information, it shall initiate the measurement as requested by NG-RAN node$_1$ 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 NG-RAN node$_2$ shall perform measurements on. For each cell, NG-RAN node$_2$ 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 NG-RAN node$_2$ is a gNB and 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 include the requested *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 may 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 received *TNL Capacity Indicator* IE represents the lowest TNL capacity available for the cell, only taking into account interfaces providing user plane transport.

- 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 the *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 NG-RAN node$_2$ is a gNB and 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* for all SSB areas supported by the cell, providing the SSB area capacity with respect to the *Cell Capacity Class Value*. 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.

  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 *Number of Active UEs* IE, if the fourth bit, "Number of Active UEs Periodic" of the *Report Characteristics* IE included in the RESOURCE STATUS REQUEST message is set to "1";

- the *RRC Connections* IE, if the fifth bit, "RRC Connections 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 NG-RAN node$_2$ shall report only once, unless otherwise requested within the *Reporting Periodicity* IE.

8.4.10.3 Unsuccessful Operation

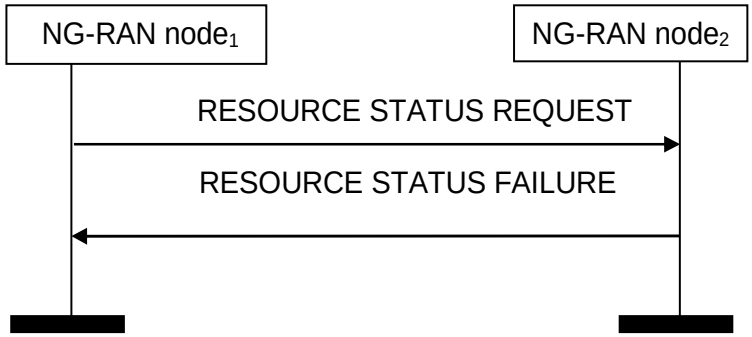

Figure 8.4.10.3-1: Resource Status Reporting Initiation, unsuccessful operation

If any of the requested measurements cannot be initiated, NG-RAN node$_2$ shall send the RESOURCE STATUS FAILURE message with an appropriate cause value.

8.4.10.4 Abnormal Conditions

For the same Measurement ID, if the initiating NG-RAN node$_1$ does not receive either the RESOURCE STATUS RESPONSE message or the RESOURCE STATUS FAILURE message, the NG-RAN node$_1$ may reinitiate the Resource Status Reporting Initiation procedure towards the same NG-RAN node, provided that the content of the new RESOURCE STATUS REQUEST message is identical to the content of the previously unacknowledged RESOURCE STATUS REQUEST message.

If the NG-RAN node$_2$ receives a RESOURCE STATUS REQUEST message which includes the *Registration Request* IE set to "add" or "stop" and if the NG-RAN node$_2$ Measurement ID value received in the RESOURCE STATUS REQUEST message is not used, the NG-RAN node$_2$ shall initiate RESOURCE STATUS FAILURE message with an appropriate cause value.

If the *Report Characteristics* IE bitmap is set to "0" (all bits are set to "0") in the RESOURCE STATUS REQUEST message then NG-RAN node$_2$ shall initiate a RESOURCE STATUS FAILURE message with an appropriate cause value.

If the NG-RAN node$_2$ receives a RESOURCE STATUS REQUEST message which includes the *Registration Request* IE set to "start" and the *NG-RAN node1Measurement ID* IE corresponding to an existing on-going load measurement reporting, then NG-RAN node$_2$ shall initiate a RESOURCE STATUS FAILURE message with an appropriate cause value.

8.4.11 Resource Status Reporting

8.4.11.1 General

This procedure is initiated by an NG-RAN node to report the result of measurements admitted by the NG-RAN node following a successful Resource Status Reporting Initiation procedure.

The procedure uses non UE-associated signalling.

8.4.11.2 Successful Operation

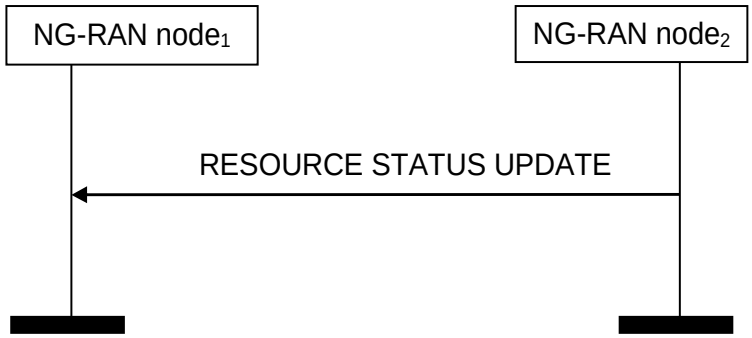

Figure 8.4.11.2-1: Resource Status Reporting, successful operation

NG-RAN node$_2$ 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, NG-RAN node$_1$ shall consider that these results were not available at NG-RAN node$_2$.

8.4.11.3 Unsuccessful Operation

Not applicable.

8.4.11.4 Abnormal Conditions

Void

8.4.12 Access And Mobility Indication

8.4.12.1 General

The purpose of the Access And Mobility Indication procedure is to transfer Access and Mobility related information between NG-RAN nodes.

8.4.12.2 Successful Operation

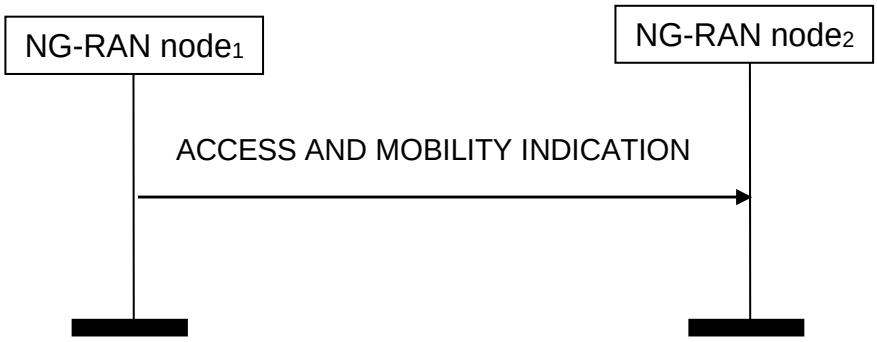

Figure 8.4.12.2-1: Access And Mobility Indication, successful operation

NG-RAN node$_1$ initiates the procedure by sending the ACCESS AND MOBILITY INDICATION message sent to NG-RAN node$_2$.

If the *Successful HO Report Information* IE is included in the ACCESS AND MOBILITY INDICATION message, NG-RAN node$_2$ may use it to optimize handover configurations.

If the *Successful PSCell Change Report Information* IE is included in the ACCESS AND MOBILITY INDICATION message, NG-RAN node$_2$ may use it to optimize PSCell change and/or PSCell addition configurations.

If the *NRCell List Container* IE is included in the ACCESS AND MOBILITY INDICATION message, NG-RAN node$_2$ may use it to identify the NG-RAN node to which the *RA Report Container* IE should be forwarded.

If the *DL LBT Failure Information List* IE is included in the ACCESS AND MOBILITY INDICATION message, the NG-RAN node$_2$ may use it for MRO analysis.

8.4.12.3 Abnormal Conditions

Not applicable.

8.4.13 Data Collection Reporting Initiation

8.4.13.1 General

This procedure is used by an NG-RAN node to request from another NG-RAN node the reporting of information to support, e.g., AI/ML for NG-RAN.

The procedure uses non UE-associated signalling.

8.4.13.2 Successful Operation

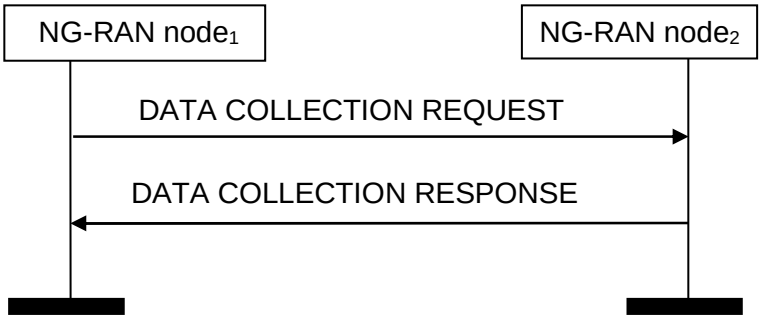

Figure 8.4.13.2-1: Data Collection Reporting Initiation, successful operation

NG-RAN $node_1$ initiates the procedure by sending the DATA COLLECTION REQUEST message to NG-RAN $node_2$ to start information reporting or to stop information reporting. Upon receipt, NG-RAN $node_2$:

- shall initiate the requested information reporting according to the parameters given in the request in case the *Registration Request for Data Collection* IE is set to "start"; or

- shall stop all measurements and predictions and terminate the reporting in case the *Registration Request for Data Collection* IE is set to "stop".

If the *Registration Request for Data Collection* IE is set to "start" in the DATA COLLECTION REQUEST message and the *Report Characteristics for Data Collection* IE indicates cell-specific information reporting, the *Cell To Report List for Data Collection* IE shall be included.

If the *Registration Request for Data Collection* IE is set to "start" in the DATA COLLECTION REQUEST message and slice-specific information reporting is requested, the *Slice To Report List for Data Collection* IE shall be included.

If NG-RAN $node_2$ is capable of providing all of the requested information, it shall initiate the information reporting as requested by NG-RAN $node_1$ and respond with the DATA COLLECTION RESPONSE message.

If NG-RAN $node_2$ is capable of providing some but not all of the requested information, it shall initiate the information reporting for the admitted requested information and include the *Node Measurement Initiation Result List* IE or the *Cell Measurement Initiation Result List* IE or both in the DATA COLLECTION RESPONSE message.

If the *Reporting Periodicity for Data Collection* IE in the DATA COLLECTION REQUEST message is present, this indicates the periodicity for the reporting of configured measurement objects. The NG-RAN $node_2$ shall report only once, unless otherwise requested within the *Reporting Periodicity for Data Collection* IE.

If the *Registration Request for Data Collection* IE is set to "start" in the DATA COLLECTION REQUEST message and predicted information is requested, the *Requested Prediction Time* IE shall be included. The *Requested Prediction Time* IE indicates the specific point in time to which the prediction of the requested information applies. The NG-RAN $node_2$ shall take it into account when generating the requested predicted information.

If the *Registration Request for Data Collection* IE is set to "start" in the DATA COLLECTION REQUEST message and the measured UE trajectory is requested, the *UE Trajectory Collection Configuration* IE shall be included. The NG-RAN $node_2$ shall take the *UE Trajectory Collection Configuration* IE into account for the configuration of UE trajectory collection and reporting. NG-RAN $node_2$ shall report the UE trajectory only once. NG-RAN $node_2$ shall terminate the collection when at least one of the following conditions is fulfilled:

- the time since UE was successfully handed over to NG-RAN $node_2$ is equal to the value of the *Collection Time Duration for UE Trajectory* IE;

- the number of visited cells within NG-RAN $node_2$ is equal to the value of the *Number of Visited Cells* IE, if included;

- UE moves to RRC_INACTIVE or RRC_IDLE state;

- UE is handed over to a cell belonging to an NG-RAN node different from NG-RAN $node_2$.

The result of the UE trajectory collection is reported at the next available DATA COLLECTION UPDATE message.

If the *Registration Request for Data Collection* IE is set to "start" in the DATA COLLECTION REQUEST message and one or more of the UE performance metrics are requested, the *UE Performance Collection Configuration* IE shall be included.The NG-RAN $node_2$ shall take the *UE Performance Collection Configuration* IE into account for the configuration of UE performance collection and reporting. NG-RAN $node_2$ shall terminate the collection when at least one of the following conditions is fulfilled:

- the time since UE was successfully handed over to NG-RAN $node_2$ is equal to the value of the *Collection Time Duration for UE Performance* IE;

- the time since SN addition successfully completed is equal to the value of the *Collection Time Duration for UE Performance* IE;

- UE moves to RRC_INACTIVE or RRC_IDLE state;

- UE is handed over to another cell;

- the NG-RAN node$_2$, configured as the SN for the UE, is released.

The result of the UE performance collection may be reported periodically during the Collection Time Duration for UE Performance via DATA COLLECTION UPDATE messages and, after collection is terminated, it shall be reported at the next available DATA COLLECTION UPDATE message.

Interaction with the Data Collection Reporting procedure

When starting a measurement, the *Report Characteristics for Data Collection* IE in the DATA COLLECTION REQUEST message indicates the type of objects NG-RAN node$_2$ performs measurements or predictions on. NG-RAN node$_2$ shall include in the DATA COLLECTION UPDATE message:

- the *SSB Area Radio Resource Status List* IE, excluding the *DL scheduling PDCCH CCE usage* IE and *UL scheduling PDCCH CCE usage* IE, included in the *Predicted Radio Resource Status* IE, if the first bit, "Predicted Radio Resource Status" of the *Report Characteristics for Data Collection* IE included in the DATA COLLECTION REQUEST message is set to "1" and if the measurement object is admitted by NG-RAN node$_2$. If the *Slice To Report List for Data Collection* IE is included for a cell, the *Predicted Radio Resource Status* IE for such cell shall, if supported, include the *Slice Radio Resource Status Item* IE.

- the *Predicted Number of Active UEs* IE, if the second bit, "Predicted Number of Active UEs" of the *Report Characteristics for Data Collection* IE included in the DATA COLLECTION REQUEST message is set to "1" and if the measurement object is admitted by NG-RAN node$_2$.

- the *Predicted RRC Connections* IE, if the third bit, "Predicted RRC Connections" of the *Report Characteristics for Data Collection* IE included in the DATA COLLECTION REQUEST message is set to "1" and if the measurement object is admitted by NG-RAN node$_2$.

- the *Average UE Throughput DL* IE, if the fourth bit, "Average UE Throughput DL" of the *Report Characteristics for Data Collection* IE included in the DATA COLLECTION REQUEST message is set to "1" and if the measurement object is admitted by NG-RAN node$_2$.

- the *Average UE Throughput UL* IE, if the fifth bit, "Average UE Throughput UL" of the *Report Characteristics for Data Collection* IE included in the DATA COLLECTION REQUEST message is set to "1" and if the measurement object is admitted by NG-RAN node$_2$.

- the *Average Packet Delay* IE, if the sixth bit, "Average Packet Delay" of the *Report Characteristics for Data Collection* IE included in the DATA COLLECTION REQUEST message is set to "1" and if the measurement object is admitted by NG-RAN node$_2$.

- the *Average Packet Drop DL* IE, if the seventh bit, "Average Packet Drop DL" of the *Report Characteristics for Data Collection* IE included in the DATA COLLECTION REQUEST message is set to "1" and if the measurement object is admitted by NG-RAN node$_2$.

- the *Energy Cost* IE, if the eighth bit, "Energy Cost" of the *Report Characteristics for Data Collection* IE included in the DATA COLLECTION REQUEST message is set to "1" and if the measurement object is admitted by NG-RAN node$_2$.

- the *Measured UE Trajectory* IE, if the ninth bit, "Measured UE Trajectory" of the *Report Characteristics for Data Collection* IE included in the DATA COLLECTION REQUEST message is set to "1" and if the measurement object is admitted by NG-RAN node$_2$.

- the *Average Packet Loss UL* IE, if the tenth bit, "Average Packet Loss UL" of the *Report Characteristics for Data Collection* IE included in the DATA COLLECTION REQUEST message is set to "1" and if the measurement object is admitted by NG-RAN node$_2$.

- the *Predicted Slice Available Capacity Group* IE, if the eleventh bit, "Predicted Slice Available Capacity" of the *Report Characteristics for Data Collection* IE included in the DATA COLLECTION REQUEST message is set to "1"and if

  - the *Slice To Report List for Data Collection* IE is included for the cell, and

  - the measurement object is admitted by NG-RAN node$_2$.

  If the *Cell Capacity Class Value Uplink* IE and the *Cell Capacity Class Value Downlink* IE are included within the *Predicted Slice Available Capacity Group* IE for the cell for which the *Predicted Slice Available Capacity* IE

is reported, these IEs are used to assign weights to the available capacity indicated in the requested *Predicted Slice Available Capacity Value Uplink* IE and *Predicted Slice Available Capacity Value Downlink* IE respectively.

- the *Slice Average UE Throughput DL* IE, if the twelfth bit, "Slice Average UE Throughput DL" of the *Report Characteristics for Data Collection* IE included in the DATA COLLECTION REQUEST message is set to "1" and if the measurement object is admitted by NG-RAN node$_2$.

- the *Slice Average UE Throughput UL* IE, if the thirteenth bit, "Slice Average UE Throughput UL" of the *Report Characteristics for Data Collection* IE included in the DATA COLLECTION REQUEST message is set to "1" and if the measurement object is admitted by NG-RAN node$_2$.

- the *Slice Average Packet Delay* IE, if the fourteenth bit, "Slice Average Packet Delay" of the *Report Characteristics for Data Collection* IE included in the DATA COLLECTION REQUEST message is set to "1" and if the measurement object is admitted by NG-RAN node$_2$.

- the *Slice Average Packet Drop DL* IE, if the fifteenth bit, "Slice Average Packet Drop DL" of the *Report Characteristics for Data Collection* IE included in the DATA COLLECTION REQUEST message is set to "1" and if the measurement object is admitted by NG-RAN node$_2$.

- the *Slice Average Packet Loss UL* IE, if the sixteenth bit, "Slice Average Packet Loss UL" of the *Report Characteristics for Data Collection* IE included in the DATA COLLECTION REQUEST message is set to "1" and if the measurement object is admitted by NG-RAN node$_2$.

8.4.13.3 Unsuccessful Operation

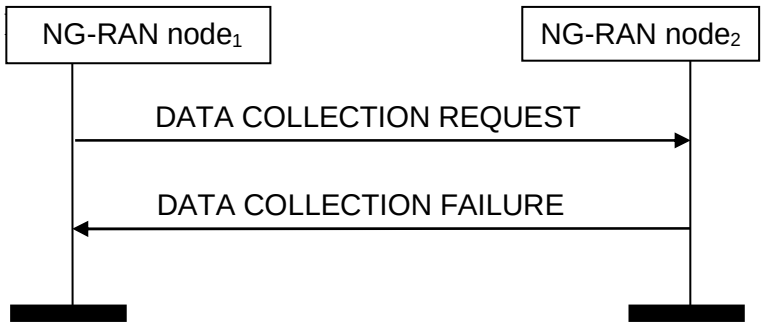

Figure 8.4.13.3-1: Data Collection Reporting Initiation, unsuccessful operation

If none of the requested information can be initiated, NG-RAN node$_2$ shall send the DATA COLLECTION FAILURE message with an appropriate cause value.

8.4.13.4 Abnormal Conditions

For the same Measurement ID, if the initiating NG-RAN node$_1$ does not receive either the DATA COLLECTION RESPONSE message or the DATA COLLECTION FAILURE message, the NG-RAN node$_1$ may reinitiate the Data Collection Reporting Initiation procedure towards the same NG-RAN node, provided that the content of the new DATA COLLECTION REQUEST message is identical to the content of the previously unacknowledged DATA COLLECTION REQUEST message.

If the NG-RAN node$_2$ receives a DATA COLLECTION REQUEST message which includes the *Registration Request for Data Collection* IE set to "stop" and if the NG-RAN node$_2$ Measurement ID value received in the DATA COLLECTION REQUEST message is not used, the NG-RAN node$_2$ shall initiate DATA COLLECTION FAILURE message with an appropriate cause value.

If in the *Report Characteristics for Data Collection* IE bitmap all bits are set to "0" in the DATA COLLECTION REQUEST message, then NG-RAN node$_2$ shall initiate a DATA COLLECTION FAILURE message with an appropriate cause value.

If the NG-RAN node$_2$ receives a DATA COLLECTION REQUEST message which includes the *Registration Request for Data Collection* IE set to "start" and the *NG-RAN node1 Measurement ID* IE corresponding to an existing on-going

Data Collection reporting, then NG-RAN node$_2$ shall initiate a DATA COLLECTION FAILURE message with an appropriate cause value.

8.4.14 Data Collection Reporting

8.4.14.1 General

This procedure is initiated by an NG-RAN node to report information accepted by the NG-RAN node following a successful Data Collection Reporting Initiation procedure for the purpose of, e.g., AI/ML for NG-RAN.

The procedure uses non UE-associated signalling.

8.4.14.2 Successful Operation

Figure 8.4.14.2-1: Data Collection Reporting, successful operation

NG-RAN node$_2$ shall report the accepted information in DATA COLLECTION UPDATE message. The accepted information is the information that was successfully initiated during the preceding Data Collection Reporting Initiation procedure.

If some results of the accepted information in DATA COLLECTION UPDATE message are missing, NG-RAN node$_1$ shall consider that these results were not available at NG-RAN node$_2$.

8.4.14.3 Unsuccessful Operation

Not applicable.

8.4.14.4 Abnormal Conditions

Void.

8.4.15 CLI Indication

8.4.15.1 General

The purpose of the CLI Indication procedure is to transfer CLI related information between NG-RAN nodes.

The procedure uses non UE-associated signalling.

8.4.15.2 Successful Operation

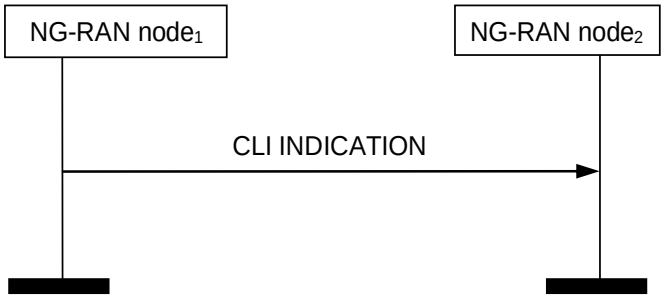

Figure 8.4.15.2-1: CLI Indication, successful operation

NG-RAN node$_1$ initiates the procedure by sending the CLI INDICATION message to NG-RAN node$_2$.

If the CLI INDICATION message is received, the NG-RAN node$_2$ may act as specified in TS 38.300 [9].

8.4.16 SCG Failure Indication

8.4.16.1 General

The purpose of the SCG Failure Indication procedure is to transfer SCG failure related information between NG-RAN nodes.

The procedure uses non UE-associated signalling.

8.4.16.2 Successful Operation

Figure 8.4.16.2-1: SCG Failure Indication, successful operation

NG-RAN node$_1$ initiates the procedure by sending the SCG FAILURE INDICATION message to NG-RAN node$_2$. When receiving the message NG-RAN node$_2$ shall assume that a SCG failure related problem was detected.

If the *Failure Type* IE is contained in the SCG FAILURE INDICATION and is set to "Too Late CPC Execution" or "CPC/CPA Execution to wrong PSCell", the NG-RAN node$_2$ shall, if supported, assume that a failure occurred in a SCG. The detection of Too Late CPC event and CPC/CPA Execution to Wrong PSCell are made according to TS 38.300 [9].

If received, NG-RAN node$_2$ uses the above information according to TS 38.300 [9].

8.4.16.3 Unsuccessful Operation

Not applicable.

8.4.16.4 Abnormal Conditions

Void.

8.4.17 OD-SIB1 Configuration Provision

8.4.17.1 General

The purpose of the OD-SIB1 Configuration Provision procedure is to enable an NG-RAN node$_1$ to provide OD-SIB1 configuration information to an NG-RAN node$_2$ and to request the NG-RAN node$_2$ to transmit the provided OD-SIB1 configuration.

The procedure is also used to enable the NG-RAN node$_1$ to request the NG-RAN node$_2$ to stop transmission of the OD-SIB1 configuration.

The procedure uses non UE-associated signalling.

8.4.17.2 Successful Operation

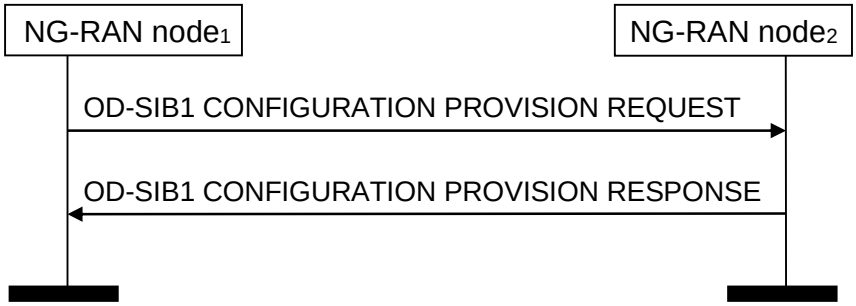

Figure 8.4.17.2-1: OD-SIB1 Configuration Provision procedure, successful operation

The NG-RAN node$_1$ initiates the procedure by sending the OD-SIB1 CONFIGURATION PROVISION REQUEST message to the NG-RAN node$_2$.

If the *Request Type* IE in the OD-SIB1 CONFIGURATION PROVISION REQUEST message is set to "start", the NG-RAN node$_2$ shall, if supported, transmit the provided OD-SIB1 configuration in SIB26 and reply with the OD-SIB1 CONFIGURATION PROVISION RESPONSE message. The NG-RAN node$_2$ stores the OD-SIB1 configuration information.

If the *Cell A ID* IE is included in the OD-SIB1 CONFIGURATION PROVISION REQUEST message, the NG-RAN node$_2$ shall, if supported, transmit the OD-SIB1 configuration in SIB26 in the cell indicated by the *Cell A ID* IE and include the *Cell A ID* IE indicating the same cell in the OD-SIB1 CONFIGURATION PROVISION RESPONSE message.

If the *Request Type* IE in the OD-SIB1 CONFIGURATION PROVISION REQUEST message is set to "start" and the *NES Cell ID* IE indicates a cell for which the NG-RAN node$_2$ is already transmitting the OD-SIB1 configuration:

- If the request is for a cell already transmitting the OD-SIB1 configuration for the cell identified by the *NES Cell ID* IE, the NG-RAN node$_2$ shall, if supported, stop the ongoing transmission and start transmission of the newly provided OD-SIB1 configuration in SIB26. The NG-RAN node$_2$ replaces the stored OD-SIB1 configuration information with the newly received OD-SIB1 configuration information.

- If the request is for a new cell indicated by the *Cell A ID* IE, the NG-RAN node$_2$ shall, if supported, start transmitting the provided OD-SIB1 configuration in SIB26 in the cell indicated by *Cell A ID* IE.

If the *Request Type* IE in the OD-SIB1 CONFIGURATION PROVISION REQUEST message is set to "stop", the NG-RAN node$_2$ shall stop broadcasting the OD-SIB1 configuration for the cell indicated by *NES Cell ID* IE in SIB26. The NG-RAN node$_2$ removes the stored OD-SIB1 configuration information.

8.4.17.3 Unsuccessful Operation

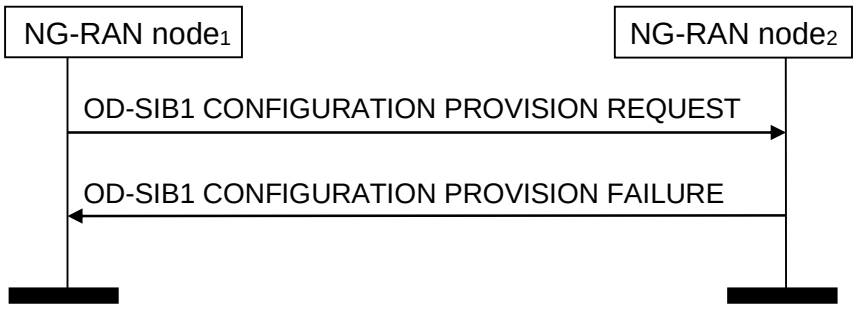

Figure 8.4.17.3-1: OD-SIB1 Configuration Provision procedure, unsuccessful operation

If the NG-RAN node$_2$ cannot transmit the provided OD-SIB1 configuration in SIB26, the NG-RAN node$_2$ shall send the OD-SIB1 CONFIGURATION PROVISION FAILURE message. The message shall contain the *Cause* IE with an appropriate value.

If the *Cell A ID* IE is included in the OD-SIB1 CONFIGURATION PROVISION REQUEST message and the NG-RAN node$_2$ cannot transmit the provided OD-SIB1 configuration in SIB26 of the cell indicated by the *Cell A ID* IE, the NG-RAN node$_2$ shall send the OD-SIB1 CONFIGURATION PROVISION FAILURE message. The NG-RAN node$_2$ includes the *Cell A ID* IE in the OD-SIB1 CONFIGURATION PROVISION FAILURE message.

8.4.17.4 Abnormal Conditions

Void.

8.4.18 OD-SIB1 Configuration Provision Status Update

8.4.18.1 General

This procedure is initiated by an NG-RAN node$_2$ to inform a neighbouring NG-RAN node$_1$ about a previously admitted OD-SIB1 configuration provision being stopped.

The procedure uses non UE-associated signalling.

8.4.18.2 Successful Operation

Figure 8.4.18.2-1: OD-SIB1 Configuration Provision Status Update procedure, successful operation

The NG-RAN node$_2$ initiates the procedure by sending the OD-SIB1 CONFIGURATION PROVISION STATUS UPDATE message to the NG-RAN node$_1$.

Upon reception of the OD-SIB1 CONFIGURATION PROVISION STATUS UPDATE message with the *Provision Status* IE set to "stopped", the NG-RAN node$_1$ shall consider that the NG-RAN node$_2$ has stopped the OD-SIB1 broadcasting for the previously admitted OD-SIB1 configuration for the cell identified by the *NES Cell ID* IE. If the *Cell A ID* IE is included in the OD-SIB1 CONFIGURATION PROVISION STATUS UPDATE message, the NG-RAN node$_1$ shall consider that a previously admitted OD-SIB1 configuration for the cell identified by the *NES Cell ID* IE is

no longer transmitted in the cell identified by the *Cell A ID* IE. The NG-RAN node$_2$ removes the stored OD-SIB1 configuration information that is no longer valid.

8.4.18.3 Unsuccessful Operation

Not applicable.

8.4.18.4 Abnormal Conditions

Void.

8.5 IAB Procedures

8.5.1 F1-C Traffic Transfer

8.5.1.1 General

The purpose of the F1-C Traffic Transfer procedure is to deliver F1-C traffic between the M-NG-RAN node and the S-NG-RAN node serving a dual-connected IAB-node, where the F1-C traffic is either received from the IAB-node or sent to the IAB-node.

The procedure uses UE-associated signalling. This procedure is only applicable to IAB-nodes.

8.5.1.2 Successful Operation

Figure 8.5.1.2-1: F1-C Traffic Transfer procedure, successful operation

Either the M-NG-RAN Node initiates the procedure by sending the F1-C TRAFFIC TRANSFER message to the S-NG-RAN Node, or the S-NG-RAN Node initiates the procedure by sending the F1-C TRAFFIC TRANSFER message to the M-NG-RAN Node.

Upon reception of the F1-C TRAFFIC TRANSFER message, the receiving node, not being the IAB-donor of the IAB-node, shall deliver the contained F1-C traffic to the IAB-node. Alternatively, the receiving node, being the IAB-donor of the IAB-node, shall handle the received F1-C traffic as specified in TS 38.473[41].

8.5.1.3 Unsuccessful Operation

Not applicable.

8.5.1.4 Abnormal Conditions

Not Applicable.

8.5.2 IAB Transport Migration Management

8.5.2.1 General

The purpose of the IAB Transport Migration Management procedure is to exchange information between the F1-terminating IAB-donor and the non-F1-terminating IAB-donor of a boundary IAB-node, for the purpose of managing the migration of the boundary and descendant IAB-node traffic between the topologies managed by the two IAB-donors. The procedure can also be used for mobile IAB-node. In this case, the boundary IAB-node refers to the mobile IAB-node and the non-F1-terminating IAB-donor of a boundary IAB-node refers to the RRC-terminating IAB-donor of a mobile IAB-node.

The procedure is applicable to inter-donor partial migration, inter-donor RLF recovery and inter-donor topology redundancy cases. The procedure is initiated by the F1-terminating IAB-donor of the boundary IAB-node. The procedure can be used to set up, modify and release (e.g., for the purpose of revoking) the resources under the non-F1-terminating IAB-donor used for serving the offloaded traffic.

The procedure uses UE-associated signalling.

8.5.2.2 Successful Operation

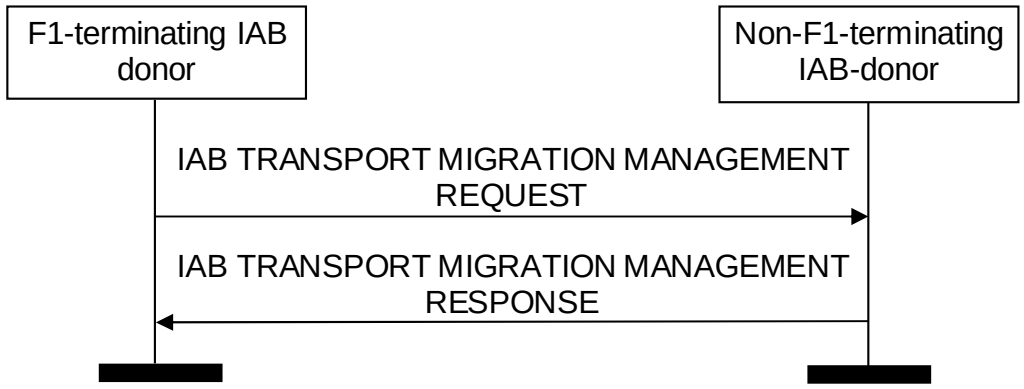

Figure 8.5.2.2-1: IAB Transport Migration Management triggered by the F1-terminating IAB-donor, successful operation

The F1-terminating IAB-donor initiates the procedure by sending the IAB TRANSPORT MIGRATION MANAGEMENT REQUEST message to the non-F1-terminating IAB-donor.

The non-F1-terminating IAB-donor may respond with the IAB TRANSPORT MIGRATION MANAGEMENT RESPONSE message by indicating:

- Traffic accepted for offloading, within the *Traffic Added List* IE;
- Already offloaded traffic accepted for modification, within the *Traffic Modified List* IE;
- Traffic not accepted for offloading, within the *Traffic Not Added List* IE;
- Already offloaded traffic not accepted for modification within the *Traffic Not Modified List* IE.

If the *Traffic To Be Released Information* IE is contained in the IAB TRANSPORT MIGRATION MANAGEMENT REQUEST message, the non-F1-terminating IAB-donor should release all offloaded traffic if the *All Traffic Indication* IE in the *Traffic to Be Released Information* IE is set to "true", or release only the offloaded traffic indicated by the *Traffic to Be Released Item* IE in the *Traffic to Be Released Information* IE.

If the IAB TRANSPORT MIGRATION MANAGEMENT REQUEST message contains the *Traffic to Be Released Information* IE, the non-F1-terminating IAB-donor shall include the *Traffic Released List* IE in the IAB TRANSPORT MIGRATION MANAGEMENT RESPONSE message.

If the IAB TRANSPORT MIGRATION MANAGEMENT REQUEST message contains the *IAB IPv4 Addresses Requested* IE or the *IAB IPv6 Request Type* IE in the *IAB TNL Address Request* IE, the non-F1-terminating IAB-donor shall, if supported, provide the allocated TNL address via the *IAB TNL Address Response* IE in the IAB TRANSPORT

MIGRATION MANAGEMENT RESPONSE message. If the IAB TRANSPORT MIGRATION MANAGEMENT REQUEST message contains the *IAB TNL Address To Remove List* IE in the *IAB TNL Address Request* IE, the non-F1-terminating IAB-donor shall consider that the TNL address(es) are no longer used by the F1-terminating IAB-donor.

If the *IAB TNL Address Exception* IE is contained in the IAB TRANSPORT MIGRATION MANAGEMENT REQUEST message, the non-F1-terminating IAB-donor shall, if supported, configure the related IAB-donor-DU to enable traffic re-routing over the inter-IAB-donor-DU tunnel.

If the *IAB QoS Mapping information* IE is contained in the IAB TRANSPORT MIGRATION MANAGEMENT RESPONSE message, the F1-terminating IAB-donor, shall, if supported, use it to set DSCP and/or IPv6 flow label fields for the downlink IP packets of the offloaded traffic.

If the *Mobile IAB-MT BAP Address* IE is contained in the IAB TRANSPORT MIGRATION MANAGEMENT REQUEST message and this is the first UE-associated signaling for the mobile IAB-MT identified by the *Mobile IAB-MT BAP Address* IE, the RRC-terminating IAB-donor, shall, if supported, ignore the *Non-F1-Terminating IAB-donor UE XnAP ID* IE and allocate an XnAP UE ID for the mobile IAB-MT to be used in the IAB TRANSPORT MIGRATION MANAGEMENT RESPONSE message and subsequent procedure(s) for this mobile IAB-MT.

8.5.2.3 Unsuccessful Operation

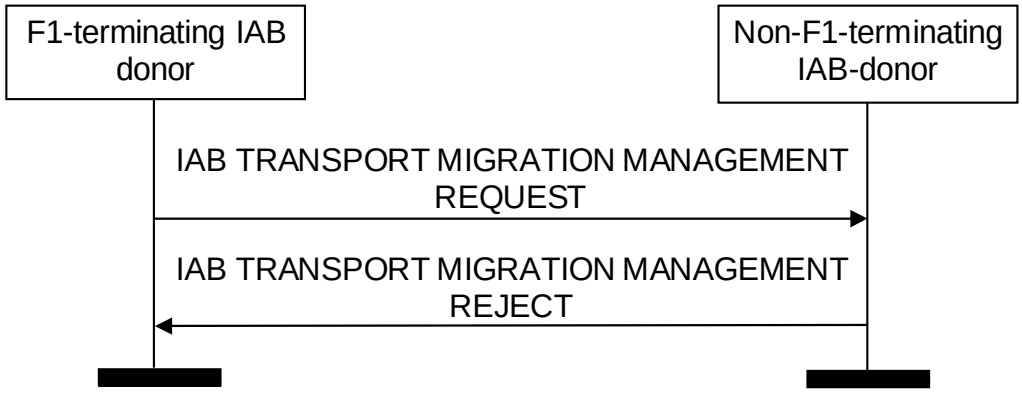

Figure 8.5.2.3-1: IAB Transport Migration Management triggered by the F1-terminating IAB-donor, unsuccessful operation

If the non-F1-terminating IAB-donor is not able to accept any traffic for offloading or modification from the F1-terminating IAB-donor, or a failure occurs during the IAB Transport Migration Management procedure, the non-F1-terminating IAB-donor sends the IAB TRANSPORT MIGRATION MANAGEMENT REJECT message with an appropriate cause value to the F1-terminating IAB-donor.

8.5.2.4 Abnormal Conditions

Not applicable.

8.5.3 IAB Transport Migration Modification

8.5.3.1 General

The purpose of the IAB Transport Migration Modification procedure is to modify the backhaul information of the offloaded traffic in the topology of the non-F1-terminating IAB-donor of a boundary IAB-node. The procedure can also be used to release the resources under the non-F1-terminating IAB-donor used for serving the offloaded traffic, and to transfer the authorization status of the boundary IAB-node. The procedure can also be used to transfer the authorization status information of the mobile IAB-node. The procedure can also be used for mobile IAB-node. In this case, the boundary IAB-node refers to the mobile IAB-node and the non-F1-terminating IAB-donor of a boundary IAB-node refers to the RRC-terminating IAB-donor of a mobile IAB-node.

The procedure is applicable to inter-donor partial migration, inter-donor RLF recovery and inter-donor topology redundancy cases. The procedure is initiated by the non-F1-terminating IAB-donor of the boundary IAB-node.

The procedure uses UE-associated signalling.

8.5.3.2 Successful Operation

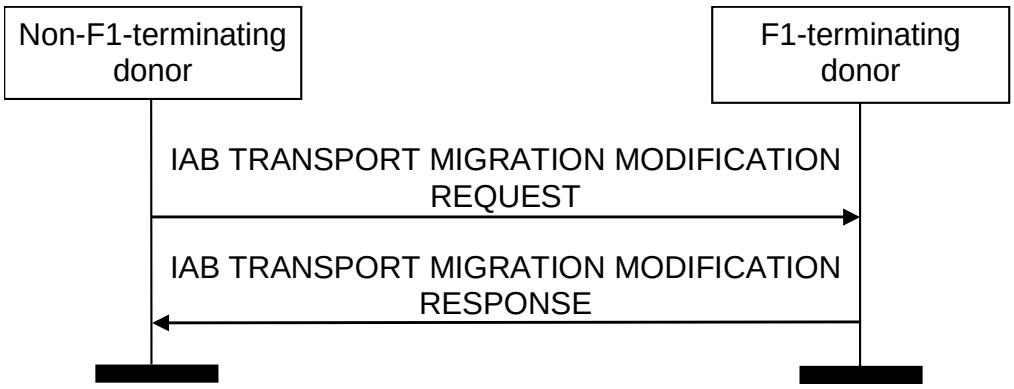

Figure 8.5.3.2-1: IAB Transport Migration Modification, successful operation

The non-F1-terminating IAB-donor initiates the procedure by sending the IAB TRANSPORT MIGRATION MODIFICATION REQUEST message to the F1-terminating IAB-donor. The F1-terminating IAB-donor responds with the IAB TRANSPORT MIGRATION MODIFICATION RESPONSE message.

If the *Traffic Required To Be Modified List* IE is contained in the IAB TRANSPORT MIGRATION MODIFICATION REQUEST message, the F1-terminating IAB-donor shall update the backhaul information in non-F1-terminating topology for each traffic indicated in the list, and include the *Traffic Required Modified List* IE in the IAB TRANSPORT MIGRATION MODIFICATION RESPONSE message.

If the *Traffic To Be Released Information* IE is contained in the IAB TRANSPORT MIGRATION MODIFICATION REQUEST message, the F1-terminating IAB-donor shall consider that all offloaded traffic will be released by the non-F1-terminating IAB-donor if the *All Traffic Indication* IE in the *Traffic to Be Released Information* IE is set to “true”, or that only the traffic indicated by the *Traffic to Be Released Item* IE will be released by the non-F1-terminating IAB-donor.

If the IAB TRANSPORT MIGRATION MODIFICATION REQUEST message contains the *Traffic To Be Released Information* IE, the F1-terminating IAB-donor shall include the *Traffic Released List* IE in the IAB TRANSPORT MIGRATION MODIFICATION RESPONSE message.

If the *IAB TNL Address To Be Added* IE is contained in the IAB TRANSPORT MIGRATION MODIFICATION REQUEST message, the F1-terminating IAB-donor shall allocate the TNL address(es) contained in this IE to the boundary IAB-node or the descendant IAB-nodes.

If the *IAB TNL Address To Be Released List* IE is contained in the IAB TRANSPORT MIGRATION MODIFICATION REQUEST message, the F1-terminating IAB-donor shall release the TNL address(es) contained in this IE for the boundary IAB-node or the descendant IAB-nodes.

If the *IAB QoS Mapping information* IE is contained in the IAB TRANSPORT MIGRATION MODIFICATION REQUEST message, the F1-terminating IAB-donor, shall, if supported, use it to set DSCP and/or IPv6 flow label fields for the downlink IP packets of the offloaded traffic.

If the *IAB Authorization Status* IE is contained in the IAB TRANSPORT MIGRATION MODIFICATION REQUEST message, the F1-terminating IAB-donor, shall, if supported, store it and use it accordingly. If the *IAB Authorization Status* IE is set to "not authorized", the F1-terminating IAB-donor, shall, if supported, initiate actions to ensure that the IAB-node will not serve any UE(s), as defined in TS 38.401[2].

If the *Mobile IAB Authorization Status* IE is contained in the IAB TRANSPORT MIGRATION MODIFICATION REQUEST message, the F1-terminating IAB-donor, shall, if supported, store it and use it as defined in TS 38.401[2]. If the *Mobile IAB-node Authorization Status* IE is set to "not authorized", the F1-terminating IAB-donor, shall, if supported, initiate actions to ensure that the mobile IAB node will not serve any UE(s), as defined in TS 38.401[2].

8.5.3.3 Unsuccessful Operation

Not applicable.

8.5.3.4 Abnormal Conditions

Not applicable.

8.5.4 IAB Resource Coordination

8.5.4.1 General

The purpose of the IAB Resource Coordination procedure is to exchange the semi-static radio resource configuration pertaining to a boundary IAB-node and/or its parent node, between the F1-terminating IAB-donor and the non-F1-terminating IAB-donor of a boundary IAB-node, for the purpose of resource multiplexing between the IAB-MT and the IAB-DU of the boundary IAB-node. The procedure can be initiated by the F1-terminating or non-F1-terminating IAB-donor of the boundary IAB-node. The procedure can also be used for mobile IAB-node. In this case, the boundary IAB-node refers to the mobile IAB-node and the non-F1-terminating IAB-donor of a boundary IAB-node refers to the RRC-terminating IAB-donor of a mobile IAB-node.

The procedure uses UE-associated signalling.

8.5.4.2 Successful Operation

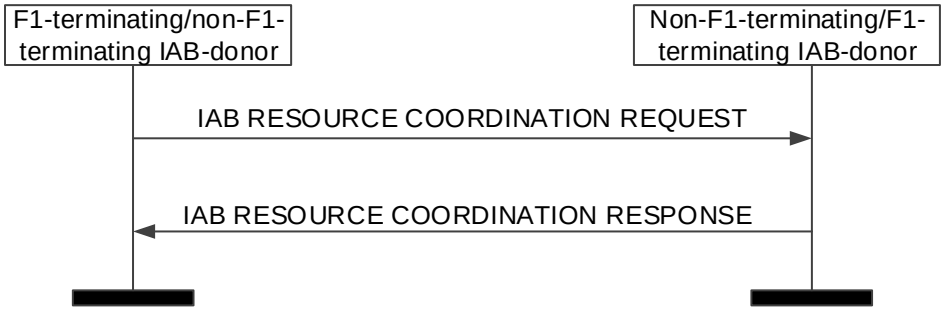

Figure 8.5.4.2-1: IAB Resource Coordination triggered by the F1-terminating/non-F1-terminating IAB-donor, successful operation

The F1-terminating/non F1-terminating IAB-donor initiates the procedure by sending the IAB RESOURCE COORDINATION REQUEST message to the non-F1-terminating/F1-terminating IAB-donor. The non-F1-terminating/F1-terminating IAB-donor shall respond with the IAB RESOURCE COORDINATION RESPONSE message to the F1-terminating/non-F1-terminating IAB-donor.

If the *Boundary Node Cells List* IE and/or *Parent Node Cells List* IE is included in the IAB RESOURCE COORDINATION REQUEST or in the IAB RESOURCE COORDINATION RESPONSE message, the receiving F1-terminating/non-F1-terminating IAB-donor should take this information into account for resource coordination with the sending non-F1-terminating/F1-terminating IAB-donor.

8.5.4.3 Unsuccessful Operation

Not applicable.

8.5.4.4 Abnormal Conditions

Not applicable.

8.6 Procedures for L1/L2 Triggered Mobility

8.6.1 LTM Configuration Update

8.6.1.1 General

The purpose of the LTM Configuration Update procedure is to update LTM configuration data, or to inform the change of serving NG-RAN node and setup the UE associated signalling between the new serving NG-RAN node and other candidate NG-RAN node(s). The procedure uses UE associated signalling.

8.6.1.2 Successful Operation

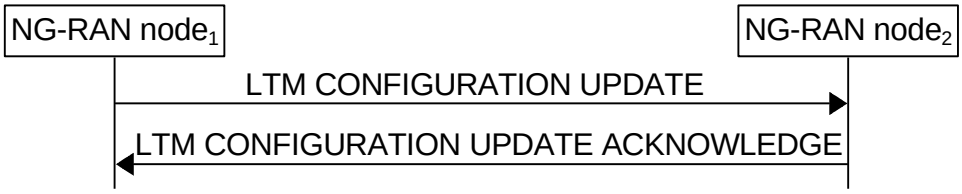

Figure 8.6.1.2-1: LTM Configuration Update procedure. Successful operation

The NG-RAN node$_1$ initiates the procedure by sending the LTM CONFIGURATION UPDATE message to NG-RAN node$_2$.

The LTM CONFIGURATION UPDATE message may contain:

- the *LTM Updates to Candidate Node Information* IE;
- the *LTM Updates to Candidate Cell Information List* IE;
- the *LTM UE Security Information* IE.

If the *Reference Configuration* IE is contained in the *LTM Updates to Candidate Node Information* IE included in the LTM CONFIGURATION UPDATE message, the NG-RAN node$_2$ shall, if supported, take it into account for generating the LTM configuration.

If the *LTM Configuration ID Mapping List* IE is contained in the *LTM Updates to Candidate Node Information* IE included in the LTM CONFIGURATION UPDATE message, the NG-RAN node$_2$ shall, if supported, consider this as the mapping information for the LTM candidate cell(s).

If the *CSI Resource Configuration* IE is contained in the *LTM Updates to Candidate Node Information* IE included in the LTM CONFIGURATION UPDATE message, the NG-RAN node$_2$ shall, if supported, use it to generate the LTM CSI reporting configuration in the *LTM Candidate Configuration* IE for L1 measurement and/or to generate the LTM CSI reporting configuration in the *CSI Report Configuration for CSI Acquisition* IE for CSI acquisition and/or CSI-IM measurement.

If the *LTM Updates to Candidate Cell Information List* IE is contained in the LTM CONFIGURATION UPDATE message, the NG-RAN node$_2$ shall, if supported, use it as specified in TS 38.300 [9].

If the *LTM Updates from Candidate Cell Information List* IE is contained in the LTM CONFIGURATION UPDATE ACKNOWLEDGE message, the NG-RAN node$_1$ shall, if supported, use it as specified in TS 38.300 [9].

If the *LTM UE Security Information* IE is included in the LTM CONFIGURATION UPDATE message, the NG-RAN node$_2$ shall use the information for subsequent LTM.

If the *Data Forwarding Info for LTM List* IE is included in the LTM CONFIGURATION UPDATE message, the NG-RAN node$_2$ shall use the information for data forwarding.

8.6.1.3 Unsuccessful Operation

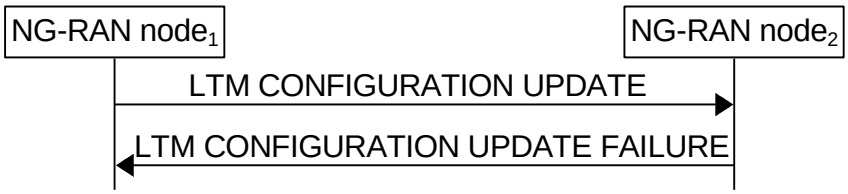

Figure 8.6.1.3-1: LTM Configuration Update procedure. Unsuccessful Operation

If the NG-RAN node$_2$ cannot accept the update, it shall respond with the LTM CONFIGURATION UPDATE FAILURE message with an appropriate cause value.

8.6.2 TA Information Transfer

8.6.2.1 General

The purpose of the TA Information Transfer procedure is to enable the NG-RAN node$_1$ to send the TA related information to the NG-RAN node$_2$. The procedure uses non UE-associated signalling.

8.6.2.2 Successful Operation

Figure 8.6.2.2-1: TA Information Transfer procedure. Successful operation.

The NG-RAN node$_1$ initiates the procedure by sending a TA INFORMATION TRANSFER message.

If the *Serving gNB ID* IE is included in the TA INFORMATION TRANSFER message, the NG-RAN node$_2$ shall, if supported, take it into account in determining which NG-RAN node to forward the message to.

8.6.3 Cell Switch Notification

8.6.3.1 General

The purpose of the Cell Switch Notification procedure is to enable the source NG-RAN node to inform the target NG-RAN node about the initiation of the cell switch command to the UE. This procedure is also used to transfer the selected TCI state from the source NG-RAN node to the target NG-RAN node. The procedure uses UE-associated signalling.

For dual connectivity, the Cell Switch Notification procedure is to enable the source S-NG-RAN node to inform the target S-NG-RAN node, via the M-NG-RAN node, about the initiation of the cell switch command to the UE as specified in TS 37.340 [8]. This procedure is also used to transfer the selected TCI state from the source S-NG-RAN node to the target S-NG-RAN node, via the M-NG-RAN node. The procedure uses UE-associated signalling.

8.6.3.2 Successful Operation

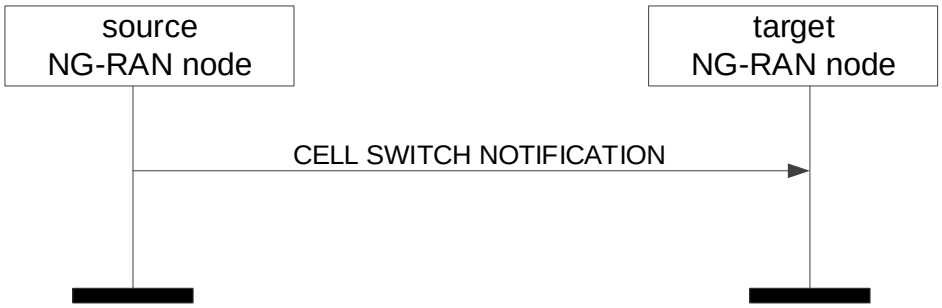

Figure 8.6.3.2-1: Cell Switch Notification procedure. Successful operation.

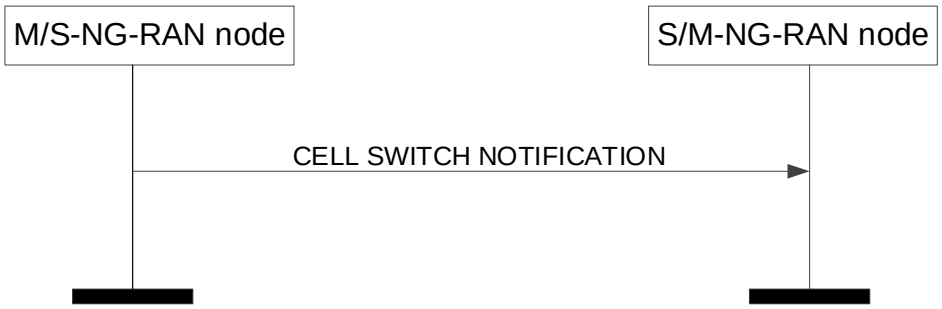

Figure 8.6.3.2-2: Cell Switch Notification procedure for dual connectivity. Successful operation.

Handover

The source NG-RAN node initiates the procedure by sending a CELL SWITCH NOTIFICATION message.

Upon reception of the CELL SWITCH NOTIFICATION message, the target NG-RAN node shall, if supported, consider that a cell switch command was sent to the UE towards one cell of the target NG-RAN node indicated by the included *Target Cell Global ID* IE.

If the *LTM Cell Switch Information* IE is contained in the CELL SWITCH NOTIFICATION message, the target NG-RAN node shall, if supported, use it as specified in TS 38.300 [9].

If the *LTM UE Association Information List* IE is contained in the CELL SWITCH NOTIFICATION message, the target NG-RAN node shall, if supported, use it to identify the UE associations.

If the *Cell Switch TA Information List* IE is contained in the CELL SWITCH NOTIFICATION message, the target NG-RAN node shall, if supported, use it as specified in TS 38.300 [9].

Dual Connectivity

The source S-NG-RAN node initiates the procedure by sending a CELL SWITCH NOTIFICATION message to the M-NG-RAN node. The M-NG-RAN node forwards the CELL SWITCH NOTIFICATION to the target S-NG-RAN node.

Upon reception of the CELL SWITCH NOTIFICATION message, the target S-NG-RAN node shall, if supported, consider that a cell switch command was sent to the UE towards one PSCell of the target S-NG-RAN node indicated by the included *Target Cell Global ID* IE.

If the *LTM Cell Switch Information* IE is contained in the CELL SWITCH NOTIFICATION message, the target S-NG-RAN node shall, if supported, use it as specified in TS 37.340 [8].

If the *Cell Switch TA Information List* IE is contained in the CELL SWITCH NOTIFICATION message, the target S-NG-RAN node shall, if supported, use it as specified in TS 37.340 [8].

8.6.4 LTM Cancel

8.6.4.1 General

The purpose of the LTM Cancel procedure is to enable a target NG-RAN node to cancel an already prepared LTM handover. The procedure uses UE-associated signalling.

8.6.4.2 Successful Operation

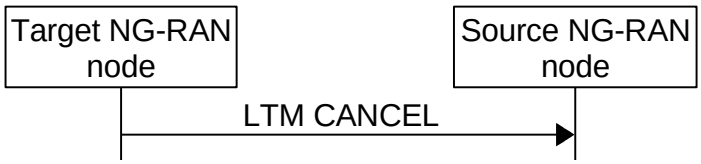

Figure 8.6.4.2-1: LTM Cancel procedure. Successful operation.

The target NG-RAN node initiates the procedure by sending the LTM CANCEL message to source NG-RAN node.

8.6.5 CSI-RS Coordination

8.6.5.1 General

The purpose of the CSI-RS Coordination procedure is to enable coordination of CSI-RS transmission. The procedure uses UE-associated signalling.

8.6.5.2 Successful Operation

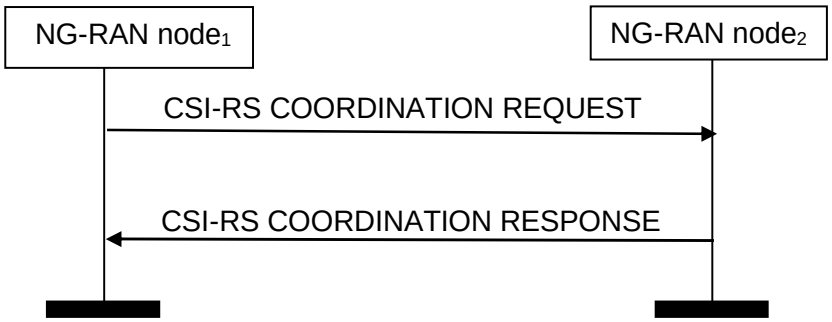

Figure 8.6.5.2-1: CSI-RS Coordination procedure, successful operation

The NG-RAN node$_1$ initiates the procedure by sending the CSI-RS COORDINATION REQUEST message to NG-RAN node$_2$.

If the *TCI State Information List* IE is included in the CSI-RS COORDINATION REQUEST message, the NG-RAN node$_2$ shall, if supported, use it for Semi-Persistent CSI-RS activation.

9 Elements for XnAP Communication

9.0 General

Sub clauses 9.1 and 9.2 describe the structure of the messages and information elements required for the XnAP protocol in tabular format. Sub clause 9.3 provides the corresponding ASN.1 definition.

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 [5].

NOTE: The messages have been defined in accordance to the guidelines specified in TR 25.921 [6].

9.1 Message Functional Definition and Content

9.1.1 Messages for Basic Mobility Procedures

9.1.1.1 HANDOVER REQUEST

This message is sent by the source NG-RAN node to the target NG-RAN node to request the preparation of resources for a handover.

Direction: source NG-RAN node → target NG-RAN node.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	reject
Source NG-RAN node UE XnAP ID reference	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the source NG-RAN node	YES	reject
Cause	M		9.2.3.2		YES	reject
Target Cell Global ID	M		9.2.3.25	Includes either an E-UTRA CGI or an NR CGI	YES	reject
GUAMI	M		9.2.3.24		YES	reject
UE Context Information		*1*			YES	reject
>NG-C UE associated Signalling reference	M		AMF UE NGAP ID 9.2.3.26	Allocated at the AMF on the source NG-C connection.	–	
>Signalling TNL association address at source NG-C side	M		CP Transport Layer Information 9.2.3.31	This IE indicates the AMF's IP address of the SCTP association used at the source NG-C interface instance. NOTE: If no UE TNLA binding exists at the source NG-RAN node, the source NG-RAN node indicates the TNL association address it would have selected if it would have had to create a UE TNLA binding.	–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
>UE Security Capabilities	M		9.2.3.49		–	
>AS Security Information	M		9.2.3.50		–	
>Index to RAT/Frequency Selection Priority	O		9.2.3.23		–	
>UE Aggregate Maximum Bit Rate	M		9.2.3.17		–	
>PDU Session Resources To Be Setup List		*1*	9.2.1.1	Similar to NG-C signalling, containing UL tunnel information per PDU Session Resource; and in addition, the source side QoS flow ⇔ DRB mapping	–	
>RRC Context	M		OCTET STRING	Either includes the *HandoverPreparationInformation* message as defined in subclause 10.2.2. of TS 36.331 [14], or the *HandoverPreparationInformation-NB* message as defined in subclause 10.6.2 of TS 36.331 [14], if the target NG-RAN node is an ng-eNB, or the *HandoverPreparationInformation* message as defined in subclause 11.2.2 of TS 38.331 [10], if the target NG-RAN node is a gNB.	–	
>Location Reporting Information	O		9.2.3.47	Includes the necessary parameters for location reporting.	–	
>Mobility Restriction List	O		9.2.3.53		–	
>5GC Mobility Restriction List Container	O		9.2.3.100		YES	ignore
>NR UE Sidelink Aggregate Maximum Bit Rate	O		9.2.3.107	This IE applies only if the UE is authorized for NR V2X services.	YES	ignore
>LTE UE Sidelink Aggregate Maximum Bit Rate	O		9.2.3.108	This IE applies only if the UE is authorized for LTE V2X services.	YES	ignore
>Management Based MDT PLMN List	O		MDT PLMN List 9.2.3.133		YES	ignore
>UE Radio Capability	O		9.2.3.138		YES	reject

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
ID						
>MBS Session Information List	O		9.2.1.36		YES	ignore
>5G ProSe UE PC5 Aggregate Maximum Bit Rate	O		NR UE Sidelink Aggregate Maximum Bit Rate 9.2.3.107	This IE applies only if the UE is authorized for 5G ProSe services.	YES	ignore
>UE Slice Maximum Bit Rate List	O		9.2.3.167		YES	ignore
>NR A2X UE PC5 Aggregate Maximum Bit Rate	O		NR UE Sidelink Aggregate Maximum Bit Rate 9.2.3.107	This IE applies only if the UE is authorized for NR A2X services.	YES	ignore
>LTE A2X UE PC5 Aggregate Maximum Bit Rate	O		LTE UE Sidelink Aggregate Maximum Bit Rate 9.2.3.108	This IE applies only if the UE is authorized for LTE A2X services.	YES	ignore
Trace Activation	O		9.2.3.55		YES	ignore
Masked IMEISV	O		9.2.3.32		YES	ignore
UE History Information	M		9.2.3.64		YES	ignore
UE Context Reference at the S-NG-RAN node	O				YES	ignore
>Global NG-RAN Node ID	M		9.2.2.3		–	
>S-NG-RAN node UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16		–	
Conditional Handover Information Request	O				YES	reject
>CHO Trigger	M		ENUMERATED (CHO-initiation, CHO-replace, …)		–	
>Target NG-RAN node UE XnAP ID	C-ifCHOmod		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the target NG-RAN node	–	
>Estimated Arrival Probability	O		INTEGER (1..100)		–	
>Conditional Handover Time Based Information	O			This IE only applies to NTN.	YES	reject
>>Handover Window Start	M		INTEGER (0..549755813887)	Corresponds to information provided in the *t1-Threshold* contained in the *ReportConfigNR* IE as defined in TS 38.331 [10]	–	
>>Handover Window Duration	M		INTEGER (1..6000)	Corresponds to information provided in the *duration* contained in the *condEventT1* contained in the *ReportConfigNR* IE as defined in TS 38.331 [10]	–	
>Maximum Number of Conditional	O		INTEGER (1..8 , …)	Indicates that the target NG-RAN	YES	reject

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Reconfigurations to Prepare				node may prepare for CHO with candidate PSCell(s) configuration and indicates the maximum number of conditional reconfigurations that the target NG-RAN node may prepare.		
NR V2X Services Authorized	O		9.2.3.105		YES	ignore
LTE V2X Services Authorized	O		9.2.3.106		YES	ignore
PC5 QoS Parameters	O		9.2.3.109	This IE applies only if the UE is authorized for NR V2X services.	YES	ignore
Mobility Information	O		BIT STRING (SIZE (32))	Information related to the handover; the source NG-RAN node provides it in order to enable later analysis of the conditions that led to a wrong HO.	YES	ignore
UE History Information from the UE	O		9.2.3.110		YES	ignore
IAB Node Indication	O		ENUMERATED (true, ...)		YES	reject
No PDU Session Indication	O		ENUMERATED (true, ...)	This IE applies only if the UE is an IAB-MT.	YES	ignore
Time Synchronisation Assistance Information	O		9.2.3.153		YES	ignore
QMC Configuration Information	O		9.2.3.156		YES	ignore
5G ProSe Authorized	O		9.2.3.159		YES	ignore
5G ProSe PC5 QoS Parameters	O		9.2.3.160	This IE applies only if the UE is authorized for 5G ProSe services.	YES	ignore
IAB Authorization Status	O		ENUMERATED (authorized, not authorized, ...)	This IE indicates the authorization status of the IAB node.	YES	ignore
DL LBT Failure Information Request	O		ENUMERATED (inquiry, …)	This IE indicates that information on DL LBT Failures occurring at the target gNB that results in mobility failure is requested	YES	ignore
Aerial UE Subscription Information	O		9.2.3.175		YES	ignore
NR A2X Services Authorized	O		9.2.3.176		YES	ignore
LTE A2X Services Authorized	O		9.2.3.177		YES	ignore
A2X PC5 QoS Parameters	O		9.2.3.178	This IE applies only if the UE is authorized for NR	YES	ignore

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				A2X services.		
Cell Based UE Trajectory Prediction	O		9.2.3.180	This IE contains information about cells that a UE is predicted to be connected to.	YES	ignore
Data Collection ID	O		9.2.3.184		YES	ignore
Candidate Relay UE Info List	O		9.2.3.188		YES	reject
Source SN to Target SN QMC Information	O		QMC Configuration Information 9.2.3.156	This IE contains S-NG-RAN node-related QMC configuration information to be forwarded to the target S-NG-RAN node.	YES	ignore
Mobile IAB Authorization Status	O		9.2.2.105		YES	reject
Ranging and Sidelink Positioning Services Information	O		9.2.3.208	This IE applies only if the UE is authorized for NR V2X services and/or 5G ProSe services.	YES	ignore
LTM Handover Information Request	O				YES	reject
>LTM Indicator	M		ENUMERATED (true, …)		–	
>Proposed LTM No Security Change ID List	O		LTM No Security Change ID List 9.2.3.231		–	
>Target NG-RAN node UE XnAP ID	O		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the target NG-RAN node.	–	
>Reference Configuration	O		OCTET STRING	Includes the *ltm-ReferenceConfiguration* as defined in TS 38.331 [10].	–	
>LTM Configuration ID Mapping List	O		9.2.3.221		–	
>CSI Resource Configuration	O		9.2.3.223		–	
>Request for CSI-RS Resource Configuration for L1 Measurements	O		ENUMERATED (true, …)		–	
>Proposed LTM L2 Reset Configuration List	O		LTM L2 Reset Configuration List 9.2.3.248	Indicates the LTM L2 Reset ID(s) to be assigned during the preparation of candidate cell(s).	–	
>Proposed LTM UE Based TA Measurement ID List	O		LTM UE Based TA Measurement ID List 9.2.3.249	Indicates the LTM UE Based TA Measurement IDs to be assigned during the preparation of candidate cells.	YES	ignore
Early Sync Information Request	O		9.2.3.217		YES	ignore
Continuous MDT	O		NG-RAN Trace ID 9.2.3.97	This IE is used to indicate Continuous	YES	ignore

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				Management Based MDT operation.		

Condition	Explanation
ifCHOmod	This IE shall be present if the *CHO Trigger* IE is present and set to "CHO-replace".

Range bound	Explanation
maxnoofMDTPLMNs	PLMNs in the Management Based MDT PLMN list. Value is 16.

9.1.1.2 HANDOVER REQUEST ACKNOWLEDGE

This message is sent by the target NG-RAN node to inform the source NG-RAN node about the prepared resources at the target.

Direction: target NG-RAN node → source NG-RAN node.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	reject
Source NG-RAN node UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the source NG-RAN node	YES	ignore
Target NG-RAN node UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the target NG-RAN node	YES	ignore
PDU Session Resources Admitted List	M		9.2.1.2	Ignored, if the *CHO-CPAC Configuration Indicator* IE is included within the *CHO-CPAC Information* IE and set to "cho-only-not-prepared".	YES	ignore
PDU Session Resources Not Admitted List	O		9.2.1.3		YES	ignore
Target NG-RAN node To Source NG-RAN node Transparent Container	M		OCTET STRING	Either includes the *HandoverCommand* message as defined in subclause 10.2.2 of TS 36.331 [14], if the target NG-RAN node is an ng-eNB, or the *HandoverCommand* message as defined in subclause 11.2.2 of TS 38.331 [10], if the target NG-RAN node is a gNB. Ignored if the *CHO-CPAC Configuration Indicator* IE is included within the	YES	ignore

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				CHO-CPAC Information IE and set to "cho-only-not-prepared".		
UE Context Kept Indicator	O		9.2.3.68		YES	ignore
Criticality Diagnostics	O		9.2.3.3		YES	ignore
DRBs transferred to MN	O		DRB List 9.2.1.29	In case of DC, indicates that SN Status is needed for the listed DRBs from the S-NG-RAN node.	YES	ignore
DAPS Response Information	O		9.2.1.34		YES	reject
Conditional Handover Information Acknowledge	O				YES	reject
>Requested Target Cell ID	M		Target Cell Global ID 9.2.3.25	Target cell indicated in the corresponding HANDOVER REQUEST message	–	
>Maximum Number of CHO Preparations	O		9.2.3.101		–	
>CHO-CPAC Information	O		9.2.3.202		YES	reject
MBS Session Information Response List	O		9.2.1.38		YES	ignore
RRC Config Indication	O		9.2.3.72		YES	ignore
PDU Set based Handling Indicator	O		9.2.3.206		YES	ignore
LTM Handover Information Request Acknowledge	O				YES	ignore
>SSB Information	M		9.2.3.228		–	
>TCI States Configurations List	M		OCTET STRING	Includes the *LTM-TCI-Info* IE, as defined in TS 38.331 [10].	–	
>LTM Candidate Configuration	M		OCTET STRING	Includes the *ltm-CandidateConfig* as defined in TS 38.331 [10].	–	
>LTM No Security Change ID	M		9.2.3.231a		–	
>Complete Candidate Configuration Indicator	O		ENUMERATED (complete, ...)		–	
>CSI-RS Resource Configuration for L1 Measurements	O		CSI-RS Resource Configuration 9.2.3.224		–	
>CSI-RS Resource Configuration for Early CSI Acquisition	O		CSI-RS Resource Configuration 9.2.3.224		–	
>LTM CFRA Resource Information	O		9.2.3.232		–	
>LTM L2 Reset Configuration	O		INTEGER (1..9, …)	Corresponds to the *ltm-NoResetID* as defined in TS 38.331 [10], for the LTM candidate cell	–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				identified by the Target cell indicated in the corresponding HANDOVER REQUEST message.		
>UE Based TA Measurement Configuration	O		OCTET STRING	Includes the *ltm-UE-MeasuredTA-ID* contained in the *LTM-Candidate* IE, as defined in TS 38.331 [10], for the LTM candidate cell identified by the Target cell indicated in the corresponding HANDOVER REQUEST message.	YES	ignore
>Requested Target Cell ID	O		Target Cell Global ID 9.2.3.25	Target cell indicated in the corresponding HANDOVER REQUEST message.	YES	ignore
Early Sync Information Response	O		Early Sync Information 9.2.3.218		YES	ignore

9.1.1.3 HANDOVER PREPARATION FAILURE

This message is sent by the target NG-RAN node to inform the source NG-RAN node that the Handover Preparation has failed.

Direction: target NG-RAN node → source NG-RAN node.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	reject
Source NG-RAN node UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the source NG-RAN node	YES	ignore
Cause	M		9.2.3.2		YES	ignore
Criticality Diagnostics	O		9.2.3.3		YES	ignore
Requested Target Cell ID	O		Target Cell Global ID 9.2.3.25	Target cell indicated in the corresponding HANDOVER REQUEST message	YES	reject

9.1.1.4 SN STATUS TRANSFER

This message is sent by the source NG-RAN node to the target NG-RAN node to transfer the uplink/downlink PDCP SN. HFN status and MRO related information during a handover or for dual connectivity.

Direction: source NG-RAN node → target NG-RAN node(handover),
NG-RAN node from which the DRB context is transferred → NG-RAN node to which the DRB context is transferred (RRC connection re-establishment or dual connectivity).

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	ignore
Source NG-RAN node UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated for handover at the source NG-RAN node and for dual connectivity at the NG-RAN node from which the DRB context is transferred.	YES	reject
Target NG-RAN node UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated for handover at the target NG-RAN node and for dual connectivity at the NG-RAN node to which the DRB context is transferred.	YES	reject
DRBs Subject To Status Transfer List	M		9.2.1.14		YES	ignore
CHO Configuration	O		9.2.2.76		YES	ignore
Mobility Information	O		BIT STRING (SIZE (32))		YES	ignore

9.1.1.5 UE CONTEXT RELEASE

This message is sent by the target NG-RAN node to the source NG-RAN node to indicate that resources can be released.

Direction: target NG-RAN node → source NG-RAN node, M-NG-RAN node → S-NG-RAN node.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	reject
Source NG-RAN node UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated for handover at the source NG-RAN node or for dual connectivity at the S-NG-RAN node.	YES	reject
Target NG-RAN node UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated for handover at the target NG-RAN node or for dual connectivity at the M-NG-RAN node.	YES	reject

9.1.1.6 HANDOVER CANCEL

This message is sent by the source NG-RAN node to the target NG-RAN node to cancel an ongoing handover.

Direction: source NG-RAN node → target NG-RAN node.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	ignore
Source NG-RAN node UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the source NG-RAN node.	YES	reject
Target NG-RAN node UE XnAP ID	O		NG-RAN node UE XnAP ID	Allocated at the target NG-RAN	YES	ignore

			9.2.3.16	node.		
Cause	M		9.2.3.2		YES	ignore
Candidate Cells To Be Cancelled List		*0 .. <maxnoofCellsinCHO>*			YES	reject
>Target Cell ID	M		Target Cell Global ID 9.2.3.25		–	
LTM Candidate Cells To Be Cancelled List	O		9.2.3.247		YES	ignore

Range bound	Explanation
maxnoofCellsinCHO	Maximum no. cells that can be prepared for a conditional handover. Value is 8.

9.1.1.7 RAN PAGING

This message is sent by the NG-RAN $node_1$ to NG-RAN $node_2$ to page a UE.

Direction: NG-RAN $node_1$ → NG-RAN $node_2$.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	reject
CHOICE *UE Identity Index Value*	M				YES	reject
>Length-10						
>>Index Length-10	M		BIT STRING (SIZE(10))	Coded as specified in TS 38.304 [33] and TS 36.304 [34].	–	
UE RAN Paging Identity	M		9.2.3.43		YES	ignore
Paging DRX	M		9.2.3.66	Includes the RAN paging cycle as defined in TS 36.304 [34] and TS 38.304 [33].	YES	ignore
RAN Paging Area	M		9.2.3.38		YES	reject
Paging Priority	O		9.2.3.44		YES	ignore
Assistance Data for RAN Paging	O		9.2.3.41		YES	ignore
UE Radio Capability for Paging	O		9.2.3.91		YES	ignore
Extended UE Identity Index Value	O		9.2.3.141	Coded as specified in TS 36.304 [34] and TS 38.304 [33]. This IE is ignored if the *Further Extended UE Identity Index Value* IE is present.	YES	ignore
E-UTRA Paging eDRX Information	O		9.2.3.142		YES	ignore
UE Specific DRX	O		9.2.3.143	Includes the UE specific paging cycle as defined in TS 36.304 [34] and TS 38.304 [33].	YES	ignore
NR Paging eDRX Information	O		9.2.3.161		YES	ignore
NR Paging eDRX	O		9.2.3.162		YES	ignore

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Information for RRC INACTIVE						
Paging Cause	O		ENUMERATED (voice, …)		YES	ignore
PEIPS Assistance Information	O		9.2.3.166		YES	ignore
Hashed UE Identity Index Value	O		9.2.3.144a		YES	ignore
MT-SDT Information	O		9.2.3.172		YES	ignore
NR Paging Long eDRX Information for RRC INACTIVE	O		9.2.3.195		YES	ignore
LP-WUSPS Assistance Information	O		9.2.3.233		YES	ignore
Further Extended UE Identity Index Value	O		9.2.3.234		YES	ignore
LP-WUS Disable Indication	O		ENUMERATED (true, …)		YES	ignore

9.1.1.8 RETRIEVE UE CONTEXT REQUEST

This message is sent by the new NG-RAN node to request the old NG-RAN node to transfer the UE Context to the new NG-RAN.

Direction: new NG-RAN node → old NG-RAN node.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	reject
New NG-RAN node UE XnAP ID reference	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the new NG-RAN node	YES	reject
UE Context ID	M		9.2.3.40		YES	reject
Integrity protection	M		BIT STRING (SIZE (16))	**RRC Resume:** Corresponds to information provided either in the *resumeMAC-I* either contained in the *RRCResumeRequest* or the *RRCResumeRequest1* message as defined in TS 38.331 [10]) or in the *shortResumeMAC-I* in the *RRCConnectionResumeRequest* message as defined in TS 36.331 [14]) **RRC Reestablishment:** Corresponds to information provided either in the *shortMAC-I* contained in the *RRCReestablishm*	YES	reject

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				entRequest message as defined in TS 38.331 [10]) or in the *shortMAC-I* in the *RRCConnectionReestablishmentRequest* message as defined in TS 36.331 [14]). **RRC Resume for UP CIoT Optimization:** Corresponds to information provided in the *shortResumeMAC-I* in the *RRCConnectionResumeRequest* message or the *RRCConnectionResumeRequest-NB* message as defined in TS 36.331 [14].		
New Cell Identifier	M		NG-RAN Cell Identity 9.2.2.9	**RRC Resume:** Corresponds to information provided either in the *targetCellIdentity* within the *VarResumeMAC-Input* as specified in TS 38.331 [10] or in the *cellIdentity* within the *VarShortINACTIVE-MAC-Input* as specified in TS 36.331 [14]. **RRC Reestablishment:** Corresponds to information provided in the *targetCellIdentity* within the *VarShortMAC-Input* as specified in TS 38.331 [10] or in the *cellIdentity* within the *VarShortMAC-Input* as specified in TS 36.331 [14]. **RRC Resume for UP CIoT Optimization:** Corresponds to information provided either in the *cellIdentity*	YES	reject

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				within the *VarShortResumeMAC-Input* or the *VarShortResumeMAC-Input-NB* as specified in TS 36.331 [14].		
RRC Resume Cause	O		9.2.3.61	In case of RNA Update, contains information provided in the *resumeCause* by the UE in the *RRCResumeRequest* or the *RRCResumeRequest1* message, as defined in TS 38.331 [10], or information provided in the *resumeCause-r15* in the *RRCConnectionResumeRequest* message, as defined in TS 36.331 [14].	YES	ignore
SDT Support Request	O		9.2.3.163		YES	ignore
SRS Positioning Configuration Or Activation Request	O		ENUMERATED (true, ...)		YES	ignore

9.1.1.9 RETRIEVE UE CONTEXT RESPONSE

This message is sent by the old NG-RAN node to transfer the UE context to the new NG-RAN node.

Direction: old NG-RAN node → new NG-RAN node.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	reject
New NG-RAN node UE XnAP ID reference	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the new NG-RAN node	YES	ignore
Old NG-RAN node UE XnAP ID reference	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the old NG-RAN node	YES	ignore
GUAMI	M		9.2.3.24		YES	reject
UE Context Information – Retrieve UE Context Response	M		9.2.1.13		YES	reject
Trace Activation	O		9.2.3.55		YES	ignore
Masked IMEISV	O		9.2.3.32		YES	ignore
Location Reporting Information	O		9.2.3.47	Includes the necessary parameters for location reporting.	YES	ignore
Criticality Diagnostics	O		9.2.3.3		YES	ignore
NR V2X Services Authorized	O		9.2.3.105		YES	ignore
LTE V2X Services Authorized	O		9.2.3.106		YES	ignore
PC5 QoS Parameters	O		9.2.3.109	This IE applies	YES	ignore

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				only if the UE is authorized for NR V2X services.		
UE History Information	O		9.2.3.64		YES	ignore
UE History Information from the UE	O		9.2.3.110		YES	ignore
Management Based MDT PLMN List	O		MDT PLMN List 9.2.3.133		YES	ignore
IAB Node Indication	O		ENUMERATED (true, ...)		YES	reject
UE Context Reference at the S-NG-RAN node	O				YES	ignore
>Global NG-RAN Node ID	M		9.2.2.3		–	
>S-NG-RAN node UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16		–	
Time Synchronisation Assistance Information	O		9.2.3.153		YES	ignore
QMC Configuration Information	O		9.2.3.156		YES	ignore
5G ProSe Authorized	O		9.2.3.159		YES	ignore
5G ProSe PC5 QoS Parameters	O		9.2.3.160	This IE applies only if the UE is authorized for 5G ProSe services.	YES	ignore
Aerial UE Subscription Information	O		9.2.3.175		YES	ignore
NR A2X Services Authorized	O		9.2.3.176		YES	ignore
LTE A2X Services Authorized	O		9.2.3.177		YES	ignore
A2X PC5 QoS Parameters	O		9.2.3.178	This IE applies only if the UE is authorized for NR A2X services.	YES	ignore
Mobile IAB Authorization Status	O		9.2.2.105		YES	reject
Ranging and Sidelink Positioning Services Information	O		9.2.3.208	This IE applies only if the UE is authorized for NR V2X services and/or 5G ProSe services.	YES	ignore
Continuous MDT	O		NG-RAN Trace ID 9.2.3.97	This IE is used to indicate Continuous Management Based MDT operation.	YES	ignore

Range bound	Explanation
maxnoofMDTPLMNs	PLMNs in the Management Based MDT PLMN list. Value is 16.

9.1.1.10 RETRIEVE UE CONTEXT FAILURE

This message is sent by the old NG-RAN node to inform the new NG-RAN node that the Retrieve UE Context procedure has failed.

Direction: old NG-RAN node → new NG-RAN node.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	reject
New NG-RAN node UE XnAP ID reference	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the new NG-RAN node	YES	ignore
Old NG-RAN node To New NG-RAN node Resume Container	O		OCTET STRING	Includes either the *RRCRelease* message as defined in TS 38.331 [10], or the *RRCConnectionRelease* message as defined in TS 36.331 [14], encapsulated in a PDCP-C PDU.	YES	ignore
Cause	M		9.2.3.2		YES	ignore
Criticality Diagnostics	O		9.2.3.3		YES	ignore
Semi-persistent Positioning Information	O		9.2.3.246		YES	ignore

9.1.1.11 XN-U ADDRESS INDICATION

This message is either sent by the new NG-RAN node to transfer data forwarding information to the old NG-RAN node, or by the M-NG-RAN node to provide either data forwarding or Xn-U bearer address related information for SN terminated bearers to the S-NG-RAN node.

Direction: new NG-RAN node → old NG-RAN node, M-NG-RAN node → S-NG-RAN node.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	reject
New NG-RAN node UE XnAP ID reference	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the new NG-RAN node or at the M-NG-RAN node.	YES	ignore
Old NG-RAN node UE XnAP ID reference	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the old NG-RAN node or at the S-NG-RAN node.	YES	ignore
Xn-U Address Information per PDU Session Resources List		*1*		This IE is ignored if the *CHO DC Indicator* IE is included and set to "coordination-only", or if the *CPC Data Forwarding indicator* IE is included and set to "coordination-only", or if the *MBS Data Forwarding Indicator* IE is included and set to "MBS-only".	YES	reject
>**Xn-U Address Information per PDU Session Resources Item**		*1..<maxnoofPDUSessions>*			–	
>>PDU Session ID	M		9.2.3.18		–	
>>Data Forwarding Info from target NG-RAN node	O		9.2.1.16		–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
>>PDU Session Resource Setup Complete Info – SN terminated	O		9.2.1.30		–	
>>Secondary Data Forwarding Info from target NG-RAN node List	O		9.2.1.31	This IE would be present only when the target M-NG-RAN node decide to split a PDU session between MN and SN	YES	ignore
>>DRB IDs taken into use	O		DRB List 9.2.1.29	Indicating the DRB IDs taken into use by the target NG-RAN node, as specified in TS 37.340 [8].	YES	reject
>>Data Forwarding Info from target E-UTRAN node	O		9.2.1.35		YES	ignore
CHO MR-DC Indicator	O		ENUMERATED (true, ..., coordination-only)	Indicating that the XN-U ADDRESS INDICATION message is for Conditional Handover, as specified in TS 37.340 [8].	YES	reject
CHO MR-DC Early Data Forwarding Indicator	O		ENUMERATED (stop, ...)		YES	ignore
CPC Data Forwarding indicator	O		ENUMERATED (triggered, early data transmission stop, ..., coordination-only)	Indicating that the XN-U ADDRESS INDICATION message is for a Conditional PSCell Change.	YES	reject
MBS Data Forwarding Indicator	O		ENUMERATED (MBS-only, ...)	Indicating that the XN-U ADDRESS INDICATION message is for MBS session data forwarding.	YES	ignore
MBS Session Information Response List	O		9.2.1.38		YES	ignore
PDU Set based Handling Indicator	O		9.2.3.206		YES	ignore
LTM DC Data Forwarding Indicator	O		ENUMERATED (triggered, ...)	Indicating that the XN-U ADDRESS INDICATION message is for Inter-CU MCG LTM.	YES	reject

Range bound	Explanation
maxnoofPDUSsessions	Maximum no. of PDU sessions. Value is 256

9.1.1.12 HANDOVER SUCCESS

This message is sent by the target NG-RAN node to the source NG-RAN node to indicate the successful access of the UE toward the target NG-RAN node.

Direction: target NG-RAN node → source NG-RAN node.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	ignore
Source NG-RAN node UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the source NG-RAN node.	YES	reject
Target NG-RAN node UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the target NG-RAN node.	YES	reject
Requested Target Cell ID	M		Target Cell Global ID 9.2.3.25	Target cell indicated in the corresponding Handover Preparation procedure. For LTM, the IE either indicates the target cell indicated in the Cell Switch Notification procedure, or may indicate any of LTM candidate cells prepared in the target NG-RAN node.	YES	reject
Accessed PSCell ID	O		NR CGI 9.2.2.7		YES	ignore

9.1.1.13 CONDITIONAL HANDOVER CANCEL

This message is sent by the target NG-RAN node to the source NG-RAN node to cancel an already prepared conditional handover or an already prepared conditional reconfiguration.

Direction: target NG-RAN node → source NG-RAN node.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	ignore
Source NG-RAN node UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the source NG-RAN node.	YES	reject
Target NG-RAN node UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the target NG-RAN node.	YES	reject
Cause	M		9.2.3.2		YES	ignore
Candidate Cells To Be Cancelled List		*0 .. <maxnoofCellsinCHO>*			YES	reject
>Target Cell ID	M		Target Cell Global ID 9.2.3.25		–	
Conditional Reconfigurations To Be Cancelled List		*0..1*		Includes CHO-only (with or without SCG) and CHO with candidate PSCell(s)	YES	reject
>**Conditional Reconfigurations To Be Cancelled Item**		*1 .. < maxnoofPSCellCandidates>*			–	
>>Target PCell ID	M		Target Cell		–	

			Global ID 9.2.3.25			
>>Target PSCell ID	O		NR CGI 9.2.2.7	If this IE is absent, indicates CHO only (with or without SCG)	–	

Range bound	Explanation
maxnoofCellsinCHO	Maximum no. cells that can be prepared for a conditional handover. Value is 8.
maxnoofPSCellCandidates	Maximum no. conditional reconfigurations that the UE can store. Value is 8. The total of maxnoofCellsinCHO and maxnoofPSCellCandidates should not exceed 8.

9.1.1.14 EARLY STATUS TRANSFER

This message is sent by the source NG-RAN node to the target NG-RAN node to transfer the COUNT value related to the forwarded downlink SDUs during DAPS Handover or Conditional Handover.

For MR-DC with 5GC, the message is also used, during a Conditional Handover, to transfer from the source S-NG-RAN node to the source M-NG-RAN node, the COUNT value related to the forwarded downlink SDUs.

For MR-DC with NG SCG, this message is also used, during a CPAC, to transfer from the source S-NG-RAN node to the M-NG-RAN node, and from the M-NG-RAN node to the target S-NG-RAN node, the COUNT value related to the forwarded downlink SDUs.

Direction: source NG-RAN node → target NG-RAN node (DAPS Handover or Conditional Handover).

Direction: source S-NG-RAN node → source M-NG-RAN node (Conditional Handover).

Direction: M-NG-RAN node → S-NG-RAN node (Conditional PSCell Addition).

Direction: source S-NG-RAN node → M-NG-RAN node (Conditional PSCell Change).

Direction: M-NG-RAN node → target S-NG-RAN node (Conditional PSCell Change).

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	ignore
Source NG-RAN node UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated for handover at the source NG-RAN node.	YES	reject
Target NG-RAN node UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated for handover at the target NG-RAN node.	YES	reject
CHOICE *Procedure Stage*	M				YES	reject
>First DL COUNT						
>>DRBs Subject To Early Status Transfer List	M	*1*			–	
>>>DRBs Subject To Early Status Transfer Item		*1 .. <maxnoof DRBs>*			–	
>>>>DRB ID	M		9.2.3.33		–	
>>>>CHOICE *First DL COUNT*	M				–	
>>>>>12 bits						

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
>>>>>>FIRST DL COUNT Value	M		COUNT Value for PDCP SN Length 12 9.2.3.36	PDCP-SN and Hyper frame number of the first DL SDU forwarded to the receiving NG-RAN node in case of 12 bit long PDCP-SN	–	
>>>>>18 bits						
>>>>>>FIRST DL COUNT Value	M		COUNT Value for PDCP SN Length 18 9.2.3.37	PDCP-SN and Hyper frame number of the first DL SDU forwarded to the receiving NG-RAN node in case of 18 bit long PDCP-SN	–	
>DL Discarding						
>>DRBs Subject To DL Discarding List	M	*1*			–	
>>>DRBs Subject To DL Discarding Item		*1 .. <maxnoof DRBs>*			–	
>>>>DRB ID	M		9.2.3.33		–	
>>>>CHOICE *DL Discarding*	M				–	
>>>>>12 bits						
>>>>>>DISCARD DL COUNT Value	M		COUNT Value for PDCP SN Length 12 9.2.3.36	PDCP-SN and Hyper frame number for which the receiving NG-RAN node should discard forwarded DL SDUs associated with lower values in case of 12 bit long PDCP-SN	–	
>>>>>18 bits						
>>>>>>DISCARD DL COUNT Value	M		COUNT Value for PDCP SN Length 18 9.2.3.37	PDCP-SN and Hyper frame number for which the receiving NG-RAN node should discard forwarded DL SDUs associated with lower values in case of 18 bit long PDCP-SN	–	

Range bound	Explanation
maxnoofDRBs	Maximum no. of DRBs allowed towards one UE. Value is 32.

9.1.1.15 RAN MULTICAST GROUP PAGING

This message is sent by the NG-RAN node$_1$ to NG-RAN node$_2$ to page UEs for a multicast session.

Direction: NG-RAN node$_1$ → NG-RAN node$_2$.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	reject
MBS Session ID	M		9.2.3.146		YES	reject
UE Identity Index List		*1*			YES	reject
>UE Identity Index Item		*1 .. <maxnoofUEIDOindicesforMBSPaging>*			–	
>>CHOICE *UE Identity Index Value*	M				–	
>>>Length-10						
>>>>Index Length-10	M		BIT STRING (SIZE(10))	Coded as specified in TS 38.304 [33].	–	
>>Paging DRX	O		UE Specific DRX 9.2.3.143	Includes the UE specific paging cycle as defined in TS 38.304 [33].	–	
Multicast RAN Paging Area	M		RAN Paging Area 9.2.3.38		YES	reject

Range bound	Explanation
maxnoofUEIDIndicesforMBSPaging	Maximum no. of UE Identity Indices for multicast group paging. Value is 4096.

9.1.1.16 RETRIEVE UE CONTEXT CONFIRM

This message is sent by the new NG-RAN node to the old NG-RAN node to inform the old NG-RAN node whether the S-NG-RAN node associated with the old NG-RAN node for the UE that was indicated during UE context retrieval is kept or not by the new NG-RAN node during RRC resumption.

In case of RACH based SDT without UE context relocation, the Retrieve UE Context Confirm procedure is also used to request termination of SDT session from the new NG-RAN node to the old NG-RAN node.

Direction: new NG-RAN node → old NG-RAN node.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	reject
Old NG-RAN node UE XnAP ID reference	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the old NG-RAN node	YES	ignore
New NG-RAN node UE XnAP ID reference	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the new NG-RAN node	YES	ignore
UE Context Kept Indicator	O		9.2.3.68		YES	ignore
SDT Termination Request	O		ENUMERATED (radio link problem, normal, …, Large SDT volume from BSR)	Indicate the reason of request for termination of an ongoing SDT session.	YES	ignore

9.1.1.17 PARTIAL UE CONTEXT TRANSFER

This message is sent by the old NG-RAN node to transfer part of the UE Context to the new NG-RAN node.

Direction: old NG-RAN node → new NG-RAN node.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	reject
New NG-RAN node UE XnAP ID reference	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the new NG-RAN node.	YES	reject
Old NG-RAN node UE XnAP ID reference	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the old NG-RAN node.	YES	ignore
Partial UE Context Information for SDT	M		9.2.3.164		YES	ignore
Partial UE Context Information for Positioning	O		9.2.3.173		YES	ignore

9.1.1.18 PARTIAL UE CONTEXT TRANSFER ACKNOWLEDGE

This message is sent by the new NG-RAN node to acknowledge the transferring part of the UE context from the old NG-RAN node. This message is also used to provide data forwarding related information for NR SDT.

Direction: new NG-RAN node → old NG-RAN node.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	reject
New NG-RAN node UE XnAP ID reference	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the new NG-RAN node	YES	ignore
Old NG-RAN node UE XnAP ID reference	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the old NG-RAN node	YES	ignore
SDT Data Forwarding DRB List		*0..1*			YES	ignore
>SDT Data Forwarding DRB Item		*1..<maxnoofDRBs>*			–	
>>DRB ID	M		9.2.3.33		–	
>>DL TNL Information	O		UP Transport Layer Information 9.2.3.30		–	
Criticality Diagnostics	O		9.2.3.3		YES	ignore
SRS Configuration	O		OCTET STRING	Includes the *SRS Configuration* IE, as defined in TS 38.455 [49].	YES	ignore

Range bound	Explanation
maxnoofDRBs	Maximum no. of DRBs. Value is 32.

9.1.1.19 PARTIAL UE CONTEXT TRANSFER FAILURE

This message is sent by the new NG-RAN node to inform the old NG-RAN node that the Partial UE Context Transfer procedure has failed.

Direction: new NG-RAN node → old NG-RAN node.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	reject

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
New NG-RAN node UE XnAP ID reference	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the new NG-RAN node	YES	ignore
Old NG-RAN node UE XnAP ID reference	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the old NG-RAN node.	YES	ignore
Cause	M		9.2.3.2		YES	ignore
Criticality Diagnostics	O		9.2.3.3		YES	ignore

9.1.2 Messages for Dual Connectivity Procedures

9.1.2.1 S-NODE ADDITION REQUEST

This message is sent by the M-NG-RAN node to the S-NG-RAN node to request the preparation of resources for dual connectivity operation for a specific UE.

Direction: M-NG-RAN node → S-NG-RAN node.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	reject
M-NG-RAN node UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the M-NG-RAN node	YES	reject
UE Security Capabilities	M		9.2.3.49		YES	reject
S-NG-RAN node Security Key	M		9.2.3.51	This IE is ignored if the *S-CPAC Request Information* IE is present in the *Conditional PSCell Addition Information Request* IE or the *LTM Candidate PSCell Addition Information Request* IE is present.	YES	reject
S-NG-RAN node UE Aggregate Maximum Bit Rate	M		UE Aggregate Maximum Bit Rate 9.2.3.17	The UE Aggregate Maximum Bit Rate is split into M-NG-RAN node UE Aggregate Maximum Bit Rate and S-NG-RAN node UE Aggregate Maximum Bit Rate which are enforced by M-NG-RAN node and S-NG-RAN node respectively.	YES	reject
Selected PLMN	O		PLMN Identity 9.2.2.4	The selected PLMN of the SCG in the S-NG-RAN node.	YES	ignore
Mobility Restriction List	O		9.2.3.53		YES	ignore
Index to RAT/Frequency Selection Priority	O		9.2.3.23		YES	reject
PDU Session		*1*			YES	reject

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Resources To Be Added List						
>PDU Session Resources To Be Added Item		*1 .. <maxnoofPDUSessions>*		NOTE: If neither the *PDU Session Resource Setup Info – SN terminated* IE nor the *PDU Session Resource Setup Info – MN terminated* IE is present in a *PDU Session Resources To Be Added Item* IE, abnormal conditions as specified in clause 8.3.1.4 apply.	–	
>>PDU Session ID	M		9.2.3.18		–	
>>S-NSSAI	M		9.2.3.21		–	
>>S-NG-RAN node PDU Session Aggregate Maximum Bit Rate	O		PDU Session Aggregate Maximum Bit Rate 9.2.3.69		–	
>>PDU Session Resource Setup Info – SN terminated	O		9.2.1.5		–	
>>PDU Session Resource Setup Info – MN terminated	O		9.2.1.7		–	
M-NG-RAN node to S-NG-RAN node Container	M		OCTET STRING	Includes the *CG-ConfigInfo* message as defined in subclause 11.2.2 of TS 38.331 [10]	YES	reject
S-NG-RAN node UE XnAP ID	O		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the S-NG-RAN node	YES	reject
Expected UE Behaviour	O		9.2.3.81		YES	ignore
Requested Split SRBs	O		ENUMERATED (srb1, srb2, srb1&2, ...)	Indicates that resources for Split SRBs are requested.	YES	reject
PCell ID	O		Global NG-RAN Cell Identity 9.2.2.27		YES	reject
Desired Activity Notification Level	O		9.2.3.77		YES	ignore
Available DRB IDs	C-ifSNterminated		DRB List 9.2.1.29	Indicates the list of DRB IDs that the S-NG-RAN node may use for SN-terminated bearers.	YES	reject
S-NG-RAN node Maximum Integrity Protected Data Rate Uplink	O		Bit Rate 9.2.3.4	The S-NG-RAN node Maximum Integrity Protected Data Rate Uplink is a portion of the UE's Maximum Integrity Protected	YES	reject

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				Data Rate in the Uplink, which is enforced by the S-NG-RAN node for the UE's SN terminated PDU sessions. If the *S-NG-RAN node Maximum Integrity Protected Data Rate Downlink* IE is not present, this IE applies to both UL and DL.		
S-NG-RAN node Maximum Integrity Protected Data Rate Downlink	O		Bit Rate 9.2.3.4	The S-NG-RAN node Maximum Integrity Protected Data Rate Downlink is a portion of the UE's Maximum Integrity Protected Data Rate in the Downlink, which is enforced by the S-NG-RAN node for the UE's SN terminated PDU sessions.	YES	reject
Location Information at S-NODE reporting	O		ENUMERATED (pscell, ...)	Indicates that the user's Location Information at S-NODE is to be provided.	YES	ignore
MR-DC Resource Coordination Information	O		9.2.2.33	Information used to coordinate resource utilisation between M-NG-RAN node and S-NG-RAN node.	YES	ignore
Masked IMEISV	O		9.2.3.32		YES	ignore
NE-DC TDM Pattern	O		9.2.2.38		YES	ignore
SN Addition Trigger Indication	O		ENUMERATED (SN change, inter-MN HO, intra-MN HO, ...)	This IE indicates the trigger for S-NG-RAN node Addition Preparation procedure	YES	reject
Trace Activation	O		9.2.3.55		YES	ignore
Requested Fast MCG recovery via SRB3	O		ENUMERATED (true, ...)	Indicates that the resources for fast MCG recovery via SRB3 are requested.	YES	ignore
UE Radio Capability ID	O		9.2.3.138		YES	reject
Source NG-RAN Node ID	O		Global NG-RAN Node ID 9.2.2.3	The NG-RAN Node ID of the source NG-RAN node, or the source SN in e.g. NR-DC to NR-DC (conditional) handover.	YES	ignore
Management Based MDT PLMN List	O		MDT PLMN List 9.2.3.133		YES	ignore
UE History Information	O		9.2.3.64		YES	ignore

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
UE History Information from the UE	O		9.2.3.110		YES	ignore
PSCell Change History	O		ENUMERATED (reporting full history, ...)		YES	ignore
IAB Node Indication	O		ENUMERATED (true, ...)		YES	reject
No PDU Session Indication	O		ENUMERATED (true, ...)	This IE applies only if the UE is an IAB-MT.	YES	ignore
CHO Information SN Addition	O				YES	reject
>Source M-NG-RAN node ID	M		Global NG-RAN Node ID 9.2.2.3		–	
>Source M-NG-RAN node UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the source M-NG-RAN node	–	
>Estimated Arrival Probability	O		INTEGER (1..100)		–	
SCG Activation Request	O		9.2.3.154		YES	ignore
Conditional PSCell Addition Information Request	O				YES	reject
>Maximum Number of PSCells To Prepare	M		INTEGER (1..8, ...)	Indicates the maximum number of PSCells that the target SN may prepare.	–	
>Estimated Arrival Probability	O		INTEGER (1..100)	Indicates the arrival probability for the UE towards the candidate target SN.	–	
>S-CPAC Request Information	O		9.2.3.192	Indicates that SN addition is for S-CPAC preparation.	YES	reject
>S-CPAC Reference Configuration Request	O		ENUMERATED (request, …)	Indicates that the reference configuration for S-CPAC is requested.	YES	ignore
S-NG-RAN node UE Slice Maximum Bit Rate	O		UE Slice Maximum Bit Rate List 9.2.3.167	This IE indicates the S-NG-RAN node portion of the UE Slice Aggregate Maximum Bit Rate as specified in TS 23.501 [7]	YES	reject
F1-terminating IAB-donor Indicator	O		ENUMERATED (true, ...)	This IE applies only if the UE is an IAB-MT.	YES	reject
Selected NID	O		NID 9.2.2.65	This IE, together with the *Selected PLMN* IE, indicates the SNPN proposed for the SCG to the S-NG-RAN node.	YES	ignore
QMC Coordination Request	O		9.2.3.197	This IE contains information for managing configuration and reporting of one or more QoE and/or	YES	ignore

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				RAN visible QoE measurements at the S-NG-RAN node subject to addition.		
Source SN to Target SN QMC Information	O		QMC Configuration Information 9.2.3.156	This IE contains S-NG-RAN node-related QMC Configuration Information to be forwarded to the target S-NG-RAN node.	YES	ignore
IAB Authorization Status	O		ENUMERATED (authorized, not authorized, …)	Indicates the IAB node´s authorization status.	YES	ignore
Source M-NG-RAN node ID	O		Global NG-RAN Node ID 9.2.2.3	The NG-RAN Node ID of the source M-NG-RAN node in e.g. NR-DC to NR-DC handover.	YES	ignore
Data Collection ID	O		9.2.3.184		YES	ignore
LTM Candidate PSCell Addition Information Request	O				YES	reject
>LTM Request Indication	M		ENUMERATED (request, ...)		–	
>Maximum Number of PSCells To Prepare	M		INTEGER (1..8, …)	Indicates the maximum number of PSCells that the candidate SN may prepare.	–	
>Suggested LTM Candidate PSCell List	M		LTM Candidate PSCell Request List 9.2.3.242		–	
>Proposed LTM No Security Change ID List	M		LTM No Security Change ID List 9.2.3.231	Indicates the LTM No Security Change IDs to be assigned during the preparation of candidate PSCells.	–	
>CSI Resource Configuration	O		9.2.3.223		–	
>SCG Reference Configuration Request	O		ENUMERATED (request, …)	Indicates that the reference configuration for LTM is requested.	–	
>LTM Configuration ID Mapping List	O		9.2.3.221		–	
>Proposed LTM L2 Reset Configuration List	O		LTM L2 Reset Configuration List 9.2.3.248	Indicates the LTM L2 Reset ID(s) to be assigned during the preparation of candidate PSCell(s).	–	
>Proposed LTM UE Based TA Measurement ID List	O		LTM UE Based TA Measurement ID List 9.2.3.249	Indicates the LTM UE Based TA Measurement ID(s) to be assigned during the preparation of	YES	ignore

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				candidate PSCell(s).		
LTM Information SN Addition	O				YES	reject
>Source M-NG-RAN node ID	M		Global NG-RAN Node ID 9.2.2.3		–	
>Source M-NG-RAN node UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the source M-NG-RAN node	–	

Range bound	Explanation
maxnoofPDUSessions	Maximum no. of PDU sessions. Value is 256

Condition	Explanation
ifSNterminated	This IE shall be present if there is at least one *PDU Session Resource Setup Info – SN terminated* in the *PDU Session Resources To Be Added List* IE.

9.1.2.2 S-NODE ADDITION REQUEST ACKNOWLEDGE

This message is sent by the S-NG-RAN node to confirm the M-NG-RAN node about the S-NG-RAN node addition preparation.

Direction: S-NG-RAN node → M-NG-RAN node.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	reject
M-NG-RAN node UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the M-NG-RAN node	YES	reject
S-NG-RAN node UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the S-NG-RAN node	YES	reject
PDU Session Resources Admitted To Be Added List		*1*			YES	ignore
>PDU Session Resources Admitted To Be Added Item		*1 .. <maxnoof PDUSessions>*		NOTE: If neither the *PDU Session Resource Setup Response Info – SN terminated* IE nor the *PDU Session Resource Setup Response Info – MN terminated* IE is present in a *PDU Session Resources Admitted to be Added Item* IE, abnormal conditions as specified in clause 8.3.1.4 apply.	–	
>>PDU Session ID	M		9.2.3.18		–	
>>PDU Session Resource Setup	O		9.2.1.6		–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Response Info – SN terminated						
>>PDU Session Resource Setup Response Info – MN terminated	O		9.2.1.8		–	
PDU Session Resources Not Admitted List	O				YES	ignore
>PDU Session Resources Not Admitted List – SN terminated	O		PDU Session Resources Not Admitted List 9.2.1.3		–	
>PDU Session Resources Not Admitted List – MN terminated	O		PDU Session Resources Not Admitted List 9.2.1.3		–	
S-NG-RAN node to M-NG-RAN node Container	M		OCTET STRING	Includes the *CG-Config* message or the *CG-CandidateList* message as defined in subclause 11.2.2 of TS 38.331 [10].	YES	reject
Admitted Split SRBs	O		ENUMERATED (srb1, srb2, srb1&2, ...)	Indicates admitted SRBs	YES	reject
RRC Config Indication	O		9.2.3.72		YES	reject
Criticality Diagnostics	O		9.2.3.3		YES	ignore
Location Information at S-NODE	O		Target Cell Global ID 9.2.3.25	Contains information to support localisation of the UE	YES	ignore
MR-DC Resource Coordination Information	O		9.2.2.33	Information used to coordinate resource utilisation between M-NG-RAN node and S-NG-RAN node.	YES	ignore
Available fast MCG recovery via SRB3	O		ENUMERATED (true, ...)	Indicates the fast MCG recovery via SRB3 is enabled.	YES	ignore
Direct Forwarding Path Availability	O		ENUMERATED (direct path available, …)	Indicates direct forwarding path is available between the target S-NG-RAN node and source NG-RAN node for intra-system handover, or between the target S-NG-RAN node and the source SN in e.g.NR-DC to NR-DC (conditional) handover.	YES	ignore
SCG Activation Status	O		9.2.3.155		YES	ignore
Conditional PSCell Addition Information Acknowledge	O				YES	ignore
>Candidate PSCell List		*1*		Ignored, if the *Candidate PSCell with Other*	–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				Information List IE is included.		
>>Candidate PSCell Item		*1 .. <maxnoofPSCellCandidate>*			–	
>>>PSCell ID	M		NR CGI 9.2.2.7		–	
>Candidate PSCell with Other Information List		*0..1*			YES	reject
>>Candidate PSCell with Other Information Item		*1 .. <maxnoofPSCellCandidate>*			–	
>>>PSCell ID	M		NR CGI 9.2.2.7		–	
>>>S-CPAC Complete Candidate Configuration Indicator	O		Complete Candidate Configuration Indicator 9.2.3.194		–	
SN Mobility Information	O		BIT STRING (SIZE (32))	Information related to PSCell change; T-SN provides it in order to enable later analysis of the conditions that led to wrong PSCell change.	YES	ignore
QMC Coordination Response	O		9.2.3.198	This IE contains the response of the S-NG-RAN node to the QMC coordination request.	YES	ignore
CHO Information SN Addition Acknowledge	O				YES	reject
>PCell ID	O		Global NG-RAN Cell Identity 9.2.2.27	PCell indicated in the corresponding S-NODE ADDITION REQUEST message.	–	
Direct Forwarding Path Availability with source M-NG-RAN node	O		ENUMERATED (direct path available, …)	Indicates direct forwarding path is available between the target S-NG-RAN node and source M-NG-RAN node.	YES	ignore
PDU Set based Handling Indicator	O		9.2.3.206		YES	ignore
LTM Candidate PSCell Addition Information Acknowledge	O				YES	reject
>LTM Candidate PSCell Prepared List	M		9.2.3.243		–	
LTM Information SN Addition Acknowledge	O				YES	reject
>PCell ID	M		Global NG-RAN Cell Identity 9.2.2.27	PCell indicated in the corresponding S-NODE ADDITION REQUEST message.	–	

Range bound	Explanation
maxnoofPDUSessions	Maximum no. of PDU sessions. Value is 256
maxnoofPSCellCandidate	Maximum no, of PSCell candidate. Value is 8

9.1.2.3 S-NODE ADDITION REQUEST REJECT

This message is sent by the S-NG-RAN node to inform the M-NG-RAN node that the S-NG-RAN node Addition Preparation has failed.

Direction: S-NG-RAN node → M-NG-RAN node.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	reject
M-NG-RAN node UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the M-NG-RAN node	YES	reject
S-NG-RAN node UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the S-NG-RAN node	YES	reject
Cause	M		9.2.3.2		YES	ignore
Criticality Diagnostics	O		9.2.3.3		YES	ignore
PCell ID	O		Global NG-RAN Cell Identity 9.2.2.27	PCell indicated in the corresponding S-NODE ADDITION REQUEST message	YES	reject

9.1.2.4 S-NODE RECONFIGURATION COMPLETE

This message is sent by the M-NG-RAN node to the S-NG-RAN node to indicate whether the configuration requested by the S-NG-RAN node was applied by the UE.

Direction: M-NG-RAN node → S-NG-RAN node.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	reject
M-NG-RAN node UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the M-NG-RAN node	YES	reject
S-NG-RAN node UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the S-NG-RAN node	YES	reject
Response Information	M				YES	ignore
>CHOICE *Response Type*	M				–	
>>Configuration successfully applied						
>>>M-NG-RAN node to S-NG-RAN node Container	O		OCTET STRING	Includes the *RRCReconfigurationComplete* message as defined in subclause 6.2.2 of TS 38.331 [10] or the *RRCConnectionReconfigurationComplete* message as	–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				defined in subclause 6.2.2 of TS 36.331 [14].		
>>>SK-counter	O		INTEGER (0..65535)		YES	ignore
>>Configuration rejected by the M-NG-RAN node						
>>>Cause	M		9.2.3.2		–	
>>>M-NG-RAN node to S-NG-RAN node Container	O		OCTET STRING	Includes the *CG-ConfigInfo* message as defined in as defined in subclause 11.2.2 of TS 38.331 [10].	–	

9.1.2.5 S-NODE MODIFICATION REQUEST

This message is sent by the M-NG-RAN node to the S-NG-RAN node to either request the preparation to modify S-NG-RAN node resources for a specific UE, or to query for the current SCG configuration, or to provide the S-RLF-related information to the S-NG-RAN node.

Direction: M-NG-RAN node → S-NG-RAN node.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	reject
M-NG-RAN node UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the M-NG-RAN node	YES	reject
S-NG-RAN node UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the S-NG-RAN node	YES	reject
Cause	M		9.2.3.2		YES	ignore
PDCP Change Indication	O		9.2.3.74		YES	ignore
Selected PLMN	O		PLMN Identity 9.2.2.4	The selected PLMN of the SCG in the S-NG-RAN node.	YES	ignore
Mobility Restriction List	O		9.2.3.53		YES	ignore
SCG Configuration Query	O		9.2.3.27		YES	ignore
UE Context Information		*0..1*			YES	reject
>UE Security Capabilities	O		9.2.3.49		–	
>S-NG-RAN node Security Key	O		9.2.3.51	This IE is ignored if received and if the *S-CPAC Request Information* IE is present in the *Conditional PSCell Addition Information Modification Request* IE.	–	
>S-NG-RAN node UE Aggregate Maximum Bit Rate	O		UE Aggregate Maximum Bit Rate 9.2.3.17		–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
>Index to RAT/Frequency Selection Priority	O		9.2.3.23		–	
>Lower Layer presence status change	O		9.2.3.60		–	
>PDU Session Resources To Be Added List		*0..1*			–	
>>PDU Session Resources To Be Added Item		*1 .. <maxnoofPDUSessions>*		NOTE: If neither the *PDU Session Resource Setup Info – SN terminated* IE nor the *PDU Session Resource Setup Info – MN terminated* IE is present in a *PDU Session Resources To Be Added Item* IE, abnormal conditions as specified in clause 8.3.3.4 apply.	–	
>>>PDU Session ID	M		9.2.3.18		–	
>>>S-NSSAI	M		9.2.3.21		–	
>>>S-NG-RAN node PDU Session Aggregate Maximum Bit Rate	O		PDU Session Aggregate Maximum Bit Rate 9.2.3.69		–	
>>>PDU Session Resource Setup Info – SN terminated	O		9.2.1.5		–	
>>>PDU Session Resource Setup Info – MN terminated	O		9.2.1.7		–	
>>>PDU Session Expected UE Activity Behaviour	O		Expected UE Activity Behaviour 9.2.3.82	Expected UE Activity Behaviour for the PDU Session.	YES	ignore
>PDU Session Resources To Be Modified List		*0..1*			–	
>>PDU Session Resources To Be Modified Item		*1 .. <maxnoofPDUSessions>*		NOTE: If neither the *PDU Session Resource Modification Info – SN terminated* IE nor the *PDU Session Resource Modification Info – MN terminated* IE is present in a *PDU Session Resources To Be Modified Item* IE,	–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				abnormal conditions as specified in clause 8.3.3.4 apply.		
>>>PDU Session ID	M		9.2.3.18		–	
>>>S-NG-RAN node PDU Session Aggregate Maximum Bit Rate	O		PDU Session Aggregate Maximum Bit Rate 9.2.3.69		–	
>>>PDU Session Resource Modification Info – SN terminated	O		9.2.1.9		–	
>>>PDU Session Resource Modification Info – MN terminated	O		9.2.1.11		–	
>>>S-NSSAI	O		9.2.3.21		YES	reject
>>>PDU Session Expected UE Activity Behaviour	O		Expected UE Activity Behaviour 9.2.3.82	Expected UE Activity Behaviour for the PDU Session.	YES	ignore
>>>User Plane Failure Indication	O		9.2.3.210		YES	ignore
>PDU Session Resources To Be Released List	O		PDU Session List with Cause 9.2.1.26		–	
M-NG-RAN node to S-NG-RAN node Container	O		OCTET STRING	Includes the *CG-ConfigInfo* message as defined in subclause 11.2.2. of TS 38.331 [10].	YES	ignore
Requested Split SRBs	O		ENUMERATED (srb1, srb2, srb1&2, ...)	Indicates that resources for Split SRBs are requested.	YES	ignore
Requested Split SRBs release	O		ENUMERATED (srb1, srb2, srb1&2, ...)	Indicates that resources for Split SRBs are requested to be released.	YES	ignore
Desired Activity Notification Level	O		9.2.3.77		YES	ignore
Additional DRB IDs	O		DRB List 9.2.1.29	Indicates additional list of DRB IDs that the S-NG-RAN node may use for SN-terminated bearers.	YES	reject
S-NG-RAN node Maximum Integrity Protected Data Rate Uplink	O		Bit Rate 9.2.3.4	The S-NG-RAN node Maximum Integrity Protected Data Rate Uplink is a portion of the UE's Maximum Integrity Protected Data Rate in the Uplink, which is enforced by the S-NG-RAN node for the UE's SN terminated PDU	YES	reject

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				sessions. If the *S-NG-RAN node Maximum Integrity Protected Data Rate Downlink* IE is not present, this IE applies to both UL and DL.		
S-NG-RAN node Maximum Integrity Protected Data Rate Downlink	O		Bit Rate 9.2.3.4	The S-NG-RAN node Maximum Integrity Protected Data Rate Downlink is a portion of the UE's Maximum Integrity Protected Data Rate in the Downlink, which is enforced by the S-NG-RAN node for the UE's SN terminated PDU sessions.	YES	reject
Location Information at S-NODE reporting	O		ENUMERATED (pscell, ...)	Indicates that the user's Location Information at S-NODE is to be provided.	YES	ignore
MR-DC Resource Coordination Information	O		9.2.2.33	Information used to coordinate resource utilisation between M-NG-RAN node and S-NG-RAN node.	YES	ignore
PCell ID	O		Global NG-RAN Cell Identity 9.2.2.27		YES	reject
NE-DC TDM Pattern	O		9.2.2.38		YES	ignore
Requested Fast MCG recovery via SRB3	O		ENUMERATED (true, ...)	Indicates that the resources for fast MCG recovery via SRB3 are requested.	YES	ignore
Requested Fast MCG recovery via SRB3 Release	O		ENUMERATED (true, ...)	Indicates that resources for fast MCG recovery via SRB3 are requested to be released.	YES	ignore
SN triggered	O		ENUMERATED (TRUE, ...)		YES	ignore
Target Node ID	O		Global NG-RAN Node ID 9.2.2.3	Indicates the target node ID of the handover procedure decided by the M-NG-RAN node.	YES	ignore
PSCell History Information Retrieve	O		ENUMERATED (query, ...)	Indicates that the SN UE history information is requested.	YES	ignore
UE History Information from the UE	O		9.2.3.110		YES	ignore
CHO Information SN Modification	O				YES	ignore
>Conditional	M		ENUMERATED		–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Reconfiguration			(intra-MN-CHO, ...)			
>Estimated Arrival Probability	O		INTEGER (1..100)		–	
SCG Activation Request	O		9.2.3.154		YES	ignore
Conditional PSCell Addition Information Modification Request	O			This IE may be sent to the candidate SN.	YES	ignore
>Maximum Number of PSCells To Prepare	O		INTEGER (1..8, ...)	Indicates the maximum number of PSCells that the candidate SN may prepare.	–	
>Estimated Arrival Probability	O		INTEGER (1..100)	Indicates the arrival probability for the UE towards the candidate SN.		
>S-CPAC Request Information	O		9.2.3.192	Indicates that SN modification is for S-CPAC preparation or modification.	YES	reject
>S-CPAC Reference Configuration Request	O		ENUMERATED (request, …)	Indicates that the reference configuration for S-CPAC is requested.	YES	ignore
>S-CPAC Inter-SN Execution Notification	O		ENUMERATED (executed, …)	Indicates that inter-SN S-CPAC was executed.	YES	reject
Conditional PSCell Change Information Update	O			This IE may be sent to the source SN in SN-initiated inter-SN CPC, or sent to a candidate SN in S-CPAC.	YES	ignore
>Multiple Target S-NG-RAN Node List		*1*			–	
>>Multiple Target S-NG-RAN Node Item		*1 .. <maxnoofTargetSNs>*			–	
>>>Target S-NG-RAN node ID	M		Global NG-RAN Node ID 9.2.2.3		–	
>>>Candidate PSCell List		*1*			–	
>>>>Candidate PSCell Item		*1 .. <maxnoofPSCellCandidate>*			–	
>>>>>PSCell ID	M		NR CGI 9.2.2.7		–	
S-NG-RAN node UE Slice Maximum Bit Rate	O		UE Slice Maximum Bit Rate List 9.2.3.167	This IE indicates the S-NG-RAN node portion of the UE Slice Aggregate Maximum Bit Rate as specified in TS 23.501 [7]	YES	ignore
Management Based MDT PLMN Modification List	O		MDT PLMN Modification List 9.2.3.169		YES	ignore

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Selected NID	O		NID 9.2.2.65	This IE, together with the *Selected PLMN* IE, indicates the SNPN proposed for the SCG to the S-NG-RAN node.	YES	ignore
QMC Coordination Request	O		9.2.3.197	This IE contains information for managing configuration and reporting of one or more QoE and/or RAN visible QoE measurements at the S-NG-RAN node subject to modification.	YES	ignore
Source SN to Target SN QMC Information Inquiry	O		ENUMERATED (true, ...)	This IE contains a request for S-NG-RAN node-related QMC Configuration Information. The information is to be forwarded to the target S-NG-RAN node.	YES	ignore
IAB Authorization Status	O		ENUMERATED (authorized, not authorized, …)	Indicates the IAB node´s authorization status.	YES	ignore
LTM Candidate PSCell Information Update Request	O				YES	ignore
>Multiple S-NG-RAN Node List		*1*			–	
>>Multiple S-NG-RAN Node Item		*1 .. <maxnoofTargetSNs>*			–	
>>>S-NG-RAN node ID	M		Global NG-RAN Node ID 9.2.2.3		–	
>>>LTM Candidate PSCell Prepared List	O		9.2.3.243		–	
>CSI Resource Configuration	O		9.2.3.223		–	
>LTM Configuration ID Mapping List	O		9.2.3.221		–	
>Proposed LTM No Security Change ID List	O		LTM No Security Change ID List 9.2.3.231	Indicates the LTM No Security Change IDs to be assigned during the preparation of candidate PSCells.	–	
>LTM SCG Security Configuration	O		9.2.3.241		–	
>LTM Candidate PSCell To be Cancelled List	O		9.2.3.247		–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
>Proposed LTM L2 Reset Configuration List	O		LTM L2 Reset Configuration List 9.2.3.248	Indicates the LTM L2 Reset ID(s) to be assigned during the preparation of candidate PSCell(s).	–	
>Proposed LTM UE Based TA Measurement ID List	O		LTM UE Based TA Measurement ID List 9.2.3.249	Indicates the LTM UE Based TA Measurement ID(s) to be assigned during the preparation of candidate PSCell(s).	YES	ignore
LTM Information SN Modification	O				YES	ignore
>LTM Reconfiguration	M		ENUMERATED (intra-MN-LTM, ...)		–	
LTM Inter-SN Execution Notification	O		ENUMERATED (executed, …)	Indicates that inter-SN SCG LTM was executed.	YES	reject

Range bound	Explanation
maxnoofPDUSessions	Maximum no. of PDU sessions. Value is 256
maxnoofPSCellCandidate	Maximum no. of PSCell candidates. Value is 8
maxnoofTargetSNs	Maximum no. of the target S-NG-RAN nodes. Value is 8

9.1.2.6 S-NODE MODIFICATION REQUEST ACKNOWLEDGE

This message is sent by the S-NG-RAN node to confirm the M-NG-RAN node's request to modify the S-NG-RAN node resources for a specific UE.

Direction: S-NG-RAN node → M-NG-RAN node.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	reject
M-NG-RAN node UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the M-NG-RAN node	YES	ignore
S-NG-RAN node UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the S-NG-RAN node	YES	ignore
PDU Session Resources Admitted List		*0..1*			YES	ignore
>PDU Session Resources Admitted To Be Added List		*0..1*			–	
>>PDU Session Resources Admitted To Be Added Item		*1 .. <maxnoof PDUSessions>*		NOTE: If neither the *PDU Session Resource Setup Response Info – SN terminated* IE nor the *PDU Session Resource Setup Response Info – MN terminated* IE	–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				is present in a *PDU Session Resources Admitted To Be Added Item* IE, abnormal conditions as specified in clause 8.3.3.4 apply.		
>>>PDU Session ID	M		9.2.3.18		–	
>>>PDU Session Resource Setup Response Info – SN terminated	O		9.2.1.6		–	
>>>PDU Session Resource Setup Response Info – MN terminated	O		9.2.1.8		–	
>PDU Session Resources Admitted To Be Modified List		*0..1*			–	
>>PDU Session Resources Admitted To Be Modified Item		*1 .. <maxnoof PDUSessions>*		NOTE: If neither the *PDU Session Resource Modification Response Info – SN terminated* IE nor the *PDU Session Resource Modification Response Info – MN terminated* IE is present in a *PDU Session Resources Admitted To Be Modified Item* IE, abnormal conditions as specified in clause 8.3.3.4 apply.	–	
>>>PDU Session ID	M		9.2.3.18		–	
>>>PDU Session Resource Modification Response Info – SN terminated	O		9.2.1.10		–	
>>>PDU Session Resource Modification Response Info – MN terminated	O		9.2.1.12		–	
>PDU Session Resources Admitted To Be Released List		*0..1*			–	
>>PDU Session Resources admitted to be released List – SN terminated	O		PDU Session List with data forwarding request info 9.2.1.24		–	
>>PDU Session Resources admitted	O		PDU Session List with Cause		–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
to be released List – MN terminated			9.2.1.26			
PDU Session Resources Not Admitted	O				YES	ignore
>PDU Session List	O		9.2.1.27	Ignored if the *PDU Session Resources Not Admitted List* IE is included	–	
>PDU Session Resources Not Admitted List	O		9.2.1.3		YES	ignore
S-NG-RAN node to M-NG-RAN node Container	O		OCTET STRING	Includes the *CG-Config* message or the *CG-CandidateList* message as defined in subclause 11.2.2 of TS 38.331 [10].	YES	ignore
Admitted Split SRBs	O		ENUMERATED (srb1, srb2, srb1&2, ...)	Indicates admitted SRBs	YES	ignore
Admitted Split SRBs release	O		ENUMERATED (srb1, srb2, srb1&2, ...)	Indicates admitted SRBs release	YES	ignore
Criticality Diagnostics	O		9.2.3.3		YES	ignore
Location Information at S-NODE	O		Target Cell Global ID 9.2.3.25	Contains information to support localisation of the UE	YES	ignore
MR-DC Resource Coordination Information	O		9.2.2.33	Information used to coordinate resource utilisation between M-NG-RAN node and S-NG-RAN node.	YES	ignore
PDU Session Resources with Data Forwarding List		*0..1*			YES	ignore
>PDU Session Resources with Data Forwarding List – SN terminated	M		PDU Session List with data forwarding request info 9.2.1.24		–	
RRC Config Indication	O		9.2.3.72		YES	reject
Available fast MCG recovery via SRB3	O		ENUMERATED (true, ...)	Indicates the fast MCG recovery via SRB3 is enabled.	YES	ignore
Release fast MCG recovery via SRB3	O		ENUMERATED (true, ...)	Indicates the fast MCG recovery via SRB3 is released.	YES	ignore
Direct Forwarding Path Availability	O		ENUMERATED (direct path available,…)	Indicates direct path is available between the S-NG-RAN node and the target NG-RAN node.	YES	ignore
SCG UE History Information	O		9.2.3.151		YES	ignore
SCG Activation Status	O		9.2.3.155		YES	ignore
Conditional PSCell Addition Information Modification	O			This IE may be sent from the target SN.	YES	ignore

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Acknowledge						
>Candidate PSCell List		*1*		Ignored, if the *Candidate PSCell with Other Information List* IE is included.	–	
>>Candidate PSCell Item		*1 .. <maxnoofPSCellCandidate>*			–	
>>>PSCell ID	M		NR CGI 9.2.2.7		–	
>Candidate PSCell with Other Information List		*0..1*			YES	reject
>>Candidate PSCell with Other Information Item		*1 .. <maxnoofPSCellCandidate>*			–	
>>>PSCell ID	M		NR CGI 9.2.2.7		–	
>>>S-CPAC Complete Candidate Configuration Indicator	O		Complete Candidate Configuration Indicator 9.2.3.194		–	
QMC Coordination Response	O		9.2.3.198	This IE contains the response of the S-NG-RAN node to the QMC coordination request.	YES	ignore
Source SN to Target SN QMC Information	O		QMC Configuration Information 9.2.3.156	This IE contains S-NG-RAN node-related QMC Configuration Information to be forwarded to the target S-NG-RAN node.	YES	ignore
PDU Set based Handling Indicator	O		9.2.3.206		YES	ignore
LTM Candidate PSCell Information Update Acknowledge	O				YES	ignore
>LTM Candidate PSCell Prepared List	O		9.2.3.243		–	
>CSI Resource Configuration	O		9.2.3.223		–	
>LTM Configuration ID Mapping List	O		9.2.3.221		–	
>CSI Report Configuration for Early CSI Acquisition	O	OCTET STRING	Includes the *ltm-CSI-ReportConfig* as defined in TS 38.331 [10].		–	

Range bound	Explanation
maxnoofPDUSessions	Maximum no. of PDU sessions. Value is 256
maxnoofPSCellCandidate	Maximum no. of PSCell candidates. Value is 8

9.1.2.7 S-NODE MODIFICATION REQUEST REJECT

This message is sent by the S-NG-RAN node to inform the M-NG-RAN node that the M-NG-RAN node initiated S-NG-RAN node Modification Preparation has failed.

Direction: S-NG-RAN node → M-NG-RAN node.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	reject
M-NG-RAN node UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the M-NG-RAN node	YES	ignore
S-NG-RAN node UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the S-NG-RAN node	YES	ignore
Cause	M		9.2.3.2		YES	ignore
Criticality Diagnostics	O		9.2.3.3		YES	ignore

9.1.2.8 S-NODE MODIFICATION REQUIRED

This message is sent by the S-NG-RAN node to the M-NG-RAN node to request the modification of S-NG-RAN node resources for a specific UE.

Direction: S-NG-RAN node → M-NG-RAN node.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	reject
M-NG-RAN node UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the M-NG-RAN node	YES	reject
S-NG-RAN node UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the S-NG-RAN node	YES	reject
Cause	M		9.2.3.2		YES	ignore
PDCP Change Indication	O		9.2.3.74		YES	ignore
PDU Session Resources To Be Modified List		*0..1*			YES	ignore
>PDU Session Resources To Be Modified Item		*1 .. <maxnoofPDUSessions>*		NOTE: If neither the *PDU Session Resource Modification Required Info – SN terminated* IE nor the *PDU Session Resource Modification Required Info – MN terminated* IE is present in a *PDU Session Resources To Be Modified Item* IE, abnormal conditions as specified in clause 8.3.4.4 apply.	–	
>>PDU Session ID	M		9.2.3.18		–	
>>PDU Session Resource Modification Required Info – SN terminated	O		9.2.1.20		–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
>>PDU Session Resource Modification Required Info – MN terminated	O		9.2.1.22		–	
PDU Session Resources To Be Released List		*0..1*			YES	ignore
>PDU Session Resources To Be Released Item		*1 .. <maxnoofPDUSessions>*			–	
>>PDU sessions to be released List – SN terminated	O		PDU Session List with data forwarding request info 9.2.1.24		–	
>>PDU sessions to be released List – MN terminated	O		PDU Session List with Cause 9.2.1.26		–	
S-NG-RAN node to M-NG-RAN node Container	O		OCTET STRING	Includes the *CG-Config* message or the *CG-CandidateList* message as defined in subclause 11.2.2 of TS 38.331 [10].	YES	ignore
Spare DRB IDs	O		DRB List 9.2.1.29	Indicates the list of unnecessary DRB IDs that had been used by the S-NG-RAN node.	YES	ignore
Required Number of DRB IDs	O		Number of DRB IDs 9.2.3.78	Indicates the number of DRB IDs that the S-NG-RAN node requests more.	YES	ignore
Location Information at S-NODE	O		Target Cell Global ID 9.2.3.25	Contains information to support localisation of the UE	YES	ignore
MR-DC Resource Coordination Information	O		9.2.2.33	Information used to coordinate resource utilisation between M-NG-RAN node and S-NG-RAN node.	YES	ignore
RRC Config Indication	O		9.2.3.72		YES	reject
Available fast MCG recovery via SRB3	O		ENUMERATED (true, ...)	This IE is not used in this version of the specification.	YES	ignore
Release fast MCG recovery via SRB3	O		ENUMERATED (true, ...)	This IE is not used in this version of the specification.	YES	ignore
SCG Indicator	O		ENUMERATED (released,...)		YES	ignore
SCG UE History Information	O		9.2.3.151		YES	ignore
SCG Activation Request	O		9.2.3.154		YES	ignore
CPAC Information Required	O			This IE may be sent from the candidate SN.	YES	ignore
>Candidate PSCell List		*1*		Indicates the full list of candidate	–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				PSCells prepared at the candidate S-NG-RAN node. Ignored, if the *Candidate PSCell with Other Information List* IE is included.		
>>Candidate PSCell Item		*1 .. <maxnoofPSCellCandidate>*			–	
>>>PSCell ID	M		NR CGI 9.2.2.7		–	
>Candidate PSCell with Other Information List		*0..1*			YES	reject
>>Candidate PSCell with Other Information Item		*1 .. <maxnoofPSCellCandidate>*			–	
>>>PSCell ID	M		NR CGI 9.2.2.7		–	
>>>S-CPAC Complete Candidate Configuration Indicator	O		Complete Candidate Configuration Indicator 9.2.3.194		–	
SCG Reconfiguration Notification	O		ENUMERATED (executed, ..., executed-deleted, deleted)		YES	ignore
SPR availability in UE	O		ENUMERATED (spr-available, …)	Indicates if an SPR is available in the UE.	YES	ignore
QMC Coordination Request	O		9.2.3.197	This IE contains information for managing configuration and reporting of one or more QoE and/or RAN visible QoE measurements at the S-NG-RAN node that requests modification.	YES	ignore
S-CPAC Request	O		ENUMERATED (initiation, ...)	Indicates that SN modification is for S-CPAC preparation. This IE may be sent from the source SN.	YES	reject
PDU Sessions List To Be Released - UPError	O		9.2.1.41		YES	ignore
LTM Candidate PSCell Information Update Required	O				YES	ignore
>LTM Candidate PSCell To be Cancelled List	O		9.2.3.247		–	

Range bound	Explanation

maxnoofPDUSessions	Maximum no. of PDU sessions. Value is 256
maxnoofPSCellCandidate	Maximum no, of PSCell candidate. Value is 8

9.1.2.9 S-NODE MODIFICATION CONFIRM

This message is sent by the M-NG-RAN node to inform the S-NG-RAN node about the successful modification.

Direction: M-NG-RAN node → S-NG-RAN node.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	reject
M-NG-RAN node UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the M-NG-RAN node	YES	ignore
S-NG-RAN node UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the S-NG-RAN node	YES	ignore
PDU sessions Admitted To Be Modified List		*0..1*			YES	ignore
>PDU sessions Admitted To Be Modified Item		*1 .. <maxnoof PDUsessions>*		NOTE: If neither the *PDU Session Resource Modification Confirm Info – SN terminated* IE nor the *PDU Session Resource Modification Confirm Info – MN terminated* IE is present in a *PDU Session Resources Admitted To Be Modified Item* IE, abnormal conditions as specified in clause 8.3.4.4 apply.	–	
>>PDU Session ID	M		9.2.3.18		–	
>>PDU Session Resource Modification Confirm Info – SN terminated	O		9.2.1.21		–	
>>PDU Session Resource Modification Confirm Info – MN terminated	O		9.2.1.23		–	
PDU sessions Released List		*0..1*			YES	ignore
>PDU sessions released List – SN terminated	O		PDU Session List with data forwarding info from the target node 9.2.1.25		–	
>PDU sessions released List – MN terminated	O		PDU Session List 9.2.1.27		–	
M-NG-RAN node to S-NG-RAN node Container	O		OCTET STRING	Includes the *RRCReconfigurationComplete*	YES	ignore

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				message as defined in subclause 6.2.2 of TS 38.331 [10] or the *RRCConnectionReconfigurationComplete* message as defined in subclause 6.2.2 of TS 36.331 [14].		
Additional DRB IDs	O		DRB List 9.2.1.29	Indicates additional list of DRB IDs that the S-NG-RAN node may use for SN-terminated bearers.	YES	reject
Criticality Diagnostics	O		9.2.3.3		YES	ignore
MR-DC Resource Coordination Information	O		9.2.2.33	Information used to coordinate resource utilisation between M-NG-RAN node and S-NG-RAN node.	YES	ignore
QMC Coordination Response	O		9.2.3.198	This IE contains the response of the S-NG-RAN node to the QMC coordination request.	YES	ignore
LTM Candidate PSCell Information Update Confirm	O				YES	ignore
>LTM Candidate PSCell Prepared List	O		9.2.3.243		–	
>CSI Resource Configuration	O		9.2.3.223		–	
>LTM Configuration ID Mapping List	O		9.2.3.221		–	

Range bound	Explanation
maxnoofPDUSessions	Maximum no. of PDU sessions. Value is 256

9.1.2.10 S-NODE MODIFICATION REFUSE

This message is sent by the M-NG-RAN node to inform the S-NG-RAN node that the S-NG-RAN node initiated S-NG-RAN node Modification has failed.

Direction: M-NG-RAN node → S-NG-RAN node.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	reject
M-NG-RAN node UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the M-NG-RAN node	YES	ignore
S-NG-RAN node UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the S-NG-RAN node	YES	ignore
Cause	M		9.2.3.2		YES	ignore
M-NG-RAN node to S-	O		OCTET	Includes the *CG-*	YES	ignore

NG-RAN node Container			STRING	*ConfigInfo* message as defined in subclause 11.2.2 of TS 38.331 [10].		
Criticality Diagnostics	O		9.2.3.3		YES	ignore

9.1.2.11 S-NODE CHANGE REQUIRED

This message is sent by the S-NG-RAN node to the M-NG-RAN node to trigger the change of the S-NG-RAN node.

Direction: S-NG-RAN node → M-NG-RAN node.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	reject
M-NG-RAN node UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the M-NG-RAN node	YES	reject
S-NG-RAN node UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the S-NG-RAN node	YES	reject
Target S-NG-RAN node ID	M		Global NG-RAN Node ID 9.2.2.3	This IE shall be ignored if the *Conditional PSCell Change Information Required* IE is present or the *LTM Candidate PSCell Change Information Required* IE is present.	YES	reject
Cause	M		9.2.3.2		YES	ignore
PDU Session SN Change Required List		*0..1*			YES	ignore
>PDU Session SN Change Required Item		*1 .. <maxnoofPDUsessions>*		NOTE: If the *PDU Session Resource Change Required Info – SN terminated* IE is not present in a *PDU Session SN Change Required Item* IE, abnormal conditions as specified in clause 8.3.5.4 apply.	–	
>>PDU Session ID	M		9.2.3.18		–	
>>PDU Session Resource Change Required Info – SN terminated	O		9.2.1.18		–	
S-NG-RAN node to M-NG-RAN node Container	M		OCTET STRING	Includes the *CG-Config* message as defined in subclause 11.2.2 of TS 38.331 [10]. This IE shall be ignored if the *Conditional PSCell Change Information Required* IE or the *LTM Candidate*	YES	reject

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				PSCell Change Information Required IE is present.		
SCG UE History Information	O		9.2.3.151		YES	ignore
SN Mobility Information	O		BIT STRING (SIZE (32))	Information related to PSCell change; S-NG-RAN node provides it in order to enable later analysis of the conditions that led to wrong PSCell change.	YES	ignore
Source PSCell ID	O		Global NG-RAN Cell Identity 9.2.2.27		YES	ignore
Conditional PSCell Change Information Required	O				YES	ignore
>Multiple Target S-NG-RAN Node List		*1*			–	
>>Multiple Target S-NG-RAN Node Item		*1 .. <maxnoofTargetSNs>*			–	
>>>Target S-NG-RAN node ID	M		Global NG-RAN Node ID 9.2.2.3		–	
>>>CPC Indicator	M		ENUMERATED (CPC-initiation, CPC-modification, CPC-cancellation, ...)		–	
>>>Maximum Number of PSCells To Prepare	M		INTEGER (1..8, …)	Indicates the maximum number of PSCells that the target SN may prepare.	–	
>>>Estimated Arrival Probability	O		INTEGER (1..100)	Indicates the arrival probability for the UE towards the candidate target SN.	–	
>>>S-NG-RAN node to M-NG-RAN node Container	M		OCTET STRING	Includes the *CG-Config* message as defined in subclause 11.2.2 of TS 38.331 [10].	–	
>S-CPAC Request	O		ENUMERATED (initiation, …)	Indicates that SN change is for S-CPAC preparation.	YES	reject
Source SN to Target SN QMC Information	O		QMC Configuration Information 9.2.3.156	This IE contains S-NG-RAN node-related QMC Configuration Information to be forwarded to the target S-NG-RAN node.	YES	ignore
LTM Candidate PSCell Change Information Required	O				YES	reject
>LTM Request	M		ENUMERATED		–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Indication			(request, ...)			
>Multiple S-NG-RAN Node List		*1*			–	
>>Multiple S-NG-RAN Node Item		*1 .. <maxnoofTargetSNs>*			–	
>>>S-NG-RAN node ID	M		Global NG-RAN Node ID 9.2.2.3		–	
>>>Maximum Number of PSCells To Prepare	M		INTEGER (1..8, …)	Indicates the maximum number of PSCells that the candidate SN may prepare.	–	
>>>S-NG-RAN node to M-NG-RAN node Container	M		OCTET STRING	Includes the CG-Config message as defined in subclause 11.2.2 of TS 38.331 [10].	–	
>>>Suggested LTM Candidate PSCell List	O		9.2.3.242		–	
>CSI Resource Configuration	O		9.2.3.223		–	
>LTM Configuration ID Mapping List	O		9.2.3.221		–	

Range bound	Explanation
maxnoofPDUsessions	Maximum no. of PDU sessions. Value is 256
maxnoofTargetSNs	Maximum no. of the target S-NG-RAN nodes. Value is 8

9.1.2.12 S-NODE CHANGE CONFIRM

This message is sent by the M-NG-RAN node to inform the S-NG-RAN node that the preparation of the S-NG-RAN node initiated S-NG-RAN node change was successful.

Direction: M-NG-RAN node → S-NG-RAN node.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	reject
M-NG-RAN node UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the M-NG-RAN node	YES	ignore
S-NG-RAN node UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the S-NG-RAN node	YES	ignore
PDU Session SN Change Confirm List		*0..1*			YES	ignore
>PDU Session SN Change Confirm Item		*1 .. <maxnoofPDUsessions>*		NOTE: If the *PDU Session Resource Change Confirm Info – SN terminated* IE is not present in a *PDU Session SN Change Confirm Item* IE, abnormal conditions as specified in clause 8.3.5.4 apply.	–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
>>PDU Session ID	M		9.2.3.18		–	
>>PDU Session Resource Change Confirm Info – SN terminated	O		9.2.1.19		–	
>>Additional List of PDU Session Resource Change Confirm Info – SN Terminated		*0..1*		This IE would be present only if multiple candidate target SNs are prepared in case of SN initiated inter-SN CPC or SN initiated inter-SN SCG LTM.	YES	ignore
>>>Additional List of PDU Session Resource Change Confirm Info – SN Terminated-Item		*1 .. <maxnoofTargetSNsMinusOne>*			–	
>>>>PDU Session Resource Change Confirm Info – SN terminated	M		9.2.1.19		–	
Criticality Diagnostics	O		9.2.3.3		YES	ignore
Conditional PSCell Change Information Confirm	O				YES	ignore
>Multiple Target S-NG-RAN Node List		*1*			–	
>>Multiple Target S-NG-RAN Node Item		*1 .. <maxnoofTargetSNs>*			–	
>>>Target S-NG-RAN node ID	M		Global NG-RAN Node ID 9.2.2.3		–	
>>>Candidate PSCell List		1			–	
>>>>Candidate PSCell Item		*1 .. <maxnoofPSCellCandidate>*			–	
>>>>>PSCell ID	M		NR CGI 9.2.2.7		–	
>>>CPAC Preparation Type	O		ENUMERATED (s-cpac, ...)		YES	ignore
M-NG-RAN node to S-NG-RAN node Container	O		OCTET STRING	Includes the *RRCReconfigurationComplete* message as defined in subclause 6.2.2 of TS 38.331 [10].	YES	ignore
LTM Candidate PSCell Change Information Confirm	O				YES	ignore
>LTM SCG Security Configuration	O		9.2.3.241		–	

Range bound	Explanation
maxnoofPDUsessions	Maximum no. of PDU sessions. Value is 256
maxnoofTargetSNs	Maximum no. of the target S-NG-RAN nodes. Value is 8
maxnoofPSCellCandidate	Maximum no, of PSCell candidate. Value is 8

maxnoofTargetSNsMinusOne	Maximum no. of the target S-NG-RAN nodes minus 1. Value is 7

9.1.2.13 S-NODE CHANGE REFUSE

This message is sent by the M-NG-RAN node to inform the S-NG-RAN node that the preparation of the S-NG-RAN node initiated S-NG-RAN node change has failed.

Direction: M-NG-RAN node → S-NG-RAN node.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	reject
M-NG-RAN node UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the M-NG-RAN node	YES	ignore
S-NG-RAN node UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the S-NG-RAN node	YES	ignore
Cause	M		9.2.3.2		YES	ignore
Criticality Diagnostics	O		9.2.3.3		YES	ignore

9.1.2.14 S-NODE RELEASE REQUEST

This message is sent by the M-NG-RAN node to the S-NG-RAN node to request the release of resources.

Direction: M-NG-RAN node → S-NG-RAN node.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	reject
M-NG-RAN node UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the M-NG-RAN node	YES	reject
S-NG-RAN node UE XnAP ID	O		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the S-NG-RAN node	YES	reject
Cause	M		9.2.3.2		YES	ignore
PDU Session Resources To Be Released List	O		PDU Session List with Cause 9.2.1.26		YES	ignore
UE Context Kept Indicator	O		9.2.3.68		YES	ignore
M-NG-RAN node to S-NG-RAN node Container	O		OCTET STRING	Includes the *CG-ConfigInfo* message as defined in subclause 11.2.2 of TS 38.331 [10].	YES	ignore
DRBs transferred to MN	O		DRB List 9.2.1.29	Indicates that the target M-NG-RAN node reconfigured the listed DRBs as MN-terminated bearers.	YES	ignore
SCG UE History Information	O		9.2.3.151		YES	ignore

Range bound	Explanation
maxnoofPDUSessions	Maximum no. of PDU sessions. Value is 256

9.1.2.15 S-NODE RELEASE REQUEST ACKNOWLEDGE

This message is sent by the S-NG-RAN node to the M-NG-RAN node to confirm the request to release S-NG-RAN node resources.

Direction: S-NG-RAN node → M-NG-RAN node.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	reject
M-NG-RAN node UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the M-NG-RAN node	YES	reject
S-NG-RAN node UE XnAP ID	O		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the S-NG-RAN node	YES	reject
PDU sessions To Be Released List		*0..1*			YES	ignore
>PDU Session Resources To Be Released List – SN terminated	O		PDU Session List with data forwarding request info 9.2.1.24		–	
Criticality Diagnostics	O		9.2.3.3		YES	ignore
SCG UE History Information	O		9.2.3.151		YES	ignore
SN Mobility Information	O		BIT STRING (SIZE (32))	Information related to PSCell change; T-SN provides it in order to enable later analysis of the conditions that led to wrong PSCell change.	YES	ignore

9.1.2.16 S-NODE RELEASE REJECT

This message is sent by the S-NG-RAN node to the M-NG-RAN node to reject the request to release S-NG-RAN node resources.

Direction: S-NG-RAN node → M-NG-RAN node.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	reject
M-NG-RAN node UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the M-NG-RAN node	YES	reject
S-NG-RAN node UE XnAP ID	O		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the S-NG-RAN node	YES	reject
Cause	M		9.2.3.2		YES	ignore
Criticality Diagnostics	O		9.2.3.3		YES	ignore

9.1.2.17 S-NODE RELEASE REQUIRED

This message is sent by the S-NG-RAN node to request the release of all resources for a specific UE at the S-NG-RAN node.

Direction: S-NG-RAN node → M-NG-RAN node.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	reject
M-NG-RAN node UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the M-NG-RAN node	YES	reject
S-NG-RAN node UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the S-NG-RAN node	YES	reject
PDU sessions To Be Released		*0..1*			YES	ignore
>PDU Session Resources to be released List – SN terminated	O		PDU Session List with data forwarding request info 9.2.1.24		–	
Cause	M		9.2.3.2		YES	ignore
S-NG-RAN node to M-NG-RAN node Container	O		OCTET STRING	Includes the *CG-Config* message as defined in TS 38.331 [10].	YES	ignore
SCG UE History Information	O		9.2.3.151		YES	ignore
PDU Sessions List To Be Released - UPError	O		9.2.1.41		YES	ignore

9.1.2.18 S-NODE RELEASE CONFIRM

This message is sent by the M-NG-RAN node to confirm the release of all resources for a specific UE at the S-NG-RAN node.

Direction: M-NG-RAN node → S-NG-RAN node.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	reject
M-NG-RAN node UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the M-NG-RAN node	YES	ignore
S-NG-RAN node UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the S-NG-RAN node	YES	ignore
PDU Session Resources Released		*0..1*			YES	ignore
>PDU sessions released List – SN terminated	O		PDU Session List with data forwarding info from the target node 9.2.1.25		–	
Criticality Diagnostics	O		9.2.3.3		YES	ignore
SCG UE History Information	O		9.2.3.151		YES	ignore

Range bound	Explanation
maxnoofPDUSessions	Maximum no. of PDU sessions. Value is 256

9.1.2.19 S-NODE COUNTER CHECK REQUEST

This message is sent by the S-NG-RAN node to request the verification of the value of the PDCP COUNTs associated with SN terminated bearers established in the S-NG-RAN node.

Direction: S-NG-RAN node → M-NG-RAN node.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	reject
M-NG-RAN node UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the M-NG-RAN node	YES	ignore
S-NG-RAN node UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the S-NG-RAN node	YES	ignore
Bearers Subject to Counter Check List		*1*			YES	ignore
>Bearers Subject to Counter Check Item		*1 .. <maxnoof DRBs>*			–	
>>DRB ID	M		9.2.3.33		–	
>>UL COUNT	M		INTEGER (0.. 4294967295)	Indicates the value of uplink COUNT associated to this DRB.	–	
>>DL COUNT	M		INTEGER (0.. 4294967295)	Indicates the value of downlink COUNT associated to this DRB.	–	

Range bound	Explanation
maxnoofDRBs	Maximum no. of DRBs. Value is 32

9.1.2.20 RRC TRANSFER

This message is sent by the M-NG-RAN-NODE to the S-NG-RAN-NODE to transfer an RRC message or from the S-NG-RAN-NODE to the M-NG-RAN-NODE to report the DL RRC message delivery status.

This message is also sent by the new NG-RAN-NODE to the old NG-RAN-NODE or from the old NG-RAN-NODE to the new NG-RAN-NODE to transfer an RRC message containing the SDT SRB in case of RACH based SDT without UE context relocation.

This message is also sent by the M-NG-RAN node to the S-NG-RAN node or from the S-NG-RAN node to the M-NG-RAN node to forward QoE measurement results and/or the RAN visible QoE measurement results received from the UE.

Direction: M-NG-RAN node → S-NG-RAN node or S-NG-RAN node → M-NG-RAN node (Dual Connectivity).

Direction: new NG-RAN node → old NG-RAN node or old NG-RAN node → new NG-RAN node (SDT).

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	reject
M-NG-RAN node UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the M-NG-RAN node or at the new NG-RAN node.	YES	reject
S-NG-RAN node UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the S-NG-RAN node or at the old NG-RAN node.	YES	reject
Split SRB		*0..1*			YES	reject
>RRC Container	O		OCTET STRING	Contains a PDCP-C PDU encapsulating an RRC message as defined in	–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				subclause 6.2.1 of TS 38.331 [10] or TS 36.331 [14] and ciphered with the key of the M-NG-RAN node		
>SRB Type	M		ENUMERATED (srb1, srb2, ...)	The SRB type to be used	–	
>Delivery Status	O		9.2.3.45	DL RRC delivery status of split SRB	–	
UE Report		*0..1*			YES	reject
>RRC Container	M		OCTET STRING	For NGEN-DC and NR-DC, includes the *UL-DCCH-Message* as defined in subclause 6.2.1 of TS 38.331 [10] containing the *MeasurementReport* message or the *RRCReconfigurationComplete message* or the *FailureInformation* message or the *UEAssistanceInformation* message. For NR-DC, includes the UL-DCCH-Message as defined in subclause 6.2.1 of TS 38.331 [10] containing the *IABOtherInformation* message. For NE-DC, includes the *UL-DCCH-Message* as defined in subclause 6.2.1 of TS 36.331 [14] containing the *MeasurementReport* message.	–	
Fast MCG Recovery via SRB3 from SN to MN		*0..1*			YES	ignore
>RRC Container	M		OCTET STRING	For NR-DC, includes the *UL-DCCH-Message* as defined in subclause 6.2.1 of TS 38.331 [10] containing the *MCGFailureInformation*, message. For NGEN-DC, includes the *UL-DCCH-Message* as defined in subclause 6.2.1 of TS 36.331 [14] containing the *MCGFailureInform*	–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				ation message.		
Fast MCG Recovery via SRB3 from MN to SN		*0..1*			YES	ignore
>RRC Container	M		OCTET STRING	For NR-DC, includes the *DL-DCCH-Message* as defined in subclause 6.2.1 of TS 38.331 [10] containing the *RRCReconfiguration* message, or the *RRCRelease* message, or the *MobilityFromNRCommand message*. For NGEN-DC, includes the *DL-DCCH-Message* as defined in subclause 6.2.1 of TS 36.331 [14] containing the *RRCConnectionReconfiguration* message, or the *RRCConnectionRelease* message, or the *MobilityFromEUTRACommand* message.	–	
SDT SRB between New NG-RAN node and Old NG-RAN node		*0..1*			YES	ignore
>RRC Container	M		OCTET STRING	Contains a PDCP-C PDU encapsulating an RRC message as defined in subclause 6.2.1 of TS 38.331 [10].	–	
>SRB ID	M		9.2.3.165	In this version of the specification, values "0", "1", "3", "4" and "5" are not set by the sender and ignored by the receiver.	–	
QoE Measurement Results		*0..1*			YES	ignore
>QoE Reference	M		OCTET STRING(SIZE(6))	*QoE Reference*, as defined in clause 5.2 of TS 28.405 [55]. It consists of MCC+MNC+QMC ID, where the MCC and MNC are received with the QMC activation request from the management	–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				system to identify one PLMN hosting the management system, and QMC ID is a 3-byte Octet String.		
>RRC Container for RAN Visible QoE Report	O		OCTET STRING	Contains the *RAN-VisibleMeasurements* IE of the *MeasurementReportAppLayer* message as defined in TS 38.331 [10].	–	
>RRC Container for QoE Report	O		OCTET STRING	Contains the *measReportAppLayerContainer* of the *MeasurementReportAppLayer* message as defined in TS 38.331 [10].	–	
>Application Layer Session Status	O		ENUMERATED (started, stopped, ...)	Corresponds to information provided in the *appLayerSessionStatus* contained in the *MeasurementReportAppLayer* message as defined in TS 38.331 [10].	–	

9.1.2.21 NOTIFICATION CONTROL INDICATION

This message is sent to notify that the QoS requirements of already established GBR QoS flow(s) for a given UE for which notification control has been requested are either not fulfilled anymore or fulfilled again.

Direction: S-NG-RAN node → M-NG-RAN node and M-NG-RAN node → S-NG-RAN node.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	ignore
M-NG-RAN node UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the M-NG-RAN node	YES	reject
S-NG-RAN node UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the S-NG-RAN node	YES	reject
PDU Session Resource Notify List		*0..1*			YES	reject
>PDU Session Resource Notify Item		*1..<maxnoofPDUSessions>*			–	
>>PDU Session ID	M		9.2.3.18		–	
>>QoS Flow Notification Control Indication Info	M		9.2.3.57		–	

Range bound	Explanation
maxnoofPDUSessions	Maximum no. of PDU sessions allowed towards one UE. Value is 256.

9.1.2.22 ACTIVITY NOTIFICATION

This message is sent by a NG-RAN node to send notification to another NG-RAN node for one or several QoS flows or PDU sessions already established for a given UE.

Direction: NG-RAN node$_1$ → NG-RAN node$_2$

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	reject
M-NG-RAN node UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the M-NG-RAN node, i.e., NG-RAN node$_1$ in case of RAN paging failure or NG-RAN node$_2$ in case of user data activity notification.	YES	ignore
S-NG-RAN node UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the S-NG-RAN node, i.e., NG-RAN node$_2$ in case of RAN paging failure or NG-RAN node$_1$ in case of user data activity notification.	YES	ignore
UE Context level user plane activity report	O		User plane traffic activity report 9.2.3.59		YES	ignore
PDU Session Resource Activity Notify List		*0..1*			YES	ignore
>PDU Session Resource Activity Notify Item		*1..<maxnoofPDUSessions>*			–	
>>PDU Session ID	M		9.2.3.18		–	
>>PDU Session level user plane activity report	O		User plane traffic activity report 9.2.3.59		–	
>>**QoS Flows Activity Notify List**		*0..1*			–	
>>>**QoS Flows Activity Notify Item**		*1..<maxnoofQoSflows>*			–	
>>>>QoS Flow Identifier	M		9.2.3.10		–	
>>>>User plane traffic activity report	M		9.2.3.59		–	
RAN Paging Failure	O		ENUMERATED (true, …)		YES	ignore

Range bound	Explanation
maxnoofPDUSessions	Maximum no. of PDU sessions. Value is 256
maxnoofQoSFlows	Maximum no. of QoS flows allowed within one PDU session. Value is 64.

9.1.2.23 E-UTRA - NR CELL RESOURCE COORDINATION REQUEST

This message is sent by a neighbouring ng-eNB to a peer gNB or by a neighbouring gNB to a peer ng-eNB, both nodes able to interact, to express the desired resource allocation for data traffic, for the sake of E-UTRA - NR Cell Resource Coordination.

Direction: ng-eNB → gNB, gNB → ng-eNB.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	reject
CHOICE *Initiating Node Type*	M				YES	reject
>ng-eNB						
>>Data Traffic Resource Indication	M		9.2.2.30	Indicates resource allocations for data traffic.	–	
>>Spectrum Sharing Group ID	M		INTEGER (1.. maxnoofCellsinNG-RANnode)	Indicates the E-UTRA cells involved in resource coordination with the NR cells affiliated with the same *Spectrum Sharing Group ID.*	–	
>>List of E-UTRA Cells in E-UTRA Coordination Request		*0..1*		List of applicable E-UTRA cells.	–	
>>>List of E-UTRA Cells in E-UTRA Coordination Request Item		*1.. < maxnoofCellsinNG-RANnode >*			–	
>>>>EUTRA Cell ID	M		E-UTRA CGI 9.2.2.8		–	
>gNB						
>>Data Traffic Resource Indication	M		9.2.2.30	Indicates resource allocations for data traffic.	–	
>>List of E-UTRA Cells in NR Coordination Request		*0..1*		List of applicable E-UTRA cells	–	
>>>List of E-UTRA Cells in E-UTRA Coordination Request Item		*1 .. < maxnoofCellsinNG-RANnode >*			–	
>>>>E-UTRA Cell ID	M		E-UTRA CGI 9.2.2.8		–	
>>Spectrum Sharing Group ID	M		INTEGER (1.. maxnoofCellsinNG-RANnode)	Indicates the NR cells involved in resource coordination with the E-UTRA cells affiliated with the same *Spectrum Sharing Group ID.*	–	
>>List of NR Cells in NR Coordination Request		*0..1*		List of applicable NR cells	–	
>>>List of NR Cells in NR Coordination Request Item		*1.. < maxnoNRcellsSpectrumSharingwithE-UTRA >*			–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
>>>>NR-Cell ID	M		NR CGI 9.2.2.7		–	
Interface Instance Indication	O		9.2.2.39		YES	reject

Range bound	Explanation
maxnoNRcellsSpectrumSharingwithE-UTRA	Maximum no. of NR cells affiliated to a *Spectrum Sharing Group ID* involved in cell resource coordination with a number of E-UTRA cells affiliated with the same *Spectrum Sharing Group ID*. Value is 64.
maxnoofCellsinNG-RANnode	Maximum no. cells that can be served by a NG-RAN node. Value is 16384.

9.1.2.24 E-UTRA - NR CELL RESOURCE COORDINATION RESPONSE

This message is sent by a neighbouring ng-eNB to a peer gNB or by a neighbouring gNB to a peer ng-eNB, both nodes able to interact, as a response to the E-UTRA - NR CELL RESOURCE COORDINATION REQUEST.

Direction: ng-eNB → gNB, gNB → ng-eNB.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	reject
CHOICE *Responding NodeType*	M				YES	reject
>ng-eNB						
>>Data Traffic Resource Indication	M		9.2.2.30	Indicates resource allocations for data traffic.	–	
>>Spectrum Sharing Group ID	M		INTEGER (1.. maxnoofCellsin NG-RANnode)	Indicates the E-UTRA cells involved in resource coordination with the NR cells affiliated with the same *Spectrum Sharing Group ID.*	–	
>>List of E-UTRA Cells in E-UTRA Coordination Response		*0..1*		List of applicable E-UTRA cells	–	
>>>List of E-UTRA Cells in E-UTRA Coordination Response Item		*1.. < maxnoofCellsinNG-RANnode >*			–	
>>>>EUTRA Cell ID	M		E-UTRA CGI 9.2.2.8		–	
>gNB						
>>Data Traffic Resource Indication	M		9.2.2.30	Indicates resource allocations for data traffic.	–	
>>Spectrum Sharing Group ID	M		INTEGER (1.. maxnoofCellsin NG-RANnode)	Indicates the NR cells involved in resource coordination with the E-UTRA cells affiliated with the same *Spectrum Sharing Group ID.*	–	
>>List of NR Cells		*0..1*		List of applicable	–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
in NR Coordination Response				NR cells		
>>>List of NR Cells in NR Coordination Response Item		*1.. < maxnoNRcellsSpectrumSharingwithE-UTRA >*			–	
>>>>NR Cell ID	M		NR CGI 9.2.2.7		–	
Interface Instance Indication	O		9.2.2.39		YES	reject

Range bound	Explanation
maxnoNRcellsSpectrumSharingwithE-UTRA	Maximum no. of NR cells affiliated to a *Spectrum Sharing Group ID* involved in cell resource coordination with a number of E-UTRA cells affiliated with the same *Spectrum Sharing Group ID*. Value is 64.
maxnoofCellsinNG-RANnode	Maximum no. cells that can be served by a NG-RAN node. Value is 16384.

9.1.2.25 SECONDARY RAT DATA USAGE REPORT

This message is sent by the S-NG-RAN node to report data volumes for secondary RAT.

Direction: S-NG-RAN node → M-NG-RAN node.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	reject
M-NG-RAN node UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the M-NG-RAN node	YES	reject
S-NG-RAN node UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the S-NG-RAN node	YES	reject
PDU Session Resource Secondary RAT Usage List		*1*			YES	reject
>PDU Session Resource Secondary RAT Usage Item		*1..<maxnoofPDUSessions>*			–	
>>PDU Session ID	M		9.2.3.18		–	
>>Secondary RAT Usage Information	M		9.2.3.87		–	

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

9.1.2.26 TRACE START

This message is sent by the M-NG-RAN node to initiate a trace session for a UE.

Direction: M-NG-RAN node → S-NG-RAN node.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	ignore
M-NG-RAN node UE	M		NG-RAN node	Allocated at the M-	YES	reject

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
XnAP ID			UE XnAP ID 9.2.3.16	NG-RAN node.		
S-NG-RAN node UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the S-NG-RAN node.	YES	reject
Trace Activation	O		9.2.3.55	This IE is always present.	YES	ignore

9.1.2.27 DEACTIVATE TRACE

This message is sent by the M-NG-RAN node to deactivate a trace session.

Direction: M-NG-RAN node → S-NG-RAN node.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	ignore
M-NG-RAN node UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the M-NG-RAN node.	YES	reject
S-NG-RAN node UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the S-NG-RAN node.	YES	reject
NG-RAN Trace ID	M		9.2.3.97	As per NG-RAN Trace ID in *Trace Activation* IE	YES	ignore

9.1.2.28 CELL TRAFFIC TRACE

This message is sent by S-NG-RAN node to transfer the trace information to the M-NG-RAN node.

Direction: S-NG-RAN node → M-NG-RAN node.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	ignore
M-NG-RAN node UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the M-NG-RAN node	YES	reject
S-NG-RAN node UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the S-NG-RAN node	YES	reject
NG-RAN Trace ID	M		9.2.3.97	As per NG-RAN Trace ID in *Trace Activation* IE	YES	ignore
Trace Collection Entity IP Address	M		Transport Layer Address 9.2.3.29	For File based Reporting. Defined in TS 32.422 [23]. Should be ignored if the *Trace Collection Entity* URI IE is present.	YES	ignore
Privacy Indicator	O		ENUMERATED (Immediate MDT, logged MDT, ...)	The value of *logged MDT* in this IE is not used in this version of the specification.	YES	ignore
Trace Collection Entity URI	O		URI 9.2.3.124	For Streaming based Reporting. Defined in TS 32.422 [23]	YES	ignore

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				Replaces Trace Collection Entity IP Address if present		

9.1.2.29 SCG FAILURE INFORMATION REPORT

This message is sent by M-NG-RAN node to S-NG-RAN node to report a PSCell change failure event.

Direction: M-NG-RAN node → S-NG-RAN node.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	ignore
M-NG-RAN node UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the M-NG-RAN node.	YES	ignore
S-NG-RAN node UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the S-NG-RAN node.	YES	ignore
Source PSCell CGI	O		Global NG-RAN Cell Identity 9.2.2.27	NG-RAN CGI of source PSCell for PSCell change procedure	YES	ignore
Failed PSCell CGI	O		Global NG-RAN Cell Identity 9.2.2.27	NG-RAN CGI of PSCell where SCG failure occurs for PSCell change procedure	YES	ignore
SCG Failure Report Container	M		OCTET STRING	Contains the *SCGFailureInformation* message or the *SCGFailureInformationEUTRA* message as defined in TS 38.331 [10] or the *SCGFailureInformation* message or the *SCGFailureInformationNR* message as defined in TS 36.331 [14]	YES	ignore
SN Mobility Information	O		BIT STRING (SIZE (32))	Information related to the PSCell change. It's provided by S-NG-RAN node in order to enable later analysis of the conditions that led to wrong PSCell change.	YES	ignore
CPAC Configuration	O		9.2.2.103		YES	ignore
Time SCG Failure	O		INTEGER (0..1023)	Corresponds to information provided in the *timeSCGFailure* contained in the *SCGFailureInformationNR* message as defined in TS 36.331 [14]	YES	ignore

9.1.2.30 SCG FAILURE TRANSFER

This message is sent by the S-NG-RAN node to the M-NG-RAN node to indicate that the root cause of the SCG failure may have occurred in the other nodes.

Direction: S-NG-RAN node → M-NG-RAN node.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	ignore
M-NG-RAN node UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the M-NG-RAN node.	YES	ignore
S-NG-RAN node UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the S-NG-RAN node.	YES	ignore

9.1.2.31 CONDITIONAL PSCELL CHANGE CANCEL

This message is sent by the M-NG-RAN node to the source S-NG-RAN node to inform the cancellation of all the prepared PSCells in the target S-NG-RAN node during a Conditional PSCell Change.

Direction: M-NG-RAN node → S-NG-RAN node.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	ignore
M-NG-RAN node UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the M-NG-RAN node	YES	reject
S-NG-RAN node UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the S-NG-RAN node	YES	reject
Cause	O		9.2.3.2		YES	ignore
Target S-NG-RAN node ID	M		Global NG-RAN Node ID 9.2.2.3		YES	reject

9.1.2.32 RACH INDICATION

This message is sent by the S-NG-RAN node to inform the M-NG-RAN node that one or more RA reports are available at the UE.

Direction: S-NG-RAN node → M-NG-RAN node.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	ignore
RA Report Indication List		*1*			YES	reject
>RA Report Indication List Item		*1 .. <maxnoofUEsforRAReportIndications>*			–	
>>M-NG-RAN node UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the M-NG-RAN node	–	

Range bound	Explanation
maxnoofUEsforRAReportIndications	Maximum number of UEs from which S-NG-RAN node is interested to collect RA report. Value is 64.

9.1.3 Messages for Global Procedures

9.1.3.1 XN SETUP REQUEST

This message is sent by a NG-RAN node to a neighbouring NG-RAN node to transfer application data for an Xn-C interface instance.

Direction: NG-RAN node$_1$ → NG-RAN node$_2$.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	reject
Global NG-RAN Node ID	M		9.2.2.3		YES	reject
TAI Support List	M		9.2.3.20	List of supported TAs and associated characteristics.	YES	reject
AMF Region Information	M		9.2.3.83	Contains a list of all the AMF Regions to which the NG-RAN node belongs.	YES	reject
List of Served Cells NR		*0 .. <maxnoofCellsinNG-RAN node>*		Contains a list of cells served by the gNB. If a partial list of cells is signalled, it contains at least one cell per carrier configured at the gNB	YES	reject
>Served Cell Information NR	M		9.2.2.11		–	
>Neighbour Information NR	O		9.2.2.13		–	
>Neighbour Information E-UTRA	O		9.2.2.14		–	
>Served Cell Specific Info Request	O		9.2.2.102		YES	ignore
List of Served Cells E-UTRA		*0 .. <maxnoofCellsinNG-RAN node>*		Contains a list of cells served by the ng-eNB. If a partial list of cells is signalled, it contains at least one cell per carrier configured at the ng-eNB	YES	reject
>Served Cell Information E-UTRA	M		9.2.2.12		–	
>Neighbour Information NR	O		9.2.2.13		–	
>Neighbour Information E-UTRA	O		9.2.2.14		–	
>SFN Offset	O		9.2.2.75	Associated with the *ECGI* IE in the *Served Cell Information E-UTRA* IE	YES	ignore
Interface Instance	O		9.2.2.39		YES	reject

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Indication						
TNL Configuration Info	O		9.2.3.96		YES	ignore
Partial List Indicator NR	O		Partial List Indicator 9.2.2.46	Value “partial” indicates that a partial list of cells is included in the *List of Served Cells NR* IE.	YES	ignore
Cell and Capacity Assistance Information NR	O		9.2.2.41	Contains NR cell related assistance information.	YES	ignore
Partial List Indicator E-UTRA	O		Partial List Indicator 9.2.2.46	Value “partial” indicates that a partial list of cells is included in the *List of Served Cells E-UTRA.*	YES	ignore
Cell and Capacity Assistance Information E-UTRA	O		9.2.2.42	Contains E-UTRA cell related assistance information.	YES	ignore
Local NG-RAN Node Identifier	O		9.2.2.101		YES	ignore
Neighbour NG-RAN Node List		*0..<maxnoofNeighbourNG-RAN nodes>*			YES	ignore
>Global NG-RAN Node ID	M		9.2.2.3		–	
>Local NG-RAN Node Identifier	M		9.2.2.101		–	
WAB-MT Identifier	O		9.2.2.109	Contains the identifier of the WAB-MT co-located with the WAB-gNB that sends this message.	YES	ignore

Range bound	Explanation
maxnoofCellsinNG-RAN node	Maximum no. cells that can be served by a NG-RAN node. Value is 16384.
maxnoofNeighbourNG-RAN nodes	Maximum no. of neighbour NG-RAN nodes. Value is 256.

9.1.3.2 XN SETUP RESPONSE

This message is sent by a NG-RAN node to a neighbouring NG-RAN node to transfer application data for an Xn-C interface instance.

Direction: NG-RAN node$_2$ → NG-RAN node$_1$.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	reject
Global NG-RAN Node ID	M		9.2.2.3		YES	reject
TAI Support List	M		9.2.3.20	List of supported TAs and associated characteristics.	YES	reject
List of Served Cells NR		*0 .. <maxnoof*		Contains a list of cells served by the	YES	reject

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
		CellsinNG-RAN node>		gNB. If a partial list of cells is signalled, it contains at least one cell per carrier configured at the gNB		
>Served Cell Information NR	M		9.2.2.11		–	
>Neighbour Information NR	O		9.2.2.13		–	
>Neighbour Information E-UTRA	O		9.2.2.14		–	
>Served Cell Specific Info Request	O		9.2.2.102	This IE is not used in this version of the specification.	YES	ignore
List of Served Cells E-UTRA		*0 .. <maxnoof CellsinNG-RAN node>*		Contains a list of cells served by the ng-eNB. If a partial list of cells is signalled, it contains at least one cell per carrier configured at the gNB	YES	reject
>Served Cell Information E-UTRA	M		9.2.2.12		–	
>Neighbour Information NR	O		9.2.2.13		–	
>Neighbour Information E-UTRA	O		9.2.2.14		–	
>SFN Offset	O		9.2.2.75	Associated with the *ECGI* IE in the *Served Cell Information E-UTRA* IE	YES	ignore
Criticality Diagnostics	O		9.2.3.3		YES	ignore
AMF Region Information	O		9.2.3.83	Contains a list of all the AMF Regions to which the NG-RAN node belongs.	YES	reject
Interface Instance Indication	O		9.2.2.39		YES	reject
TNL Configuration Info	O		9.2.3.96		YES	ignore
Partial List Indicator NR	O		Partial List Indicator 9.2.2.46	Value “partial” indicates that a partial list of cells is included in the *List of Served Cells NR* IE.	YES	ignore
Cell and Capacity Assistance Information NR	O		9.2.2.41	Contains NR cell related assistance information.	YES	ignore
Partial List Indicator E-UTRA	O		Partial List Indicator 9.2.2.46	Value “partial” indicates that a partial list of cells is included in the *List of Served Cells E-UTRA.*	YES	ignore
Cell and Capacity Assistance Information E-UTRA	O		9.2.2.42	Contains E-UTRA cell related assistance information.	YES	ignore
Local NG-RAN Node Identifier	O		9.2.2.101		YES	ignore

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Neighbour NG-RAN Node List		*0..<maxnoofNeighbourNG-RAN nodes>*			YES	ignore
>Global NG-RAN Node ID	M		9.2.2.3		–	
>Local NG-RAN Node Identifier	M		9.2.2.101		–	
WAB-MT Identifier	O		9.2.2.109	Contains the identifier of the WAB-MT co-located with the WAB-gNB that sends this message.	YES	ignore

Range bound	Explanation
maxnoofCellsinNG-RAN node	Maximum no. cells that can be served by a NG-RAN node. Value is 16384.
maxnoofNeighbourNG-RAN nodes	Maximum no. of neighbour NG-RAN nodes. Value is 256.

9.1.3.3 XN SETUP FAILURE

This message is sent by the neighbouring NG-RAN node to indicate Xn Setup failure.

Direction: NG-RAN node$_2$ → NG-RAN node$_1$.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	reject
Cause	M		9.2.3.2		YES	ignore
Time To Wait	O		9.2.3.56		YES	ignore
Criticality Diagnostics	O		9.2.3.3		YES	ignore
Interface Instance Indication	O		9.2.2.39		YES	reject
Message Oversize Notification	O		9.2.2.45		YES	ignore

9.1.3.4 NG-RAN NODE CONFIGURATION UPDATE

This message is sent by a NG-RAN node to a neighbouring NG-RAN node to transfer updated information for an Xn-C interface instance.

Direction: NG-RAN node$_1$ → NG-RAN node$_2$.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	reject
TAI Support List	O		9.2.3.20	List of supported TAs and associated characteristics.	GLOBAL	reject
CHOICE *Initiating NodeType*	M				YES	ignore
>gNB						
>>Served Cells To Update NR	O		9.2.2.15		YES	ignore
>>Cell Assistance Information NR	O		9.2.2.17		YES	ignore
>>Cell Assistance	O		9.2.2.43		YES	ignore

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Information E-UTRA						
>>Served Cell Specific Info Request	O		9.2.2.102		YES	ignore
>ng-eNB						
>>Served Cells to Update E-UTRA	O		9.2.2.16		YES	ignore
>>Cell Assistance Information NR	O		9.2.2.17		YES	ignore
>>Cell Assistance Information E-UTRA	O		9.2.2.43		YES	ignore
TNLA To Add List		*0..1*			YES	ignore
>TNLA To Add Item		*1..<maxnoofTNLAssociations>*			–	
>>TNLA Transport Layer Information	M		CP Transport Layer Information 9.2.3.31	CP Transport Layer Information of NG-RAN node$_1$	–	
>>TNL Association Usage	M		9.2.3.84		–	
TNLA To Remove List		*0..1*			YES	ignore
>TNLA To Remove Item		*1..<maxnoofTNLAssociations>*			–	
>>TNLA Transport Layer Information	M		CP Transport Layer Information 9.2.3.31	CP Transport Layer Information of NG-RAN node$_1$	–	
TNLA To Update List		*0..1*			YES	ignore
>TNLA To Update Item		*1..<maxnoofTNLAssociations>*			–	
>>TNLA Transport Layer Information	M		CP Transport Layer Information 9.2.3.31	CP Transport Layer Information of NG-RAN node$_1$	–	
>>TNL Association Usage	O		9.2.3.84		–	
Global NG-RAN Node ID	O		9.2.2.3		YES	reject
AMF Region Information To Add	O		AMF Region Information 9.2.3.83	List of all added AMF Regions to which the NG-RAN node belongs.	YES	reject
AMF Region Information To Delete	O		AMF Region Information 9.2.3.83	List of all deleted AMF Regions to which the NG-RAN node belongs.	YES	reject
Interface Instance Indication	O		9.2.2.39		YES	reject
TNL Configuration Info	O		9.2.3.96		YES	ignore
Coverage Modification List		*0 .. 1*		List of cells with modified coverage.	GLOBAL	reject
>Coverage Modification Item		*0 .. <maxnoofCellsinNG-RAN node>*			–	
>>Global NG-RAN Cell Identity	M		Global Cell Identity 9.2.2.73	Global Cell Identity of the cell to be modified. In this version of the	–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				specification, only a NG-RAN cell identifier can be included.		
>>Cell Coverage State	M		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.	–	
>>Cell Deployment Status Indicator	O		ENUMERATED (pre-change-notification, ...)	Indicates the Cell Coverage State is planned to be used at the next reconfiguration.	–	
>>Cell Replacing Info	C-ifCellDeploymentStatusIndicatorPresent				–	
>>>Replacing Cells		*0 .. <maxnoofCellsinNG-RAN node>*			–	
>>>>Global NG-RAN Cell Identity			Global Cell Identity 9.2.2.73	Global Cell Identity of a cell that may replace all or part of the coverage of the cell to be modified. In this version of the specification, only a NG-RAN cell identifier can be included.	–	
>>SSB Coverage Modification List		*0..1*		List of SSB beams with modified coverage.	–	
>>>SSB Coverage Modification Item		*0..<maxnoofSSBAreas>*			–	
>>>>SSB Index	M		INTEGER (0..63)	Identifier of the SSB beam to be modified.	–	
>>>>SSB Coverage State	M		INTEGER (0..15, …)	Value '0' indicates that the SSB beam is inactive. Other values Indicates that the SSB beam is active and also indicates the coverage configuration of the concerned SSB beam.	–	
>>Coverage Modification Cause	O		ENUMERATED (coverage, cell edge capacity, ..., network energy saving)	Indicates the reason for the coverage modification in NG-RAN node$_1$.	YES	ignore

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Local NG-RAN Node Identifier	O		9.2.2.101		YES	ignore
Neighbour NG-RAN Node List		*0..<maxnoofNeighbourNG-RAN nodes>*			YES	ignore
>Global NG-RAN Node ID	M		9.2.2.3		–	
>Local NG-RAN Node Identifier	M		9.2.2.101		–	
Local NG-RAN Node Identifier Removal	O		Local NG-RAN Node Identifier 9.2.2.101		YES	ignore
WAB-MT Identifier	O		9.2.2.109	Contains the identifier of the WAB-MT co-located with the WAB-gNB that sends this message.	YES	ignore
Future Coverage Modification List		*0..1*		List of cells whose coverage will be modified.	YES	ignore
>Future Coverage Modification Item		*1..<maxnoofCellsinNG-RAN node>*			–	
>>NR CGI	M		9.2.2.7	Identifier of the NR cell whose coverage will be modified.	–	
>>Future Cell Coverage State	M		INTEGER (0..63, ...)	Value ‘0’ indicates that the cell will be inactive. Other values indicate that the cell will be active and also indicates the future coverage configuration of the concerned cell.	–	
>>Future SSB Coverage Modification List		*0..1*		List of SSB beams whose coverage will be modified.	–	
>>>Future SSB Coverage Modification Item		*1..<maxnoofSSBAreas>*			–	
>>>>SSB index	M		INTEGER (0..63)	Identifier of the SSB beam whose coverage will be modified.	–	
>>>>Future SSB Coverage State	M		INTEGER (0..15, ...)	Value ‘0’ indicates that the SSB beam will be inactive. Other values indicate that the SSB beams will be active and also Indicates the future coverage configuration of the concerned SSB beams.	–	
>>Predicted Coverage	O		ENUMERATED (coverage, cell	Indicates the reason for the	–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Modification Cause			edge capacity, cancel, ...)	predicted coverage modification in NG-RAN node$_1$, or that a previously sent Future Coverage Modification List is cancelled.		
>>Time for Future Coverage State	O		INTEGER (1..60, …)	Indicates the time when the Future Cell Coverage State(s) and/or the Future SSB Coverage State(s) will be applied by the NG-RAN node$_1$ relative to the time of receiving this information, in seconds. This IE is ignored if the Predicted Coverage Modification Cause is set to “cancel”.	–	

Range bound	Explanation
maxnoofTNLAssociations	Maximum numbers of TNL Associations between the NG RAN nodes. Value is 32.
maxnoofCellsinNG-RAN node	Maximum no. cells that can be served by a NG-RAN node. Value is 16384.
maxnoofSSBAreas	Maximum no. SSB Areas that can be served by a cell. Value is 64.
maxnoofNeighbourNG-RAN nodes	Maximum no. of neighbour NG-RAN nodes. Value is 256.

Condition	Explanation
ifCellDeploymentStatusIndicatorPresent	This IE shall be present if the *Cell Deployment Status Indicator* IE is present.

9.1.3.5 NG-RAN NODE CONFIGURATION UPDATE ACKNOWLEDGE

This message is sent by a neighbouring NG-RAN node to a peer node to acknowledge update of information for a TNL association.

Direction: NG-RAN node$_2$ → NG-RAN node$_1$.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	reject
CHOICE *Responding NodeType*	M				YES	ignore
>ng-eNB						
>>Served E-UTRA Cells		*0 .. < maxnoofCellsinNG-RANnode >*		Complete or limited list of cells served by an ng-eNB, if requested by NG-RAN node$_1$.	YES	ignore
>>>Served Cell Information E-	M		9.2.2.12		–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
UTRA						
>>>Neighbour Information NR	O		9.2.2.13	NR neighbours.	–	
>>>Neighbour Information E-UTRA	O		9.2.2.14	E-UTRA neighbours	–	
>>>SFN Offset	O		9.2.2.75	Associated with the *ECGI* IE in the *Served Cell Information E-UTRA* IE	YES	ignore
>>Partial List Indicator E-UTRA	O		Partial List Indicator 9.2.2.46	Value "partial" indicates that a partial list of cells is included in the *Served E-UTRA Cells* IE	YES	ignore
>>Cell and Capacity Assistance Information E-UTRA	O		9.2.2.42	Contains E-UTRA cell related assistance information.	YES	ignore
>gNB						
>>Served NR Cells		*0 .. < maxnoofCellsinNG-RANnode >*		Complete or limited list of cells served by a gNB, if requested by NG-RAN node$_1$.	–	
>>>Served Cell Information NR	M		9.2.2.11		–	
>>>Neighbour Information NR	O		9.2.2.13	NR neighbours.	–	
>>>Neighbour Information E-UTRA	O		9.2.2.14	E-UTRA neighbours	–	
>>>Served Cell Specific Info Request	O		9.2.2.102		YES	ignore
>>Partial List Indicator NR	O		Partial List Indicator 9.2.2.46	Value "partial" indicates that a partial list of cells is included in the *Served NR Cells* IE	YES	ignore
>>Cell and Capacity Assistance Information NR	O		9.2.2.41	Contains NR cell related assistance information.	YES	ignore
TNLA Setup List		*0..1*			YES	ignore
>TNLA Setup Item		*1..<maxnoofTNLAssociations>*			–	
>>TNLA Transport Layer Address	M		CP Transport Layer Information 9.2.3.31	CP Transport Layer Information as received from NG-RAN node$_1$	–	
TNLA Failed to Setup List		*0..1*			YES	ignore
>TNLA Failed To Setup Item		*1..<maxnoofTNLAssociations>*			–	
>>TNLA Transport Layer Address	M		CP Transport Layer Information 9.2.3.31	CP Transport Layer Information as received from NG-RAN node$_1$	–	
>>Cause	M		9.2.3.2		–	
Criticality Diagnostics	O		9.2.3.3		YES	ignore

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Interface Instance Indication	O		9.2.2.39		YES	reject
TNL Configuration Info	O		9.2.3.96		YES	ignore
Local NG-RAN Node Identifier	O		9.2.2.101		YES	ignore
Neighbour NG-RAN Node List		*0..<maxnoofNeighbourNG-RAN nodes>*			YES	ignore
>Global NG-RAN Node ID	M		9.2.2.3		–	
>Local NG-RAN Node Identifier	M		9.2.2.101		–	
Local NG-RAN Node Identifier Removal			Local NG-RAN Node Identifier 9.2.2.101		YES	ignore
WAB-MT Identifier	O		9.2.2.109	Contains the identifier of the WAB-MT co-located with the WAB-gNB that sends this message.	YES	ignore

Range bound	Explanation
maxnoofCellsinNGRANnode	Maximum no. cells that can be served by an NG-RAN node. Value is 16384.
maxnoofTNLAssociations	Maximum numbers of TNL Associations between NG-RAN nodes. Value is 32.
maxnoofNeighbourNG-RAN nodes	Maximum no. of neighbour NG-RAN nodes. Value is 256.

9.1.3.6 NG-RAN NODE CONFIGURATION UPDATE FAILURE

This message is sent by the neighbouring NG-RAN node to indicate NG-RAN node Configuration Update failure.

Direction: NG-RAN node$_2$ → NG-RAN node$_1$.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	reject
Cause	M		9.2.3.2		YES	ignore
Time To Wait	O		9.2.3.56		YES	ignore
Criticality Diagnostics	O		9.2.3.3		YES	ignore
Interface Instance Indication	O		9.2.2.39		YES	reject

9.1.3.7 CELL ACTIVATION REQUEST

This message is sent by the NG-RAN node$_1$ to the peer NG-RAN node$_2$ to request a previously switched-off cell(s) or SSB beam(s) to be re-activated.

Direction: NG-RAN node$_1$ → NG-RAN node$_2$.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	reject
CHOICE *Served Cells To Activate*	M				YES	reject
>NR Cells						
>>NR Cells List		*1*			–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
>>>NR Cells item		*1 .. < maxnoofCellsinNG-RANnode >*			–	
>>>>NR CGI	M		9.2.2.7		–	
>E-UTRA Cells						
>>E-UTRA Cells List		*1*			–	
>>>E-UTRA Cells item		*1 .. < maxnoofCellsinNG-RANnode >*			–	
>>>>E-UTRA CGI	M		9.2.2.8		–	
>NR Cells and SSBs					YES	ignore
>>To Be Activated NR Cells and SSBs List		*1*			–	
>>>To Be Activated NR Cells and SSBs item		*1 .. < maxnoofCellsinNG-RANnode >*			–	
>>>>NR CGI	M		9.2.2.7		–	
>>>>SSBs to be Activated List		*0..1*			–	
>>>>>SSBs to be Activated Item		*1 .. < maxnoofSSBAreas >*			–	
>>>>>>SSB Index	M		INTEGER (0..63)	Identifier of the SSB beam requested to be activated.	–	
Activation ID	M		INTEGER (0..255)	Allocated by the NG-RAN node$_1$	YES	reject
Interface Instance Indication	O		9.2.2.39		YES	reject

Range bound	Explanation
maxnoofCellsinNG-RANnode	Maximum no. cells that can be served by an NG-RAN node. Value is 16384.
maxnoofSSBAreas	Maximum no. SSB Areas that can be served by a NG-RAN node cell. Value is 64.

9.1.3.8 CELL ACTIVATION RESPONSE

This message is sent by an NG-RAN node$_2$ to a peer NG-RAN node$_1$ to indicate that one or more cell(s) previously switched-off has (have) been activated.

Direction: NG-RAN node$_2$ → NG-RAN node$_1$.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	reject
CHOICE *Activated Served Cells*	M				YES	reject
>NR Cells						
>>NR Cells List		*1*			–	
>>>NR Cells Item		*1 .. < maxnoofC*			–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
		ellsinNG-RANnode >				
>>>>NR CGI	M		9.2.2.7		–	
>E-UTRA Cells						
>>E-UTRA Cells List		*1*			–	
>>>E-UTRA Cells Item		*1 .. < maxnoofCellsinNG-RANnode >*			–	
>>>>E-UTRA CGI	M		9.2.2.8		–	
>NR Cells and SSBs					YES	ignore
>>Activated NR Cells and SSBs List		*1*			–	
>>>Activated NR Cells and SSBs Item		*1 .. < maxnoofCellsinNG-RANnode >*			–	
>>>>NR CGI	M		9.2.2.7		–	
>>>>SSBs Activated List		*0..1*			–	
>>>>>SSB Activated Item		*1 .. < maxnoofSSBAreas >*			–	
>>>>>>SSB Index	M		INTEGER (0..63)	Identifier of the activated SSB beam.	–	
Activation ID	M		INTEGER (0..255)	Allocated by the NG-RAN node$_1$	YES	reject
Criticality Diagnostics	O		9.2.3.3		YES	ignore
Interface Instance Indication	O		9.2.2.39		YES	reject

Range bound	Explanation
maxnoofCellsinNG-RANnode	Maximum no. cells that can be served by an NG-RAN node. Value is 16384.
maxnoofSSBAreas	Maximum no. SSB Areas that can be served by a NG-RAN node cell. Value is 64.

9.1.3.9 CELL ACTIVATION FAILURE

This message is sent by an NG-RAN node$_2$ to a peer NG-RAN node$_1$ to indicate cell activation failure.

Direction: NG-RAN node$_2$ → NG-RAN node$_1$.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	reject
Activation ID	M		INTEGER (0..255)	Allocated by the NG-RAN node$_1$	YES	reject
Cause	M		9.2.3.2		YES	ignore
Criticality Diagnostics	O		9.2.3.3		YES	ignore
Interface Instance Indication	O		9.2.2.39		YES	reject

9.1.3.10 RESET REQUEST

This message is sent from one NG-RAN node to another NG-RAN node and is used to request the Xn interface to be reset.

Direction: NG-RAN node$_1$ → NG-RAN node$_2$.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	reject
CHOICE *Reset Request TypeInfo*	M				YES	reject
>Full Reset						
>Partial Reset						
>>UE contexts to be released List		*1*			–	
>>>UE Contexts to be released Item		*1 .. <maxnoofUecontexts>*			–	
>>>>NG-RAN node1 UE XnAP ID	O		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the NG-RAN node$_1$	–	
>>>>NG-RAN node2 UE XnAP ID	O		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the NG-RAN node$_2$	–	
Cause	M		9.2.3.2		YES	ignore
Interface Instance Indication	O		9.2.2.39		YES	reject

Range bound	Explanation
maxnoofUEContexts	Maximum no. of UE Contexts. Value is 8192.

9.1.3.11 RESET RESPONSE

This message is sent by an NG-RAN node as a response to a RESET REQUEST message.

Direction: NG-RAN node$_2$ → NG-RAN node$_1$.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	reject
CHOICE *Reset Response Type Info*	M				YES	ignore
>Full Reset						
>Partial Reset						
>>Admitted UE contexts to be released List		*1*			–	
>>>Admitted UE Contexts to be released Item		*1 .. <maxnoofUecontexts>*			–	
>>>>NG-RAN node1 UE XnAP ID	O		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the NG-RAN node$_1$	–	
>>>>NG-RAN node2 UE XnAP ID	O		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the NG-RAN node$_2$	–	
Criticality Diagnostics	O		9.2.3.3		YES	ignore
Interface Instance Indication	O		9.2.2.39		YES	reject

Range bound	Explanation

maxnoofUEContexts	Maximum no. of UE Contexts. Value is 8192.

9.1.3.12 ERROR INDICATION

This message is used to indicate that some error has been detected in the NG-RAN node.

Direction: NG-RAN node$_1$ → NG-RAN node$_2$.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	ignore
Old NG-RAN node UE XnAP ID	O		NG-RAN node UE XnAP ID 9.2.3.16	Allocated for handover at the source NG-RAN node and for dual connectivity at the S-NG-RAN node or for an SN Status Transfer procedure at the NG-RAN node from which a DRB is offloaded.	YES	ignore
New NG-RAN node UE XnAP ID	O		NG-RAN node UE XnAP ID 9.2.3.16	Allocated for handover at the target NG-RAN node and for dual connectivity at the M-NG-RAN node or for an SN Status Transfer procedure at the NG-RAN node to which a DRB is offloaded.	YES	ignore
Cause	O		9.2.3.2		YES	ignore
Criticality Diagnostics	O		9.2.3.3		YES	ignore
Interface Instance Indication	O		9.2.2.39		YES	reject

9.1.3.13 XN REMOVAL REQUEST

This message is sent by a NG-RAN node to a neighbouring NG-RAN node to initiate the removal of the interface instance.

Direction: NG-RAN node$_1$ → NG-RAN node$_2$.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	reject
Global NG-RAN Node ID	M		9.2.2.3		YES	reject
Xn Removal Threshold	O		Xn Benefit Value 9.2.3.54		YES	reject
Interface Instance Indication	O		9.2.2.39		YES	reject

9.1.3.14 XN REMOVAL RESPONSE

This message is sent by a NG-RAN node to a neighbouring NG-RAN node to acknowledge the initiation of removal of the interface instance.

Direction: NG-RAN node $_2$ → NG-RAN node $_1$.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	reject
Global NG-RAN Node ID	M		9.2.2.3		YES	reject
Criticality Diagnostics	O		9.2.3.3		YES	ignore
Interface Instance Indication	O		9.2.2.39		YES	reject

9.1.3.15 XN REMOVAL FAILURE

This message is sent by the NG-RAN node to indicate that removing the interface instance cannot be accepted.

Direction: NG-RAN node $_2$ → NG-RAN node $_1$.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	reject
Cause	M		9.2.3.2		YES	ignore
Criticality Diagnostics	O		9.2.3.3		YES	ignore
Interface Instance Indication	O		9.2.2.39		YES	reject

9.1.3.16 FAILURE INDICATION

This message is sent by NG-RAN node$_2$ to indicate an RRC re-establishment attempt or a reception of an RLF Report from a UE that suffered a connection failure at NG-RAN node$_1$.

Direction: NG-RAN node$_2$ → NG-RAN node$_1$.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	ignore
CHOICE *Initiating condition*	M				YES	reject
>RRC Reestab						
>>CHOICE *RRC Reestab Initiated Reporting*	M				–	
>>>RRC Reestab Reporting without RLF Report						
>>>>Failure cell PCI	M		NG-RAN Cell PCI 9.2.2.10	Physical Cell Identifier	–	
>>>>Re-establishment cell CGI	M		Global NG-RAN Cell Identity 9.2.2.27		–	
>>>>C-RNTI	M		BIT STRING (SIZE (16))	Corresponds to information provided in the *c-RNTI* contained either in the *RRCReestablishmentRequest* message (TS 38.331 [10]) or in the *RRCConnectionReestablishmentRequest* message (TS 36.331 [14])	–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
>>>>ShortMAC-I	M		BIT STRING (SIZE (16))	Corresponds to information provided in the *shortMAC-I* contained either in the *RRCReestablishmentRequest* message (TS 38.331 [10]) or in the *RRCConnectionReestablishmentRequest* message (TS 36.331 [14])	–	
>>>>RRC Conn Reestab Indicator	O		ENUMERATED (reconfigurationFailure, handoverFailure, otherFailure, ...)	Corresponds to information provided in the *reestablishmentCause* contained in the *RRCReestablishmentRequest* message as defined in TS 38.331 [10] or in the *RRCConnectionReestablishmentRequest* message as defined in TS 36.331 [14].	YES	ignore
>>>RRC Reestab Reporting with RLF Report						
>>>>UE RLF Report Container	M		UE RLF Report 9.2.2.59		–	
>RRC Setup						
>>CHOICE *RRC Setup Initiated Reporting*	M				–	
>>>RRC Setup Reporting with RLF Report						
>>>>UE RLF Report Container	M		UE RLF Report 9.2.2.59		–	
>>UE RLF Report Container	O		UE RLF Report 9.2.2.59	This IE is not used in this version of the specification.	–	

9.1.3.17 HANDOVER REPORT

This message is sent by NG-RAN node$_1$ to NG-RAN node$_2$ to report a handover failure event, or other critical mobility problem.

Direction: NG-RAN node $_1$ → NG-RAN node $_2$.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	ignore
Handover Report Type	M		ENUMERATED (HO too early, HO to wrong cell, Inter-		YES	ignore

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
			system ping-pong, …, Too Late CHO with candidate SCG)			
Handover Cause	M		Cause 9.2.3.2	Indicates handover cause employed for handover from NG-RAN node 2. The IE is ignored if the Handover Report Type is set to “Too Late CHO with candidate SCG”.	YES	ignore
Source cell CGI	M		Global NG-RAN Cell Identity 9.2.2.27	NG-RAN CGI of source cell for handover procedure (in NG-RAN node 2)	YES	ignore
Target cell CGI	M		Global NG-RAN Cell Identity 9.2.2.27	NG-RAN CGI of target cell for handover procedure (in NG-RAN node 1). If the Handover Report Type is set to “Inter-system ping-pong”, it contains the target cell of the inter system handover from the other system to NG-RAN node 1 cell If the Handover Report Type is set to “Too Late CHO with candidate SCG”, it is the suitable cell in the NG-RAN node 2.	YES	ignore
Re-establishment cell CGI	C-ifHandoverReportType HoToWrongCell		Global Cell Identity 9.2.2.73	CGI of cell where UE attempted re-establishment or where UE successfully re-connected after the failure	YES	ignore
Target cell in E-UTRAN	C-ifHandoverReportType Intersystempingpong		OCTET STRING	Encoded according to *Global Cell ID* in the *Last Visited E-UTRAN Cell Information* IE, as defined in TS 36.413 [31]	YES	ignore
Source cell C-RNTI	O		BIT STRING (SIZE (16))	C-RNTI allocated at the source NG-RAN node (in NG-RAN node 2)	YES	ignore
Mobility Information	O		BIT STRING (SIZE (32))	Information provided in the HANDOVER REQUEST message or in the	YES	ignore

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				SN STATUS TRANSFER message from NG-RAN node 2.		
UE RLF Report Container	O		UE RLF Report 9.2.2.59	The *UE RLF Report Container* IE received in the FAILURE INDICATION message.	YES	ignore
CHO Configuration	O		9.2.2.76		YES	ignore
Target cell C-RNTI	O		BIT STRING (SIZE (16))	C-RNTI allocated at the target NG-RAN node.	YES	ignore
Time Since Failure	O		INTEGER (0.. 172800, ...)	Corresponds to the *TimeSinceFailure* IE received from the UE in RLF Report as defined in TS 36.331 [14].	YES	ignore

Condition	Explanation
ifHandoverReportType HoToWrongCell	This IE shall be present if the *Handover Report Type* IE is set to the value "HO to wrong cell"
ifHandoverReportType Intersystempingpong	This IE shall be present if the *Handover Report Type* IE is set to the value "Inter-system ping-pong"

9.1.3.18 RESOURCE STATUS REQUEST

This message is sent by NG-RAN node$_1$ to NG-RAN node$_2$ to initiate the requested measurement according to the parameters given in the message.

Direction: NG-RAN node$_1$ $\rightarrow$ NG-RAN node$_2$.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	reject
NG-RAN node1 Measurement ID	M		INTEGER (1..4095,...)	Allocated by NG-RAN node$_1$	YES	reject
NG-RAN node2 Measurement ID	C-ifRegistrationRequestStoporAdd		INTEGER (1..4095,...)	Allocated by NG-RAN node$_2$	YES	ignore
Registration Request	M		ENUMERATED (start, stop, add, …)	Type of request for which the resource status is required.	YES	reject
Report Characteristics	C-ifRegistrationRequestStart		BIT STRING (SIZE(32))	Each position in the bitmap indicates measurement object the NG-RAN node2 is requested to report. First Bit = PRB Periodic, Second Bit = TNL Capacity Ind Periodic, Third Bit = Composite	YES	reject

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				Available Capacity Periodic, Fourth Bit =Number of Active UEs Periodic, Fifth Bit =RRC connections Periodic, Sixth Bit = NR-U Channel List Periodic. Other bits shall be ignored by the NG-RAN node2.		
Cell To Report List		*0..1*		Cell ID list to which the request applies.	YES	ignore
>**Cell To Report Item**		*1 .. <maxnoofCellsinNG-RANnode>*			–	
>>Cell ID	M		Global NG-RAN Cell Identity 9.2.2.27		–	
>>**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 .. <* maxnoofBPLMNs >			–	
>>>>PLMN Identity	M		9.2.2.4	Broadcast PLMN	–	
>>>>**S-NSSAI List**		*1*			–	
>>>>>**S-NSSAI Item**		*1 .. <maxnoofSliceItems>*			–	
>>>>>>S-NSSAI	M		9.2.3.21		–	
Reporting Periodicity	O		ENUMERATED (500ms, 1000ms, 2000ms, 5000ms, 10000ms, …)	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 *Registration Request* IE is set to "add".	YES	ignore

Condition	Explanation
ifRegistrationRequestStoporAdd	This IE shall be present if the *Registration Request* IE is set to the value "stop" or "add".
ifRegistrationRequestStart	This IE shall be present if the Registration Request IE is set to the value "start".

Range bound	Explanation
maxnoofCellsinNG-RANnode	Maximum no. cells that can be served by a NG-RAN node. Value is 16384.
maxnoofSSBAreas	Maximum no. SSB Areas that can be served by a NG-RAN node cell. Value is 64.
maxnoofSliceItems	Maximum no. of signalled slice support items. Value is 1024.
maxnoofBPLMNs	Maximum no. of broadcast PLMNs by a cell. Value is 12.

9.1.3.19 RESOURCE STATUS RESPONSE

This message is sent by NG-RAN node$_2$ to NG-RAN node$_1$ to indicate that the requested measurement, for all of the measurement objects included in the measurement is successfully initiated.

Direction: NG-RAN node$_2$ → NG-RAN node$_1$.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	reject
NG-RAN node1 Measurement ID	M		INTEGER (1..4095,...)	Allocated by NG-RAN node$_1$	YES	reject
NG-RAN node2 Measurement ID	M		INTEGER (1..4095,...)	Allocated by NG-RAN node$_2$	YES	reject
Criticality Diagnostics	O		9.2.3.3		YES	ignore

9.1.3.20 RESOURCE STATUS FAILURE

This message is sent by the NG-RAN node$_2$ to NG-RAN node$_1$ to indicate that for any of the requested measurement objects the measurement cannot be initiated.

Direction: NG-RAN node$_2$ → NG-RAN node$_1$.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	reject
NG-RAN node1 Measurement ID	M		INTEGER (1..4095,...)	Allocated by NG-RAN node$_1$	YES	reject
NG-RAN node2 Measurement ID	M		INTEGER (1..4095,...)	Allocated by NG-RAN node$_2$	YES	reject
Cause	M		9.2.3.2		YES	ignore
Criticality Diagnostics	O		9.2.3.3		YES	ignore

9.1.3.21 RESOURCE STATUS UPDATE

This message is sent by NG-RAN node$_2$ to NG-RAN node$_1$ to report the results of the requested measurements.

Direction: NG-RAN node$_2$ → NG-RAN node$_1$.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	ignore
NG-RAN node1 Measurement ID	M		INTEGER (1..4095,...)	Allocated by NG-RAN node$_1$	YES	reject
NG-RAN node2 Measurement ID	M		INTEGER (1..4095,...)	Allocated by NG-RAN node$_2$	YES	reject
Cell Measurement		*1*			YES	ignore

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Result						
>Cell Measurement Result Item		*1 .. < maxnoofCellsinNG-RANnode >*			YES	ignore
>>Cell ID	M		Global NG-RAN Cell Identity 9.2.2.27		–	
>>Radio Resource Status	O		9.2.2.50		–	
>>TNL Capacity Indicator	O		9.2.2.49		–	
>>Composite Available Capacity Group	O		9.2.2.51		–	
>>Slice Available Capacity	O		9.2.2.55		–	
>>Number of Active UEs	O		9.2.2.62		–	
>>RRC Connections	O		9.2.2.56		–	
>>NR-U Channel List		*0..1*			YES	ignore
>>>NR-U Channel Item		*1..<maxnoofNR-UChannelIDs>*			–	
>>>>NR-U Channel ID	M		INTEGER (1.. *maxnoofNR-UchannelIDs*, …)	The NR-U channel utilised 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.	–	
>>>>Channel Occupancy Time Percentage UL	O		INTEGER (0..100)	The percentage of time for which the channel resources have been utilised for UL traffic served by the corresponding NR-	YES	ignore

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				U Channel of the serving cell for UEs that transmit to the serving cell. Value 100 indicates that the channel resources have been utilized for UL traffic served by the corresponding NR-U Channel of the serving cell for the whole duration between consecutive reporting.		
>>>>Energy Detection Threshold UL	O		INTEGER (-100..-50,…)	Indicates the average of the maximum ED Threshold configured by the gNB for UL channel sensing. Value is in dBm.	YES	ignore
>>>>Radio Resource Status NR-U	O		9.2.2.104	Indicates the radio resource status per NR-U channel.	YES	ignore

Range bound	Explanation
maxnoofCellsinNG-RANnode	Maximum no. cells that can be served by a NG-RAN node. Value is 16384.
maxnoofNR-UchannelIDs	Maximum no. NR-U channel IDs in a cell. Value is 16.

9.1.3.22 MOBILITY CHANGE REQUEST

This message is sent by NG-RAN node$_1$ to NG-RAN node$_2$ to initiate adaptation of mobility parameters.

Direction: NG-RAN node$_1$ → NG-RAN node$_2$.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	reject
NG-RAN node1 Cell ID	M		Global NG-RAN Cell Identity 9.2.2.27		YES	reject
NG-RAN node2 Cell ID	M		Global NG-RAN Cell Identity 9.2.2.27		YES	reject
NG-RAN node1 Mobility Parameters	O		Mobility Parameters Information 9.2.2.60	Configuration change in NG-RAN node1 cell	YES	ignore
NG-RAN node2 Proposed Mobility Parameters	M		Mobility Parameters Information 9.2.2.60	Proposed configuration change in NG-RAN node2 cell	YES	reject
Cause	M		9.2.3.2		YES	ignore
SSB Offsets List		*0..1*			YES	ignore
>SSB Offsets Item		*1 .. < maxnoofSSBAreas>*			–	
>>NG-RAN node1	O		SSB Offset	Configuration	–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
SSB Offset Information			Information 9.2.2.77	change in NG-RAN node 1 SSB		
>>NG-RAN node2 SSB Offset Information	M		SSB Offset Information 9.2.2.77	Proposed configuration change in NG-RAN node2 SSB	–	

Range bound	Explanation
maxnoofSSBAreas	Maximum no. SSB Areas that can be served by a NG-RAN node cell. Value is 64.

9.1.3.23 MOBILITY CHANGE ACKNOWLEDGE

This message is sent by NG-RAN node$_2$ to indicate to NG-RAN node$_1$ that Proposed Mobility Parameters proposed by NG-RAN node$_1$ were accepted.

Direction: NG-RAN node$_2$ → NG-RAN node$_1$.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	reject
NG-RAN node1 Cell ID	M		Global NG-RAN Cell Identity 9.2.2.27		YES	reject
NG-RAN node2 Cell ID	M		Global NG-RAN Cell Identity 9.2.2.27		YES	reject
Criticality Diagnostics	O		9.2.3.3		YES	ignore

9.1.3.24 MOBILITY CHANGE FAILURE

This message is sent by the NG-RAN node$_2$ to indicate to NG-RAN node$_1$ that Proposed Mobility Parameters proposed by NG-RAN node$_1$ were refused.

Direction: NG-RAN node$_2$ → NG-RAN node$_1$.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	reject
NG-RAN node1 Cell ID	M		Global NG-RAN Cell Identity 9.2.2.27		YES	reject
NG-RAN node2 Cell ID	M		Global NG-RAN Cell Identity 9.2.2.27		YES	reject
Cause	M		9.2.3.2		YES	ignore
Mobility Parameters Modification Range	O		9.2.2.61		YES	ignore
Criticality Diagnostics	O		9.2.3.3		YES	ignore
NG-RAN node2 SSB Offsets Modification Range		*0 .. < maxnoofSSBAreas>*			YES	ignore
>SSB Index	M		INTEGER (0..63)		–	
>SSB Offset Modification Range	M		9.2.2.78		–	

Range bound	Explanation
maxnoofSSBAreas	Maximum no. SSB Areas that can be served by a NG-RAN node

	cell. Value is 64.

9.1.3.25 ACCESS AND MOBILITY INDICATION

This message is sent by NG-RAN node$_1$ to transfer access and mobility related information to NG-RAN node$_2$.

Direction: NG-RAN node $_1$ → NG-RAN node $_2$.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	ignore
RA Report		*0..1*			YES	ignore
>RA Report List Item		*1 .. < maxnoofRAReports >*			–	
>>RA Report Container	M		OCTET STRING	Includes the *RA-ReportList* IE as defined in subclause 6.2.2 in TS 38.331 [10].	–	
>>UE Assistant Identifier	O		NG-RAN node UE XnAP ID 9.2.3.16		YES	ignore
>>NRCell List Container	O		OCTET STRING	Includes the *CellIdListNR* IE as defined in subclause 6.2.2 in TS 36.331 [14].	YES	ignore
Successful HO Report Information		*0..1*			YES	ignore
>Successful HO Report List Item		*1 .. <maxnoofSuccessfulHOReports>*			–	
>>Successful HO Report Container	M		OCTET STRING	Includes the *SuccessHO-Report* IE as defined in subclause 6.2.2 in TS 38.331 [10].	–	
Successful PSCell Change Report Information		*0..1*			YES	ignore
>Successful PSCell Change Report List Item		*1 .. <maxnoofSuccessfulPSCellChangeReports>*			–	
>>Successful PSCell Change Report Container	M		OCTET STRING	Includes the *SuccessPSCell-Report* IE as defined in TS 38.331 [10]	–	
>>SN Mobility Information	O		BIT STRING (SIZE (32))	Mobility Information in the PSCell of the source SN in case this message is sent from the MN to the source SN; Mobility Information in the PSCell of the	–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				target SN in case this message is sent from the MN to the target SN.		
DL LBT Failure Information List		*0..1*			YES	ignore
>DL LBT Failure Information Item		*1 .. <maxnoofLBTFailureInformation>*				
>>DL LBT Failure Information	M		9.2.3.174		–	

Range bound	Explanation
maxnoofRACHReports	Maximum no. of RACH Reports, the maximum value is 64.
maxnoofSuccessfulHOReports	Maximum no. of Successful HO Reports, the maximum value is 64.
maxnoofSuccessfulPSCellChangeReports	Maximum no. of Successful PSCell Change Reports, the maximum value is 64.
maxnoofLBTFailureInformation	Maximum no. of UEs for which LBT Failure Information is provided, the maximum value is 64.

9.1.3.26 DATA COLLECTION REQUEST

This message is sent by NG-RAN node$_1$ to NG-RAN node$_2$ to initiate the requested information reporting according to the parameters given in the message.

Direction: NG-RAN node$_1$ → NG-RAN node$_2$.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	reject
NG-RAN node1 Measurement ID	M		INTEGER (1..4095,...)	Allocated by NG-RAN node$_1$	YES	reject
NG-RAN node2 Measurement ID	C-ifRegistrationRequestForDataCollectionStop		INTEGER (1..4095,...)	Allocated by NG-RAN node$_2$	YES	ignore
Registration Request for Data Collection	M		ENUMERATED(start, stop, …)	Type of request for which the information is required.	YES	reject

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Report Characteristics for Data Collection	C-ifRegistrationRequestForDataCollectionStart		BITSTRING (SIZE(32))	Each position in the bitmap indicates the object the NG-RAN node$_2$ is requested to report. First Bit = Predicted Radio Resource Status, Second Bit = Predicted Number of Active UEs, Third Bit = Predicted RRC Connections Fourth Bit = Average UE Throughput DL, Fifth Bit = Average UE Throughput UL, Sixth Bit = Average Packet Delay, Seventh Bit = Average Packet Drop DL, Eighth Bit = Energy Cost, Ninth Bit = Measured UE Trajectory, Tenth Bit = Average Packet Loss UL, Eleventh Bit = Predicted Slice Available Capacity, Twelfth Bit = Slice Average UE Throughput DL, Thirteenth Bit = Slice Average UE Throughput UL, Fourteenth Bit = Slice Average Packet Delay, Fifteenth Bit = Slice Average Packet Drop DL, Sixteenth Bit = Slice Average Packet Loss UL. Other bits are ignored by the NG-RAN node$_2$.	YES	reject
Cell To Report List for Data Collection		*0..1*		Cell ID list to which the request applies.	YES	ignore
>**Cell To Report Item for Data Collection**		*1 .. <maxnoofCellsinNG-RANnode>*			–	
>>Cell ID	M		Global NG-RAN Cell Identity 9.2.2.27	Indicates an NR Cell Identity.	–	
>>Slice To Report List for Data Collection		*0..1*		S-NSSAI list to which the request applies.	YES	ignore
>>>Slice To Report Item for Data Collection		*1 .. <maxnoofBPLMNs>*			–	
>>>>PLMN Identity	M		9.2.2.4	Broadcast PLMN	–	
>>>>S-NSSAI List		*1*			–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
>>>>>S-NSSAI Item		*1 .. < maxnoofSliceItems>*			–	
>>>>>>S-NSSAI	M		9.2.3.21		–	
Reporting Periodicity for Data Collection	O		ENUMERATED(500ms, 1000ms, 2000ms, 5000ms, 10000ms, …)	Periodicity that can be used for reporting of requested objects. Also used as the averaging window length for all objects if supported.	YES	ignore
Requested Prediction Time	O		INTEGER (1..60, ...)	For one time reporting, it indicates the point in time, measured from reception of the DATA COLLECTION REQUEST message, for which predictions are provided. In periodic reporting, for each subsequent DATA COLLECTION UPDATE message, the point in time is shifted by the reporting periodicity. (unit: second)	YES	ignore
UE Trajectory Collection Configuration	O		9.2.3.185		YES	ignore
UE Performance Collection Configuration	O		9.2.3.186		YES	ignore

Condition	Explanation
ifRegistrationRequestForDataCollectionStop	This IE shall be present if the *Registration Request for Data Collection* IE is set to the value “stop”.
ifRegistrationRequestForDataCollectionStart	This IE shall be present if the *Registration Request for Data Collection* IE is set to the value “start”.

Range bound	Explanation
maxnoofCellsinNG-RANnode	Maximum no. cells that can be served by a NG-RAN node. Value is 16384.
maxnoofBPLMNs	Maximum no. of broadcast PLMNs by a cell. Value is 12.
maxnoofSliceItems	Maximum no. of signalled slice support items. Value is 1024.

9.1.3.27 DATA COLLECTION RESPONSE

This message is sent by NG-RAN $node_2$ to NG-RAN $node_1$ to indicate that the requested information, for all or part of the measurement objects included in the reporting, is successfully initiated.

Direction: NG-RAN $node_2 \rightarrow$ NG-RAN $node_1$.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	reject
NG-RAN node1 Measurement ID	M		INTEGER (1..4095,...)	Allocated by NG-RAN $node_1$	YES	reject
NG-RAN node2 Measurement ID	M		INTEGER (1..4095,...)	Allocated by NG-RAN $node_2$	YES	reject
Node Measurement Initiation Result List		*0..1*		List of measurement objects that failed to be initiated in the node.	YES	reject

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
>Node Measurement Initiation Result Item		*1 .. <maxFailedMeasPerNode>*			–	
>>Node Measurement Failed Report Characteristics	M		BIT STRING (SIZE(32))	Each position in the bitmap indicates measurement objects that failed to be initiated in the NG-RAN $node_2$. First Bit = Energy Cost, Second Bit = Average UE Throughput DL, Third Bit = Average UE Throughput UL, Fourth Bit = Average Packet Delay, Fifth Bit = Average Packet Drop DL, Sixth Bit = Measured UE Trajectory, Seventh Bit = Average Packet Loss UL, Eighth Bit = Slice Average UE Throughput DL, Ninth Bit = Slice Average UE Throughput UL, Tenth Bit = Slice Average Packet Delay, Eleventh Bit = Slice Average Packet Drop DL, Twelfth Bit = Slice Average Packet Loss UL. Other bits are ignored by the NG-RAN $node_1$.	–	
>>Cause	M		9.2.3.2	Failure cause for measurement objects for which the measurement cannot be initiated.	–	
Cell Measurement Initiation Result List		*0..1*		List of measurement objects that failed to be initiated per cell.	YES	reject
>Cell Measurement Initiation Result Item		*1 .. <maxnoofCellsinNG-RANnode>*			–	
>>Cell ID	M		Global NG-RAN Cell Identity 9.2.2.27	Indicates an NR Cell Identity.	–	
>>Cell Measurement Failure Cause List		*0..1*		Indicates that NG-RAN $node_2$ could not initiate the measurement for at least one of the requested measurement objects in the cell.	–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
>>>Cell Measurement Failure Cause Item		*1 .. <maxFailedCellMeasObjects>*			–	
>>>>Cell Measurement Failed Report Characteristics	M		BITSTRING (SIZE(32))	Each position in the bitmap indicates measurement objects that failed to be initiated in the NG-RAN $node_2$. First Bit = Predicted Radio Resource Status, Second Bit = Predicted Number of Active UEs, Third Bit = Predicted RRC Connections. Other bits are ignored by the NG-RAN $node_1$.	–	
>>>>Cause	M		9.2.3.2	Failure cause for measurement objects for which the measurement cannot be initiated.	–	
>>Slice Measurement Initiation Result	O		9.2.3.235	List of measurement objects that failed to be initiated per slice.	YES	reject
Criticality Diagnostics	O		9.2.3.3		YES	ignore

Range bound	Explanation
maxnoofCellsinNG-RANnode	Maximum no. cells that can be served by a NG-RAN node. Value is 16384.
maxFailedCellMeasObjects	Maximum number of measurement objects that can fail per cell. Value is 124.
maxFailedMeasPerNode	Maximum number of measurement objects that can fail per node. Value is 124.

9.1.3.28 DATA COLLECTION FAILURE

This message is sent by the NG-RAN $node_2$ to NG-RAN $node_1$ to indicate that for all of the requested objects the reporting cannot be initiated.

Direction: NG-RAN $node_2$ → NG-RAN $node_1$.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	reject
NG-RAN node1 Measurement ID	M		INTEGER (1..4095,...)	Allocated by NG-RAN $node_1$	YES	reject
NG-RAN node2 Measurement ID	M		INTEGER (1..4095,...)	Allocated by NG-RAN $node_2$	YES	reject
Cause	M		9.2.3.2		YES	ignore
Criticality Diagnostics	O		9.2.3.3		YES	ignore

9.1.3.29 DATA COLLECTION UPDATE

This message is sent by NG-RAN $node_2$ to NG-RAN $node_1$ to report the requested information.

Direction: NG-RAN $node_2$ → NG-RAN $node_1$.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	ignore
NG-RAN node1 Measurement ID	M		INTEGER (1..4095,...)	Allocated by NG-RAN node$_1$	YES	reject
NG-RAN node2 Measurement ID	M		INTEGER (1..4095,...)	Allocated by NG-RAN node$_2$	YES	reject
Cell Measurement Result for Data Collection List		*0..1*			YES	ignore
>Cell Info Result for Data Collection Item		*1 .. < maxnoofCellsinNG-RANnode >*			–	
>>Cell ID	M		Global NG-RAN Cell Identity 9.2.2.27	Indicates an NR Cell Identity.	–	
>>Predicted Radio Resource Status	O		Radio Resource Status 9.2.2.50	The IE only includes the *SSB Area Radio Resource Status List* IE, excluding the *DL scheduling PDCCH CCE usage* IE and *UL scheduling PDCCH CCE usage* IE, and optionally includes the *Slice Radio Resource Status List* IE.	–	
>>Predicted Number of Active UEs	O		Number of Active UEs 9.2.2.62		–	
>>Predicted RRC Connections	O		RRC Connections 9.2.2.56		–	
>>Predicted Slice Available Capacity Group	O		9.2.3.237		YES	ignore
UE Associated Info Result List		*0..1*			YES	ignore
>UE Associated Info Result Item		*1 .. < maxnoofUEReports >*			–	
>>UE Assistant Identifier	M		NG-RAN node UE XnAP ID 9.2.3.16	NG-RAN node UE XnAP ID allocated by NG-RAN node$_1$.	–	
>>UE Performance	O		9.2.3.179		–	
>>Measured UE Trajectory	O		9.2.3.182	It contains information about cells that a UE has connected to.	–	
>>Slice UE Performance	O		9.2.3.236		YES	ignore
Node Associated Info Result		*0..1*			YES	ignore

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
>Energy Cost	O		INTEGER (0..10000,…)	The node level measured Energy Consumption index. Value 0 indicates the minimum measured Energy Consumption and 10000 indicates the maximum measured Energy Consumption.	-	-

Range bound	Explanation
maxnoofCellsinNG-RANnode	Maximum no. cells that can be served by a NG-RAN node. Value is 16384.
maxnoofUEReports	Maximum no. UE s for which information can be reported by a NG-RAN node. Value is 16.

9.1.3.30 OD-SIB1 CONFIGURATION PROVISION REQUEST

This message is sent by the NG-RAN node$_1$ to the peer NG-RAN node$_2$ to request to start or to stop the provisioning of an OD-SIB1 configuration.

Direction: NG-RAN node$_1$ → NG-RAN node$_2$.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	reject
CHOICE *Request Type*	M				YES	reject
>Start						
>>OD-SIB1 Configuration	M		OCTET STRING	Includes the *OD-SIB1-Config* IE as specified in SIB26 in TS 38.331 [10].	–	
>>NES Cell ID	M		NR CGI 9.2.2.7		–	
>>Cell A ID	O		NR CGI 9.2.2.7		–	
>Stop						
>>NES Cell ID	M		NR CGI 9.2.2.7		–	
Interface Instance Indication	O		9.2.2.39		YES	reject

9.1.3.31 OD-SIB1 CONFIGURATION PROVISION RESPONSE

This message is sent by an NG-RAN node$_2$ to a peer NG-RAN node$_1$ to indicate that the OD-SIB1 configuration will be provided by the NG-RAN node$_2$ as requested by the NG-RAN node$_1$.

Direction: NG-RAN node$_2$ → NG-RAN node$_1$.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	reject
NES Cell ID	M		NR CGI 9.2.2.7		YES	reject
Cell A ID	O		NR CGI 9.2.2.7		YES	ignore
Interface Instance	O		9.2.2.39		YES	reject

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Indication						

9.1.3.32 OD-SIB1 CONFIGURATION PROVISION FAILURE

This message is sent by an NG-RAN node$_2$ to a peer NG-RAN node$_1$ to indicate that the OD-SIB1 configuration cannot be provided by the NG-RAN node$_2$ as requested by the NG-RAN node$_1$.

Direction: NG-RAN node$_2$ → NG-RAN node$_1$.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	reject
Cause	M		9.2.3.2		YES	ignore
NES Cell ID	M		NR CGI 9.2.2.7		YES	reject
Cell A ID	O		NR CGI 9.2.2.7		YES	ignore
Criticality Diagnostics	O		9.2.3.3		YES	ignore
Interface Instance Indication	O		9.2.2.39		YES	reject

9.1.3.33 OD-SIB1 CONFIGURATION PROVISION STATUS UPDATE

This message is sent by an NG-RAN node$_2$ to a peer NG-RAN node$_1$ to report that an admitted OD-SIB1 configuration provision is being stopped.

Direction: NG-RAN node$_2$ → NG-RAN node$_1$.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	ignore
NES Cell ID	M		NR CGI 9.2.2.7		YES	reject
Cell A ID	O		NR CGI 9.2.2.7		YES	ignore
Provision Status	M		ENUMERATED (stopped, …)	Indicates the status of the OD-SIB1 configuration transmission.	YES	reject
Interface Instance Indication	O		9.2.2.39		YES	reject

9.1.3.34 CLI INDICATION

This message is sent by NG-RAN node$_1$ to NG-RAN node$_2$ to report the results of the CLI measurements or to indicate the need for SRS Resource Configuration information.

Direction: NG-RAN node$_1$ → NG-RAN node$_2$.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	ignore
CLI Measurement Result List		*0..1*			YES	ignore
>CLI Measurement Result Item		*1 .. < maxnoofCellsinNG-RANnode >*			–	
>>Cell ID	M		Global NG-RAN Cell Identity 9.2.2.27		–	
>>SSB Index	O		INTEGER (0..63, …)	Strongest DL SSB beam information	–	
>>NZP CSI-RS Resource Indication	O		INTEGER (1..64, …)	Strongest DL NZP CSI-RS beam information. The value is a relative index of the CSI-RS resources within the set of resources signalled.	–	
>>CLI Mitigation Indication	O		ENUMERATED (true, …)	Indicates the need for CLI mitigation.	–	
SRS Resource Indication	O		ENUMERATED (true, …)	Indication to NG-RAN node$_2$ that SRS-Resource configuration information is needed	–	

Range bound	Explanation
maxnoofCellsinNG-RANnode	Maximum no. cells that can be served by a NG-RAN node. Value is 16384.

9.1.3.35 SCG FAILURE INDICATION

This message is sent by NG-RAN node$_1$ to NG-RAN node$_2$ to report a SCG failure event that occurred while CHO with candidate SCG was configured.

Direction: NG-RAN node $_1$ → NG-RAN node $_2$.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	ignore
Target NG-RAN node UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the candidate target NG-RAN node	YES	ignore
SCG Failure Report Container	M		OCTET STRING	Includes the *SCGFailureInformation* message as defined in TS 38.331 [10]	YES	ignore
Failure Type	O		ENUMERATED (Too Late CPC Execution, CPC/CPA Execution to wrong PSCell, ...)		YES	ignore

9.1.4 Messages for IAB Procedures

9.1.4.1 F1-C TRAFFIC TRANSFER

This message is sent by the M-NG-RAN node to the S-NG-RAN node or by the S-NG-RAN node to the M-NG-RAN node of a dual-connected IAB-node to transfer the F1-C traffic to and from the IAB-node.

Direction: M-NG-RAN node → S-NG-RAN node or S-NG-RAN node → M-NG-RAN node.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	reject
M-NG-RAN node UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the M-NG-RAN node	YES	reject
S-NG-RAN node UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the S-NG-RAN node	YES	reject
F1-C Traffic Container	M		OCTET STRING	Contains an F1-C interface SCTP CHUNK and IP header, or an IP packet to protect the traffic on the F1-C interface as defined in TS 33.501 [28].	YES	reject

9.1.4.2 IAB TRANSPORT MIGRATION MANAGEMENT REQUEST

This message is sent by an F1-terminating IAB-donor to a non-F1-terminating IAB-donor of a boundary IAB-node, for the purpose of setting up, modifying, or releasing (e.g., for the purpose of revoking) the configuration for the migration of boundary and descendant node traffic between two IAB-donors.

Direction: F1-terminating IAB-donor → non-F1-terminating IAB-donor.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	reject
F1-Terminating IAB-donor UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the F1-terminating IAB-donor	YES	reject
Non-F1-Terminating IAB-donor UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the non-F1-terminating IAB-donor	YES	reject
Traffic To Be Added List		*0..1*			YES	reject
>**Traffic To Be Added Item**		*1 .. <maxnoofTrafficIndexEntries>*			–	
>>Traffic Index	M		9.2.2.80		–	
>>Traffic Profile	M		9.2.2.81		–	
>>F1-Terminating Topology BH Information	O		9.2.2.82		–	
Traffic To Be Modified List		*0..1*			YES	reject
>**Traffic To Be Modified Item**		*1 .. <maxnoofTrafficIndexEntries>*			–	
>>Traffic Index	M		9.2.2.80		–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
>>Traffic Profile	O		9.2.2.81		–	
>>F1-Terminating Topology BH Information	O		9.2.2.82		–	
Traffic To Be Released Information	O		9.2.2.84		YES	reject
IAB TNL Address Request	O		9.2.2.85		YES	reject
IAB TNL Address Exception	O		9.2.2.98		YES	reject
Mobile IAB-MT BAP Address	O		BAP Address 9.2.2.89	This IE is only present when the F1-terminating IAB-donor only has the BAP address of the mobile IAB-MT, but not the UE XnAP ID assigned by the RRC-Terminating IAB-donor for the mobile IAB-MT.	YES	reject

Range bound	Explanation
maxnoofTrafficIndexEntries	Maximum no. of traffic offloaded to the non-F1-terminating IAB-donor. The value is 1024.

9.1.4.3 IAB TRANSPORT MIGRATION MANAGEMENT RESPONSE

This message is sent by the non-F1-terminating IAB-donor to the F1-terminating IAB-donor of a boundary IAB-node to provide inter-donor transport related configurations for the offloaded traffic.

Direction: non-F1-terminating IAB-donor → F1-terminating IAB-donor.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	reject
F1-Terminating IAB-Donor UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the F1-terminating IAB-donor	YES	reject
Non-F1-Terminating IAB-Donor UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the non-F1-terminating IAB-donor	YES	reject
Traffic Added List		*0..1*			YES	reject
>**Traffic Added Item**		*1 .. <maxnoofTrafficIndexEntries>*			–	
>>Traffic Index	M		9.2.2.80		–	
>>Non-F1-terminating Topology BH Information	M		9.2.2.83		–	
Traffic Modified List		*0..1*			YES	reject
>**Traffic Modified Item**		*1 .. <maxnoofTrafficIndexEntries>*			–	
>>Traffic Index	M		9.2.2.80		–	
>>Non-F1-terminating Topology	M		9.2.2.83		–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
BH Information						
Traffic Not Added List		*0..1*			YES	reject
>**Traffic Not Added Item**		*1 .. <maxnoofTrafficIndexEntries>*			–	
>>Traffic Index	M		9.2.2.80		–	
>>Cause	O		9.2.3.2		–	
Traffic Not Modified List		*0..1*			YES	reject
>**Traffic Not Modified Item**		*1 .. <maxnoofTrafficIndexEntries>*			–	
>>Traffic Index	M		9.2.2.80		–	
>>Cause	O		9.2.3.2		–	
IAB TNL Address Response	O		9.2.2.86		YES	reject
Traffic Released List		*0..1*			YES	reject
>**Traffic Released Item**		*1 .. <maxnoofTrafficIndexEntries>*			–	
>>Traffic Index	M		9.2.2.80		–	
>>BH Info List	O		9.2.2.99		–	

Range bound	Explanation
maxnoofTrafficIndexEntries	Maximum no. of traffic offloaded to the non-F1-terminating IAB-donor. The value is 1024.

9.1.4.3a IAB TRANSPORT MIGRATION MANAGEMENT REJECT

This message is sent by the non-F1-terminating IAB-donor to inform the F1-terminating IAB-donor that the IAB Transport Migration Management procedure has failed.

Direction: Non-F1-terminating IAB-donor → F1-terminating IAB-donor.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	reject
F1-Terminating IAB-Donor UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the F1-terminating IAB-donor	YES	reject
Non-F1-Terminating IAB-Donor UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the non-F1-terminating IAB-donor	YES	reject
Cause	M		9.2.3.2		YES	ignore
Criticality Diagnostics	O		9.2.3.3		YES	ignore

9.1.4.4 IAB TRANSPORT MIGRATION MODIFICATION REQUEST

This message is sent by a non-F1-terminating IAB-donor to an F1-terminating IAB-donor of a boundary IAB-node, for the purpose of modifying or releasing (e.g., for the purpose of revoking) the configuration for the migrated traffic of boundary IAB-node or descendant IAB-node.

Direction: non-F1-terminating IAB-donor → F1-terminating IAB-donor.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	reject
F1-Terminating IAB-donor UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the F1-terminating IAB-donor	YES	reject
Non-F1-Terminating IAB-donor UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the non-F1-terminating IAB-donor	YES	reject
Traffic Required To Be Modified List		*0..1*			YES	reject
>**Traffic Required To Be Modified Item**		*1 .. <maxnoofTrafficIndexEntries>*			–	
>>Traffic Index	M		9.2.2.80		–	
>>Non-F1-terminating topology BH information	M		9.2.2.83		–	
Traffic To Be Released Information	O		9.2.2.84		YES	reject
IAB TNL Address To Be Added	O		IAB TNL Address Response 9.2.2.86		YES	reject
IAB TNL Address To Be Released List		*0..1*			YES	reject
>IAB TNL Address To Be Released Item		*1..<maxnoofTLAsIAB>*			–	
>>IAB TNL Address	M		9.2.2.92		–	
IAB Authorization Status	O		ENUMERATED (authorized, not authorized, …)	Indicates the IAB node´s authorization status.	YES	ignore
Mobile IAB Authorization Status	O		9.2.2.105		YES	ignore

Range bound	Explanation
maxnoofTrafficIndexEntries	Maximum no. of traffic offloaded to the non-F1-terminating IAB-donor. The value is 1024.
maxnoofTLAsIAB	Maximum total no. of Ipv4 address(es), IPv6 address(es) and IPv6 address prefix(es) that can be requested in one procedure execution. The value is 1024.

9.1.4.5 IAB TRANSPORT MIGRATION MODIFICATION RESPONSE

This message is sent by the F1-terminating IAB-donor to the non-F1-terminating IAB-donor of a boundary IAB-node to acknowledge the update of configuration requested by the non-F1-terminating IAB-donor.

Direction: F1-terminating IAB-donor → non-F1-terminating IAB-donor.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	reject
F1-Terminating IAB-donor UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the F1-terminating IAB-donor	YES	reject
Non-F1-Terminating IAB-donor UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the non-F1-terminating IAB-donor	YES	reject
Traffic Required		*0..1*			YES	reject

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Modified List						
>**Traffic Required Modified Item**		*1 .. <maxnoofTrafficIndexEntries>*			–	
>>Traffic Index	M		9.2.2.80		–	
Traffic Released List IE		*0..1*			YES	reject
>Traffic Released Item		*1 .. <maxnoofTrafficIndexEntries>*			–	
>>Traffic Index	M		9.2.2.80		–	
>>BH Info List	O		9.2.2.99		–	

Range bound	Explanation
maxnoofTrafficIndexEntries	Maximum no. of traffic offloaded to the non-F1-terminating IAB-donor. The value is 1024.

9.1.4.6 IAB RESOURCE COORDINATION REQUEST

This message is sent by an F1-terminating/non-F1-terminating IAB-donor to a non-F1-terminating/F1-terminating IAB-donor of a boundary IAB-node, for the purpose of coordination of the semi-static resources of a single or dual-connected boundary IAB-node.

Direction: F1-terminating IAB-donor → non-F1-terminating IAB-donor, non-F1-terminating IAB-donor→F1-terminating IAB-donor.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	reject
F1-terminating IAB-Donor UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the F1-terminating IAB-donor	YES	reject
Non F1-terminating IAB-Donor UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the non-F1-terminating IAB-donor	YES	reject
Boundary Node Cells List		*0..1*		List of cells served by the boundary IAB-node IAB-DU.	YES	reject
>Boundary Node Cells List Item		*1 .. <maxnoofServedCellsIAB >*			–	
>>Boundary Node Cell Information	M		IAB Cell Information 9.2.2.94		–	
Parent Node Cells List		*0..1*		List of cells served by the parent node IAB-DU or parent IAB-donor-DU.	YES	reject
>Parent Node Cells List Item		*1 .. <* maxnoofServingCells *>*			–	
>>Parent Node Cell Information	M		IAB Cell Information 9.2.2.94		–	

Range bound	Explanation
maxnoofServedCellsIAB	Maximum number of cells served by an IAB-DU. Value is 512.
maxnoofServingCells	Maximum no. of serving cells for an IAB-MT. Value is 32, as defined by the *maxNrofServingCells* in TS 38.331 [10].

9.1.4.7 IAB RESOURCE COORDINATION RESPONSE

This message is sent by a non-F1-terminating/F1-terminating IAB-donor to an F1-terminating/non-F1-terminating IAB-donor of a boundary IAB-node, in response to an IAB RESOURCE COORDINATION REQUEST message.

Direction: non-F1-terminating IAB-donor → F1-terminating IAB-donor, F1-terminating IAB-donor → non-F1-terminating IAB-donor.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	reject
F1-terminating IAB-Donor node UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the F1-terminating IAB-donor	YES	reject
Non F1-terminating IAB-Donor node UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the non-F1-terminating IAB-donor	YES	reject
Boundary Node Cells List		*0..1*		List of cells served by the boundary IAB-node IAB-DU.	YES	reject
>Boundary Node Cells List Item		*1 .. <maxnoofServedCellsIAB >*			–	
>>Boundary Node cell Information	M		IAB Cell Information 9.2.2.94		–	
Parent Node Cells List		*0..1*		List of cells served by the parent node IAB-DU or parent IAB-donor-DU.	YES	reject
>Parent Node Cells List Item		*1 .. <* maxnoofServingCells >			–	
>>Parent Node Cell Information	M		IAB Cell Information 9.2.2.94		–	

Range bound	Explanation
maxnoofServedCellsIAB	Maximum number of cells served by an IAB-DU. Value is 512.
maxnoofServingCells	Maximum no. of serving cells for an IAB-MT. Value is 32, as defined by the *maxNrofServingCells* in TS 38.331 [10].

9.1.5 Messages for L1/L2 Triggered Mobility

9.1.5.1 LTM CONFIGURATION UPDATE

This message is sent by the NG-RAN node$_1$ to update LTM configuration data.

Direction: NG-RAN node$_1$ → NG-RAN node$_2$.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality

Message Type	M		9.2.3.1		YES	reject
NG-RAN node 1 UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the NG-RAN node 1	YES	reject
NG-RAN node 2 UE XnAP ID	O		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the NG-RAN node 2	YES	reject
LTM Updates to Candidate Node Information		*0..1*			YES	ignore
>Reference Configuration	O		OCTET STRING	Includes the *ltm-ReferenceConfiguration* as defined in TS 38.331 [10].	–	
>LTM Configuration ID Mapping List	O		9.2.3.221		–	
>CSI Resource Configuration	O		9.2.3.223		–	
LTM Updates to Candidate Cell Information List		*0..1*			YES	ignore
>LTM Updates to Candidate Cell Information Item		*1.. <maxnoofLTMCells>*			–	
>>Candidate Cell ID	M		NR CGI 9.2.2.7		–	
>>Early Sync Information	O		9.2.3.218	Indicates the consolidated early synchronization information to be used for subsequent LTM.	–	
>>LTM CFRA Resource Information	O		9.2.3.232		–	
>>UE Based TA Measurement Configuration	O		OCTET STRING	Includes the *ltm-UE-MeasuredTA-ID* contained in the *LTM-Candidate* IE, as defined in TS 38.331 [10], for the LTM candidate cell identified by the *Candidate Cell ID* IE.	–	
>>AS Security Information	O		9.2.3.50		–	
>>LTM No Security Change ID	O		9.2.3.231a		–	
>>Data Forwarding Info for LTM List		*0..1*			–	
>>>Data Forwarding Info for LTM Item		*1..<maxnoofPDUSessions>*			–	
>>>>PDU Session ID	M		9.2.3.18		–	
>>>>Data Forwarding Info from target NG-RAN node	M		9.2.1.16		–	
>>Last Target NG-RAN node UE XnAP ID	O		NG-RAN node UE XnAP ID 9.2.3.16	This IE is included only once for the candidate cell belonging to the NG-RAN node 2.	–	
LTM UE Security	O		9.2.3.230		YES	ignore

Information						

Range bound	Explanation
maxnoofLTMCells	Maximum no. of Cells configured for LTM allowed towards one UE, the maximum value is 8.

9.1.5.2 LTM CONFIGURATION UPDATE ACKNOWLEDGE

This message is sent by the NG-RAN node$_2$ to inform the NG-RAN node$_1$ to acknowledge update of information associated to an LTM configuration.

Direction: NG-RAN node$_2$ → NG-RAN node$_1$.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	reject
NG-RAN node 1 UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the NG-RAN node 1.	YES	reject
NG-RAN node 2 UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the NG-RAN node 2.	YES	reject
LTM Updates from Candidate Cell Information List		*0..1*			YES	ignore
>LTM Candidate Cell Information Item		*1.. <maxnoof LTMCells >*			–	
>>Candidate Cell ID	M		NR CGI 9.2.2.7		–	
>>LTM Candidate Configuration	M		OCTET STRING	Includes the *ltm-CandidateConfig* as defined in TS 38.331 [10].	–	
>>Complete Candidate Configuration Indicator	O		ENUMERATED (complete, ...)		–	
>>CSI Report Configuration for Early CSI Acquisition	O		OCTET STRING	Includes the *ltm-CSIReportConfig* as defined in TS 38.331 [10].	–	
Criticality Diagnostics	O		9.2.3.3		YES	ignore

Range bound	Explanation
maxnoofLTMCells	Maximum no. of Cells configured for LTM allowed towards one UE, the maximum value is 8.

9.1.5.3 LTM CONFIGURATION UPDATE FAILURE

This message is sent by the NG-RAN node$_2$ to indicate to NG-RAN node$_1$ about LTM Configuration Update failure.

Direction: NG-RAN node$_2$ → NG-RAN node$_1$.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	reject
NG-RAN node 1 UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the NG-RAN node 1.	YES	reject

NG-RAN node 2 UE XnAP ID	O		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the NG-RAN node 2.	YES	reject
Cause	M		9.2.3.2		YES	ignore
Criticality Diagnostics	O		9.2.3.3		YES	ignore

9.1.5.4 TA INFORMATION TRANSFER

This message is sent by the NG-RAN node$_1$ to inform the NG-RAN node$_2$ about the Timing Advance value and related information.

Direction: NG-RAN node$_1$ → NG-RAN node$_2$.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	reject
TA Information List		*1*			YES	reject
>TA Information Transfer Item		*<1… maxnoofTAList>*			–	
>>Early RACH Resources Requester ID	M		9.2.3.220	Identifies the entity requesting Early RACH resources.	–	
>>Candidate Cell ID	M		NR CGI 9.2.2.7		–	
>>TA Value	M		INTEGER (0..4095)	Indicates the TA value as defined in TS 38.213 [40].	–	
>>Preamble Index	M		INTEGER (0..63)		–	
>>RA-RNTI	M		INTEGER (0..65535, ...)	RA-RNTI as defined in TS 38.321 [35].	–	
>>Tag ID Pointer	O		OCTET STRING	Includes the *tag-Id-ptr* contained in the *TCI-UL-State* IE or the *TCI-State* IE, as defined in TS 38.331 [10].	–	
>>Serving gNB ID	O		Global gNB ID 9.2.2.1	Indicates the serving SN in case of inter-SN SCG LTM.	YES	ignore

Range bound	Explanation
maxnoofTAList	Maximum no. of TA values to be sent, the maximum value is 8.

9.1.5.5 CELL SWITCH NOTIFICATION

This message is sent by the source NG-RAN node to inform the target NG-RAN node about the initiation of the cell switch command to the UE.

This message is also sent by the source S-NG-RAN node to the M-NG-RAN node or from the M-NG-RAN node to the target S-NG-RAN node to inform the target S-NG-RAN node about the initiation of the cell switch command to the UE.

Direction: source NG-RAN node → target NG-RAN node.

Direction: M-NG-RAN node → target S-NG-RAN node or source S-NG-RAN node → M-NG-RAN node (Dual Connectivity).

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality

Message Type	M		9.2.3.1		YES	reject
Source NG-RAN node UE XnAP ID reference	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the source NG-RAN node.	YES	reject
Target NG-RAN node UE XnAP ID reference	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the target NG-RAN node.	YES	reject
Target Cell Global ID	M		NR CGI 9.2.2.7		YES	reject
LTM Cell Switch Information		*0..1*			YES	ignore
>Joint or DL TCI State ID	M		OCTET STRING	Include the *TCI-StateId* IE as defined in TS 38.331 [10].	–	
>UL TCI State ID	O		OCTET STRING	Includes the *TCI-UL-StateId* IE as defined in TS 38.331 [10].	–	
LTM UE Association Information List		*0..1*			YES	ignore
>LTM UE Association Item		*1.. <maxnoofLTMCells>*			–	
>>Candidate Cell ID	M		NR CGI 9.2.2.7		–	
>>Last Target NG-RAN node UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16		–	
Cell Switch TA Information List		*0..1*			YES	ignore
>Cell Switch TA Information Item IEs		*1 .. <maxnoofTAList>*			EACH	ignore
>>Candidate Cell ID	M		NR CGI 9.2.2.7		–	
>>TA Value	M		INTEGER (0..4095)	Indicates the TA value as defined in TS 38.213 [40].	–	
>>Tag ID Pointer	O		OCTET STRING	Includes the *tag-Id-ptr* contained in the *TCI-UL-State* IE or the *TCI-State* IE, as defined in TS 38.331 [10].	–	

Range bound	Explanation
maxnoofLTMCells	Maximum no. of Cells configured for LTM allowed towards one UE, the maximum value is 8.
maxnoofTAList	Maximum no. of TA values to be sent, the maximum value is 8.

9.1.5.6 LTM CANCEL

This message is sent by the target NG-RAN node to the source NG-RAN node to cancel an already prepared LTM handover.

Direction: target NG-RAN node → source NG-RAN node.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	reject
Source NG-RAN node UE XnAP ID	M		NG-RAN node UE XnAP ID	Allocated at the source NG-RAN	YES	reject

			9.2.3.16	node.		
Target NG-RAN node UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the target NG-RAN node.	YES	reject
Cause	O		9.2.3.2		YES	ignore
LTM Candidate Cells To Be Cancelled List	O		9.2.3.247		YES	ignore

9.1.5.7 CSI-RS COORDINATION REQUEST

This message is sent by NG-RAN node$_1$ to NG-RAN node$_2$ to coordinate the activation and deactivation of CSI-RS transmission for a UE at NG-RAN node$_2$.

Direction: NG-RAN node$_1$ → NG-RAN node$_2$.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	reject
NG-RAN node$_1$ UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the source NG-RAN node.	YES	reject
NG-RAN node$_2$ UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the target NG-RAN node.	YES	reject
CSI-RS Coordination Request List		*1*			YES	reject
>CSI-RS Coordination Request Item		*1 .. <maxnoofCSIResourceConfigurations>*			–	
>>Transmission Request	M		ENUMERATED (activate, deactivate, …)		–	
>>CSI Resource Configuration ID	M		INTEGER (0..111, …)	Corresponds to information provided in the *LTM-CSI-ResourceConfigId* IE as defined in TS 38.331 [10].	–	
>>TCI State Information List		*0..1*		Indicates the TCI states where the semi persistent CSI-RS resource is transmitted. The mapping between the CSI-RS Resource indicated by the *LTM CSI Resource Configuration ID* IE and the TCI state is defined in TS 38.321 [35].	–	
>>>TCI state information Item		*1 .. < maxnoofLTM-CSI-ResourcesPerSet>*			–	
>>>>Joint or DL TCI State ID	M		OCTET STRING	Includes the *TCI-StateId* IE, as defined in TS 38.331 [10].	–	

Range bound	Explanation
maxnoofCSIResourceConfigurations	Maximum number of CSI Resource Configurations. Value is 112.
maxnoofLTM-CSI-ResourcesPerSet	Maximum number of LTM CSI-RS resource per set. Value is 512.

9.1.5.8 CSI-RS COORDINATION RESPONSE

This message is sent by NG-RAN node$_2$ to NG-RAN node$_1$ to coordinate the activation and deactivation of CSI-RS transmission for a UE at NG-RAN node$_2$.

Direction: NG-RAN node$_2$ → NG-RAN node$_1$.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.3.1		YES	reject
NG-RAN node$_1$ UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the source NG-RAN node.	YES	reject
NG-RAN node$_2$ UE XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the target NG-RAN node.	YES	reject
CSI-RS Coordination Result List		*1*			YES	reject
>CSI-RS Coordination Result Item		*1 .. <maxnoofCSIResourceConfigurations>*			–	
>>Transmission Status	M		ENUMERATED (activated, deactivated, …)		–	
>>CSI Resource Configuration ID	M		INTEGER (0..111, …)	Corresponds to information provided in the *CSI-ResourceConfigId* IE as defined in TS 38.331 [10].	–	

Range bound	Explanation
maxnoofCSIResourceConfigurations	Maximum number of CSI Resource Configurations. Value is 112.

9.2 Information Element definitions

9.2.0 General

When specifying information elements which are to be represented by bit strings, 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 bit strings from other specifications, the first bit of the bit string contains the first bit of the concerned information.

9.2.1 Container and List IE definitions

9.2.1.1 PDU Session Resources To Be Setup List

This IE contains PDU session resource related information used at UE context transfer between NG-RAN nodes.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
PDU Session Resources To Be Setup List		*1*			–	
>PDU Session Resources To Be Setup Item		*1 .. <maxnoof PDU sessions >*			–	
>>PDU Session ID	M		9.2.3.18		–	
>>S-NSSAI	M		9.2.3.21		–	
>>PDU Session Resource Aggregate Maximum Bitrate	O		PDU Session Aggregate Maximum Bit Rate 9.2.3.69	This IE shall be present when at least one Non-GBR QoS Flow has been setup.	–	
>>UL NG-U UP TNL Information at UPF	M		UP Transport Layer Information 9.2.3.30	UPF endpoint of the NG-U transport bearer. For delivery of UL PDUs	–	
>>Source DL NG-U TNL Information	O		UP Transport Layer Information 9.2.3.30	Indicates the possibility to keep the NG-U GTP-U tunnel termination point at the target NG-RAN node.	–	
>>Security Indication	O		9.2.3.52		–	
>>PDU Session Type	M		9.2.3.19		–	
>>Network Instance	O		9.2.3.85	This IE is ignored if the *Common Network Instance* IE is present.	–	
>>QoS Flows To Be Setup List		*1*			–	
>>>QoS Flows To Be Setup Item		*1 .. <maxnoof QoSFlows >*			–	
>>>>QoS Flow Identifier	M		9.2.3.10		–	
>>>>QoS Flow Level QoS Parameters	M		9.2.3.5		–	
>>>>E-RAB ID	O		INTEGER (0..15, …)		–	
>>>>TSC Traffic Characteristics	O		9.2.3.114	Traffic pattern information associated with the QFI. Details in TS 23.501 [7].	YES	ignore
>>>>Redundant QoS Flow Indicator	O		9.2.3.118		YES	ignore
>>>>ECN Marking or Congestion Information Reporting Request	O		9.2.3.205		YES	ignore
>>Data Forwarding and Offloading Info	O		9.2.1.17		–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
from source NG-RAN node						
>>Additional UL NG-U UP TNL Information at UPF List	O		9.2.1.32	Additional UPF endpoint of the NG-U transport bearer. For delivery of UL PDUs	YES	ignore
>>Common Network Instance	O		9.2.3.92		YES	ignore
>>Redundant UL NG-U UP TNL Information at UPF	O		UP Transport Layer Information 9.2.3.30	UPF endpoint of the NG-U transport bearer. For delivery of UL PDUs for the redundant transmission	YES	ignore
>>Additional Redundant UL NG-U UP TNL Information at UPF List	O		Additional UL NG-U UP TNL Information at UPF List 9.2.1.32	Additional Redundant UPF endpoint of the NG-U transport bearer. For delivery of UL PDUs	YES	ignore
>>Redundant Common Network Instance	O		Common Network Instance 9.2.3.92		YES	ignore
>>Redundant PDU Session Information	O		9.2.3.112		YES	ignore
>>MBS Session Associated Information	O		9.2.1.37		YES	ignore

Range bound	Explanation
maxnoofPDUSessions	Maximum no. of PDU sessions. Value is 256
maxnoofQoSFlows	Maximum no. of QoS flows allowed within one PDU session. Value is 64.

9.2.1.2 PDU Session Resources Admitted List

This IE contains PDU session resource related information to report success of the establishment of PDU session resources.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
PDU Session Resources Admitted List		*1*			–	
>**PDU Session Resources Admitted Item**		*1..<maxnoofPDUSessions>*			–	
>>PDU Session ID	M		9.2.3.18		–	
>>PDU Session Resource Admitted Info	M				–	
>>>DL NG-U TNL Information Unchanged	O		ENUMERATED (True, …)	Indicates the NG-U tunnels that have been kept unchanged at the target NG-RAN node	–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
>>>QoS Flows Admitted List		*1*			–	
>>>>QoS Flows Admitted Item		*1..<maxnoofQoSFlows>*			–	
>>>>>QoS Flow Identifier	M		9.2.3.10		–	
>>>>>Current QoS Parameters Set Index	O		Alternative QoS Parameters Set Index 9.2.3.103	Index to the currently fulfilled alternative QoS parameters set.	YES	ignore
>>>QoS Flows not Admitted List	O		QoS Flow List with Cause 9.2.1.4		–	
>>>Data Forwarding Info from target NG-RAN node	O		9.2.1.16		–	
>>>Secondary Data Forwarding Info from target NG-RAN node List	O		9.2.1.31	This IE would be present only when the target M-NG-RAN node decide to split a PDU session between MN and SN	YES	ignore

Range bound	Explanation
maxnoofPDUSessions	Maximum no. of PDU sessions. Value is 256
maxnoofQoSFlows	Maximum no. of QoS flows allowed within one PDU session. Value is 64.

9.2.1.3 PDU Session Resources Not Admitted List

This IE contains a list of PDU session resources which were not admitted to be added or modified.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
PDU Session Resources Not Admitted List		*1*		
>**PDU Session Resources Not Admitted Item**		*1..<maxnoofPDUSessions>*		
>>PDU Session ID	M		9.2.3.18	
>>Cause	O		9.2.3.2	

Range bound	Explanation
maxnoofPDUSessions	Maximum no. of PDU sessions. Value is 256

9.2.1.4 QoS Flow List with Cause

This IE contains a list of QoS flows with a cause value.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
QoS Flow with Cause Item		*1..<maxnoofQoSFlows>*		
>QoS Flow Identifier	M		9.2.3.10	
>Cause	O		9.2.3.2	

Range bound	Explanation
maxnoofQoSFlows	Maximum no. of QoS flows allowed within one PDU session. Value is 64.

9.2.1.4a QoS Flow List

This IE contains information regarding a list of QoS flows.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
QoS Flow Item		*1..<maxnoofQoSFlows>*		
>QoS Flow Identifier	M		9.2.3.10	
>QoS Flow Mapping Indication	O		9.2.3.79	

Range bound	Explanation
maxnoofQoSFlows	Maximum no. of QoS flows allowed within one PDU session. Value is 64.

9.2.1.5 PDU Session Resource Setup Info – SN terminated

This IE contains information for the addition of S-NG-RAN node resources related to a PDU session for DRBs configured with an SN terminated bearer option.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
UL NG-U UP TNL Information at UPF	M		UP Transport Layer Information 9.2.3.30	UPF endpoint of the NG-U transport bearer. For delivery of UL PDUs	–	
PDU Session Type	M		9.2.3.19		–	
Network Instance	O		9.2.3.85	This IE shall be ignored if the *Common Network Instance* IE is present.	–	
QoS Flows To Be Setup List		*1*			–	
>**QoS Flow To Be Setup Item**		*1 .. <maxnoofQoSFlows>*			–	
>>QoS Flow Identifier	M		9.2.3.10		–	
>>QoS Flow Level QoS Parameters	M		9.2.3.5	For GBR QoS flows, this IE contains GBR QoS flow information as received at NG-C	–	
>>Offered GBR QoS Flow Information	O		GBR QoS Flow Information 9.2.3.6	This IE contains M-Node offered GBR QoS Flow Information.	–	
>>TSC Traffic Characteristics	O		9.2.3.114	Traffic pattern information associated with the QFI. Details in TS 23.501 [7].	YES	ignore
>>Redundant QoS Flow Indicator	O		9.2.3.118		YES	ignore

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
>>ECN Marking or Congestion Information Reporting Request	O		9.2.3.205		YES	ignore
Data Forwarding and Offloading Info from source NG-RAN node	O		9.2.1.17		–	
Security Indication	O		9.2.3.52		–	
Security Result	O		9.2.3.67	Indicates security activation status in MN.	YES	reject
Common Network Instance	O		9.2.3.92		YES	ignore
Default DRB Allowed	O		9.2.3.93		YES	ignore
Split Session Indicator	O		9.2.3.94		YES	reject
Non-GBR Resources Offered	O		9.2.3.98		YES	ignore
Redundant UL NG-U UP TNL Information at UPF	O		UP Transport Layer Information 9.2.3.30	UPF endpoint of the NG-U transport bearer. For delivery of UL PDUs for the redundant transmission.	YES	ignore
Redundant Common Network Instance	O		Common Network Instance 9.2.3.92		YES	ignore
Redundant PDU Session Information	O		9.2.3.112		YES	ignore

Range bound	Explanation
maxnoofQoSFlows	Maximum no. of QoS flows. Value is 64

9.2.1.6 PDU Session Resource Setup Response Info – SN terminated

This IE contains the result of the addition of S-NG-RAN node resources related to a PDU session for DRBs configured with an SN terminated bearer option.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
DL NG-U UP TNL Information at NG-RAN	M		UP Transport Layer Information 9.2.3.30	S-NG-RAN node endpoint of the NG transport bearer. For delivery of DL PDUs.	–	
DRBs To Be Setup List		*0..1*			–	
>DRBs to Be Setup Item		*1 .. <maxnoof DRBs>*			–	
>>DRB ID	M		9.2.3.33		–	
>>SN UL PDCP UP TNL Information	M		UP Transport Parameters 9.2.3.76	S-NG-RAN node endpoint(s) of a DRB's Xn transport bearer at its PDCP resource. For delivery of UL PDUs.	–	
>>DRB QoS	M		QoS Flow Level QoS		–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
			Parameters 9.2.3.5			
>>PDCP SN Length	O		9.2.3.63	Indicates the PDCP SN length of the DRB.	–	
>>RLC Mode	M		9.2.3.28	Indicates the RLC mode to be used in the assisting node.	–	
>>UL Configuration	O		9.2.3.75	Information about UL usage in the M-NG-RAN node. This IE is used when the concerned DRB has both MCG resource and SCG resource configured i.e. the concerned DRB is configured as split bearer.	–	
>>secondary SN UL PDCP UP TNL Information	O		UP Transport Parameters 9.2.3.76	S-NG-RAN node endpoint(s) of a DRB's Xn transport bearer at its PDCP resource. For delivery of UL PDUs in case of PDCP duplication.	–	
>>Duplication Activation	O		9.2.3.71	Information on the initial state of UL PDCP duplication. This IE is ignored if the *RLC Duplication Information* IE is present.	–	
>>QoS Flows Mapped To DRB List		*1*			–	
>>>QoS Flows Mapped To DRB Item		*1 .. <maxnoofQoSFlows>*			–	
>>>>QoS Flow Identifier	M		9.2.3.10		–	
>>>>MCG requested GBR QoS Flow Information	O		GBR QoS Flow Information 9.2.3.6	This IE contains GBR QoS Flow Information necessary for the MCG part.	–	
>>>>QoS Flow Mapping Indication	O		9.2.3.79		–	
>>>>Current QoS Parameters Set Index	O		Alternative QoS Parameters Set Index 9.2.3.103		YES	ignore
>>>>Source DL Forwarding IP Address	O		Transport Layer Address 9.2.3.29	Identifies the TNL address used by the source node for data forwarding.	YES	ignore
>>Additional PDCP		*0..1*			YES	ignore

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Duplication TNL List						
>>>Additional PDCP Duplication TNL Item		*1 .. <maxnoofAdditionalPDCPDuplicationTNL>*			–	
>>>>Additional PDCP Duplication UP TNL Information	M		UP Transport Layer Information 9.2.3.30	S-NG-RAN node endpoint(s) of a DRB's Xn transport bearer at its PDCP resource. For delivery of UL PDUs in case of additional PDCP duplication.	–	
>>RLC Duplication Information	O		9.2.3.111	.	–	
>>ECN Marking or Congestion Information Reporting Status	O		9.2.3.214		YES	ignore
>>PSI based SDU Discard UL	O		9.2.3.244		YES	ignore
>>PSI based SDU Discard DL	O		9.2.3.245		YES	ignore
Data Forwarding Info from target NG-RAN node	O		9.2.1.16		–	
QoS Flows Not Admitted List	O		QoS Flow List with Cause 9.2.1.4		–	
Security Result	O		9.2.3.67		–	
DRB IDs taken into use	O		DRB List 9.2.1.29	Indicating the DRB IDs taken into use by the target NG-RAN node, as specified in TS 37.340 [8].	YES	reject
Redundant DL NG-U UP TNL Information at NG-RAN	O		UP Transport Layer Information 9.2.3.30	S-NG-RAN node endpoint of the NG transport bearer. For delivery of DL PDUs for the redundant transmission.	YES	ignore
Used RSN Information	O		Redundant PDU Session Information 9.2.3.112		YES	ignore
Data Forwarding and Offloading Info from source NG-RAN node	O		9.2.1.17	Contains data forwarding proposal for S-CPAC, to be used later when the S-NG-RAN node is selected for access.	YES	ignore
Additional DRB Setup Info List	O		9.2.3.215		YES	ignore

Range bound	Explanation

maxnoofDRBs	Maximum no. of DRBs allowed towards one UE. Value is 32.
maxnoofQoSFlows	Maximum no. of QoS flows. Value is 64
maxnoofAdditionalPDCPDuplicationTNL	Maximum no. of additional PDCP Duplication TNL. Value is 2.

9.2.1.7 PDU Session Resource Setup Info – MN terminated

This IE contains information for the addition of S-NG-RAN node resources related to a PDU session for DRBs configured with an MN terminated bearer option.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
PDU Session Type	M		9.2.3.19		–	
DRBs To Be Setup List		*1*			–	
>DRBs to Be Setup Item		*1 .. <maxnoof DRBs>*			–	
>>DRB ID	M		9.2.3.33		–	
>>MN UL PDCP UP TNL Information	M		UP Transport Parameters 9.2.3.76	M-NG-RAN node endpoint(s) of a DRB's Xn-U transport bearer at its PDCP resource. For delivery of UL PDUs.	–	
>>RLC Mode	M		9.2.3.28	Indicates the RLC mode to be used in the assisting node.	–	
>>UL Configuration	O		9.2.3.75	Information about UL usage in the S-NG-RAN node. This IE is used when the concerned DRB has both MCG resource and SCG resource configured i.e. the concerned DRB is configured as split bearer.	–	
>>DRB QoS	M		QoS Flow Level QoS Parameters 9.2.3.5		–	
>>PDCP SN Length	O		9.2.3.63	Indicates the PDCP SN length of the DRB.	–	
>>secondary MN UL PDCP UP TNL Information	O		UP Transport Parameters 9.2.3.76	M-NG-RAN node endpoint(s) of a DRB's Xn transport bearer at its PDCP resource. For delivery of UL PDUs in case of PDCP duplication.	–	
>>Duplication Activation	O		9.2.3.71	Information on the initial state of UL PDCP duplication. This IE is ignored if the *RLC Duplication Information* IE is	–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				present.		
>>QoS Flows Mapped To DRB List		*1*			–	
>>>QoS Flows Mapped To DRB Item		*1 .. <maxnoofQoSFlows>*			–	
>>>>QoS Flow Identifier	M		9.2.3.10		–	
>>>>QoS Flow Level QoS Parameters	M		9.2.3.5		–	
>>>>QoS Flow Mapping Indication	O		9.2.3.79		–	
>>>>TSC Traffic Characteristics	O		9.2.3.114	Traffic pattern information associated with the QFI. Details in TS 23.501 [7].	YES	ignore
>>Additional PDCP Duplication TNL List		*0..1*			YES	ignore
>>>Additional PDCP Duplication TNL Item		*1 .. <maxnoofAdditionalPDCPDuplicationTNL>*			–	
>>>>Additional PDCP Duplication UP TNL Information	M		UP Transport Layer Information 9.2.3.30	M-NG-RAN node endpoint(s) of a DRB's Xn transport bearer at its PDCP resource. For delivery of UL PDUs in case of additional PDCP duplication.	–	
>>RLC Duplication Information	O		9.2.3.111		YES	ignore
>>ECN Marking or Congestion Information Reporting Request	O		9.2.3.205		YES	ignore
>>PSI based SDU Discard UL	O		9.2.3.244		YES	ignore
>>PSI based SDU Discard DL	O		9.2.3.245		YES	ignore

Range bound	Explanation
maxnoofDRBs	Maximum no. of DRBs allowed towards one UE. Value is 32.
maxnoofQoSFlows	Maximum no. of QoS flows allowed within one PDU session. Value is 64.
maxnoofAdditionalPDCPDuplicationTNL	Maximum no. of additional PDCP Duplication TNL. Value is 2.

9.2.1.8 PDU Session Resource Setup Response Info – MN terminated

This IE contains the result of the addition of S-NG-RAN node resources related to a PDU session for DRBs configured with an MN terminated bearer option.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
DRBs Admitted List		*1*			–	
>DRBs Admitted Item		*1 .. <maxnoofDRBs>*			–	
>>DRB ID	M		9.2.3.33		–	
>>SN DL SCG UP TNL Information	M		UP Transport Parameters 9.2.3.76	S-NG-RAN node GTP-U tunnel endpoint(s) of the DRB's Xn transport at its Lower Layer SCG resource. For delivery of DL PDUs.	–	
>>secondary SN DL SCG UP TNL Information	O		UP Transport Parameters 9.2.3.76	S-NG-RAN node GTP-U tunnel endpoint(s) of the DRB's Xn transport at its Lower Layer SCG resource. For delivery of DL PDUs in case of PDCP duplication.	–	
>>LCID	O		9.2.3.70	LCID for primary path or LCID for split secondary path for fallback to split bearer if PDCP duplication is applied	–	
>>Additional PDCP Duplication TNL List		*0..1*			YES	ignore
>>>Additional PDCP Duplication TNL Item		*1 .. <maxnoofAdditionalPDCPDuplicationTNL>*			–	
>>>>Additional PDCP Duplication UP TNL Information	M		UP Transport Layer Information 9.2.3.30	S-NG-RAN node GTP-U tunnel endpoint(s) of the DRB's Xn transport at its Lower Layer SCG resource. For delivery of DL PDUs in case of additional PDCP duplication.	–	
>>QoS Flows Mapped To DRB List		*0..1*			YES	ignore
>>>QoS Flows Mapped To DRB Item		*1 .. <maxnoofQoSFlows>*			–	
>>>>QoS Flow Identifier	M		9.2.3.10		–	
>>>>Current QoS Parameters Set Index	M		Alternative QoS Parameters Set Index 9.2.3.103		–	
>>ECN Marking or Congestion	O		9.2.3.214		YES	ignore

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Information Reporting Status						
DRBs Not Admitted To Be Setup or Modified List	O		DRB List with Cause 9.2.1.28		YES	ignore

Range bound	Explanation
maxnoofDRBs	Maximum no. of DRBs allowed towards one UE. Value is 32.
maxnoofAdditionalPDCPDuplicationTNL	Maximum no. of additional PDCP Duplication TNL. Value is 2

9.2.1.9 PDU Session Resource Modification Info – SN terminated

This IE contains information related to a PDU session resource for an M-NG-RAN node initiated request to modify DRBs configured with an SN terminated bearer option.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
UL NG-U UP TNL Information at UPF	O		UP Transport Layer Information 9.2.3.30	UPF endpoint of the NG-U transport bearer. For delivery of UL PDUs	–	
Network Instance	O		9.2.3.85	This IE shall be ignored if the *Common Network Instance* IE is present.	–	
QoS Flows To Be Setup List		*0..1*			–	
>QoS Flows To Be Setup Item		*1 .. <maxnoof QoSFlows>*			–	
>>QoS Flow Identifier	M		9.2.3.10		–	
>>QoS Flow Level QoS Parameters	M		9.2.3.5	For GBR QoS flows, this IE contains GBR QoS flow information as received at NG-C.	–	
>>Offered GBR QoS Flow Information	O		GBR QoS Flow Information 9.2.3.6	This IE contains M-Node offered GBR QoS Flow Information.	–	
>>TSC Traffic Characteristics	O		9.2.3.114	Traffic pattern information associated with the QFI. Details in TS 23.501 [7].	YES	ignore
>>Redundant QoS Flow Indicator	O		9.2.3.118		YES	ignore
>>ECN Marking or Congestion Information Reporting Request	O		9.2.3.205		YES	ignore
Data Forwarding and Offloading Info from source NG-RAN node	O		9.2.1.17	Applicable for the QoS flows contained in the *QoS Flows To Be Setup List* IE.	–	
QoS Flows To Be Modified List		*0..1*			–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
>QoS Flows To Be Modified Item		*1 .. <maxnoofQoSFlows>*			–	
>>QoS Flow Identifier	M		9.2.3.10		–	
>>QoS Flow Level QoS Parameters	O		9.2.3.5	For GBR QoS flows, this IE contains GBR QoS flow information as received at NG-C.	–	
>>Offered GBR QoS Flow Information	O		GBR QoS Flow Information 9.2.3.6	This IE contains M-Node offered GBR QoS Flow Information.	–	
>>QoS Flow Mapping Indication	O		9.2.3.79	This IE is not applicable in this version of the specification.	–	
>>TSC Traffic Characteristics	O		9.2.3.114	Traffic pattern information associated with the QFI. Details in TS 23.501 [7].	YES	ignore
>>Redundant QoS Flow Indicator	O		9.2.3.118		YES	ignore
>>ECN Marking or Congestion Information Reporting Request	O		9.2.3.205		YES	ignore
QoS Flows To Be Released List		*0..1*	QoS Flow List with Cause 9.2.1.4		–	
DRBs To Be Modified List		*0..1*			–	
>DRBs to Be Modified Item		*1 .. <maxnoofDRBs>*			–	
>>DRB ID	M		9.2.3.33		–	
>>MN DL CG UP TNL Information	O		UP Transport Parameters 9.2.3.76	M-NG-RAN node GTP-U endpoint(s) of a DRB's Xn transport bearer at its lower layer CG resource. For delivery of DL PDUs.	–	
>>secondary MN DL CG UP TNL Information	O		UP Transport Parameters 9.2.3.76	M-NG-RAN node GTP-U endpoint(s) of a DRB's Xn transport bearer at its lower layer CG resource. For delivery of DL PDUs in case of PDCP duplication.	–	
>>LCID	O		9.2.3.70	LCID for primary path or LCID for split secondary path for fallback to split bearer if PDCP duplication is applied	–	
>>RLC Status	O		9.2.3.80		–	
>>Additional PDCP		*0..1*			YES	ignore

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Duplication TNL List						
>>>Additional PDCP Duplication TNL Item		*1 .. <maxnoof AdditionalPDCPDuplicationTNL>*			–	
>>>>Additional PDCP Duplication UP TNL Information	M		UP Transport Layer Information 9.2.3.30	M-NG-RAN node GTP-U endpoint(s) of a DRB's Xn transport bearer at its lower layer CG resource. For delivery of DL PDUs in case of additional PDCP duplication.	–	
DRBs To Be Released List	O		DRB List with Cause 9.2.1.28		–	
Common Network Instance	O		9.2.3.92		YES	ignore
Default DRB Allowed	O		9.2.3.93		YES	ignore
Non-GBR Resources Offered	O		9.2.3.98		YES	ignore
Redundant UL NG-U UP TNL Information at UPF	O		UP Transport Layer Information 9.2.3.30	UPF endpoint of the NG-U transport bearer. For delivery of UL PDUs for the redundant transmission	YES	ignore
Redundant Common Network Instance	O		Common Network Instance 9.2.3.92		YES	ignore
Security Indication	O		9.2.3.52		YES	ignore

Range bound	Explanation
maxnoofQoSFlows	Maximum no. of QoS flows. Value is 64.
maxnoofAdditionalPDCPDuplicationTNL	Maximum no. of additional PDCP Duplication TNL. Value is 2.

9.2.1.10 PDU Session Resource Modification Response Info – SN terminated

This IE contains the PDU session resource related result of an M-NG-RAN node initiated request to modify DRBs configured with an SN terminated bearer option.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
DL NG-U UP TNL Information at NG-RAN	O		UP Transport Layer Information 9.2.3.30	S-NG-RAN node endpoint of the NG transport bearer. For delivery of DL PDUs.	–	
DRBs To Be Setup List		*0..1*			–	
>DRBs to Be Setup Item		*1 .. <maxnoof DRBs>*			–	
>>DRB ID	M		9.2.3.33		–	
>>SN UL PDCP UP	M		UP Transport	S-NG-RAN node	–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
TNL Information			Parameters 9.2.3.76	endpoint(s) of a DRB's Xn transport bearer at its PDCP resource. For delivery of UL PDUs.		
>>DRB QoS	M		QoS Flow Level QoS Parameters 9.2.3.5		–	
>>PDCP SN Length	O		9.2.3.63	Indicates the PDCP SN length of the DRB.	–	
>>RLC Mode	M		9.2.3.28	Indicates the RLC mode to be used in the assisting node.	–	
>>UL Configuration	O		9.2.3.75	Information about UL usage in the M-NG-RAN node. This IE is used when the concerned DRB has both MCG resource and SCG resource configured i.e. the concerned DRB is configured as split bearer.	–	
>>secondary SN UL PDCP UP TNL Information	O		UP Transport Parameters 9.2.3.76	S-NG-RAN node endpoint(s) of a DRB's Xn transport bearer at its PDCP resource. For delivery of UL PDUs in case of PDCP duplication.	–	
>>Duplication Activation	O		9.2.3.71	Information on the initial state of UL PDCP duplication. This IE is ignored if the *RLC Duplication Information* IE is present.	–	
>>QoS Flows Mapped To DRB List		*1*			–	
>>>QoS Flows Mapped To DRB Item		*1 .. <maxnoofQoSFlows>*			–	
>>>>QoS Flow Identifier	M		9.2.3.10		–	
>>>>MCG requested GBR QoS Flow Information	O		GBR QoS Flow Information 9.2.3.6	This IE contains GBR QoS Flow Information necessary for the MCG part.	–	
>>>>QoS Flow Mapping Indication	O		9.2.3.79		–	
>>>>Current QoS	O		Alternative QoS		YES	ignore

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Parameters Set Index			Parameters Set Index 9.2.3.103			
>>>>Source DL Forwarding IP Address	O		Transport Layer Address 9.2.3.29	Identifies the TNL address used by the source node for data forwarding.	YES	ignore
>>Additional PDCP Duplication TNL List		*0..1*			YES	ignore
>>>Additional PDCP Duplication TNL Item		*1 .. <maxnoofAdditionalPDCPDuplicationTNL>*			–	
>>>>Additional PDCP Duplication UP TNL Information	M		UP Transport Layer Information 9.2.3.30	S-NG-RAN node endpoint(s) of a DRB's Xn transport bearer at its PDCP resource. For delivery of UL PDUs in case of additional PDCP duplication.	–	
>>RLC Duplication Information	O		9.2.3.111		YES	ignore
>>ECN Marking or Congestion Information Reporting Status	O		9.2.3.214		YES	ignore
>>PSI based SDU Discard UL	O		9.2.3.244		YES	ignore
>>PSI based SDU Discard DL	O		9.2.3.245		YES	ignore
Data Forwarding Info from target NG-RAN node	O		9.2.1.16	Applicable for the QoS flows in DRBs to be setup.	–	
DRBs To Be Modified List		*0..1*			–	
>DRBs to Be Modified Item		*1 .. <maxnoofDRBs>*			–	
>>DRB ID	M		9.2.3.33		–	
>>SN UL PDCP UP TNL Information	O		UP Transport Parameters 9.2.3.76	S-NG-RAN node endpoint(s) of a DRB's Xn transport bearer at its PDCP resource. For delivery of UL PDUs.	–	
>>DRB QoS	O		QoS Flow Level QoS Parameters 9.2.3.5		–	
>>QoS Flows Mapped to DRB List		*0..1*		Overwriting the existing QoS Flow List	–	
>>>QoS Flows Mapped to DRB Item		*1 .. <maxnoofQoSFlows>*			–	
>>>>QoS Flow	M		9.2.3.10		–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Identifier						
>>>>MCG requested GBR QoS Flow Information	O		GBR QoS Flow Information 9.2.3.6	This IE contains GBR QoS Flow Information necessary for the MCG part.	–	
>>>>QoS Flow Mapping Indication	O		9.2.3.79		–	
>>>>Current QoS Parameters Set Index	O		Alternative QoS Parameters Set Index 9.2.3.103		YES	ignore
>>>>Source DL Forwarding IP Address	O		Transport Layer Address 9.2.3.29	Identifies the TNL address used by the source node for data forwarding.	YES	ignore
>>Additional PDCP Duplication TNL List		*0..1*			YES	ignore
>>>Additional PDCP Duplication TNL Item		*1 .. <maxnoofAdditionalPDCPDuplicationTNL>*			–	
>>>>Additional PDCP Duplication UP TNL Information	M		UP Transport Layer Information 9.2.3.30	S-NG-RAN node endpoint(s) of a DRB's Xn transport bearer at its PDCP resource. For delivery of UL PDUs in case of additional PDCP duplication.	–	
>>RLC Duplication Information	O		9.2.3.111		YES	ignore
>>secondary SN UL PDCP UP TNL Information	O		UP Transport Parameters 9.2.3.76	S-NG-RAN node endpoint(s) of a DRB's Xn transport bearer at its PDCP resource. For delivery of UL PDUs in case of PDCP duplication.	YES	ignore
>>PDCP Duplication Configuration	O		9.2.3.86		YES	ignore
>>Duplication Activation	O		9.2.3.71		YES	ignore
>>ECN Marking or Congestion Information Reporting Status	O		9.2.3.214		YES	ignore
>>PSI based SDU Discard UL	O		9.2.3.244		YES	ignore
>>PSI based SDU Discard DL	O		9.2.3.245		YES	ignore
DRBs To Be Released List	O		DRB List with Cause 9.2.1.28		–	
Data Forwarding and Offloading Info from source NG-RAN node	O		9.2.1.17	Contains DL Data Forwarding indications for	–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				QoS Flows removed from the SDAP in the SN.		
QoS Flows Not Admitted to be Added List	O		QoS Flow List with Cause 9.2.1.4		–	
QoS Flows Released List	O		QoS Flow List with Cause 9.2.1.4		–	
DRB IDs taken into use	O		DRB List 9.2.1.29	Indicating the DRB IDs taken into use by the target NG-RAN node, as specified in TS 37.340 [8].	YES	reject
Redundant DL NG-U UP TNL Information at NG-RAN	O		UP Transport Layer Information 9.2.3.30	S-NG-RAN node endpoint of the NG transport bearer. For delivery of DL PDUs for the redundant transmission.	YES	ignore
Security Result	O		9.2.3.67		YES	ignore
Additional DRB Setup Info List	O		9.2.3.215		YES	ignore

Range bound	Explanation
maxnoofDRBs	Maximum no. of DRBs allowed towards one UE. Value is 32.
maxnoofQoSFlows	Maximum no. of QoS flows. Value is 64.
maxnoofAdditionalPDCPDuplicationTNL	Maximum no. of additional PDCP Duplication TNL. Value is 2.

9.2.1.11 PDU Session Resource Modification Info – MN terminated

This IE contains information related to PDU session resource for an M-NG-RAN node initiated request to modify DRBs configured with an MN terminated bearer option.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
PDU Session Type	M		9.2.3.19		–	
DRBs To Be Setup List		*0..1*			–	
>DRBs to Be Setup Item		*1 .. <maxnoof DRBs>*			–	
>>DRB ID	M		9.2.3.33		–	
>>MN UL PDCP UP TNL Information	M		UP Transport Parameters 9.2.3.76	M-NG-RAN node endpoint(s) of a DRB's Xn transport bearer at its PDCP resource. For delivery of UL PDUs.	–	
>>RLC Mode	M		9.2.3.28	Indicates the RLC mode to be used in the assisting node.	–	
>>UL Configuration	O		9.2.3.75	Information about UL usage in the S-NG-RAN node. This IE is used when the	–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				concerned DRB has both MCG resource and SCG resource configured i.e. the concerned DRB is configured as split bearer.		
>>DRB QoS	M		QoS Flow Level QoS Parameters 9.2.3.5		–	
>>PDCP SN Length	O		9.2.3.63	Indicates the PDCP SN length of the DRB.	–	
>>secondary MN UL PDCP UP TNL Information	O		UP Transport Parameters 9.2.3.76	M-NG-RAN node endpoint(s) of a DRB's Xn transport bearer at its PDCP resource. For delivery of UL PDUs in case of PDCP duplication.	–	
>>Duplication Activation	O		9.2.3.71	Information on the initial state of UL PDCP duplication. This IE is ignored if the *RLC Duplication Information* IE is present.	–	
>>QoS Flows Mapped to DRB List		*1*			–	
>>>QoS Flows Mapped To DRB Item		*1 .. <maxnoofQoSFlows>*			–	
>>>>QoS Flow Identifier	M		9.2.3.10		–	
>>>>QoS Flow Level QoS Parameters	M		9.2.3.5		–	
>>>>QoS Flow Mapping Indication	O		9.2.3.79		–	
>>>>TSC Traffic Characteristics	O		9.2.3.114	Traffic pattern information associated with the QFI. Details in TS 23.501 [7].	YES	ignore
>>Additional PDCP Duplication TNL List		*0..1*			YES	ignore
>>>Additional PDCP Duplication TNL Item		*1 .. <maxnoofAdditionalPDCPDuplicationTNL>*			–	
>>>>Additional PDCP Duplication UP TNL Information	M		UP Transport Layer Information 9.2.3.30	M-NG-RAN node endpoint(s) of a DRB's Xn transport bearer at its PDCP resource. For	–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				delivery of UL PDUs in case of additional PDCP duplication.		
>>RLC Duplication Information	O		9.2.3.111		YES	ignore
>>ECN Marking or Congestion Information Reporting Request	O		9.2.3.205		YES	ignore
>>PSI based SDU Discard UL	O		9.2.3.244		YES	ignore
>>PSI based SDU Discard DL	O		9.2.3.245		YES	ignore
DRBs To Be Modified List		*0..1*			–	
>DRBs to Be Modified Item		*1 .. <maxnoof DRBs>*			–	
>>DRB ID	M		9.2.3.33		–	
>>MN UL PDCP UP TNL Information	O		UP Transport Parameters 9.2.3.76	M-NG-RAN node endpoint(s) of a DRB's Xn transport bearer at its PDCP resource. For delivery of UL PDUs.	–	
>>DRB QoS	O		QoS Flow Level QoS Parameters 9.2.3.5		–	
>>secondary MN UL PDCP UP TNL Information	O		UP Transport Parameters 9.2.3.76	M-NG-RAN node endpoint(s) of a DRB's Xn transport bearer at its PDCP resource. For delivery of UL PDUs in case of PDCP duplication.	–	
>>UL Configuration	O		9.2.3.75	Information about UL usage in the S-NG-RAN node.	–	
>>PDCP Duplication Configuration	O		9.2.3.86		–	
>>Duplication Activation	O		9.2.3.71	Information on the initial state of UL PDCP duplication. This IE is ignored if the *RLC Duplication Information* IE is present.	–	
>>QoS Flows Mapped To DRB List		*0..1*		Overwriting the existing QoS Flow List	–	
>>>QoS Flows Mapped To DRB Item		*1 .. <maxnoof QoS Flows>*			–	
>>>>QoS Flow Identifier	M		9.2.3.10		–	
>>>>QoS Flow Level QoS Parameters	M		9.2.3.5		–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
>>>>QoS Flow Mapping Indication	O		9.2.3.79		–	
>>>>TSC Traffic Characteristics	O		9.2.3.114	Traffic pattern information associated with the QFI. Details in TS 23.501 [7].	YES	ignore
>>Additional PDCP Duplication TNL List		*0..1*			YES	ignore
>>>Additional PDCP Duplication TNL Item		*1 .. <maxnoofAdditionalPDCPDuplicationTNL>*			–	
>>>>Additional PDCP Duplication UP TNL Information	M		UP Transport Layer Information 9.2.3.30	M-NG-RAN node endpoint(s) of a DRB's Xn transport bearer at its PDCP resource. For delivery of UL PDUs in case of additional PDCP duplication.	–	
>>RLC Duplication Information	O		9.2.3.111		YES	ignore
>>ECN Marking or Congestion Information Reporting Request	O		9.2.3.205		YES	ignore
>>PSI based SDU Discard UL	O		9.2.3.244		YES	ignore
>>PSI based SDU Discard DL	O		9.2.3.245		YES	ignore
DRBs To Be Released List	O		DRB List with Cause 9.2.1.28		–	

Range bound	Explanation
maxnoofDRBs	Maximum no. of DRBs allowed towards one UE. Value is 32.
maxnoofQoSFlows	Maximum no. of QoS flows allowed within one PDU session. Value is 64.
maxnoofAdditionalPDCPDuplicationTNL	Maximum no. of additional PDCP Duplication TNL. Value is 2.

9.2.1.12 PDU Session Resource Modification Response Info – MN terminated

This IE contains the PDU session resource related result of an M-NG-RAN node initiated modification of DRBs configured with an MN terminated bearer option.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
DRBs Admitted to be Setup or Modified List		*1*			–	
>DRBs Admitted to be Setup or Modified Item		*1 .. <maxnoofDRBs>*			–	
>>DRB ID	M		9.2.3.33		–	
>>SN DL SCG UP TNL Information	O		UP Transport Parameters 9.2.3.76	S-NG-RAN node GTP-U tunnel endpoint(s) of the	–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				DRB's Xn transport at its Lower Layer SCG resource. For delivery of DL PDUs.		
>>secondary SN DL SCG UP TNL Information	O		UP Transport Parameters 9.2.3.76	S-NG-RAN node GTP-U tunnel endpoint(s) of the DRB's Xn transport at its Lower Layer SCG resource. For delivery of DL PDUs in case of PDCP duplication.	–	
>>LCID	O		9.2.3.70	LCID for primary path or LCID for split secondary path for fallback to split bearer if PDCP duplication is applied	–	
>>Additional PDCP Duplication TNL List		*0..1*			YES	ignore
>>>Additional PDCP Duplication TNL Item		*1 .. <maxnoofAdditionalPDCPDuplicationTNL>*			–	
>>>>Additional PDCP Duplication UP TNL Information	M		UP Transport Layer Information 9.2.3.30	S-NG-RAN node GTP-U tunnel endpoint(s) of the DRB's Xn transport at its Lower Layer SCG resource. For delivery of DL PDUs in case of additional PDCP duplication.	–	
>>QoS Flows Mapped To DRB List		*0..1*			YES	ignore
>>>QoS Flows Mapped To DRB Item		*1 .. <maxnoofQoSFlows>*			–	
>>>>QoS Flow Identifier	M		9.2.3.10		–	
>>>>Current QoS Parameters Set Index	O		Alternative QoS Parameters Set Index 9.2.3.103		–	
>>ECN Marking or Congestion Information Reporting Status	O		9.2.3.214		YES	ignore
DRBs Released List	O		DRB List 9.2.1.29		–	
DRBs Not Admitted To Be Setup or Modified List	O		DRB List with Cause 9.2.1.28		–	

Range bound	Explanation
maxnoofDRBs	Maximum no. of DRBs allowed towards one UE. Value is 32.
maxnoofAdditionalPDCPDuplicationTNL	Maximum no. of additional PDCP Duplication TNL. Value is 2.

9.2.1.13 UE Context Information – Retrieve UE Context Response

This IE contains the UE context information within the RETRIEVE UE CONTEXT RESPONSE message.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
NG-C UE associated Signalling reference	M		AMF UE NGAP ID 9.2.3.26	Allocated at the AMF on the old NG-C connection.	–	
Signalling TNL Association Address at source NG-C side	M		CP Transport Layer Information 9.2.3.31	This IE indicates the AMF's IP address of the SCTP association used at the source NG-C interface instance. NOTE: If no UE TNLA binding exists at the source NG-RAN node, the source NG-RAN node indicates the TNL association address it would have selected if it would have had to create a UE TNLA binding.	–	
UE Security Capabilities	M		9.2.3.49		–	
AS Security Information	M		9.2.3.50		–	
UE Aggregate Maximum Bit Rate	M		9.2.3.17		–	
PDU Session Resources To Be Setup List	M		9.2.1.1		–	
RRC Context	M		OCTET STRING	Includes the *HandoverPreparationInformation* message as defined in subclause 11.2.2 of TS 38.331[10] if the old and new serving NG-RAN nodes are gNBs. Includes either the *HandoverPreparationInformation* message as defined in subclause 10.2.2 of TS 36.331 [14] or the *HandoverPreparationInformation-NB* message as defined in subclause 10.6.2 of TS 36.331 [14], if the old and new serving NG-RAN	–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				nodes are ng-eNBs.		
Mobility Restriction List	O		9.2.3.53		–	
Index to RAT/Frequency Selection Priority	O		9.2.3.23		–	
5GC Mobility Restriction List Container	O		9.2.3.100		YES	ignore
NR UE Sidelink Aggregate Maximum Bit Rate	O		9.2.3.107	This IE applies only if the UE is authorized for NR V2X services.	YES	ignore
LTE UE Sidelink Aggregate Maximum Bit Rate	O		9.2.3.108	This IE applies only if the UE is authorized for LTE V2X services.	YES	ignore
UE Radio Capability ID	O		9.2.3.138		YES	reject
MBS Session Information List	O		9.2.1.36		YES	ignore
No PDU Session Indication	O		ENUMERATED (true, ...)	This IE applies only if the UE is an IAB-MT.	YES	ignore
5G ProSe UE PC5 Aggregate Maximum Bit Rate	O		NR UE Sidelink Aggregate Maximum Bit Rate 9.2.3.107	This IE applies only if the UE is authorized for 5G ProSe services.	YES	ignore
UE Slice Maximum Bit Rate List	O		9.2.3.167		YES	ignore
Positioning Information	O		9.2.3.168		YES	ignore
NR A2X UE PC5 Aggregate Maximum Bit Rate	O		NR UE Sidelink Aggregate Maximum Bit Rate 9.2.3.107	This IE applies only if the UE is authorized for NR A2X services.	YES	ignore
LTE A2X UE PC5 Aggregate Maximum Bit Rate	O		LTE UE Sidelink Aggregate Maximum Bit Rate 9.2.3.108	This IE applies only if the UE is authorized for LTE A2X services.	YES	ignore
NRPPa Positioning Information	O		9.2.3.211		YES	ignore
Semi-persistent Positioning Information	O		9.2.3.246		YES	ignore

9.2.1.14 DRBs Subject To Status Transfer List

This IE contains a list of DRBs containing information about PDCP SN status.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
DRBs Subject To Status Transfer Item		*1 .. <maxnoof DRBs>*			–	
>DRB ID	M		9.2.3.33		–	
>CHOICE *PDCP Status Transfer UL*	M				–	
>>12 bits						
>>>Receive Status Of PDCP SDU	O		BIT STRING (SIZE(1.. 2048))	The IE is used in case of 12-bit long PDCP-SN. The first bit indicates the	–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				status of the SDU after the First Missing UL PDCP SDU. The Nth bit indicates the status of the UL PDCP SDU in position (N + First Missing SDU Number) modulo (1 + the maximum value of the PDCP-SN). 0: PDCP SDU has not been received. 1: PDCP SDU has been received correctly.		
>>>UL COUNT Value	M		COUNT Value for PDCP SN Length 12 9.2.3.36	PDCP-SN and Hyper Frame Number of the first missing UL SDU in case of 12-bit long PDCP-SN	–	
>>18 bits						
>>>Receive Status Of PDCP SDU	O		BIT STRING (SIZE(1.. 131072))	The IE is used in case of 18-bit long PDCP-SN. The first bit indicates the status of the SDU after the First Missing UL PDCP SDU. The Nth bit indicates the status of the UL PDCP SDU in position (N + First Missing SDU Number) modulo (1 + the maximum value of the PDCP-SN). 0: PDCP SDU has not been received. 1: PDCP SDU has been received correctly.	–	
>>>UL COUNT Value	M		COUNT Value for PDCP SN Length 18 9.2.3.37	PDCP-SN and Hyper Frame Number of the first missing UL SDU in case of 18-bit long PDCP-SN	–	
>CHOICE *PDCP Status Transfer DL*	M				–	
>>12 bits						
>>>Receive Status Of PDCP SDU	O		BIT STRING (SIZE(1.. 2048))	This IE is not used in this version of the specification.	–	
>>>DL COUNT Value	M		COUNT Value for PDCP SN	PDCP-SN and Hyper Frame	–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
			Length 12 9.2.3.36	Number that the target NG-RAN node (handover) or the NG-RAN node to which the DRB context is transferred (dual connectivity) should assign for the next DL SDU not having an SN yet in case of 12-bit long PDCP-SN.		
>>18 bits						
>>>Receive Status Of PDCP SDU	O		BIT STRING (SIZE(1.. 131072))	This IE is not used in this version of the specification.	–	
>>>DL COUNT Value	M		COUNT Value for PDCP SN Length 18 9.2.3.37	PDCP-SN and Hyper Frame Number that the target NG-RAN node (handover) or the NG-RAN node to which the DRB context is transferred (dual connectivity) should assign for the next DL SDU not having an SN yet in case of 18-bit long PDCP-SN.	–	
>Old QoS Flow List - UL End Marker expected	O		QoS Flow List 9.2.1.4a	This IE is included to be used for indicating that the source NG-RAN node has initiated QoS flow re-mapping and has not yet received SDAP end markers, as described in TS 38.300 [9]. In this version of the specification, the *QoS Flow Mapping Indication* IE is not included by the sending node and ignored if received in the *Old QoS Flow List - UL End Marker expected* IE.	YES	reject
>CHOICE *PDCP SN Gap Transfer UL*	O				YES	ignore
>>12 bits						
>>>Discard Bitmap	M		BIT STRING (SIZE(1.. 2048))	The IE is used in case of 12-bit long PDCP-SN. The first bit indicates the status of the SDU after the First Missing UL PDCP	–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				SDU, whose UL COUNT value is indicated in the *UL COUNT Value* IE of the *PDCP Status Transfer UL* IE, choice of "12 bits". The Nth bit indicates the status of the UL PDCP SDU in position (N + First Missing UL PDCP SDU Number) modulo (1 + the maximum value of the PDCP-SN). 0: PDCP SDU has not been discarded. 1: PDCP SDU has been discarded.		
>>18 bits						
>>>Discard Bitmap	M		BIT STRING (SIZE(1.. 131072))	The IE is used in case of 18-bit long PDCP-SN. The first bit indicates the status of the SDU after the First Missing UL PDCP SDU, whose UL COUNT value is indicated in the *UL COUNT Value* IE of the *PDCP Status Transfer UL* IE, choice of "18 bits". The Nth bit indicates the status of the UL PDCP SDU in position (N + First Missing UL PDCP SDU Number) modulo (1 + the maximum value of the PDCP-SN). 0: PDCP SDU has not been discarded. 1: PDCP SDU has been discarded.	–	

Range bound	Explanation
maxnoofDRBs	Maximum no. of DRBs allowed towards one UE. Value is 32.

9.2.1.15 DRB to QoS Flow Mapping List

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

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
DRBs to QoS Flow Mapping Item		*1 .. <maxnoofDRBs>*			–	
>DRB ID	M		9.2.3.33		–	
>QoS Flows List	M		9.2.1.4a		–	
>RLC Mode	O		9.2.3.28	Indicates the RLC mode for PDCP transfer between M-NG-RAN node and S-NG-RAN node.	–	
>DAPS Request Information	O		9.2.1.33		YES	ignore

Range bound	Explanation
maxnoofDRBs	Maximum no. of DRBs allowed towards one UE. Value is 32.
maxnoofQoSFlows	Maximum no. of QoS flows allowed within one PDU session. Value is 64.

9.2.1.16 Data Forwarding Info from target NG-RAN node

This IE contains TNL information for the establishment of data forwarding tunnels towards the target NG-RAN node.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
QoS Flows Accepted For Data Forwarding List		*1*			–	
>QoS Flows Accepted For Data Forwarding Item		*1..<maxnoofQoSFlows>*			–	
>>QoS Flow Identifier	M		9.2.3.10		–	
PDU Session level DL data forwarding UP TNL Information	O		UP Transport Layer Information 9.2.3.30	To forward NG-U DL SDAP SDUs to the target node.	–	
PDU Session level UL data forwarding UP TNL Information	O		UP Transport Layer Information 9.2.3.30	To forward NG-U UL SDAP SDU to the target node.	–	
Data Forwarding Response DRB List		*0..1*			–	
>Data Forwarding Response DRB Item		*1..<maxnoofDRBs>*			–	
>>DRB ID	M		9.2.3.33		–	
>>DL Forwarding UP TNL Information	O		UP Transport Layer Information 9.2.3.30		–	
>>UL Forwarding UP TNL Information	O		UP Transport Layer Information 9.2.3.30		–	
Direct Forwarding Path Availability	O		ENUMERATED (direct path available, …)	Indicates direct forwarding path is available between the target NG-	YES	ignore

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				RAN node and source S-NG-RAN node for the PDU session.		

Range bound	Explanation
maxnoofDRBs	Maximum no. of DRBs. Value is 32.
maxnoofQoSFlows	Maximum no. of QoS flows allowed within one PDU session. Value is 64.

9.2.1.17 Data Forwarding and Offloading Info from source NG-RAN node

This IE contains information from a source NG-RAN node regarding per QoS flow proposed data forwarding and offloading.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
QoS Flows To Be Forwarded List		*1*			–	
>QoS Flows To Be Forwarded Item		*1 .. <maxnoofQoSFlows>*			–	
>>QoS Flow Identifier	M		9.2.3.10		–	
>>DL Forwarding	M		9.2.3.34		–	
>>UL Forwarding	M		9.2.3.90	This IE shall be ignored.	–	
>>UL Forwarding Proposal	O		9.2.3.95		YES	ignore
>>Source DL Forwarding IP Address	O		Transport Layer Address 9.2.3.29	Identifies the TNL address for data forwarding allocated by the MN node for DC cases and by source NG-RAN node for mobility without MR-DC involved cases	YES	ignore
>>Source Node DL Forwarding IP Address	O		Transport Layer Address 9.2.3.29	This IE is present only for the case of SA to MR-DC handover and it is used to identify the source TNL address allocated by the source NG-RAN node for data forwarding.	YES	ignore
Source DRB to QoS Flow Mapping List	O		DRB to QoS Flow Mapping List 9.2.1.15	Usage of the DRB IDs indicated in the *Source DRB to QoS Flow Mapping List* IE is specified in TS 37.340 [8].	–	

Range bound	Explanation
maxnoofQoSFlows	Maximum no. of QoS flows allowed within one PDU session. Value is 64.

9.2.1.18 PDU Session Resource Change Required Info – SN terminated

This IE contains information for the S-NG-RAN node initiated request for an S-NG-RAN node change related to a PDU session resource with DRBs configured with an SN terminated bearer option.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Data Forwarding and Offloading Info from source NG-RAN node	O		9.2.1.17	

9.2.1.19 PDU Session Resource Change Confirm Info – SN terminated

This IE contains information for the M-NG-RAN node's confirmation of an S-NG-RAN node initiated request for an S-NG-RAN node change related to a PDU session resource with DRBs configured with an SN terminated bearer option.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Data Forwarding Info from target NG-RAN node	O		9.2.1.16		–	
DRB IDs taken into use	O		DRB List 9.2.1.29	Indicating the DRB IDs taken into use by the target NG-RAN node, as specified in TS 37.340 [8].	YES	reject

9.2.1.20 PDU Session Resource Modification Required Info – SN terminated

This IE contains PDU session resource information of an S-NG-RAN node initiated modification request of DRBs configured with an SN terminated bearer option.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
DL NG-U UP TNL Information at NG-RAN	O		UP Transport Layer Information 9.2.3.30	S-NG-RAN node endpoint of the NG-U transport bearer. For delivery of DL PDUs.	–	
QoS Flows To Be Released List	O		QoS Flow List with Cause 9.2.1.4		–	
Data Forwarding and Offloading Info from source NG-RAN node	O		9.2.1.17	This IE only applies to QoS flows included in the *QoS FlowS To Be Released List* IE.	–	
DRBs To Be Setup List		*0..1*			–	
>DRBs to Be Setup Item		*1 .. <maxnoof DRBs>*			–	
>>DRB ID	M		9.2.3.33		–	
>>PDCP SN Length	O		9.2.3.63	Indicates the PDCP SN length of the DRB.	–	
>>SN UL PDCP UP TNL Information	M		UP Transport Parameters	S-NG-RAN node endpoint(s) of a	–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
			9.2.3.76	DRB's Xn transport bearer at its PDCP resource. For delivery of UL PDUs.		
>>DRB QoS	M		QoS Flow Level QoS Parameters 9.2.3.5		–	
>>secondary SN UL PDCP UP TNL Information	O		UP Transport Parameters 9.2.3.76	S-NG-RAN node endpoint(s) of a DRB's Xn transport bearer at its PDCP resource. For delivery of UL PDUs in case of PDCP Duplication.	–	
>>Duplication Activation	O		9.2.3.71	Information on the initial state of UL PDCP duplication. This IE is ignored if the *RLC Duplication Information* IE is present.	–	
>>UL Configuration	O		9.2.3.75	Information about UL usage in the S-NG-RAN node. This IE is used when the concerned DRB has both MCG resource and SCG resource configured i.e. the concerned DRB is configured as split bearer.	–	
>>QoS Flows Mapped To DRB List		*1*			–	
>>>QoS Flows Mapped To DRB Item		*1 .. <maxnoof QoSFlows>*			–	
>>>>QoS Flow Identifier	M		9.2.3.10		–	
>>>>MCG requested GBR QoS Flow Information	O		GBR QoS Flow Information 9.2.3.6	This IE contains GBR QoS Flow Information necessary for the MCG part.	–	
>>>>QoS Flow Mapping Indication	O		9.2.3.79		YES	ignore
>>RLC Mode	M		9.2.3.28	Indicates the RLC mode at the assisting node.	–	
>>Additional PDCP Duplication TNL List		*0..1*			YES	ignore
>>>Additional PDCP Duplication TNL Item		*1 .. <maxnoof Additional*			–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
		PDCPDuplicationTNL>				
>>>>Additional PDCP Duplication UP TNL Information	M		UP Transport Layer Information 9.2.3.30	S-NG-RAN node endpoint(s) of a DRB's Xn transport bearer at its PDCP resource. For delivery of UL PDUs in case of additional PDCP Duplication.	–	
>>RLC Duplication Information	O		9.2.3.111		YES	ignore
>>ECN Marking or Congestion Information Reporting Status	O		9.2.3.214		YES	ignore
>>PSI based SDU Discard UL	O		9.2.3.244		YES	ignore
>>PSI based SDU Discard DL	O		9.2.3.245		YES	ignore
DRBs To Be Modified List		*0..1*			–	
>DRBs to Be Modified Item		*1 .. <maxnoofDRBs>*			–	
>>DRB ID	M		9.2.3.33		–	
>>SN UL PDCP UP TNL Information	O		UP Transport Parameters 9.2.3.76	S-NG-RAN node endpoint(s) of a DRB's Xn transport bearer at its PDCP resource. For delivery of UL PDUs.	–	
>>DRB QoS	O		QoS Flow Level QoS Parameters 9.2.3.5		–	
>>secondary SN UL PDCP UP TNL Information	O		UP Transport Parameters 9.2.3.76	S-NG-RAN node endpoint(s) of a DRB's Xn transport bearer at its PDCP resource. For delivery of UL PDUs in case of PDCP Duplication.	–	
>>UL Configuration	O		9.2.3.75	Information about UL usage in the S-NG-RAN node.	–	
>>PDCP Duplication Configuration	O		9.2.3.86		–	
>>Duplication Activation	O		9.2.3.71	This IE is ignored if the *RLC Duplication Information* IE is present.	–	
>>QoS Flows Mapped to DRB List		*0..1*		Overwriting the existing QoS Flow List	–	
>>>QoS Flows Mapped to DRB Item		*1 .. <maxnoofQoSFlows*			–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
		>				
>>>>QoS Flow Identifier	M		9.2.3.10		–	
>>>>MCG requested GBR QoS Flow Information	O		GBR QoS Flow Information 9.2.3.6	This IE contains GBR QoS Flow Information necessary for the MCG part.	–	
>>>>QoS Flow Mapping Indication	O		9.2.3.79		YES	ignore
>>Additional PDCP Duplication TNL List		*0..1*			YES	ignore
>>>Additional PDCP Duplication TNL Item		*1 .. <maxnoofAdditionalPDCPDuplicationTNL>*			–	
>>>>Additional PDCP Duplication UP TNL Information	M		UP Transport Layer Information 9.2.3.30	S-NG-RAN node endpoint(s) of a DRB's Xn transport bearer at its PDCP resource. For delivery of UL PDUs in case of additional PDCP Duplication.	–	
>>RLC Duplication Information	O		9.2.3.111		YES	ignore
>>ECN Marking or Congestion Information Reporting Status	O		9.2.3.214		YES	ignore
>>PSI based SDU Discard UL	O		9.2.3.244		YES	ignore
>>PSI based SDU Discard DL	O		9.2.3.245		YES	ignore
DRBs To Be Released List	O		DRB List with Cause 9.2.1.28		–	
Additional DRB Setup Info List	O		9.2.3.215		YES	ignore

Range bound	Explanation
maxnoofDRBs	Maximum no. of DRBs allowed towards one UE. Value is 32.
maxnoofQoSFlows	Maximum no. of QoS flows. Value is 64.
maxnoofAdditionalPDCPDuplicationTNL	Maximum no. of additional PDCP Duplication TNL. Value is 2.

9.2.1.21 PDU Session Resource Modification Confirm Info – SN terminated

This IE contains the PDU session resource related result of an S-NG-RAN node initiated modification of DRBs configured with an SN terminated bearer option.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
UL NG-U UP TNL Information at UPF	O		UP Transport Layer Information 9.2.3.30	UPF endpoint of the NG-U transport bearer. For delivery of UL	–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				PDUs		
DRBs Admitted to be Setup or Modified List		*1*			–	
>DRBs Admitted to be Setup or Modified Item		*1 .. <maxnoofDRBs>*			–	
>>DRB ID	M		9.2.3.33		–	
>>MN DL CG UP TNL Information	O		UP Transport Parameters 9.2.3.76	M-NG-RAN node endpoint(s) of the DRB's Xn transport at its Lower Layer CG resource. For delivery of DL PDUs.	–	
>>secondary MN DL CG UP TNL Information	O		UP Transport Parameters 9.2.3.76	M-NG-RAN node endpoint(s) of the DRB's Xn transport at its Lower Layer CG resource. For delivery of DL PDUs at the case of PDCP duplication.	–	
>>LCID	O		9.2.3.70	Shall be ignored by the S-NG-RAN node if received.	–	
>>Additional PDCP Duplication TNL List		*0..1*			YES	ignore
>>>Additional PDCP Duplication TNL Item		*1 .. <maxnoofAdditionalPDCPDuplicationTNL>*			–	
>>>>Additional PDCP Duplication UP TNL Information	M		UP Transport Layer Information 9.2.3.30	M-NG-RAN node endpoint(s) of the DRB's Xn transport at its Lower Layer CG resource. For delivery of DL PDUs at the case of additional PDCP duplication.	–	
DRBs Not Admitted To Be Setup or Modified List	O		DRB List with Cause 9.2.1.28		–	
Data Forwarding Info from target NG-RAN node	O		9.2.1.16	Forwarding Addresses for both, QoS flow and DRB level offloading.	–	
DRB IDs taken into use	O		DRB List 9.2.1.29	Indicating the DRB IDs taken into use by the target NG-RAN node, as specified in TS 37.340 [8].	YES	reject

Range bound	Explanation
maxnoofDRBs	Maximum no. of DRBs allowed towards one UE. Value is 32.

maxnoofQoSFlows	Maximum no. of QoS flows. Value is 64.
maxnoofAdditionalPDCPDuplicationTNL	Maximum no. of additional PDCP Duplication TNL. Value is 2.

9.2.1.22 PDU Session Resource Modification Required Info – MN terminated

This IE contains PDU session resource information of an S-NG-RAN node initiated modification request of DRBs configured with an MN terminated bearer option.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
DRBs To Be Modified List	O				–	
>DRBs To Be Modified Item		*1..<maxnoofDRBs>*			–	
>>DRB ID	M		9.2.3.33		–	
>>SN DL SCG UP TNL Information	M		UP Transport Layer Information 9.2.3.30	S-NG-RAN node endpoint of a DRB's Xn transport bearer. For delivery of DL PDUs.	–	
>>secondary SN DL SCG UP TNL Information	O		UP Transport Layer Information 9.2.3.30	S-NG-RAN node endpoint of a DRB's Xn transport bearer. For delivery of DL PDUs in case of PDCP Duplication	–	
>>LCID	O		9.2.3.70	LCID for primary path or LCID for split secondary path for fallback to split bearer if PDCP duplication is applied	–	
>>RLC Status	O		9.2.3.80		–	
>>Additional PDCP Duplication TNL List		*0..1*			YES	ignore
>>>Additional PDCP Duplication TNL Item		*1 .. <maxnoofAdditionalPDCPDuplicationTNL>*			–	
>>>>Additional PDCP Duplication UP TNL Information	M		UP Transport Layer Information 9.2.3.30	S-NG-RAN node endpoint of a DRB's Xn transport bearer. For delivery of DL PDUs in case of additional PDCP Duplication	–	
>>ECN Marking or Congestion Information Reporting Status	O		9.2.3.214		YES	ignore
DRBs To Be Released List	O		DRB List with Cause 9.2.1.28		–	

Range bound	Explanation
maxnoofDRBs	Maximum no. of DRBs. Value is 32.
maxnoofAdditionalPDCPDuplicationTNL	Maximum no. of additional PDCP Duplication TNL. Value is 2.

9.2.1.23 PDU Session Resource Modification Confirm Info – MN terminated

This IE contains the PDU session resource related result of an S-NG-RAN node initiated modification of DRBs configured with an MN terminated bearer option.

NOTE: In the current version of this specification, this IE has no content, apart from an extension container.

IE/Group Name	Presence	Range	IE type and reference	Semantics description

9.2.1.24 PDU Session List with data forwarding request info

This IE contains a list of PDU session related data forwarding request information.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
PDU Session List with data forwarding request info		*1 .. <maxnoofPDUsessions>*			–	
>PDU Session ID	M		9.2.3.18		–	
>Data Forwarding and Offloading Info from source NG-RAN node	O		9.2.1.17		–	
>DRBs To Be Released List	O		DRB to QoS Flow Mapping List 9.2.1.15	Indicate the QoS flow mapping and RLC mode of the released DRBs.	–	
>Cause	O		9.2.3.2		YES	ignore

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

9.2.1.25 PDU Session List with data forwarding info from the target node

This IE contains a list of PDU session related data forwarding information from the target NG-RAN node.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
PDU Session List with data forwarding from the target node		*1 .. <maxnoofPDUsessions>*			–	
>PDU Session ID	M		9.2.3.18		–	
>Data Forwarding Info from target NG-RAN node	M		9.2.1.16		–	
>DRB IDs taken into use	O		DRB List 9.2.1.29	Indicating the DRB IDs taken into use by the target NG-RAN node, as specified in TS 37.340 [8].	YES	reject

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

9.2.1.26 PDU Session List with Cause

This IE contains a list of PDU Sessions, a cause may accompany each list element.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
PDU Session List with Cause		*1 .. <maxnoofPDUsessions>*		
>PDU Session ID	M		9.2.3.18	
>Cause	O		9.2.3.2	

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

9.2.1.27 PDU Session List

This IE contains a list of PDU sessions.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
PDU Session List		*1 .. <maxnoofPDUsessions>*		
>PDU Session ID	M		9.2.3.18	

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

9.2.1.28 DRB List with Cause

This IE contains a list of DRBs, a cause may accompany each list element.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
DRB List with Cause		*1 .. <maxnoofDRBs>*		
>DRB ID	M		9.2.3.33	
>Cause	M		9.2.3.2	
>RLC Mode	O		9.2.3.28	Indicates the RLC mode for PDCP transfer between M-NG-RAN node and S-NG-RAN node.

Range bound	Explanation
maxnoofDRBs	Maximum no. of PDU sessions. Value is 32.

9.2.1.29 DRB List

This IE contains a list of DRBs.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
DRB List		*1 .. <maxnoofDRBs>*		
>DRB ID	M		9.2.3.33	

Range bound	Explanation
maxnoofDRBs	Maximum no. of DRBs. Value is 32.

9.2.1.30 PDU Session Resource Setup Complete Info – SN terminated

This IE contains information to complete the establishment of Xn-U bearers for SN terminated bearers.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
DRBs To Be Setup List		*1*			–	–
>DRBs to Be Setup Item		*1 .. <maxnoofDRBs>*			–	–
>>DRB ID	M		9.2.3.33		–	–
>>MN DL Xn UP TNL Information	M		UP Transport Layer Information 9.2.3.30	M-NG-RAN node endpoint of a DRB's Xn-U transport. For delivery of DL PDUs.	–	–
>>Secondary MN DL Xn UP TNL Information	O		UP Transport Layer Information 9.2.3.30	M-NG-RAN node endpoint of a DRB's Xn-U transport. For delivery of DL PDUs in case of PDCP Duplication.	YES	ignore

Range bound	Explanation
maxnoofDRBs	Maximum no. of DRBs allowed towards one UE. Value is 32.

9.2.1.31 Secondary Data Forwarding Info from target NG-RAN node List

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Secondary Data Forwarding Info from target NG-RAN node Item		*1..<maxnoofMultiConnectivityMinusOne>*		
>Secondary Data Forwarding Info from target NG-RAN node	M		Data Forwarding Info from target NG-RAN node 9.2.1.16	

Range bound	Explanation
maxnoofMultiConnectivityMinusOne	Maximum no. of *MultiConnectivity minus one*. Value is 3

9.2.1.32 Additional UL NG-U UP TNL Information at UPF List

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Additional UL NG-U UP TNL Information at UPF Item		*1..<maxnoofMultiConnectivityMinusOne>*			–	
>Additional UL NG-U UP TNL Information at UPF	M		UP Transport Layer Information 9.2.3.30		–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
>Common Network Instance	O		9.2.3.92		YES	ignore

Range bound	Explanation
maxnoofMultiConnectivityMinusOne	Maximum no. of *MultiConnectivity minus one*. Value is 3

9.2.1.33 DAPS Request Information

The *DAPS Indicator* IE indicates that the source NG-RAN node requests a DAPS HO for the concerned DRB.

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

9.2.1.34 DAPS Response Information

The *DAPS Response Information* IE indicates, per DRB, the response to a requested DAPS Handover.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
DAPS Response Information List		*1..<maxnoofDRBs>*		
>DRB ID	M		9.2.3.33	
>DAPS Response Indicator	M		ENUMERATED (DAPS HO accepted, DAPS HO not accepted, …)	Indicates whether the DAPS Handover has been accepted.

Range bound	Explanation
maxnoofDRBs	Maximum no. of DRBs allowed towards one UE. Value is 32.

9.2.1.35 Data Forwarding Info from target E-UTRAN node

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Data Forwarding Info from Target E-UTRAN node List		*1*		
>Data Forwarding Info from Target E-UTRAN node Item		*1..<maxnoofDataForwardingTunneltoE-UTRAN>*		
>>DL Forwarding UP TNL Information	M		UP Transport Layer Information 9.2.3.30	
>>QoS Flows To Be Forwarded List		*1*		
>>>QoS Flows To Be Forwarded Item		*1..<maxnoofQoSFlows>*		
>>>>QoS Flow Identifier	M		9.2.3.10	

Range bound	Explanation
maxnoofDataForwardingTunneltoE-UTRAN	Maximum no. of Data Forwarding Tunnels to E-UTRAN for a UE. Value is 256.

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

9.2.1.36 MBS Session Information List

This IE contains NG-RAN MBS session resource context related information used at UE context transfer between NG-RAN nodes.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
MBS Session Information Item		*1..<maxnoofMBSSessions>*			–	
>MBS Session ID	M		9.2.3.146		–	
>MBS Area Session ID	O		9.2.3.148	MBS Area Session ID of the UE at the NG-RAN node from which the UE context is transferred	–	
>Active MBS Session Information	O				–	
>>MBS QoS Flows to Add List		*1..<maxnoofMBSQoSFlows>*			–	
>>>MBS QoS Flow Identifier	M		QoS Flow Identifier 9.2.3.10		–	
>>>MBS QoS Flow Level QoS Parameters	M		QoS Flow Level QoS Parameters 9.2.3.5		–	
>>MBS Service Area	O		9.2.3.150		–	
>>MBS Mapping and Data Forwarding Request Info from source NG-RAN node	O		9.2.1.39		–	
>MBS Assistance Information	O		9.2.3.196		YES	ignore

Range bound	Explanation
maxnoofMBSSessions	Maximum no. of MBS Sessions. Value is 256.
maxnoofMBSQoSFlows	Maximum no. of QoS flows allowed within one MBS session. Value is 64.

9.2.1.37 MBS Session Associated Information

This IE contains MBS session resource related information about associated unicast QoS flows.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
MBS Session Associated Information List		*1..<maxnoof*AssociatedMBSSessions*>*		The NG-RAN node does not establish resources for the associated unicast QoS Flows included in the *MBS Session Information Item* IE and replicated in a QoS Flows To Be Setup Item. An Associated Unicast QoS Flow Identifier appears only once in

IE/Group Name	Presence	Range	IE type and reference	Semantics description
				the *MBS Session Information List* IE.
>MBS Session ID	M		9.2.3.146	
>Associated QoS Flow Information List		*1..<maxnoofMBSQoSflows>*		
>>MBS QoS Flow Identifier	M		QoS Flow Identifier 9.2.3.10	
>>Associated Unicast QoS Flow Identifier	M		QoS Flow Identifier 9.2.3.10	

Range bound	Explanation
maxnoofMBSQoSFlows	Maximum no. of QoS flows allowed within one MBS session. Value is 64.
maxnoofAssociatedMBSSessions	Maximum no. of MBS Sessions allowed within one PDU session. Value is 32.

9.2.1.38 MBS Session Information Response List

This IE contains NG-RAN MBS session resource context related information to be provided in response to information provided in the *MBS Session Information List* IE.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
MBS Session Information Response List		*1..<maxnoofMBSSessions>*		
>MBS Session ID	M		9.2.3.146	
>MBS Data Forwarding Response Info from target NG-RAN node	O		9.2.1.40	

Range bound	Explanation
maxnoofMBSSessions	Maximum no. of MBS Sessions. Value is 256.

9.2.1.39 MBS Mapping and Data Forwarding Request Info from source NG-RAN node

This IE contains information from a source NG-RAN node regarding MBS QoS flow to MRB mapping and data forwarding information.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
MBS Mapping and Data Forwarding Request Info from source NG-RAN node		*1 .. <maxnoofMRBs>*		
>MRB ID	M		9.2.3.145	Contains the MRB ID value allocated at the source NG-RAN node.
>MBS QoS Flow List		*1..<maxnoofMBSQoSflows>*		
>>MBS QoS Flow Identifier	M		QoS Flow Identifier 9.2.3.10	
>MRB Progress Information	O		9.2.3.147	The PDCP SN information of the last packet which has already been delivered to the UE for the MRB.

Range bound	Explanation
maxnoofMBSQoSFlows	Maximum no. of QoS flows allowed within one MBS session. Value is 64.

Range bound	Explanation
maxnoofMRBs	Maximum no. of MRBs allowed for one MBS Session. Value is 32.

9.2.1.40 MBS Data Forwarding Response Info from target NG-RAN node

This IE contains TNL information for the establishment of data forwarding tunnels towards the target NG-RAN node.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
MBS Data Forwarding Response Info from target NG-RAN node		*1..<maxnoofMRBs>*		
>MRB ID	M		9.2.3.145	Contains the MRB ID value allocated at the source NG-RAN node.
>DL Forwarding UP TNL Information	M		UP Transport Layer Information 9.2.3.30	
>MRB Progress Information	O		9.2.3.147	This IE includes the information of the oldest packet available at the target NG-RAN node for the MRB.

Range bound	Explanation
maxnoofMRBs	Maximum no. of MRBs. Value is 32.

9.2.1.41 PDU Sessions List To Be Released - UPError

This IE contains a list of PDU sessions to be released due to GTP-U Error Indication for SN terminated bearers.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
PDU Sessions List To Be Released UP Error Item		*1 .. <maxnoofPDUsessions>*		
>PDU Session ID	M		9.2.3.18	
>User Plane Error Indicator	M		ENUMERATED (GTP-U Error Indication Received, …)	

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

9.2.2 NG-RAN Node and Cell Configuration related IE definitions

9.2.2.1 Global gNB ID

This IE is used to globally identify a gNB (see TS 38.300 [9]).

IE/Group Name	Presence	Range	IE type and reference	Semantics description
PLMN Identity	M		9.2.2.4	
CHOICE *gNB ID*	M			
>gNB ID				
>>gNB ID	M		BIT STRING (SIZE(22..32))	Equal to the leftmost bits of the *NR Cell Identity* IE contained in the *NR CGI* IE of each cell served by the gNB.

9.2.2.2 Global ng-eNB ID

This IE is used to globally identify an ng-eNB (see TS 38.300 [9]).

IE/Group Name	Presence	Range	IE type and reference	Semantics description
PLMN Identity	M		9.2.2.4	
CHOICE *ng-eNB ID*	M			
>*Macro ng-eNB ID*				
>>Macro ng-eNB ID	M		BIT STRING (SIZE(20))	Equal to the 20 leftmost bits of the *E-UTRA Cell Identity* IE contained in the *E-UTRA CGI* IE of each cell served by the ng-eNB.
>*Short Macro ng-eNB ID*				
>>Short Macro ng-eNB ID	M		BIT STRING (SIZE(18))	Equal to the 18 leftmost bits of the *E-UTRA Cell Identity* IE contained in the *E-UTRA CGI* IE of each cell served by the ng-eNB.
>*Long Macro ng-eNB ID*				
>>Long Macro ng-eNB ID	M		BIT STRING (SIZE(21))	Equal to the 21 leftmost bits of the *E-UTRA Cell Identity* IE contained in the *E-UTRA CGI* IE of each cell served by the ng-eNB.

9.2.2.3 Global NG-RAN Node ID

This IE is used to globally identify an NG-RAN node (see TS 38.300 [9]).

IE/Group Name	Presence	Range	IE type and reference	Semantics description
CHOICE *NG-RAN node*	M			
>*gNB*				
>>Global gNB ID	M		9.2.2.1	
>*ng-eNB*				
>>Global ng-eNB ID	M		9.2.2.2	

9.2.2.4 PLMN Identity

This IE 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 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 3 digit MNC).

9.2.2.5 TAC

This information element is used to uniquely identify a Tracking Area within a PLMN.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
TAC	M		OCTET STRING (SIZE (3))	

9.2.2.6 RAN Area Code

This IE defines the RAN Area Code.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
RANAC	M		INTEGER (0..255)	

9.2.2.7 NR CGI

This IE is used to globally identify an NR cell (see TS 38.300 [9]).

IE/Group Name	Presence	Range	IE type and reference	Semantics description
PLMN Identity	M		9.2.2.4	
NR Cell Identity	M		BIT STRING (SIZE(36))	The leftmost bits of the *NR Cell Identity* IE correspond to the gNB ID (defined in subclause 9.2.2.1).

9.2.2.8 E-UTRA CGI

This IE is used to globally identify an E-UTRA cell (see TS 36.300 [12]).

IE/Group Name	Presence	Range	IE type and reference	Semantics description
PLMN Identity	M		9.2.2.4	
E-UTRA Cell Identity	M		BIT STRING (SIZE(28))	The leftmost bits of the *E-UTRA Cell Identity* IE correspond to the ng-eNB ID (defined in subclause 9.2.2.2).

9.2.2.9 NG-RAN Cell Identity

This IE contains either an NR or an E-UTRA Cell Identity.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
CHOICE *Cell Identifier*	M			
>NR				
>>NR Cell Identity	M		BIT STRING (SIZE(36))	The leftmost bits of the *NR Cell Identity* IE correspond to the gNB ID (defined in subclause 9.2.2.1).
>E-UTRA				
>>E-UTRA Cell Identity	M		BIT STRING (SIZE(28))	The leftmost bits of the *E-UTRA Cell Identity* IE correspond to the ng-eNB ID (defined in subclause 9.2.2.2).

9.2.2.10 NG-RAN Cell PCI

This IE defines physical cell ID of a cell served by an NG-RAN node.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
CHOICE *RAT*	M			
>nr				
>>NR PCI	M		INTEGER (0..1007, …)	NR Physical Cell ID
>e-utra				
>>E-UTRA PCI	M		INTEGER (0..503, …)	E-UTRA Physical Cell ID

9.2.2.11 Served Cell Information NR

This IE contains cell configuration information of an NR cell that a neighbouring NG-RAN node may need for the Xn AP interface.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
NR-PCI	M		INTEGER (0..1007, …)	NR Physical Cell ID	–	
NR CGI	M		9.2.2.7		–	
TAC	M		9.2.2.5	Tracking Area Code	–	
RANAC	O		RAN Area Code 9.2.2.6		–	
Broadcast PLMNs		*1..<maxnoofBPLMNs>*		Broadcast PLMNs contained in the *SIB1* message as specified in TS 38.331[10], associated to the NR Cell Identity in the *NR CGI* IE.	–	
>PLMN Identity	M		9.2.2.4		–	
CHOICE *NR-Mode-Info*	M				–	
>FDD						
>>**FDD Info**		*1*			–	
>>>UL NR Frequency Info	M		NR Frequency Info 9.2.2.19	This IE is ignored for NR operating bands for which uplink range of N_{REF} is not defined in section 5.4.2.3 of TS 38.104 [24].	–	
>>>DL NR Frequency Info	M		NR Frequency Info 9.2.2.19		–	
>>>UL Transmission Bandwidth	M		NR Transmission Bandwidth 9.2.2.20	This IE is ignored for NR operating bands for which uplink range of N_{REF} is not defined in section 5.4.2.3 of TS 38.104 [24].	–	
>>>DL Transmission Bandwidth	M		NR Transmission Bandwidth 9.2.2.20		–	
>>>UL Carrier List	O		NR Carrier List 9.2.2.63	If included, the *UL Transmission Bandwidth* IE shall be ignored.	YES	ignore
>>>DL Carrier List	O		NR Carrier List 9.2.2.63	If included, the *DL Transmission Bandwidth* IE shall be ignored.	YES	ignore

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
>>>gNB-DU Cell Resource Configuration-FDD-UL	O		gNB-DU Cell Resource Configuration 9.2.2.95	Contains FDD UL resource configuration of gNB-DU's cell. Only applicable if the gNB-DU is an IAB-DU or an IAB-donor-DU.	YES	ignore
>>>gNB-DU Cell Resource Configuration-FDD-DL	O		gNB-DU Cell Resource Configuration 9.2.2.95	Contains FDD DL resource configuration of gNB-DU's cell. Only applicable if the gNB-DU is an IAB-DU or an IAB-donor-DU.	YES	ignore
>*TDD*						
>>**TDD Info**		*1*			–	
>>>Frequency Info	M		NR Frequency Info 9.2.2.19		–	
>>>Transmission Bandwidth	M		NR Transmission Bandwidth 9.2.2.20	This IE is ignored if the *Transmission Bandwidth asymmetric* IE is present.	–	
>>>Intended TDD DL-UL Configuration NR	O		9.2.2.40		YES	ignore
>>>TDD UL-DL Configuration Common NR	O		OCTET STRING	Includes the *tdd-UL-DL-ConfigurationCommon* contained in the *SIB1* message as defined in TS 38.331 [10]	YES	ignore
>>>Carrier List	O		NR Carrier List 9.2.2.63	If included, the *Transmission Bandwidth* IE shall be ignored.	YES	ignore
>>>gNB-DU Cell Resource Configuration-TDD	O		gNB-DU Cell Resource Configuration 9.2.2.95	Contains TDD resource configuration of gNB-DU's cell. Only applicable if the gNB-DU is an IAB-DU or an IAB-donor-DU.	YES	ignore
>>>Transmission Bandwidth asymmetric		*0..1*		Indicates the asymmetric UL and DL transmission bandwidth.	YES	ignore
>>>>UL Transmission Bandwidth	M		NR Transmission Bandwidth 9.2.2.20		–	
>>>>DL Transmission Bandwidth	M		NR Transmission Bandwidth 9.2.2.20		–	
>>>SBFD Frequency Configuration	O		OCTET STRING	Includes the *SBFD-Subband-Allocation* IE, as defined in TS 38.331[10].	YES	ignore

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Measurement Timing Configuration	M		OCTET STRING	Includes the *MeasurementTimingConfiguration* inter-node message for the served cell, as defined in TS 38.331 [10].	–	
Connectivity Support	M		9.2.2.28		–	
Broadcast PLMN Identity Info List NR		*0..<maxnoofBPLMNs>*		This IE corresponds to information provided in the *PLMN-IdentityInfoList* IE and the *NPN-IdentityInfoList* IE (if available) in *SIB1* as specified in TS 38.331 [10]. All PLMN Identities and associated information contained in the *PLMN-IdentityInfoList* IE and NPN identities and associated information contained in the *NPN-IdentityInfoList* IE (if available) are included and provided in the same order as broadcast in the *SIB1* message. NOTE: In case of NPN-only cell, the PLMN Identities and associated information contained in the *PLMN-IdentityInfoList* IE are not included.	YES	ignore
>Broadcast PLMNs		*1..<maxnoofBPLMNs>*		Broadcast PLMNs in the *SIB1* message, associated to the *NR Cell Identity* IE.	–	
>>PLMN Identity	M		9.2.2.4		–	
>TAC	M		9.2.2.5		–	
>NR Cell Identity	M		BIT STRING (SIZE(36))		–	
>RANAC	O		RAN Area Code 9.2.2.6		–	
>Configured TAC Indication	O		9.2.2.39a	NOTE: This IE is associated with the TAC in the *Broadcast PLMN Identity Info List NR* IE	YES	ignore

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
>NPN Broadcast Information	O		9.2.2.71	If this IE is included the content of the *Broadcast PLMNs* IE in the *Broadcast PLMN Identity Info List NR* IE is ignored.	YES	reject
Configured TAC Indication	O		9.2.2.39a	NOTE: This IE is associated with the TAC on top-level of the *Served Cell Information NR* IE	YES	ignore
SSB Positions In Burst	O		9.2.2.64		YES	ignore
NR Cell PRACH Configuration	O		OCTET STRING	Includes the *NR Cell PRACH Configuration* IE as defined in section 9.3.1.139 in TS 38.473 [41].	YES	ignore
NPN Broadcast Information	O		9.2.2.71	If this IE is included the content of the *Broadcast PLMNs* IE in the top *Served Cell Information NR* IE is ignored.	YES	reject
CSI-RS Transmission Indication	O		ENUMERATED (activated, deactivated, ...)	This IE indicates the CSI-RS transmission status of the given cell. If the *Additional Measurement Timing Configuration List* IE is present, this IE is ignored.	YES	ignore
SFN Offset	O		9.2.2.75		YES	ignore
Supported MBS FSA ID List		*0..<maxnoofMBSFSAs>*		Shall contain all MBS Frequency Selection Area Identities associated to the NR Cell Identity in the *NR CGI* IE.	YES	ignore
>MBS Frequency Selection Area Identity	M		OCTET STRING(3)	Corresponds to information provided in the *MBS-FSAI* IE as defined in TS 38.331 [10].	–	
NR-U Channel Info List		*0..1*			YES	ignore
>NR-U Channel Info Item		*1..<maxnoofNR-UChannelIDs>*			–	
>>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	–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				resource blocks (RBs) on which a channel access 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 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 [51]. Allowed values are specified in 38.101-1 [52] in Table 5.4.2.3-2, Table 5.4.2.3-3 and Table 5.4.2.3-4.	–	
>>Bandwidth	M		ENUMERATED (10MHz, 20MHz, 40MHz, 60MHz, 80MHz, …,100MHz)		–	
Additional Measurement Timing Configuration List	O	*1 .. <maxnoof MTCItems >*			YES	ignore
>Measurement Timing Configuration Index	M		INTEGER (0..16)	"0" refers to the configuration contained in the Measurement Timing Configuration IE. Any value between "1" and "16" refers to a configuration within the *Additional Measurement Timing Configuration List*	–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				IE.		
>**CSI- RS MTC Configuration List**	M	*1 .. <maxnoofCSIRSconfigurations>*		This list explicitly expresses the CSI-RS configurations contained in the MTC	–	
>>CSI-RS Index	M		INTEGER (0..95)	Index of CSI-RS as in MTC	–	
>>CSI-RS Status	M		ENUMERATED (activated, deactivated, …)	This IE indicates the CSI-RS transmission status of the configuration.	–	
>>**CSI-RS Neighbour List**	O	*1 .. <maxnoofCSIRSneighbourCells>*		This list expresses the cells and CSI-RSs neighbouring the CSI-RS in the *CSI-RS Index* IE.	–	
>>>NR CGI	M		9.2.2.7		–	
>>>**CSI-RS MTC Neighbour List**	O	*1 .. < maxnoofCSIRSneighbourCellsInMTC>*		This list expresses the CSI-RSs served by the NR CGI, which are neighbouring the CSI-RS of the served cell and contained in the MTC indicated by the neighbouring NR cell.	–	
>>>>CSI-RS Index	M		INTEGER (0..95)		–	
RedCap Broadcast Information	O		BIT STRING (SIZE(8))	The presence of this IE indicates that the *intraFreqReselectionRedCap* is broadcast in the *SIB1* message of the corresponding cell, see TS 38.331 [10]. Each position in the bitmap indicates which RedCap UEs are allowed access, according to the setting of RedCap barring indicators in the *SIB1* message, see TS 38.331 [10]. First bit = 1Rx, second bit = 2Rx, third bit = halfDuplex, other bits reserved for future use. Value '1' indicates 'access allowed'. Value '0' indicates 'access not allowed".	YES	ignore

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
eRedCap Broadcast Information	O		BIT STRING (SIZE(8))	The presence of this IE indicates that the *intraFreqReselection-eRedCap* IE is broadcast in SIB1 of the corresponding cell, see TS 38.331 [10]. Each position in the bitmap indicates which eRedCap UEs are allowed access, according to the setting of the barring indicators in SIB1, see TS 38.331 [10]. First bit = 1Rx, second bit = 2Rx, third bit = half-duplex, other bits reserved for future use. Value '1' indicates 'access allowed'. Value '0' indicates 'access not allowed'.	YES	ignore
Mobile IAB Cell	O		9.2.2.106		YES	ignore
XR Broadcast Information	O		ENUMERATED (true, …)	Corresponds to information provided in the *cellBarred2RxXR* contained in the *SIB1* message as defined in TS 38.331 [10].	YES	ignore
Barring Exemption for Emergency Call Information	O		ENUMERATED (true, ...)	Corresponds to information provided in the *barringExemptEmergencyCall* contained in the *SIB1* message as defined in 38.331 [10].	YES	ignore
NZP CSI-RS Resources Configuration	O		9.2.2.107		YES	ignore
SRS Resource Configuration	O		9.2.2.108		YES	ignore

Range bound	Explanation
maxnoofBPLMNs	Maximum no. of broadcast PLMNs by a cell. Value is 12.
maxnoofMBSFSAs	Maximum no. of MBS FSAs by one gNB. Value is 256.
maxnoofNR-UChannelIDs	Maximum no. NR-U channel IDs in a cell. Value is 16.
maxnoofMTCItems	Maximum no. of measurement timing configurations associated with the neighbour cell. Value is 16.
maxnoofCSIRSconfigurations	Maximum number of CSI RS configurations reported in the MTC. Value is 96
maxnoofCSIRSneighbourCells	Maximum number of cells neighbouring a CSI-RS coverage area. Value is 16

maxnoofCSIRSneighbourCellsInMTC	Maximum number of CSI-RS coverage areas neighbouring a specific CSI-RS coverage area. Value is 16

9.2.2.12 Served Cell Information E-UTRA

This IE contains cell configuration information of an E-UTRA cell that a neighbour NG-RAN node may need for the Xn AP interface.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
E-UTRA PCI	M		INTEGER (0..503, …)	E-UTRA Physical Cell ID	–	
ECGI	M		E-UTRA CGI 9.2.2.8		–	
TAC	M		9.2.2.5	Tracking Area Code	–	
RANAC	O		RAN Area Code 9.2.2.6		–	
Broadcast PLMNs		*1..<maxnoofBPLMNs>*		Broadcast PLMNs in the *SystemInformationBlockType1* message (SIB1) as specified in TS 36.331 [14], associated to the E-UTRA Cell Identity in the *ECGI* IE. NOTE: In this version of the specification, it is possible to broadcast only up to 6 PLMN IDs.	–	
>PLMN Identity	M		9.2.2.4		–	
CHOICE *E-UTRA-Mode-Info*	M				–	
>FDD						
>>FDD Info		*1*			–	
>>>UL EARFCN	M		E-UTRA ARFCN 9.2.2.21	Corresponds to N_{UL} in TS 36.104 [25] for E-UTRA operating bands for which it is defined; ignored for E-UTRA operating bands for which N_{UL} is not defined	–	
>>>DL EARFCN	M		E-UTRA ARFCN 9.2.2.21	Corresponds to N_{DL} in TS 36.104 [25]	–	
>>>UL E-UTRA Transmission Bandwidth	M		E-UTRA Transmission Bandwidth 9.2.2.22	Same as DL Transmission Bandwidth in this release; ignored in case UL EARFCN value is ignored	–	
>>>DL E-UTRA Transmission Bandwidth	M		E-UTRA Transmission Bandwidth 9.2.2.22		–	
>>>Offset of NB-IoT Channel Number to DL	O		Offset of NB-IoT Channel Number to	Corresponds to M_{DL} in TS 36.104 [25]	YES	reject

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
EARFCN			EARFCN 9.2.2.47			
>>>Offset of NB-IoT Channel Number to UL EARFCN	O		Offset of NB-IoT Channel Number to EARFCN 9.2.2.47	Corresponds to M_{UL} in TS 36.104 [25]	YES	reject
>TDD						
>>TDD Info		*1*			–	
>>>EARFCN	M		E-UTRA ARFCN 9.2.2.21	Corresponds to N_{DL}/N_{UL} in TS 36.104 [25]	–	
>>>E-UTRA Transmission Bandwidth	M		9.2.2.22		–	
>>>Subframe Assignment	M		ENUMERATED (sa0, sa1, sa2, sa3, sa4, sa5, sa6, ...)	Uplink-downlink subframe configuration information defined in TS 36.211 [26]	–	
>>>Special Subframe Info		*1*		Special subframe configuration information defined in TS 36.211 [26]	–	
>>>>Special Subframe Patterns	M		ENUMERATED (ssp0, ssp1, ssp2, ssp3, ssp4, ssp5, ssp6, ssp7, ssp8, ssp9, ssp10, ...)		–	
>>>>Cyclic Prefix DL	M		ENUMERATED (Normal, Extended,…)		–	
>>>>Cyclic Prefix UL	M		ENUMERATED (Normal, Extended, ...)		–	
>>>Offset of NB-IoT Channel Number to DL EARFCN	O		Offset of NB-IoT Channel Number to EARFCN 9.2.2.47	Corresponds to M_{DL} in TS 36.104 [25]	YES	reject
>>>NB-IoT UL DL Alignment Offset	O		9.2.2.48		YES	reject
Number of Antenna Ports E-UTRA	O		9.2.2.23		–	
PRACH Configuration	O		E-UTRA PRACH Configuration 9.2.2.25		–	
MBSFN Subframe Info		*0..<maxnoofMBSFN>*		Corresponds to information provided in the *MBSFN-SubframeConfig* IE as defined in TS 36.331 [14]	–	
>Radioframe Allocation Period	M		ENUMERATED (n1, n2, n4, n8, n16, n32, …)		–	
>Radioframe Allocation Offset	M		INTEGER (0..7, ...)		–	
>MBSFN Subframe Allocation E-UTRA	M		9.2.2.26		–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
E-UTRA Multiband Info List	O		9.2.2.24		–	
FreqBandIndicatorPriority	O		ENUMERATED (not-broadcast, broadcast, ...)	This IE indicates that the ng-eNB supports the *freqBandIndicatorPriority*, and whether *the freqBandIndicatorPriority* is broadcast in the *SystemInformationBlockType1* message (SIB1) (see TS 36.331 [14])	–	
BandwidthReducedSI	O		ENUMERATED (scheduled, ...)	This IE indicates that the *SystemInformationBlockType1-BR* message is scheduled in the cell (see TS 36.331 [14])	–	
Protected E-UTRA Resource Indication	O		9.2.2.29	This IE indicates which E-UTRA control/reference signal resources are protected and are not subject to E-UTRA - NR Cell Resource Coordination.	–	
Broadcast PLMN Identity Info List E-UTRA		*0..<maxnoofEUTRABPLMNs>*		This IE corresponds to information provided in the *cellAccessRelatedInfoList-5GC* in the *SystemInformationBlockType1* message as specified in TS 36.331 [14]. All PLMN Identities and associated information contained in the *cellAccessRelatedInfoList-5GC* are included and provided in the same order as broadcast in the *SystemInformationBlockType1* message.	YES	ignore
>Broadcast PLMNs		*1..<maxnoofEUTRABPLMNs>*		Broadcast PLMNs in *SystemInformationBlockType1* message (SIB1) associated to the *E-UTRA Cell Identity* IE.	–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
>>PLMN Identity	M		9.2.2.4		–	
>TAC	M		9.2.2.5		–	
>E-UTRA Cell Identity	M		BIT STRING (SIZE(28))		–	
>RANAC	O		RAN Area Code 9.2.2.6		–	
NPRACH Configuration	O		9.2.2.74		YES	ignore

Range bound	Explanation
maxnoofBPLMNs	Maximum no. of broadcast PLMNs by a cell. The value is 12.
maxnoofMBSFN	Maximum no. of MBSFN frame allocation with different offset. Value is 8.
maxnoofEUTRABPLMNs	Maximum no. of PLMN Ids.broadcast in an E-UTRA cell. Value is 6.

9.2.2.13 Neighbour Information NR

This IE contains cell configuration information of NR cells that a neighbour NG-RAN node may need to properly operate its own served cells.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Neighbour Information NR		*1 .. <maxnoofNeighbours>*			–	
>NRPCI	M		INTEGER (0..1007)	NR Physical Cell ID	–	
>NR CGI	M		9.2.2.7		–	
>TAC	M		9.2.2.5	Tracking Area Code	–	
>RANAC	O		RAN Area Code 9.2.2.6		–	
>CHOICE *NR-Mode-Info*	M				–	
>>FDD						
>>>FDD Info		*1*			–	
>>>>UL NR FreqInfo	M		NR Frequency Info 9.2.2.19	This IE is ignored for NR operating bands for which uplink range of N_{REF} is not defined in section 5.4.2.3 of TS 38.104 [24].	–	
>>>>DL NR FreqInfo	M		NR Frequency Info 9.2.2.19		–	
>>TDD						
>>>TDD Info		*1*			–	
>>>>NR FreqInfo	M		NR Frequency Info 9.2.2.19		–	
>Connectivity Support	M		9.2.2.28		–	
>Measurement Timing Configuration	M		OCTET STRING	Includes the *MeasurementTimingConfiguration* inter-node message for the neighbour cell, as defined in TS 38.331 [10].	–	
>Mobile IAB Cell	O		9.2.2.106		YES	ignore

Range bound	Explanation
maxnoofNeighbours	Maximum no. of neighbour cells associated to a given served cell. Value is 1024.

9.2.2.14 Neighbour Information E-UTRA

This IE contains cell configuration information of E-UTRA cells that a neighbour NG-RAN node may need to properly operate its own served cells.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
E-UTRA Neighbour Information E-UTRA		*1 .. <maxnoofNeighbours>*		
>E-UTRA PCI	M		INTEGER (0..503, …)	E-UTRA Physical Cell Identifier of the neighbour cell
>ECGI	M		E-UTRA CGI 9.2.2.8	
>EARFCN	M		E-UTRA ARFCN 9.2.2.21	DL EARFCN for FDD or EARFCN for TDD
>TAC	M		9.2.2.5	Tracking Area Code
>RANAC	O		RAN Area Code 9.2.2.6	

Range bound	Explanation
maxnoofNeighbours	Maximum no. of neighbour cells associated to a given served cell. Value is 1024.

9.2.2.15 Served Cells To Update NR

This IE contains updated configuration information for served NR cells exchanged between NG-RAN nodes.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Served Cells NR To Add		*0 .. < maxnoofCellsinNG-RAN node>*		List of added cells served by the NG-RAN node.	–	
>Served Cell Information NR	M		9.2.2.11		–	
>Neighbour Information NR	O		9.2.2.13		–	
>Neighbour Information E-UTRA	O		9.2.2.14		–	
>Served Cell Specific Info Request	O		9.2.2.102		YES	ignore
Served Cells To Modify NR		*0 .. < maxnoofCellsinNG-RAN node>*		List of modified cells served by the NG-RAN node.	–	
>Old NR CGI	M		NR CGI 9.2.2.7		–	
>Served Cell Information NR	M		9.2.2.11		–	
>Neighbour Information NR	O		9.2.2.13		–	
>Neighbour Information E-UTRA	O		9.2.2.14		–	
>Deactivation	O		ENUMERATED	Indicates that the	–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Indication			(deactivated, ...)	concerned cell is switched off for energy saving reasons.		
Served Cells To Delete NR		*0 .. < maxnoofCellsinNG-RAN node >*		List of deleted cells served by the NG-RAN node.	–	
>Old NR-CGI	M		NR CGI 9.2.2.7		–	

Range bound	Explanation
maxnoofCellsinNG-RAN node	Maximum no. cells that can be served by a NG-RAN node. Value is 16384.

9.2.2.16 Served Cells to Update E-UTRA

This IE contains updated configuration information for served E-UTRA cells exchanged between NG-RAN nodes.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Served Cells To Add E-UTRA		*0 .. < maxnoofCellsinNG-RAN node>*		List of added cells served by the NG-RAN node.	–	
>Served Cell Information E-UTRA	M		9.2.2.12		–	
>Neighbour Information NR	O		9.2.2.13		–	
>Neighbour Information E-UTRA	O		9.2.2.14		–	
>SFN Offset	O		9.2.2.75	Associated with the *ECGI* IE in the *Served Cell Information E-UTRA* IE	YES	ignore
Served Cells To Modify E-UTRA		*0 .. < maxnoofCellsinNG-RAN node>*		List of modified cells served by the NG-RAN node.	–	
>Old ECGI	M		E-UTRA CGI 9.2.2.8		–	
>Served Cell Information E-UTRA	M		9.2.2.12		–	
>Neighbour Information NR	O		9.2.2.13		–	
>Neighbour Information E-UTRA	O		9.2.2.14		–	
>Deactivation Indication	O		ENUMERATED (deactivated, ...)	Indicates that the concerned cell is switched off for energy saving reasons.	–	
>SFN Offset	O		9.2.2.75	Associated with the *ECGI* IE in the *Served Cell Information E-UTRA* IE	YES	ignore
Served Cells To Delete E-UTRA		*0 .. < maxnoofC*		List of deleted cells served by the	–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
		ellsinNG-RAN node >		NG-RAN node.		
>Old ECGI	M		E-UTRA CGI 9.2.2.8		–	

Range bound	Explanation
maxnoofCellsinNG-RAN node	Maximum no. cells that can be served by a NG-RAN node. Value is 16384.

9.2.2.17 Cell Assistance Information NR

The *Cell Assistance Information* IE is used by the NG-RAN node to request information about NR cells.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
CHOICE Cell Assistance Type	M			
>Limited NR List				
>>List of Requested NR Cells		*1 .. < maxnoofCellsinNG-RAN node>*		Included when the NG-RAN node requests a limited list of served NR cells.
>>>NR CGI	M		9.2.2.7	NR cell for which served NR cell information is requested.
>Full NR List				
>>Complete Information Request Indicator	M		ENUMERATED (allServedCellsNR, …)	Included when the NG-RAN node requests the complete list of served cells for a gNB

Range bound	Explanation
maxnoofCellsinNG-RAN node	Maximum no. cells that can be served by a NG-RAN node. Value is 16384.

9.2.2.18 SUL Information

This IE contains information about the SUL carrier.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
SUL Frequency Info	M		INTEGER (0..maxNRARFCN)	RF Reference Frequency as defined in TS 38.104 [24] 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		NR Transmission Bandwidth		–	

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
			9.2.2.20			
Carrier List	O		NR Carrier List 9.2.2.63	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 $F_{REF,shift}$ as defined in Section 5.4.2.1 of TS 38.104 [24].	YES	ignore

Range bound	Explanation
maxNRARFCN	Maximum value of NRARFCNs. Value is 3279165.

9.2.2.19 NR Frequency Info

The NR Frequency Info defines the carrier frequency and bands used in a cell for a given direction (UL or DL) in FDD or for both UL and DL directions in TDD or for 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 [24], 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.	–	
SUL Information	O		9.2.2.18		–	
NR Frequency Band List		*1*			–	
>**NR Frequency Band Item**		*1..<maxnoofNRCellBands>*			–	
>>NR Frequency Band	M		INTEGER (1.. 1024, ...)	Primary NR Operating Band as defined in TS 38.104 [24], section 5.4.2.3. The value 1 corresponds e n1, value 2 corresponds to NR operating band n2, etc.	–	
>>**Supported SUL band List**		*0..<maxnoofNRCellBands>*			–	
>>>Supported SUL band Item	M		INTEGER (1.. 1024, ...)	Supplementary NR Operating	–	

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
				Band as defined in TS 38.104 [24] section 5.4.2.3 that can be used for SUL duplex mode as per TS 38.101-1 [52] 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 $F_{REF,shift}$ as defined in Section 5.4.2.1 of TS 38.104 [24].	YES	ignore

Range bound	Explanation
maxNRARFCN	Maximum value of NRARFCNs. Value is 3279165.
maxnoofNRCellBands	Maximum no. of frequency bands supported for a NR cell. Value is 32.

9.2.2.20 NR Transmission Bandwidth

The *NR Transmission Bandwidth* IE is used to indicate either the UL or the 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 and scs120 corresponds to the sub carrier spacing in TS 38.104 [24].
NR 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, nrb15, nrb35)	This IE is used to indicate the UL or DL transmission bandwidth expressed in units of resource blocks "N_{RB}" (TS 38.104 [24]). The values nrb11, nrb18, etc. correspond to the number of resource blocks "N_{RB}" 11, 18, etc.

9.2.2.21 E-UTRA ARFCN

The E-UTRA Absolute Radio Frequency Channel Number defines the carrier frequency used in an E-UTRAN cell for a given direction (UL or DL) in FDD or for both UL and DL directions in TDD.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
E-UTRA ARFCN	M		INTEGER (0..maxEARFCN)	The relation between EARFCN and carrier frequency (in MHz) are defined in TS 36.104 [25].

Range bound	Explanation
maxEARFCN	Maximum value of EARFCNs. Value is 262143.

9.2.2.22 E-UTRA Transmission Bandwidth

The *E-UTRA Transmission Bandwidth* IE is used to indicate the 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,... , bw1)	

9.2.2.23 Number of Antenna Ports E-UTRA

The *Number of Antenna Ports E-UTRA* IE is used to indicate the number of cell specific antenna ports supported by an E-UTRA cell.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
Number of Antenna Ports	M		ENUMERATED (an1, an2, an4,...)	an1 = One antenna port an2 = Two antenna ports an4 = Four antenna ports

9.2.2.24 E-UTRA Multiband Info List

The *E-UTRA Multiband Info List* IE contains the additional frequency band indicators that an E-UTRA cell belongs to listed in decreasing order of preference and corresponds to information provided in the *MultiBandInfoList* IE specified in TS 36.331 [14].

IE/Group Name	Presence	Range	IE type and reference	Semantics description
BandInfo		*1..<maxnoofEutraBands>*		
>Frequency Band Indicator	M		INTEGER (1.. 256, ...)	E-UTRA operating band as defined in TS 36.101 [27, table 5.5-1]

Range bound	Explanation
maxnoofEUTRABands	Maximum number of frequency bands that an E-UTRA cell belongs to. The value is 16.

9.2.2.25 E-UTRA PRACH Configuration

This IE indicates the E-UTRA PRACH resources used in an E-UTRA neighbour 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 [26]
ZeroCorrelationZoneConfiguration	M		INTEGER (0..15)	See section 5.7.2. in TS 36.211 [26]
HighSpeedFlag	M		ENUMERATED (true, false, ...)	"true" corresponds to Restricted set and "false" to Unrestricted set. See section 5.7.2 in TS 36.211 [26]
PRACH-FrequencyOffset	M		INTEGER (0..94)	See section 5.7.1 of TS 36.211 [26]
PRACH-ConfigurationIndex	C-ifTDD		INTEGER (0..63)	See section 5.7.1. in TS 36.211 [26]

Condition	Explanation
ifTDD	This IE shall be present if the *EUTRA-Mode-Info* IE in the *Served Cell Information E-UTRA* IE is set to the value "TDD".

9.2.2.26 MBSFN Subframe Allocation E-UTRA

The *MBSFN Subframe Allocation E-UTRA* IE is used to indicate the subframes that are allocated for MBSFN within the radio frame allocation period as specified for the *MBSFN-SubframeConfig* IE TS 36.331 [14].

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
CHOICE *Subframe Allocation*	M			
>oneframe				
>>Oneframe Info	M		BIT STRING (SIZE(6))	
>fourframes				
>>Fourframes Info	M		BIT STRING (SIZE(24))	

9.2.2.27 Global NG-RAN Cell Identity

This IE contains either an NR or an E-UTRA Cell Identity.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
PLMN Identity	M		9.2.2.4	
NG-RAN Cell Identity	M		9.2.2.9	

9.2.2.28 Connectivity Support

The *Connectivity Support* IE is used to indicate the connectivity supported by a NR cell.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
EN-DC Support	M		ENUMERATED (Supported, Not supported, …)	

9.2.2.29 Protected E-UTRA Resource Indication

This IE indicates the resources allocated for E-UTRA DL and UL reference and control signals (hereby referred to as protected resources). This information is used in the process of E-UTRA – NR Cell Resource Coordination.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Activation SFN	M		INTEGER (0..1023)	Indicates from which SFN of the receiving node the resource allocation is valid.
Protected Resource List		*1*		The protected resource pattern is continuously repeated, and it is valid until stated otherwise or until replaced by a new pattern. The pattern does not apply in reserved subframes.
>Protected Resource List Item		*1..<maxnoofProtectedResourcePatterns>*		Each item describes one transmission pattern. A pattern may comprise several control signals.
>>Resource Type	M		ENUMERATED (downlinknonCRS,CRS,uplink, …)	Indicates whether the protected resource is E-UTRA DL non-CRS, E-UTRA CRS or E-UTRA UL.
>>Intra-PRB Protected Resource Footprint	M		BIT STRING (SIZE(84, …))	The bitmap of REs occupied by the protected signal within one PRB. Each position in the bitmap represents an RE in one PRB; value "0" indicates "resource not protected", value "1" indicates "resource protected ". The first bit of the string corresponds to the RE with the smallest time and frequency index in the PRB, where the indexing first goes into the frequency domain. The length of the bit string equals the product of N_{RB}^{SC} and the length of PRB in time dimension, measured in REs. N_{RB}^{SC} is defined in TS 36.211 [26]. The intra-PRB pattern consisting of all "1"s is equivalent to PRB-level granularity.
>>Protected Footprint Frequency Pattern	M		BIT STRING (SIZE(6..110, ...))	The bit string indicates in which PRBs inside carrier bandwidth the Intra-PRB Protected Resource Footprint applies. How often in time dimension this frequency pattern applies, depends on time periodicity of Intra-PRB Protected Resource Footprint. The first bit of the bit string corresponds to the PRB occupying the lowest subcarrier frequencies of the carrier bandwidth, where the indexing first goes into the frequency domain. Each position in the string represents a PRB; value "0" indicates " Intra-PRB Protected Resource Footprint does not appear in PRB", value "1" indicates "Intra-PRB Protected Resource Footprint appears in PRB". The length of the bit string equals the number of PRBs in the carrier bandwidth.
>>Protected Footprint Time Pattern	M			The description of time periodicity of the Intra-PRB Protected Resource Footprint.
>>>Protected Footprint	M		INTEGER(1..320, ...	Periodicity with which the

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Time-periodicity			)	periodic Intra-PRB Protected Resource Footprint repeats in time-dimension (1= every PRB (i.e. slot), 2=every other PRB (i.e. slot) etc.
>>>Protected Footprint Start Time	M		INTEGER(1..20, ...)	The time-position of the PRB inside the frame in which the periodic Intra-PRB Protected Resource Footprint appears for the first time. The value "1" corresponds to the receiving node's slot 0 in subframe 0 in the receiving node's radio frame where SFN = Activation SFN.
MBSFN Control Region Length	O		INTEGER(0..3)	Length of control region in MBSFN subframes. Expressed in REs, in the time dimension.
PDCCH Region Length	M		INTEGER(1..3)	Length of PDCCH region in regular subframes. Expressed in REs, in the time dimension.

Range bound	Explanation
maxnoofProtectedResourcePatterns	Maximum no. protected resource patterns. Value is 16.

9.2.2.30 Data Traffic Resource Indication

This IE indicates the intended data traffic resource allocation for E-UTRA - NR Cell Resource Coordination.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Activation SFN	M		INTEGER (0..1023)	Indicates from which SFN of the receiving node the agreement is valid.
CHOICE *Shared Resource Type*	M			
>UL Only Sharing				
>>UL Resource Bitmap	M		Data Traffic Resources 9.2.2.31	
>UL and DL Sharing				
>>CHOICE *UL Resources*	M			
>>>Unchanged			NULL	
>>>Changed				
>>>>UL Resource Bitmap	M		Data Traffic Resources 9.2.2.31	
>>CHOICE *DL Resources*	M			
>>>Unchanged			NULL	
>>>Changed				
>>>>DL Resource Bitmap	M		Data Traffic Resources 9.2.2.31	
Reserved Subframe Pattern	O		9.2.2.32	Indicates subframes in which the resource allocation does not hold.

9.2.2.31 Data Traffic Resources

The *Data Traffic Resources* IE indicates the intended data traffic resource allocation for E-UTRA - NR Cell Resource Coordination.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Data Traffic Resources	M		BIT STRING (SIZE(6..17600))	The indication of resources allocated to E-UTRA PDSCH/PUSCH. Each position in the bit string represents a PRB pair in a subframe; value "0" indicates "resource not intended to be used for transmission", value "1" indicates "resource intended to be used for transmission ". The first bit of the bit string corresponds to the PRB pair occupying the lowest subcarrier frequencies of the carrier, where the indexing first goes into the frequency domain. The bit string may span across multiple contiguous subframes. The first position of the Data Traffic Resources IE corresponds to the receiving node's subframe 0 in a receiving node's radio frame where SFN = Activation SFN. The length of the bit string is an integer multiple of N_{RB}^{DL} or N_{RB}^{UL}, defined in TS 36.211 [26].

9.2.2.32 Reserved Subframe Pattern

The *Reserved Subframe Pattern* IE indicates the pattern of subframes in which the *Protected E-UTRA Resource Indication* and *Data Traffic Resource Indication* do not hold.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Subframe Type	M		ENUMERATED(MBSFN, non-MBSFN, …)	Indicates what type of non-regular subframes the *Reserved Subframe Pattern* refers to (e.g. MBSFN).
Reserved Subframe Pattern	M		BIT STRING (SIZE(10..160))	Each position in the bitmap represents a subframe. Value '0' indicates "regular subframe". Value '1' indicates "reserved subframe". For MBSFN subframes, the exception refers only to the non-control region of the subframe. The bit string may span across multiple contiguous subframes. The first position of the Subframe Configuration IE corresponds to the receiving node's subframe 0 in a receiving node's radio frame where SFN = Activation SFN. The IE is ignored if received by the ng-eNB.
MBSFN Control Region Length	O		INTEGER(0..3)	Length of control region in MBSFN subframes. Expressed in REs, in the time dimension.

9.2.2.33 MR-DC Resource Coordination Information

The *MR-DC Resource Coordination Information* IE is used to coordinate resource utilisation between the M-NG-RAN node and the S-NG-RAN node.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
CHOICE *NG-RAN Node Resource Coordination Information*	M			
>EUTRA				
>>E-UTRA Resource Coordination Information			9.2.2.34	E-UTRA resource coordination information
>NR				
>>NR Resource Coordination Information			9.2.2.35	NR resource coordination information

9.2.2.34 E-UTRA Resource Coordination Information

The *E-UTRA Resource Configuration Information* IE indicates LTE resource allocation at ng-eNB used at the gNB to coordinate resource or sidelink resource utilisation between M-NG-RAN-node and S-NG-RAN node.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
EUTRA Cell ID	M		E-UTRA CGI 9.2.2.8	This IE indicates the SpCell.
UL Coordination Information	M		BIT STRING (SIZE(6..4400, …))	Each position in the bitmap represents a PRB pair in a subframe; value "0" indicates "PCell resource not intended to be used for transmission by the sending node", value "1" indicates "PCell resource intended to be used for transmission by the sending node". The bit string spans from the first PRB pair of the first represented subframe to the last PRB pair of the same subframe and then moves to the following PRBs in the following subframes in the same order. Each position is applicable only in positions corresponding to UL subframes or SL subframes for sidelink transmission. The bit string may span across multiple contiguous subframes (maximum 40). The first position of the *UL Coordination Information* corresponds to subframe 0 in a radio frame where *SFN* = 0. The length of the bit string is an integer multiple of $N_{\mathrm{RB}}^{\mathrm{UL}}$. $N_{\mathrm{RB}}^{\mathrm{UL}}$ is defined in TS 36.211 [26]. The UL Coordination Information is continuously repeated.
DL Coordination Information	O		BIT STRING (SIZE(6..4400, …))	Each position in the bitmap represents a PRB pair in a subframe; value "0" indicates "PCell resource not intended to be used for transmission by the

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
				sending node", value "1" indicates "PCell resource intended to be used for transmission by the sending node". The bit string spans from the first PRB pair of the first represented subframe to the last PRB pair of the same subframe and then moves to the following PRBs in the following subframes in the same order. Each position is applicable only in positions corresponding to DL subframes. The bit string may span across multiple contiguous subframes (maximum 40). The first position of the *DL Coordination Information* corresponds to the receiving node's subframe 0 in a receiving node's radio frame where *SFN* = 0. The length of the bit string is an integer multiple of N_{RB}^{DL} . N_{RB}^{DL} is defined in TS 36.211 [26]. The DL Coordination Information is continuously repeated.
NR CGI	O		9.2.2.7	This IE indicates the assumed SpCell.
E-UTRA Coordination Assistance Information	O		9.2.2.36	

9.2.2.35 NR Resource Coordination Information

The *NR Resource Coordination Information* IE indicates resources within the bandwidth of the ng-eNB SpCell which are not available for use by the ng-eNB and is used at the ng-eNB to coordinate resource or sidelink resource utilisation between the gNB and the ng-eNB.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
NR CGI	M		9.2.2.7	This IE indicates the SpCell.
UL Coordination Information	M		BIT STRING (SIZE(6..4400, …))	Each position in the bitmap represents a PRB pair in a subframe; value "0" indicates "SpCell resource not intended to be used for transmission by the sending node", value "1" indicates "SpCell resource intended to be used for transmission by the sending node". The bit string spans from the first PRB pair of the first represented subframe to the last PRB pair of the same subframe and then moves to the following PRBs in the following subframes in the same order. Each position is applicable only in positions corresponding to UL subframes or SL subframes for sidelink transmission. The bit string may span across

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
				multiple contiguous subframes (maximum 40). The first position of the *UL Coordination Information* corresponds to the receiving node's subframe 0 in a receiving node's radio frame where *SFN* = 0. The length of the bit string is an integer multiple of $N_{\mathrm{RB}}^{\mathrm{UL}}$. $N_{\mathrm{RB}}^{\mathrm{UL}}$ is defined in TS 36.211 [26]. The UL Coordination Information is continuously repeated.
DL Coordination Information	O		BIT STRING (SIZE(6..4400, …))	Each position in the bitmap represents a PRB pair in a subframe; value "0" indicates "SpCell resource not intended to be used for transmission by the sending node", value "1" indicates "SpCell resource intended to be used for transmission by the sending node". The bit string spans from the first PRB pair of the first represented subframe to the last PRB pair of the same subframe and then moves to the following PRBs in the following subframes in the same order. Each position is applicable only in positions corresponding to DL subframes. The bit string may span across multiple contiguous subframes (maximum 40). The first position of the *DL Coordination Information* corresponds to the receiving node's subframe 0 in a receiving node's radio frame where *SFN* = 0. The length of the bit string is an integer multiple of $N_{\mathrm{RB}}^{\mathrm{DL}}$. $N_{\mathrm{RB}}^{\mathrm{DL}}$ is defined in TS 36.211 [26]. The DL Coordination Information is continuously repeated.
EUTRA Cell ID	O		E-UTRA CGI 9.2.2.8	Reference cell for *UL Coordination Information* IE and *DL Coordination Information* IE.
NR Coordination Assistance Information	O		9.2.2.37	

9.2.2.36 E-UTRA Coordination Assistance Information

The *E-UTRA Coordination Assistance Information* IE is provided by the ng-eNB and used by the gNB to determine further coordination of resource utilisation between the gNB and the ng-eNB.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
E-UTRA Coordination Assistance Information	M		ENUMERATED(Coordination Not	

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
			Required, …)	

9.2.2.37 NR Coordination Assistance Information

The *NR Coordination Assistance Information* IE is provided by the gNB and used by the ng-eNB to determine further coordination of resource utilisation between the gNB and the ng-eNB.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
NR Coordination Assistance Information	M		ENUMERATED(Coordination Not Required, …)	

9.2.2.38 NE-DC TDM Pattern

The *NE-DC TDM Pattern* IE is provided by the gNB and used by the ng-eNB to determine UL/DL reference configuration indicating the time during which a UE configured with NE-DC is allowed to transmit.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
Subframe Assignment	M		ENUMERATED (sa0, sa1, sa2, sa3, sa4, sa5, sa6)	Indicates DL/UL subframe configuration where sa0 points to Configuration 0, sa1 to Configuration 1 etc. as specified in TS 36.331 [14].
Harq Offset	M		INTEGER (0..9)	Indicates a HARQ subframe offset that is applied to the subframes designated as UL in the associated subframe assignment, see TS 36.331 [14]

9.2.2.39 Interface Instance Indication

The Interface Instance Indication identifies the interface instance the XnAP message is destined for.

NOTE: The Interface Instance Indication is allocated so that it can be associated with an Xn-C interface instance. The Interface Instance Indication may identify more than one interface instance.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
Interface Instance Indication	M		INTEGER (0..255, ...)	

9.2.2.39a Configured TAC Indication

This IE indicates that in a NR cell served by the gNB, the TAC with which this IE is associated, is only configured but not broadcast.

NOTE: This IE is defined in accordance to the possibility foreseen in TS 38.331 [10] 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, ...)	

9.2.2.40 Intended TDD DL-UL Configuration NR

This IE contains the subcarrier spacing, cyclic prefix and TDD DL-UL slot configuration of an NR cell that a neighbour NG-RAN node 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, …, scs480, scs960)	The values scs15, scs30, scs60 and scs120 corresponds to the sub carrier spacing in TS 38.104 [24].	–	
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..<maxnoofslots>*			–	
>>Slot Index			INTEGER (0.. 5119)		–	
>>CHOICE *Symbol Allocation in Slot*	M				–	
>>>All DL						
>>>All UL						
>>>Both DL and UL						
>>>>Number of DL Symbols	M		INTEGER (0..13)	Number of consecutive DL symbols in the slot identified by Slot Index. If extended cyclic prefix is used, the maximum value is 11. The *Permutation* 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. If extended cyclic prefix is used, the maximum value is 11. The *Permutation* 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.

9.2.2.41 Cell and Capacity Assistance Information NR

The *Cell and Capacity Assistance Information NR* IE is used by the NG-RAN node to request information about NR cells and it includes information about cell list size capacity.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
Maximum Cell List Size	O		9.2.2.44	
Cell Assistance Information NR	O		9.2.2.17	

9.2.2.42 Cell and Capacity Assistance Information E-UTRA

The *Cell and Capacity Assistance Information E-UTRA* IE is used by the NG-RAN node to request information about E-UTRA cells and it includes information about cell list size capacity.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
Maximum Cell List Size	O		9.2.2.44	
Cell Assistance Information E-UTRA	O		9.2.2.43	

9.2.2.43 Cell Assistance Information E-UTRA

The *Cell Assistance Information* IE is used by the NG-RAN node to request information about E-UTRA cells.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
CHOICE Cell Assistance Type	M			
>Limited EUTRA List				
>>List of Requested E-UTRA Cells		*1 .. < maxnoofCellsinNG-RAN node>*		Included when the NG-RAN node requests a limited list of served E-UTRA cells.
>>>E-UTRA CGI	M		9.2.2.8	E-UTRA cell for which served E-UTRA cell information is requested.
>Full E-UTRA List				
>>Complete Information Request Indicator	M		ENUMERATED (allServedCellsE-UTRA, …)	Included when the NG-RAN node requests the complete list of served cells for a ng-eNB

Range bound	Explanation
maxnoofCellsinNG-RAN node	Maximum no. cells that can be served by a NG-RAN node. Value is 16384.

9.2.2.44 Maximum Cell List Size

This IE indicates the maximum size the sending node can handle for a given cell list.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Maximum Cell List Size	M		INTEGER (0..16384, …)	

9.2.2.45 Message Oversize Notification

This IE indicates that a failure has occurred due to an excessive message size and it indicates the maximum number of cells that can be received in the *List of Served Cells NR* IE or in the *List of Served Cells E-UTRA* IE.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Maximum Cell List Size	M		9.2.2.44	

9.2.2.46 Partial List Indicator

The *Partial List Indicator* IE is used by the NG-RAN node to indicate whether the served cell information contained in the same message is a partial list.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
Partial List Indicator	M		ENUMERATED (partial, ...)	

9.2.2.47 Offset of NB-IoT Channel Number to EARFCN

This IE is used to indicate the offset of the NB-IoT Channel Number to the EARFCN (TS 36.104 [25]).

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
Offset of NB-IoT Channel Number to EARFCN	M		ENUMERATED (-10, -9, -8.5, -8, -7, -6, -5, -4.5, -4, -3, -2, -1, -0.5, 0, 1, 2, 3, 3.5, 4, 5, 6, 7, 7.5, 8, 9, ...)	

9.2.2.48 NB-IoT UL DL Alignment Offset

This IE is used to indicate the offset between the UL carrier frequency center with respect to DL carrier frequency center.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
NB-IoT UL DL Alignment Offset	M		ENUMERATED (-7.5, 0, 7.5, …)	Unit: kHz Corresponds to information provided in the *TDD-UL-DL-AlignmentOffset-NB* IE as specified in TS 36.331 [14].

9.2.2.49 TNL Capacity Indicator

The *TNL Capacity Indicator* IE indicates the offered and available capacity of the Transport Network experienced by the NG RAN cell

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 cell in kbps
DL TNL Available Capacity	M		INTEGER (0.. 100, ...)	Available capacity over the transport portion serving the cell 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 cell in kbps
UL TNL Available Capacity	M		INTEGER (0.. 100, ...)	Available capacity over the transport portion serving the cell in percentage. Value 100 corresponds to the offered capacity.

9.2.2.50 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
CHOICE *Radio Resource Status Type*	M				–	
>ng-eNB						
>>DL GBR PRB usage	M		INTEGER (0..100)	Per cell DL GBR PRB usage	–	
>>UL GBR PRB usage	M		INTEGER (0..100)	Per cell UL GBR PRB usage	–	
>>DL non-GBR PRB usage	M		INTEGER (0..100)	Per cell DL non-GBR PRB usage	–	
>>UL non-GBR PRB usage	M		INTEGER (0..100)	Per cell UL non-GBR PRB usage	–	
>>DL Total PRB usage	M		INTEGER (0..100)	Per cell DL Total PRB usage	–	
>>UL Total PRB usage	M		INTEGER (0..100)	Per cell UL Total PRB usage	–	
>>DL scheduling PDCCH CCE usage	O		INTEGER (0..100)		YES	ignore
>>UL scheduling PDCCH CCE usage	O		INTEGER (0..100)		YES	ignore
>gNB						
>>**SSB Area Radio Resource Status List**		*1*			–	
>>>**SSB Area Radio Resource Status Item**		*1..<maxnoofSSBAreas>*			–	
>>>>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	M		INTEGER	Per SSB area DL	–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
DL non-GBR PRB usage			(0..100)	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)		YES	ignore
>>>>UL scheduling PDCCH CCE usage	O		INTEGER (0..100)		YES	ignore
>>Slice Radio Resource Status List		*0..1*			YES	ignore
>>>Slice Radio Resource Status Item		*1..< maxnoofBPLMNs >*			–	
>>>>PLMN Identity	M		9.2.2.4		–	
>>>>S-NSSAI Radio Resource Status List		*1*			–	
>>>>>S-NSSAI Radio Resource Status Item		*1..<maxnoofSliceItems>*			–	
>>>>>>S-NSSAI	M		9.2.3.21		–	
>>>>>>Slice DL GBR PRB usage	M		INTEGER (0..100)	Per slice DL GBR PRB usage in percentage of the cell total PRB number.	–	
>>>>>>Slice UL GBR PRB usage	M		INTEGER (0..100)	Per slice UL GBR PRB usage in percentage of the cell total PRB number.	–	
>>>>>>Slice DL non-GBR PRB usage	M		INTEGER (0..100)	Per slice DL non-GBR PRB usage in percentage of the cell total PRB number.	–	
>>>>>>Slice UL non-GBR PRB usage	M		INTEGER (0..100)	Per slice UL non-GBR PRB usage in percentage of the cell total PRB number.	–	
>>>>>>Slice	M		INTEGER	Total amount of	–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
DL Total PRB allocation			(0..100)	DL PRBs available per cell for the 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 the 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 [42].	–	
>>>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 [42].	–	
>>>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 [42].	–	
>>>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 [42].	–	
>>>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 [42].	–	
>>>UL Total PRB usage for MIMO	M		INTEGER (0..100)	Per cell UL Total PRB usage for MIMO in percentage of the cell total PRB number as defined in TS 38.314 [42].	–	

Range bound	Explanation
maxnoofSSBAreas	Maximum no. SSB Areas that can be served by a NG-RAN node cell. Value is 64.
maxnoofSliceItems	Maximum no. of signalled slice support items. Value is 1024.
maxnoofBPLMNs	Maximum no. of broadcast PLMNs by a cell. Value is 12.

9.2.2.51 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, Uplink and Supplementary Uplink.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Composite Available Capacity Downlink	M		Composite Available Capacity 9.2.2.52	For the Downlink	–	
Composite Available Capacity Uplink	M		Composite Available Capacity 9.2.2.52	For the Uplink, including both NUL and SUL (if available)	–	
Composite Available Capacity Supplementary Uplink	O		Composite Available Capacity 9.2.2.52	For the SUL	YES	ignore

9.2.2.52 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		9.2.2.53	
Capacity Value	M		9.2.2.54	'0' indicates no resource is available, Measured on a linear scale.

9.2.2.53 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 indicates the minimum cell capacity, and 100 indicates the maximum cell capacity. There should be a linear relation between cell capacity and Cell Capacity Class Value.

9.2.2.54 Capacity Value

The *Capacity Value* IE indicates the amount of resources per cell and per SSB area that are available relative to the total NG-RAN resources. The capacity value should be measured and reported so that the minimum NG-RAN 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 indicates no available capacity, and 100 indicates maximum available capacity with respect to the whole cell. Capacity Value should be measured on a linear scale.
SSB Area Capacity Value		*0..1*		

IE/Group Name	Presence	Range	IE type and reference	Semantics description
List				
>SSB Area Capacity Value Item		*1..<maxnoofSSBAreas>*		
>>SSB Index	M		INTEGER (0..63)	
>>SSB Area Capacity Value	M		INTEGER (0..100)	Value 0 indicates no available capacity, and 100 indicates 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 NG-RAN node cell. Value is 64.

9.2.2.55 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 NG-RAN 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		*1..< maxnoofBPLMNs >*		
>PLMN Identity	M		9.2.2.4	Broadcast PLMN
>S-NSSAI Available Capacity List		*1*		
>>S-NSSAI Available Capacity Item		*1 .. < maxnoofSliceItems>*		
>>>S-NSSAI	M		9.2.3.21	
>>>Slice Available Capacity Value Downlink	M		INTEGER (0..100)	Value 0 indicates no available capacity, and 100 indicates maximum available capacity. Slice *Available* Capacity Value Downlink should be measured on a linear scale.
>>>Slice Available Capacity Value Uplink	M		INTEGER (0..100)	Value 0 indicates no available capacity, and 100 indicates maximum available capacity. Slice Available Capacity Value Uplink should be measured on a linear scale.

Range bound	Explanation
maxnoofSliceItems	Maximum no. of signalled slice support items. Value is 1024.
maxnoofBPLMNs	Maximum no. of PLMN Ids.broadcast in a cell. Value is 12.

9.2.2.56 RRC Connections

The *RRC Connections* IE indicates the overall status of RRC connections per cell.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Number of RRC Connections	M		9.2.2.57	
Available RRC Connection	M		9.2.2.58	

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Capacity Value				

9.2.2.57 Number of RRC Connections

The *Number of RRC Connections* IE indicates the maximum supported number of UEs in RRC_CONNECTED mode.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Number of RRC Connections	M		INTEGER (1..65536,...)	

9.2.2.58 Available RRC Connection Capacity Value

The *Available RRC Connection Capacity Value* IE indicates the residual percentage of the number of RRC connections, relative to the maximum number of RRC connections supported by the cell.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Available RRC Connection Capacity Value	M		INTEGER (0..100)	Value 0 indicates no available capacity, and 100 indicates maximum available capacity with respect to the whole cell. Capacity Value should be measured on a linear scale.

9.2.2.59 UE RLF Report

This IE contains the RLF Report to be transferred.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
CHOICE *type*	M				–	
>NR						
>>NR UE RLF Report Container	M		OCTET STRING	*Includes the nr-RLF-Report* contained in the *UEInformationResponse* message as defined in TS 38.331 [10].	–	
>LTE						
>>LTE UE RLF Report Container	M		OCTET STRING	Includes the *rlf-Report-r9* contained in the *UEInformationResponse* message defined in TS 36.331 [14]	–	
>LTE Extension					YES	ignore
>>LTE UE RLF Report Container	M		OCTET STRING	Includes the *rlf-Report-r9* contained in the *UEInformationResponse* message as defined in TS 36.331 [14]	–	
>>LTE UE RLF Report Container Extend Band	M		OCTET STRING	Includes the *rlf-Report-v9e0* contained in the *UEInformationRes*	–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				ponse message as defined in TS 36.331 [14]		

9.2.2.60 Mobility Parameters Information

The *Mobility Parameters Information* IE contains the change of the Handover Trigger as compared to its current value. The Handover Trigger corresponds to the threshold at which a cell initialises the handover preparation procedure towards a specific neighbour cell. Positive value of the change means the handover is proposed to take place later.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Handover Trigger Change	M		INTEGER (-20 .. 20)	The actual value is IE value * 0.5 dB.

9.2.2.61 Mobility Parameters Modification Range

The *Mobility Parameters Modification Range* IE contains the range of *Handover Trigger Change* values permitted by the NG-RAN node$_2$ at the moment the MOBILITY CHANGE FAILURE message is sent.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Handover Trigger Change Lower Limit	M		INTEGER (-20 .. 20)	The actual value is IE value * 0.5 dB.
Handover Trigger Change Upper Limit	M		INTEGER (-20 .. 20)	The actual value is IE value * 0.5 dB.

9.2.2.62 Number of Active UEs

The *Number of Active UEs* IE indicates the mean number of active UEs as defined in TS 38.314 [42].

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 [42] 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.

9.2.2.63 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		*1..<maxnoofNRSCSs>*		
>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 *NR SCS* IE defined for

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
				this carrier). The maximum value corresponds to 275×8−1. See TS 38.211 [39], clause 4.4.2.
>Carrier Bandwidth	M		INTEGER (1.. maxnoofPhysicalResourceBlocks, ...)	Width of this carrier in number of PRBs (using the *NR SCS* IE defined for this carrier). See TS 38.211 [39], clause 4.4.2. For band n100 and specific GSCN values defined in Table 5.4.3.1-3 of TS 38.104 [24], the utilized transmission bandwidth is less than the maximum transmission bandwidth configuration N_{RB} specified in Table 5.3.2-1 of TS 38.104 [24].

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.

9.2.2.64 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 [40], clause 4.1.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
CHOICE *ssb-PositionsInBurst*	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.
>ShortBitmap				
>>ShortBitmap	M		BIT STRING (SIZE(4))	
>MediumBitmap				
>>MediumBitmap	M		BIT STRING (SIZE(8))	
>LongBitmap				
>>LongBitmap	M		BIT STRING (SIZE(64))	

9.2.2.65 NID

This IE is used to identify (together with a PLMN identifier) a Standalone Non-Public Network. The NID is specified in TS 23.003 [22].

IE/Group Name	Presence	Range	IE type and reference	Semantics description
NID	M		BIT STRING (SIZE(44))	

9.2.2.66 CAG-Identifier

This IE is used to identify (together with a PLMN identifier) a Public Network Integrated Non-Public Network. The CAG-Identifier is specified in TS 23.003 [22].

IE/Group Name	Presence	Range	IE type and reference	Semantics description
CAG-Identifier	M		BIT STRING (SIZE(32))	

9.2.2.67 Broadcast NID List

This IE contains a list of NIDs.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Broadcast NID List		*1..<maxnoofNIDs>*		
>NID	M		9.2.2.65	

Range bound	Explanation
maxnoofNIDs	Maximum no. of NIDs broadcast in a cell. Value is 12.

9.2.2.68 Broadcast SNPN ID List

This IE contains a list of SNPN IDs.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Broadcast SNPN ID List		*1..<maxnoofSNPNIDs>*		
>PLMN Identity	M		9.2.2.4	
>Broadcast NID List	M		9.2.2.67	

Range bound	Explanation
maxnoofSNPNIDs	Maximum no. of SNPN IDs broadcast in a cell. Value is 12.

9.2.2.69 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		*1..<maxnoofCAGs>*		
>CAG-Identifier	M		9.2.2.66	

Range bound	Explanation
maxnoofCAGs	Maximum no. of CAG-Identifiers broadcast in a cell. Value is 12.

9.2.2.70 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		*1..<maxnoofBPLMNs>*		Broadcast PLMNs
>PLMN Identity	M		9.2.2.4	

IE/Group Name	Presence	Range	IE type and reference	Semantics description
>Broadcast CAG-Identifier List	M		9.2.2.69	

Range bound	Explanation
maxnoofBPLMNs	Maximum no. of broadcast PLMNs by a cell. Value is 12.

9.2.2.71 NPN Broadcast Information

This IE contains NPN related broadcast information.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
CHOICE *NPN Broadcast Information per PLMN*	M			
>SNPN Information				
>>Broadcast SNPN ID List	M		9.2.2.68	
>PNI-NPN Information				
>>Broadcast PNI-NPN ID Information	M		9.2.2.70	

9.2.2.72 NPN Support

This IE contains NPN related information associated with Network Slicing information.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
CHOICE *NPN Support*	M			
>SNPN				
>>NID	M		9.2.2.65	This IE is associated with the PLMN Identity and the TAI Slice Support List contained in the *TAI Support List IE*. Together with the PLMN Identity it identifiers the SNPN supported in the corresponding Tracking Area by the NG-RAN node.

9.2.2.73 Global Cell Identity

This IE is used to globally identify an NG-RAN cell or an E-UTRAN cell (see TS 36.300 [12]).

IE/Group Name	Presence	Range	IE type and reference	Semantics description
PLMN Identity	M		9.2.2.4	
CHOICE *Cell Type*	M			
>NG-RAN E-UTRA				
>>E-UTRA Cell Identity	M		BIT STRING (SIZE(28))	The leftmost bits of the *E-UTRA Cell Identity* IE correspond to the ng-eNB ID (defined in subclause 9.2.2.2).
>NG-RAN NR				
>>NR Cell Identity	M		BIT STRING (SIZE(36))	The leftmost bits of the *NR Cell Identity* IE correspond to the gNB ID (defined in subclause 9.2.2.1).
>E-UTRAN				
>>E-UTRAN Cell Identity	M		BIT STRING (SIZE(28))	The leftmost bits of the *E-UTRAN Cell Identity* IE value correspond to the eNB ID

IE/Group Name	Presence	Range	IE type and reference	Semantics description
				(defined in section 9.2.22 in TS 36.423 [44]).

9.2.2.74 NPRACH Configuration

This IE indicates the NPRACH Configuration.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
CHOICE *FDDorTDD*	M			
>*FDD*				
>>NPRACH-CP-Length	M		ENUMERATED (us66dot7, us266dot7, …)	
>>Anchor Carrier NPRACH Configuration	M		OCTET STRING	Includes the *NPRACH-ParametersList-NB-r13* IE as defined in 6.7.3.2 of TS 36.331 [14].
>>Anchor Carrier EDT NPRACH Configuration	O		OCTET STRING	Includes the *NPRACH-ParametersList-NB-r14* IE as defined in 6.7.3.2 of TS 36.331 [14].
>>Anchor Carrier Format 2 NPRACH Configuration	O		OCTET STRING	Includes the *NPRACH-ParametersListFmt2-NB-r15* IE as defined in 6.7.3.2 of TS 36.331 [14].
>>Anchor Carrier Format 2 EDT NPRACH Configuration	O		OCTET STRING	Includes the *NPRACH-ParametersListFmt2-NB-r15* IE as defined in 6.7.3.2 of TS 36.331 [14].
>>Non Anchor Carrier NPRACH Configuration	O		OCTET STRING	Includes the *UL-ConfigCommonList-NB-r14* IE as defined in 6.7.3.1 of TS 36.331 [14].
>>Non Anchor Carrier Format 2 NPRACH Configuration	O		OCTET STRING	Includes the *UL-ConfigCommonList-NB-v1530* IE as defined in 6.7.3.1 of TS 36.331 [14].
>*TDD*				
>>NPRACH-PreambleFormat	M		ENUMERATED (fmt0, fmt1, fmt2, fmt0-a, fmt1-a, …)	
>>Anchor Carrier NPRACH Configuration TDD	M		OCTET STRING	Includes the *NPRACH-ParametersListTDD-NB-r15* IE as defined in 6.7.3.2 of TS 36.331 [14].
>>Non Anchor Carrier Frequency Configuration list		*0..< maxnoofNonAnchorCarrierFreqConfig>*		
>>>Non Anchor Carrier Frequency	M		OCTET STRING	Includes the *DL-CarrierConfigCommon-NB-r14* IE as defined in 6.7.3.2 of TS 36.331 [14].
>>Non Anchor Carrier NPRACH Configuration TDD	O		OCTET STRING	Includes the *UL-ConfigCommonListTDD-NB-r15* IE as defined in 6.7.3.1 of TS 36.331 [14].

Range bound	Explanation
maxnoofNonAnchorCarrierFreqConfig	Maximum no. of non-Anchor Carrier Frequency Configurations. Value is 15.

9.2.2.75 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 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*10^4-1). Values higher than the maximum are discarded.

9.2.2.76 CHO Configuration

This IE contains the CHO configuration information.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
CHO Candidate Cell List		*1*		
>CHO Candidate Cell Item		*1 .. <maxnoofCellsinCHO>*		
>>CHO Candidate Cell ID	M		Global NG-RAN Cell Identity 9.2.2.27	
>>CHO Execution Condition List		*1*		
>>>CHO Execution Condition Item		*1 .. <maxnoofCHOexecutioncond>*		
>>>>MeasObject Container	M		OCTET STRING	Includes the *MeasObjectToAddMod* IE contained in the *RRCReconfiguration* message (TS 38.331 [10]), which is configured for the CHO candidate cell
>>>>ReportConfig Container	M		OCTET STRING	Includes the *ReportConfigToAddMod* IE contained in the *RRCReconfiguration* message (TS 38.331 [10]), which is configured for the CHO candidate cell

Range bound	Explanation
maxnoofCellsinCHO	Maximum no. cells that can be prepared for a conditional handover. Value is 8.
maxnoofCHOexecutioncond	Maximum no. execution conditions for a conditional handover. Value is 2.

9.2.2.77 SSB Offset Information

This IE represents the SSB Offset to apply to UE measurements received for the SSB Area identified by the SSB Index.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
SSB Index	M		INTEGER (0..63)	
SSB Triggering Offset	M		Mobility Parameters Information 9.2.2.60	

9.2.2.78 SSB Offset Modification Range

The *SSB Offset Modification Range* IE contains the range of *SSB Offset* values permitted by the NG-RAN node$_2$ at the moment the MOBILITY CHANGE FAILURE message is sent.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
SSB Index	M		INTEGER (0..63)	
SSB Mobility Parameters Modification Range	M		Mobility Parameters Modification Range 9.2.2.61	

9.2.2.79 Multiplexing Info

This IE contains information about the multiplexing capabilities between the IAB-DU's cell and the cells configured on the co-located IAB-MT.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
IAB-MT Cell List		*1*		
>IAB-MT Cell Item		*1 .. <maxnoofServingCells>*		
>>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, supported and FDM required, …)	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, supported and FDM required, …)	An indication of whether the IAB-node supports simultaneous transmission at its DU and MT side.
>>DU_TX/MT_RX	M		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.
>>DU_RX/MT_TX	M		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.

Range bound	Explanation
maxnoofServingCells	Maximum no. of serving cells for an IAB-MT. Value is 32, as defined by the *maxNrofServingCells* in TS 38.331 [10].

9.2.2.80 Traffic Index

This IE is used to identify the traffic offloaded to the topology of non-F1-terminating IAB-donor. This IE is only applicable to IAB.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Traffic Index	M		INTEGER (1..1024,…)	

9.2.2.81 Traffic Profile

This IE indicates the QoS parameters for F1-U traffic, or the non-UP traffic type. This IE is only applicable to IAB.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
CHOICE *Traffic type*	M			
>UP Traffic				
>>QoS Parameters	M		QoS Flow Level QoS parameters 9.2.3.5	
>Non-UP Traffic				
>>Non-UP Traffic	M		9.2.2.100	

9.2.2.82 F1-Terminating Topology BH Information

This IE provides the BH information of the traffic used in F1-terminating IAB-donor's topology. This IE is only applicable to IAB.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
F1-terminating BH information list		*1*		
>F1-terminating BH Information item IEs		*1..<maxnoofBHInfo>*		
>>BH Info Index	M		INTEGER (1.. maxnoofBHInfo)	
>>DL TNL Address	O		IAB TNL Address 9.2.2.92	
>>DL F1 Terminating BH Info		*0..1*		This IE indicates the BH information for DL traffic of a descendant node.
>>>Egress BAP Routing ID	M		BAP Routing ID 9.2.2.87	
>>>Egress BH RLC CH ID	M		BH RLC Channel ID 9.2.2.88	
>>UL F1 Terminating BH Info		*0..1*		This IE indicates the BH information for UL traffic of a descendant node.
>>>Ingress BAP Routing ID	M		BAP Routing ID 9.2.2.87	
>>>Ingress BH RLC CH ID	M		BH RLC Channel ID 9.2.2.88	

Range bound	Explanation
maxnoofBHInfo	Maximum no. of BH information corresponding to one Traffic Index assigned to the traffic offloaded to the non-F1-terminating IAB-donor. The value is 1024.

9.2.2.83 Non-F1-terminating Topology BH Information

This IE provides the BH information of the traffic used in non-F1-terminating IAB-donor's topology. This IE is only applicable to IAB.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Non-F1-terminating BH Information List		*1*		
>Non-F1-terminating BH Information Item IEs		*1..<maxnoofBHInfo>*		
>>BH Info Index	M		INTEGER (1.. maxnoofBHInfo)	
>>DL Non-F1 Terminating BH Info		*0..1*		This IE indicates the BH information for DL traffic
>>>Ingress BAP Routing ID	M		BAP Routing ID 9.2.2.87	
>>>Ingress BH RLC CH ID	M		BH RLC Channel ID 9.2.2.88	
>>>Prior-hop BAP Address	M		BAP Address 9.2.2.89	
>>>IAB QoS mapping information	O		9.2.2.91	
>>UL Non-F1 Terminating BH Info		*0..1*		This IE indicates the BH information for UL traffic
>>>Egress BAP Routing ID	M		BAP Routing ID 9.2.2.87	
>>>Egress BH RLC CH ID	M		BH RLC Channel ID 9.2.2.88	
>>>Next-hop BAP Address	M		BAP Address 9.2.2.89	
BAP Control PDU RLC CH List		*0..1*		
>**BAP Control PDU RLC CH Item IEs**		*1..<maxnoofBAPControlPDURLCCHs>*		
>>BH RLC CH ID	M		BH RLC Channel ID 9.2.2.88	
>>Next-hop BAP Address	M		BAP Address 9.2.2.89	

Range bound	Explanation
maxnoofBHInfo	Maximum no. of BH information corresponding to one Traffic Index assigned to the traffic offloaded to the non-F1-terminating IAB-donor. The value is 1024.
maxnoofBAPControlPDURLCCHs	Maximum no. of BH RLC CHs to be used for the boundary IAB-node and its parent node in the non-F1-terminating topology. The value is 2.

9.2.2.84 Traffic To Be Released Information

This IE is used to indicate the offloaded traffic to be released. This IE is only applicable to IAB.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
CHOICE *Traffic Release type*	M			
>*Full Release*				
>>All Traffic Indication	M		ENUMERATED (true, ..)	
>*Partial Release*				
>>**Traffic To Be Released List**		*1*		
>>>**Traffic To Be Released Item IE**		*1 .. <maxnoofTrafficIndexEntries>*		

IE/Group Name	Presence	Range	IE type and reference	Semantics description
>>>>Traffic Index	M		9.2.2.80	
>>>>BH Info List	O		9.2.2.99	

Range bound	Explanation
maxnoofTrafficIndexEntries	Maximum no. of traffic offloaded to the non-F1-terminating IAB-donor. The value is 1024.

9.2.2.85 IAB TNL Address Request

This IE indicates the request of IP address assignment, and/or the request of IP address removal. This IE is only applicable to IAB.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
IAB IPv4 Addresses Requested	O		IAB TNL Addresses Requested 9.2.2.93	
CHOICE *IAB IPv6 Request Type*	O			
>IPv6 Address				
>>IAB IPv6 Addresses Requested	M		IAB TNL Addresses Requested 9.2.2.93	
>IPv6 Prefix				
>>IAB IPv6 Address Prefixes Requested	M		IAB TNL Addresses Requested 9.2.2.93	
IAB TNL Address To Remove List		*0..1*		
>IAB TNL Address To Remove Item		*1..<maxnoofTLAsIAB>*		
>>IAB TNL Address	M		9.2.2.92	

Range bound	Explanation
maxnoofTLAsIAB	Maximum total no. of IPv4 address(es), IPv6 address(es) and IPv6 address prefix(es) that can be requested in one procedure execution. The value is 1024.

9.2.2.86 IAB TNL Address Response

This IE indicates the TNL address(es) assigned to IAB node(s).

IE/Group Name	Presence	Range	IE type and reference	Semantics description
IAB Allocated TNL Address List		*1*		
>IAB Allocated TNL Address Item		*1..<maxnoofTLAsIAB>*		
>>IAB TNL Address	M		9.2.2.92	
>>IAB TNL Address Usage	O		ENUMERATED (F1-C, F1-U, Non-F1, All, …)	Indicates the usage of the allocated IPv4 or IPv6 address or IPv6 address prefix.
>>Associated Donor DU Address	O		BAP Address 9.2.2.89	

Range bound	Explanation
maxnoofTLAsIAB	Maximum total no. of IPv4 address(es), IPv6 address(es) and IPv6 address prefix(es) that can be requested in one procedure

Range bound	Explanation
	execution. The value is 1024.

9.2.2.87 BAP Routing ID

This IE indicates the BAP Routing ID. This IE is only applicable to IAB.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
BAP Address	M		9.2.2.89	
Path ID	M		BAP Path ID 9.2.2.90	

9.2.2.88 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))	

9.2.2.89 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 information provided in the *bap-Address*, defined in subclause 6.2.2 or subclause 6.3.2 of TS 38.331 [10], or the *iab-donor-DU-BAP-Address* defined in subclause 6.2.2 of TS 38.331[10].

9.2.2.90 BAP Path ID

This IE indicates the BAP Path ID, which is part of the BAP Routing ID. This IE is only applicable to IAB.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
BAP Path ID	M		BIT STRING (SIZE(10))	Corresponds to information provided in the *bap-PathId* defined in subclause 6.3.2 of TS 38.331 [10].

9.2.2.91 IAB QoS mapping information

This IE indicates the DSCP and/or IPv6 Flow Label field(s) of an IP packet of the traffic offloaded to the non-F1-terminating IAB-donor topology. This IE is only used for IAB.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
DSCP	O		BIT STRING (SIZE(6))	
Flow Label	O		BIT STRING	

IE/Group Name	Presence	Range	IE type and reference	Semantics description
			(SIZE(20))	

9.2.2.92 IAB TNL Address

This 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 *IAB TNL Address*	M			
>IPv4				
>>IPv4 Address	M		BIT STRING (SIZE(32))	The IPv4 address allocated to an IAB-node.
>IPv6				
>>IPv6 Address	M		BIT STRING (SIZE(128))	The IPv6 address allocated to an IAB-node.
>IPv6prefix				
>>IPv6 Prefix	M		BIT STRING (SIZE(64))	The IPv6 address prefix allocated to an IAB-node.

9.2.2.93 IAB TNL Addresses Requested

This 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 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.

9.2.2.94 IAB Cell Information

This IE contains IAB-DU cell resource configuration, cell specific signal/channel configuration and multiplexing info of the cell of an IAB-node or IAB-donor-DU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
NR CGI	M		9.2.2.7	
CHOICE *IAB-DU Cell Resource Configuration-Mode-Info*	O			
>TDD				
>>TDD Info		*1*		
>>>gNB-DU Cell Resource Configuration-TDD	M		gNB-DU Cell Resource Configuration 9.2.2.95	Contains TDD resource configuration of gNB-DU's cell.
>>>Frequency Info	O		NR Frequency Info 9.2.2.19	
>>>Transmission Bandwidth	O		NR Transmission Bandwidth 9.2.2.20	

IE/Group Name	Presence	Range	IE type and reference	Semantics description
>>>Carrier List	O		NR Carrier List 9.2.2.63	If included, the *Transmission Bandwidth* IE shall be ignored.
>FDD				
>>FDD Info		*1*		
>>>gNB-DU Cell Resource Configuration-FDD-UL	M		gNB-DU Cell Resource Configuration 9.2.2.95	Contains FDD UL resource configuration of gNB-DU's cell.
>>>gNB-DU Cell Resource Configuration-FDD-DL	M		gNB-DU Cell Resource Configuration 9.2.2.95	Contains FDD DL resource configuration of gNB-DU's cell.
>>>UL Frequency Info	O		NR Frequency Info 9.2.2.19	
>>>DL Frequency Info	O		NR Frequency Info 9.2.2.19	
>>>UL Transmission Bandwidth	O		NR Transmission Bandwidth 9.2.2.20	
>>>DL Transmission Bandwidth	O		NR Transmission Bandwidth 9.2.2.20	
>>>UL Carrier List	O		NR Carrier List 9.2.2.63	If included, the *UL Transmission Bandwidth* IE shall be ignored.
>>>DL Carrier List	O		NR Carrier List 9.2.2.63	If included, the *DL Transmission Bandwidth* IE shall be ignored.
IAB STC Info	O		9.2.2.96	STC configuration of this gNB-DU's cell.
RACH Config Common	O		OCTET STRING	Includes the *rach-ConfigCommon* as defined in subclause 6.3.2 of TS 38.331 [10].
RACH Config Common IAB	O		OCTET STRING	Includes the IAB-specific *rach-ConfigCommonIAB* as defined in subclause 6.3.2 of TS 38.331 [10].
CSI-RS Configuration	O		OCTET STRING	Includes the *NZP-CSI-RS-Resource* IE as defined in subclause 6.3.2 of TS 38.331 [10].
SR Configuration	O		OCTET STRING	Includes the *SchedulingRequestResourceConfig* IE as defined in subclause 6.3.2 of TS 38.331 [10].
PDCCH Configuration SIB1	O		OCTET STRING	Includes the *PDCCH-ConfigSIB1* IE as defined in subclause 6.3.2 of TS 38.331 [10].
SCS Common	O		OCTET STRING	Includes the *subCarrierSpacingCommon* as defined in subclause 6.2.2 of TS 38.331 [10].
Multiplexing Info	O		9.2.2.79	Contains information on multiplexing with cells configured for collocated IAB-MT, if applicable.

9.2.2.95 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 [40], clause 11.1.1). This IE is only applicable if the gNB-DU is an IAB-DU or an IAB-donor-DU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Subcarrier Spacing	M		ENUMERATED (kHz15, kHz30, kHz120, kHz240, spare3, spare2, spare1, …, kHz60)	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		*0..1*		
>**DUF Slot Configuration Item**		*1..<maxnoofDUFSlots>*		
>>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 [40], excluding the last row in Table 14-2.
HSNA Transmission Periodicity	M		ENUMERATED (ms0p5, ms0p625, ms1, ms1p25, ms2, ms2p5, ms5, ms10, ms20, ms40, ms80, ms160, …)	
HSNA Slot Configuration List		*0..1*		
>**HSNA Slot Configuration Item**		*1..<maxnoofHSNASlots>*		
>>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		9.2.2.97	Indicates the configuration for up to M non-overlapping RB sets for a given DU cell, used for frequency domain resource allocation. The maximum value of M is 8.
Frequency-domain HSNA Configuration List		*0..1*		
>**Frequency-domain HSNA Configuration Item**		*1..<maxnoofRBsetsPerCell>*		
>>RB Set Index	M		INTEGER (0.. *maxnoofRBsetsPerCell1*, …)	Refers to an RB set defined by RB Set Configuration. The RB set indexes are consecutive (and increasing) starting at 0.
>>Frequency-domain HSNA Slot Configuration List		*1*		

IE/Group Name	Presence	Range	IE type and reference	Semantics description
>>>Frequency-domain HSNA Slot Configuration item		*1..<maxnoofHSNASlots>*		
>>>>Slot Index	M		INTEGER (.. *maxnoofHSNASlots*)	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.
NA cell resource configuration List		*0..1*		List of unavailable resources of this cell for the dual-connected boundary IAB-node.
>**NA cell resource configuration Item**		*1..<maxnoofHSNASlots>*		
>>NA Downlink	O		ENUMERATED (true, false, …)	Indicates whether downlink symbols, in a slot, are unavailable to serve the boundary IAB-node.
>>NA Uplink	O		ENUMERATED (true, false, …)	Indicates whether uplink symbols, in a slot, are unavailable to serve the boundary IAB-node.
>>NA Flexible	O		ENUMERATED (true, false, …)	Indicates whether flexible symbols, in a slot, are unavailable to serve the boundary IAB-node.

Range bound	Explanation
maxnoofDUFSlots	Maximum no. of slots in 10ms. Value is 320. Corresponds to the *maxNrofSlots* defined in TS 38.331 [10].
maxnoofHSNASlots	Maximum no of "Hard", "Soft" or "Not available" slots in 160ms. Value is 5120.
maxnoofRBsetsPerCell	Maximum no. of RB sets per DU cell. Value is 8.
maxnoofRBsetsPerCell1	Maximum no. of RB sets per DU cell minus 1. Value is 7.

9.2.2.96 IAB STC Info

This IE contains cell SSB Transmission Configuration (STC) information of an IAB-DU or an IAB-donor-DU.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
IAB STC-Info List		*1*		
>IAB STC-Info Item		*1 ..<maxnoofIABSTCInfo>*		
>>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)	

IE/Group Name	Presence	Range	IE type and reference	Semantics description
>>SSB Transmission Timing Offset	M		INTEGER (0.. 127, …)	SSB transmission timing offset in number of half-frames.
>>CHOICE *SSB Transmission Bitmap*	M			Corresponds to information provided in the *SSB-ToMeasure* IE defined in TS 38.331 [10].
>>>*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.

9.2.2.97 RB Set Configuration

This IE contains the configuration for up to M non-overlapping RB sets for a given gNB-DU cell, used for frequency domain resource allocation. This IE is only applicable if the gNB-DU is an IAB-DU. The maximum value of M is 8.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Subcarrier Spacing	M		ENUMERATED (kHz15, kHz30, kHz120, kHz240, spare3, spare2, spare1, …, kHz60)	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.. *maxnoofRBsetsPerCell)*	Number of configured RB sets. The RB sets are contiguous and non-overlapping. If the *NR Carrier List* IE(9.2.2.63) 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 *RB Set Configuration* IE, which overlaps with the lowest usable RB across all SCS-specific carriers provided by the *NR Carrier List* IE for the IAB-DU cell. Otherwise, the lowest subcarrier of the start RB of the first RB set is aligned with

IE/Group Name	Presence	Range	IE type and reference	Semantics description
				point A for the IAB-DU cell.

Range bound	Explanation
maxnoofRBsetsPerCell	Maximum no. of RB sets per IAB-DU cell. Value is 8.

9.2.2.98 IAB TNL Address Exception

This IE indicates the list of source TNL addresses carried on UL IP packets in an IAB network, which can be forwarded over the inter-IAB-donor-DU tunnel, and that are exempt from TNL address filtering, for the purpose of inter-donor-DU rerouting.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
IAB TNL Address List		*1*		
>IAB TNL Address Item IEs		*1..< maxnoofTLAsIAB>*		
>>IAB TNL Address	M		9.2.2.92	

Range bound	Explanation
maxnoofTLAsIAB	Maximum total no. of IPv4 address(es), IPv6 address(es) and IPv6 address prefix(es) that can be requested in one procedure execution. The value is 1024.

9.2.2.99 BH Info List

This IE indicates a list of BH information indices, where each index represents the offloaded traffic pertaining to, e.g., a certain BAP routing ID, BH RLC CH.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
BH Info List		*1*		
>BH Info Item IEs		*1..<maxnoofBHInfo>*		
>>BH Info Index	M		INTEGER (1.. maxnoofBHInfo)	

Range bound	Explanation
maxnoofBHInfo	Maximum no. of BH information corresponding to one Traffic Index assigned to the traffic offloaded to the non-F1-terminating IAB-donor. The value is 1024.

9.2.2.100 Non-UP traffic

This IE indicates the type of non-UP traffic.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
CHOICE *non-UPTraffic*	M			
>non-UP Traffic Type				
>>Non-UP Traffic Type	M		ENUMERATED(UE-associated F1AP, non-UE-associated F1AP, non-F1, ...)	
>control Plane Traffic Type				

IE/Group Name	Presence	Range	IE type and reference	Semantics description
>>Control Plane Traffic Type	M		INTEGER (1..3, ...)	Identified by the different codepoints in this IE, where 1 has the highest priority.

9.2.2.101 Local NG-RAN Node Identifier

This IE is used to resolve a Global NG-RAN Node ID from an I-RNTI and obtain a reference to an UE context at RRC Resume.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
CHOICE *Local NG-RAN Node Identifier*	M				–	
>Full I-RNTI profile						
>>CHOICE *Full I-RNTI Profile*	M				–	
>>>Full I-RNTI profile 0						
>>>>Local NG-RAN Node Identifier Full I-RNTI profile 0	M		BIT STRING (SIZE(21))		–	
>>>Full I-RNTI profile 1						
>>>>Local NG-RAN Node Identifier Full I-RNTI profile 1	M		BIT STRING (SIZE(18))		–	
>>>Full I-RNTI profile 2						
>>>>Local NG-RAN Node Identifier Full I-RNTI profile 2	M		BIT STRING (SIZE(15))		–	
>>>Full I-RNTI profile 3						
>>>>Local NG-RAN Node Identifier Full I-RNTI profile 3	M		BIT STRING (SIZE(12))		–	
>Short I-RNTI Profile						
>>CHOICE *Short I-RNTI profile*	M				–	
>>>Short I-RNTI profile 0						
>>>>Local NG-RAN Node Identifier Short I-RNTI profile 0	M		BIT STRING (SIZE(8))		–	
>>>Short I-RNTI profile 1						
>>>>Local NG-RAN Node Identifier Short I-RNTI profile 1	M		BIT STRING (SIZE(6))		–	
>Full and Short I-RNTI profiles					YES	ignore
>>Full I-RNTI profile	M				–	
>>>CHOICE *Full I-RNTI Profile*	M				–	
>>>>Full I-RNTI profile 0						
>>>>>Local NG-RAN Node Identifier Full I-RNTI profile 0	M		BIT STRING (SIZE(21))		–	
>>>>Full I-RNTI profile 1						
>>>>>Local NG-RAN Node Identifier Full I-RNTI profile 1	M		BIT STRING (SIZE(18))		–	
>>>>Full I-RNTI profile 2						
>>>>>Local NG-	M		BIT STRING		–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
RAN Node Identifier Full I-RNTI profile 2			(SIZE(15))			
>>>>Full I-RNTI profile 3						
>>>>>Local NG-RAN Node Identifier Full I-RNTI profile 3	M		BIT STRING (SIZE(12))		–	
>>Short I-RNTI Profile	M					
>>>CHOICE *Short I-RNTI profile*	M				–	
>>>>Short I-RNTI profile 0						
>>>>>Local NG-RAN Node Identifier Short I-RNTI profile 0	M		BIT STRING (SIZE(8))		–	
>>>>Short I-RNTI profile 1						
>>>>>Local NG-RAN Node Identifier Short I-RNTI profile 1	M		BIT STRING (SIZE(6))		–	

9.2.2.102 Served Cell Specific Info Request

The *Served Cell Specific Info Request* IE is used by the NG-RAN node to request specific information about NR cells.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
List of Requested NR Cells		*1*		List of NR cells.
>List of Requested NR Cells item		*1 .. < maxnoofCellsinNG-RAN node>*		
>>NR CGI	M		9.2.2.7	NR cell for which specific served NR cell information is requested.
>>Additional Measurement Timing Configuration List Request Indicator	O		ENUMERATED (AdditionalMTCListRequested, …)	Included when the NG-RAN node requests the *Additional Measurement Timing Configuration List* IE to be included in the *Served Cell Information NR* IE for the requested cells.

Range bound	Explanation
maxnoofCellsinNG-RAN node	Maximum no. cells that can be served by a NG-RAN node. Value is 16384.

9.2.2.103 CPAC Configuration

This IE contains the CPC or CPA configuration information.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
CPAC Candidate Cell List		*1*		
>CPAC Candidate Cell Item		*1 .. <maxnoofPSCellsinCPAC>*		
>>CPAC Candidate Cell ID	M		Global NG-RAN Cell Identity 9.2.2.27	
>>CPAC Execution Condition List		*1*		
>>>CPAC Execution Condition Item		*1 .. <maxnoofCPACexecutioncond>*		
>>>>MeasObject Container	M		OCTET STRING	Includes the *MeasObjectToAddMod* IE contained in the *RRCReconfiguration* message as specified in TS 38.331 [10], which is configured for the CPAC candidate cell
>>>>ReportConfig Container	M		OCTET STRING	Includes the *ReportConfigToAddMod* IE contained in the *RRCReconfiguration* message as specified in TS 38.331 [10], which is configured for the CPAC candidate cell

Range bound	Explanation
maxnoofPSCellsinCPAC	Maximum no. cells that can be prepared for a CPAC handover. Value is 8.
maxnoofCPACexecutioncond	Maximum no. execution conditions for a conditional handover. Value is 2.

9.2.2.104 Radio Resource Status NR-U

The *Radio Resource Status NR-U* IE indicates the usage of the PRBs per NR-U Channel for all traffic in Downlink and Uplink.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
DL Total PRB Usage	M		INTEGER (0..100)	Per NR-U Channel DL Total PRB usage in percentage of the cell total PRB number.
UL Total PRB Usage	M		INTEGER (0..100)	Per NR-U Channel UL Total PRB usage in percentage of the cell total PRB number.

9.2.2.105 Mobile IAB Authorization Status

This IE indicates the authorization status of the mobile IAB-node.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Mobile IAB Authorization Status	M		ENUMERATED (authorized, not authorized, …)	

9.2.2.106 Mobile IAB Cell

This IE indicates that the cell is served by a mobile IAB-node.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Mobile IAB Cell	M		ENUMERATED (true, …)	

9.2.2.107 NZP CSI-RS Resources Configuration

This IE contains the NZP CSI-RS resources configuration of an NR cell.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
NZP-CSI-RS-ResourceSet	M		OCTET STRING	Includes the *NZP-CSI-RS-ResourceSet* IE, as defined in TS 38.331 [10].
NZP-CSI-RS-Resource List		*1*		
>NZP-CSI-RS-Resource Item		*1..<maxnoofNZP-CSI-RS-ResourcesPerSet>*		
>>NZP-CSI-RS-Resource	M		OCTET STRING	Includes the *NZP-CSI-RS-Resource* IE, as defined in TS 38.331 [10].

Range bound	Explanation
maxnoofNZP-CSI-RS-ResourcesPerSet	Maximum no. of NZP CSI-RS resources per resource set. Value is 64.

9.2.2.108 SRS Resource Configuration

This IE contains a list of SRS-Resource of UEs in the current cell.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
SRS Resource Configuration List		*1*		
>SRS Resource Configuration List Item		*1..<maxnoofSRS-Resource>*		
>>SRS Resource	M		OCTET STRING	Includes the *SRS-Resource* IE as defined in TS 38.331 [10].

Range bound	Explanation
maxnoofSRS-Resource	Maximum number of SRS Resource. Value is 64

9.2.2.109 WAB-MT Identifier

This IE contains the WAB-MT's identifier.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
NR CGI	M		9.2.2.7	The WAB-MT's serving cell ID.
C-RNTI	M		BIT STRING (SIZE (16))	C-RNTI allocated to the WAB-MT by the BH-gNB.

9.2.3 General IE definitions

9.2.3.1 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
Procedure Code	M		INTEGER (0..255)	
Type of Message	M		CHOICE (Initiating Message, Successful Outcome , Unsuccessful Outcome, ...)	

9.2.3.2 Cause

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

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
CHOICE *Cause Group*	M			
>Radio Network Layer				
>>Radio Network Layer Cause	M		ENUMERATED (Cell not Available, Handover Desirable for Radio Reasons, Handover Target not Allowed, Invalid AMF Set ID, No Radio Resources Available in Target Cell, Partial Handover, Reduce Load in Serving Cell, Resource Optimisation Handover, Time Critical Handover, $TXn_{RELOCoverall}$ Expiry, $TXn_{RELOCprep}$ Expiry, Unknown GUAMI ID, Unknown Local NG-RAN node UE XnAP ID, Inconsistent Remote NG-RAN node UE XnAP ID, Encryption And/Or Integrity Protection Algorithms Not Supported, Multiple PDU Session ID Instances, Unknown PDU Session ID, Unknown QoS Flow ID, Multiple QoS Flow ID Instances, Switch Off Ongoing, Not supported 5QI value, $TXn_{DCoverall}$ Expiry,	

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
			TXn_{DCprep} Expiry, Action Desirable for Radio Reasons, Reduce Load, Resource Optimisation, Time Critical action, Target not Allowed, No Radio Resources Available, Invalid QoS combination, Encryption Algorithms Not Supported, Procedure cancelled, RRM purpose, Improve User Bit Rate, User Inactivity, Radio Connection With UE Lost, Failure in the Radio Interface Procedure, Bearer Option not Supported, UP integrity protection not possible, UP confidentiality protection not possible, Resources not available for the slice(s), UE Maximum integrity protected data rate reason, CP Integrity Protection Failure, UP Integrity Protection Failure, Slice(s) not supported by NG-RAN, MN Mobility, SN Mobility, Count reaches max value, Unknown Old NG-RAN node UE XnAP ID, PDCP Overload, DRB ID not available, Unspecified, …, UE Context ID not known, Non-relocation of context, CHO-CPC resources to be changed, RSN not available	

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
			for the UP, NPN access denied, Report Characteristics Empty, Existing Measurement ID, Measurement Temporarily not Available, Measurement not Supported For The Object, UE Power Saving, Not existing NG-RAN node$_2$ Measurement ID, Insufficient UE Capabilities, Normal Release, Value out of allowed range, SCG activation deactivation failure, SCG deactivation failure due to data transmission, SSB not Available, LTM Triggered, No Backhaul Resource, mIAB-node not authorized, IAB not Authorized)	
>Transport Layer				
>>Transport Layer Cause	M		ENUMERATED (Transport Resource Unavailable, Unspecified, …)	
>Protocol				
>>Protocol Cause	M		ENUMERATED (Transfer Syntax Error, Abstract Syntax Error (Reject), Abstract Syntax Error (Ignore and Notify), Message not Compatible with Receiver State, Semantic Error, Abstract Syntax Error (Falsely Constructed Message), Unspecified, …)	
>Misc				
>>Miscellaneous Cause	M		ENUMERATED (Control Processing Overload, Hardware Failure, O&M Intervention, Not enough User Plane Processing Resources,	

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
			Unspecified, …)	

The meaning of the different cause values is specified 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
Cell not Available	The concerned cell is not available.
Handover Desirable for Radio Reasons	The reason for requesting handover is radio related.
Handover Target not Allowed	Handover to the indicated target cell is not allowed for the UE in question.
Invalid AMF Set ID	The target NG-RAN node doesn't belong to the same AMF Set of the source NG-RAN node, i.e. NG handovers should be attempted instead.
No Radio Resources Available in Target Cell	The target cell doesn't have sufficient radio resources available.
Partial Handover	Provides a reason for the handover cancellation. The target NG-RAN node did not admit all PDU Sessions included in the HANDOVER REQUEST and the source NG-RAN node estimated service continuity for the UE would be better by not proceeding with handover towards this particular target NG-RAN node.
Reduce Load in Serving Cell	Load in serving cell needs to be reduced. When applied to handover preparation, it indicates the handover is triggered due to load balancing.
Resource Optimisation Handover	The reason for requesting handover is to improve the load distribution with the neighbour cells.
Value out of allowed range	The action failed because the proposed Handover Trigger parameter change in the NG-RAN node$_2$ Proposed Mobility Parameters IE is too low or too high.
Time Critical Handover	Handover is requested for time critical reason i.e. this cause value is reserved to represent all critical cases where the connection is likely to be dropped if handover is not performed.
TXn$_{RELOCoverall}$ Expiry	The reason for the action is expiry of timer TXn$_{RELOCoverall}$.
TXn$_{RELOCprep}$ Expiry	Handover Preparation procedure is cancelled when timer TXn$_{RELOCprep}$ expires.
Unknown GUAMI ID	The target NG-RAN node belongs to the same AMF Set of the source NG-RAN node and recognizes the AMF Set ID. However, the GUAMI value is unknown to the target NG-RAN node.
Unknown Local NG-RAN node UE XnAP ID	The action failed because the receiving NG-RAN node does not recognise the local NG-RAN node UE XnAP ID.
Inconsistent Remote NG-RAN node UE XnAP ID	The action failed because the receiving NG-RAN node considers that the received remote NG-RAN node UE XnAP ID is inconsistent..
Encryption And/Or Integrity Protection Algorithms Not Supported	The target NG-RAN node is unable to support any of the encryption and/or integrity protection algorithms supported by the UE.
Multiple PDU Session ID Instances	The action failed because multiple instances of the same PDU Session had been provided to the NG-RAN node.
Unknown PDU Session ID	The action failed because the PDU Session ID is unknown in the NG-RAN node.
Unknown QoS Flow ID	The action failed because the QoS Flow ID is unknown in the NG-RAN node.
Multiple QoS Flow ID Instances	The action failed because multiple instances of the same QoS flow had been provided to the NG-RAN node.
Switch Off Ongoing	The reason for the action is an ongoing switch off i.e. the concerned cell will be switched off after offloading and not be available. It aides the receiving NG-RAN node in taking subsequent actions, e.g. selecting the target cell for subsequent handovers.
Not supported 5QI value	The action failed because the requested 5QI is not supported.
TXn$_{DCoverall}$ Expiry	The reason for the action is expiry of timer TXn$_{DCoverall}$.

Radio Network Layer cause	Meaning
TXn_{DCprep} Expiry	The reason for the action is expiry of timer TXn_{DCprep}
Action Desirable for Radio Reasons	The reason for requesting the action is radio related. In the current version of this specification applicable for Dual Connectivity only.
Reduce Load	Load in the cell(group) served by the requesting node needs to be reduced. In the current version of this specification applicable for Dual Connectivity only.
Resource Optimisation	The reason for requesting this action is to improve the load distribution with the neighbour cells. In the current version of this specification applicable for Dual Connectivity only.
Time Critical action	The action is requested for time critical reason i.e. this cause value is reserved to represent all critical cases where radio resources are likely to be dropped if the requested action is not performed. In the current version of this specification applicable for Dual Connectivity only.
Target not Allowed	Requested action towards the indicated target cell is not allowed for the UE in question. In the current version of this specification applicable for Dual Connectivity only.
No Radio Resources Available	The cell(s) in the requested node don't have sufficient radio resources available. In the current version of this specification applicable for Dual Connectivity only.
Invalid QoS combination	The action was failed because of invalid QoS combination. In the current version of this specification applicable for Dual Connectivity only.
Encryption Algorithms Not Supported	The requested NG-RAN node is unable to support any of the encryption algorithms supported by the UE. In the current version of this specification applicable for Dual Connectivity only.
Procedure cancelled	The sending node cancelled the procedure due to other urgent actions to be performed. In the current version of this specification applicable for Dual Connectivity only.
RRM purpose	The procedure is initiated due to node internal RRM purposes. In the current version of this specification applicable for Dual Connectivity only.
Improve User Bit Rate	The reason for requesting this action is to improve the user bit rate. In the current version of this specification applicable for Dual Connectivity only.
User Inactivity	The action is requested due to user inactivity on all PDU Sessions. The action may be performed on several levels: - on UE Context level, if NG is requested to be released in order to optimise the radio resources; or S-NG-RAN node didn't see activity on the PDU session recently. - on PDU Session Resource or DRB or QoS flow level, e.g. if Activity Notification indicate lack of activity In the current version of this specification applicable for Dual Connectivity only.
Radio Connection With UE Lost	The action is requested due to losing the radio connection to the UE. In the current version of this specification applicable for Dual Connectivity only.
Failure in the Radio Interface Procedure	Radio interface procedure has failed. In the current version of this specification applicable for Dual Connectivity only.
Bearer Option not Supported	The requested bearer option is not supported by the sending node. In the current version of this specification applicable for Dual Connectivity only.
UP integrity protection not possible	The PDU session cannot be accepted according to the required user plane integrity protection policy.
UP confidentiality protection not	The PDU session cannot be accepted according to the

Radio Network Layer cause	Meaning
possible	required user plane confidentiality protection policy.
Resources not available for the slice(s)	The requested resources are not available for the slice(s).
UE Maximum integrity protected data rate reason	The request is not accepted in order to comply with the maximum data rate for integrity protection supported by the UE.
CP Integrity Protection Failure	The request is not accepted due to failed control plane integrity protection.
UP Integrity Protection Failure	The procedure is initiated because the SN (hosting node) detected an Integrity Protection failure in the UL PDU coming from the MN.
Slice(s) not supported by NG-RAN	The failure is due to slice(s) not supported by the NG-RAN node.
MN Mobility	The procedure is initiated due to relocation of the M-NG-RAN node UE context.
SN Mobility	The procedure is initiated due to relocation of the S-NG-RAN node UE context.
Count reaches max value,	Indicates the PDCP COUNT for UL or DL reached the max value and the bearer may be released.
Unknown Old NG-RAN node UE XnAP ID	The action failed because the Old NG-RAN node UE XnAP ID or the S-NG-RAN node UE XnAP ID is unknown.
PDCP Overload	The procedure is initiated due to PDCP resource limitation.
DRB ID not available	The action failed because the M-NG-RAN node is not able to provide additional DRB IDs to the S-NG-RAN node.
Unspecified	Sent for radio network layer cause when none of the specified cause values applies.
UE Context ID not known	The context retrieval procedure cannot be performed because the UE context cannot be identified.
Non-relocation of context	The context retrieval procedure is not performed because the old RAN node has decided not to relocate the UE context.
CHO-CPC resources to be changed	The prepared resources for CHO or CPC for a UE are to be changed.
RSN not available for the UP	The redundant user plane resources are not available.
NPN Access denied	Access denied, or release is required, due to NPN reasons.
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 NG-RAN node 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.
UE Power Saving	The procedure is initiated to accommodate the preference indicated by UE to release the S-NG-RAN node for UE power saving purpose.
Not existing NG-RAN node$_2$ Measurement ID	The action failed because the NG-RAN node$_2$ Measurement ID is not used.
Insufficient UE Capabilities	The procedure can't proceed due to insufficient UE capabilities.
Normal Release	The release is due to normal reasons.
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.
SSB not Available	The concerned SSB is not available.
LTM Triggered	The release is due to that LTM is triggered in M-NG-RAN node.
No Backhaul Resource	The reject is due to no sufficient backhaul radio resource available.
mIAB-node not authorized	The reject is due to the mobile IAB-MT is not authorized.
IAB not Authorized	The action is requested due to the S-NG-RAN node having completed the operation for a non-authorized IAB-node.

Transport Layer cause	Meaning
Transport resource unavailable	The required transport resources are not available.

Unspecified	Sent when none of the above cause values applies but still the cause is Transport Network Layer related.

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	NG-RAN node control processing overload.
Hardware Failure	NG-RAN node hardware failure.
Not enough User Plane Processing Resources	NG-RAN node has insufficient user plane processing resources available.
O&M Intervention	Operation and Maintenance intervention related to NG-RAN node equipment.
Unspecified	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.

9.2.3.3 Criticality Diagnostics

The *Criticality Diagnostics* IE is sent by the NG-RAN node 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.

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).
Information Element Criticality Diagnostics		*0..<maxNrOfErrors>*		
>IE Criticality	M		ENUMERATED (reject, ignore, notify)	The IE Criticality is used for reporting the criticality of the triggering IE. The value "ignore" is not applicable.
>IE ID	M		INTEGER (0..65535)	The IE ID of the not understood or missing IE
>Type Of Error	M		ENUMERATED(not understood, missing, …)	

Range bound	Explanation
maxNrOfErrors	Maximum no. of IE errors allowed to be reported with a single message. The Value is 256.

9.2.3.4 Bit Rate

This IE indicates the number of bits delivered by NG-RAN in UL or to NG-RAN in DL or by the UE in sidelink 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 aggregate maximum bit rate.

This IE also indicates the average UE Throughput.

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

9.2.3.5 QoS Flow Level QoS Parameters

This IE defines the QoS Parameters to be applied to a QoS flow.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
CHOICE *QoS Characteristics*	M				–	
>Non Dynamic 5QI						
>>Non dynamic 5QI Descriptor	M		9.2.3.8		–	
>Dynamic 5QI						
>>Dynamic 5QI Descriptor	M		9.2.3.9		–	
Allocation and Retention Priority	M		9.2.3.7		–	
GBR QoS Flow Information	O		9.2.3.6	This IE shall be present for GBR QoS flows and is ignored otherwise.	–	
Reflective QoS Attribute	O		ENUMERATED (subject to, ...)	Reflective QoS is specified in TS 23.501 [7]. This IE applies to Non-GBR bearers only and is ignored otherwise.	–	
Additional QoS flow Information	O		ENUMERATED (more likely, …)	If this IE is set to "more likely", this indicates that traffic for this QoS flow is likely to appear more often than traffic for other flows established for the PDU session. This IE may be present in case of Non-GBR flows only and is ignored otherwise.	–	
QoS Monitoring Request	O		ENUMERATED (UL, DL, Both, …)	Indicates to measure UL, or DL, or both UL/DL delays for the	YES	ignore

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				associated QoS flow.		
QoS Monitoring Reporting Frequency	O		INTEGER (1.. 1800, …)	Indicates the Reporting Frequency for RAN part delay for Qos monitoring. Unit: second	YES	ignore
QoS Monitoring Disabled	O		ENUMERATED (true, ...)	Indicates to stop the QoS monitoring.	YES	ignore
PDU Set QoS Parameters		*0..1*		Indicates the PDU Set QoS Parameters.	YES	ignore
>UL PDU Set QoS Information	O		PDU Set QoS Information 9.2.3.203		–	
>DL PDU Set QoS Information	O		PDU Set QoS Information 9.2.3.203		–	
DL PDU Set Information Marking Support Indication	O		ENUMERATED (true, …)		YES	ignore
MMSID	O		OCTET STRING (SIZE (1))	Multi-modal service ID from the application, used to indicate QoS flows are related to a multi-modal service, as specified in TS 23.501 [7] and TS 38.300 [9].	YES	ignore
Indication of Bitrate Adaptation	O		ENUMERATED (uplink, …)	Indicates that the QoS Flow allows rate adaptation in the indicated direction.	YES	ignore

9.2.3.6 GBR QoS Flow Information

This IE indicates QoS Parameters for a GBR QoS Flow for downlink and uplink.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Maximum Flow Bit Rate Downlink	M		Bit Rate 9.2.3.4	Maximum Bit Rate in DL. Flow Bit Rates are specified in TS 23.501 [7].	–	
Maximum Flow Bit Rate Uplink	M		Bit Rate 9.2.3.4	Maximum Bit Rate in UL. Flow Bit Rates are specified in TS 23.501 [7].	–	
Guaranteed Flow Bit Rate Downlink	M		Bit Rate 9.2.3.4	Guaranteed Bit Rate (provided that there is data to deliver) in DL. Flow Bit Rates are specified in TS 23.501 [7].	–	
Guaranteed Flow Bit Rate Uplink	M		Bit Rate 9.2.3.4	Guaranteed Bit Rate (provided	–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				that there is data to deliver). Flow Bit Rates are specified in TS 23.501 [7].		
Notification Control	O		ENUMERATED (notification requested, ...)	Notification control is specified in TS 23.501 [7]	–	
Maximum Packet Loss Rate Downlink	O		Packet Loss Rate 9.2.3.11	Indicates the maximum rate for lost packets that can be tolerated in the downlink direction. Maximum Packet Loss Rate is specified in TS 23.501 [7].	–	
Maximum Packet Loss Rate Uplink	O		Packet Loss Rate 9.2.3.11	Indicates the maximum rate for lost packets that can be tolerated in the uplink direction. Maximum Packet Loss Rate is specified in TS 23.501 [7].	–	
Alternative QoS Parameters Set List	O		9.2.3.102	Indicates alternative sets of QoS Parameters for the QoS flow.	YES	ignore
Monitoring Request on Available Bitrate		*0..1*			YES	ignore
>Monitoring Request	M		ENUMERATED (ul, dl, both, stop, …)	Indicates to monitor and report UL, or DL, or both UL/DL available Bitrate for the associated QoS flow as specified in TS 23.501 [7], or stop the corresponding QoS monitoring.	–	
>DL Available Bitrate Report Thresholds	C-ifReportDL		Available Bitrate Report Threshold List 9.2.3.216		–	
>UL Available Bitrate Report Thresholds	C-ifReportUL		Available Bitrate Report Threshold List 9.2.3.216		–	

Condition	Explanation
ifReportDL	This IE shall be present if the *Monitoring Request* IE is set to the value “dl” or “both”.
ifReportUL	This IE shall be present if the Monitoring Request IE is set to the value “ul” or “both”.

9.2.3.7 Allocation and Retention Priority

This IE specifies the relative importance compared to other QoS flows for allocation and retention of the NR RAN

resource.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Allocation/Retention Priority		*1*		
>Priority Level	M		INTEGER (0..15, ...)	**Desc.:** This defines the relative importance of a resource request. (see TS 23.501 [7]). **Usage:** Values between 1 and 15 are ordered in decreasing order of priority, i.e., 1 is the highest and 15 is the lowest.
>Pre-emption Capability	M		ENUMERATED (shall not trigger pre-emption, may trigger pre-emption, ...)	**Desc.:** This IE indicates the pre-emption capability of the request on other QoS flows (see TS 23.501 [7]). **Usage:** The QoS flow shall not pre-empt other QoS flow 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 preemption of other QoS flows (see TS 23.501 [7]). **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: 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.

9.2.3.8 Non dynamic 5QI Descriptor

This IE defines 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 [7}	–	
Priority Level	O		9.2.3.62	Priority level is specified in TS 23.501 [7]. When included, it overrides standardized or pre-configured value.	–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Averaging Window	O		9.2.3.14	Averaging window is specified in TS 23.501 [7]. When included, it overrides standardized or pre-configured value.	–	
Maximum Data Burst Volume	O		9.2.3.15	Maximum Data Burst Volume is specified in TS 23.501 [7]. When included, it overrides standardized or pre-configured value.	–	
CN Packet Delay Budget Downlink	O		Extended Packet Delay Budget 9.2.3.113	Core Network Packet Delay Budget is specified in TS 23.501 [7]. 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 9.2.3.113	Core Network Packet Delay Budget is specified in TS 23.501 [7]. This IE may be present in case of GBR QoS flows and is ignored otherwise.	YES	ignore

9.2.3.9 Dynamic 5QI Descriptor

This IE defines the QoS characteristics for a non-standardized or not pre-configured 5QI for downlink and uplink.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Priority Level	M		9.2.3.62	Priority level is specified in TS 23.501 [7].	–	
Packet Delay Budget	M		9.2.3.12	Packet Delay Budget is specified in TS 23.501 [7]. This IE is ignored if the *Extended Packet Delay Budget* IE is present.	–	
Packet Error Rate	M		9.2.3.13	Packet Error Rate is specified in TS 23.501 [7].	–	
5QI	O		INTEGER (0..255, ...)	This IE contains the dynamically assigned 5QI as specified in TS 23.501 [7].	–	
Delay Critical	C-ifGBRflow		ENUMERATED (Delay critical, Non-delay	This IE indicates whether the GBR QoS flow is delay	–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
			critical, ...)	critical as specified in TS 23.501 [7].		
Averaging Window	C-ifGBRflow		9.2.3.14	Averaging window is specified in TS 23.501 [7].	–	
Maximum Data Burst Volume	O		9.2.3.15	Maximum Data Burst Volume is specified in TS 23.501 [7]. This IE shall be included if the *Delay Critical* IE is set to "delay critical" and is be ignored otherwise.	–	
Extended Packet Delay Budget	O		9.2.3.113	Packet Delay Budget is specified in TS 23.501 [7].	YES	ignore
CN Packet Delay Budget Downlink	O		Extended Packet Delay Budget 9.2.3.113	Core Network Packet Delay Budget is specified in TS 23.501 [7]. 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 9.2.3.113	Core Network Packet Delay Budget is specified in TS 23.501 [7]. This IE may be present in case of GBR QoS flows and is ignored otherwise.	YES	ignore

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

9.2.3.10 QoS Flow Identifier

This IE identifies either a QoS Flow within a PDU Session or an MBS QoS flow within an MBS Session. Definition and use of the QoS Flow Identifier is specified in TS 23.501 [7].

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

9.2.3.11 Packet Loss Rate

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

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

9.2.3.12 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 units of 0.5ms.

9.2.3.13 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 * 10^{-k}, whereas k is the Exponent.
Exponent	M		INTEGER (0..9, ...)	

9.2.3.14 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.

9.2.3.15 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,

9.2.3.16 NG-RAN node UE XnAP ID

The NG-RAN node UE XnAP ID uniquely identifies a UE over the Xn interface within the NG-RAN node.

The use of this IE is defined in TS 38.401 [2].

NOTE: If Xn-C signalling transport is shared among multiple interface instances, the value of the NG-RAN node UE XnAP ID is allocated so that it can be associated with the corresponding Xn-C interface instance.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
NG-RAN node UE XnAP ID	M		INTEGER (0 .. 2^{32} - 1)	

9.2.3.17 UE Aggregate Maximum Bit Rate

The UE Aggregate Maximum Bitrate is applicable for all Non-GBR QoS flows per UE which is defined for the Downlink and the Uplink direction and a subscription parameter provided by the AMF to the NG-RAN.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
UE Aggregate Maximum Bit Rate		*1*		Applicable for Non-GBR QoS flows.
>UE Aggregate Maximum Bit Rate Downlink	M		Bit Rate 9.2.3.4	This IE indicates the UE Aggregate Maximum Bit Rate as specified in TS 23.501 [7] in the downlink direction.
>UE Aggregate Maximum Bit Rate Uplink	M		Bit Rate 9.2.3.4	This IE indicates the UE Aggregate Maximum Bit Rate as specified in TS 23.501 [7] in the uplink direction.

9.2.3.18 PDU Session ID

This IE identifies a PDU Session for a UE. Definition and use of the PDU Session ID is specified in TS 23.501 [7].

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

9.2.3.19 PDU Session Type

This IE defines the PDU Session Type as specified in TS 23.501 [7].

IE/Group Name	Presence	Range	IE type and reference	Semantics description
PDU Session Type	M		ENUMERATED (IPv4, IPv6, IPv4v6, Ethernet, Unstructured, ...)	

9.2.3.20 TAI Support List

This IE indicates the list of TAIs supported by NG-RAN node and associated characteristics e.g. supported slices.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
TAI Support Item		*1..<maxnoofsupportedTACs>*			–	
>TAC	M		9.2.2.5	Broadcast TAC	–	
>Broadcast PLMNs		*1..<maxnoofsupportedPLMNs>*			–	
>>PLMN Identity	M		9.2.2.4	Broadcast PLMN	–	
>>TAI Slice Support List	M		Slice Support List 9.2.3.22	Supported S-NSSAIs per TAC, per PLMN or per SNPN.	–	
>>NPN Support	O		9.2.2.72		YES	reject
>>Extended TAI Slice Support List	O		Extended Slice Support List 9.2.3.139	Additional Supported S-NSSAIs per TAC, per PLMN or per SNPN.	YES	reject
>>TAI NSAG Support List	O		9.2.3.170	NSAG information associated with the slices per TAC, per PLMN or per SNPN.	YES	ignore
>>TAI Slice	O		9.2.3.207	Indicates the cells	YES	ignore

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Unavailable Cell List				of the TAI configured with zero resources for a slice.		

Range bound	Explanation
maxnoofsupportedTACs	Maximum no. of TACs supported by an NG-RAN node. Value is 256.
maxnoofsupportedPLMNs	Maximum no. of PLMNs supported by an NG-RAN node. Value is 12.

9.2.3.21 S-NSSAI

This IE indicates the S-NSSAI as defined in TS 23.003 [22].

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
SST	M		OCTET STRING (SIZE(1))	
SD	O		OCTET STRING (SIZE(3))	

9.2.3.22 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		*1..<maxnoofSliceItems>*		
>S-NSSAI	M		9.2.3.21	

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

9.2.3.23 Index to RAT/Frequency Selection Priority

The *Index to RAT/Frequency Selection Priority* IE is used to define local configuration for RRM strategies such as camp priorities and control of inter-RAT/inter-frequency mobility in RRC_CONNECTED, as specified in TS 23.501 [7].

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Index to RAT/Frequency Selection Priority	M		INTEGER (1..256)	

9.2.3.24 GUAMI

This IE contains the Globally Unique AMF Identifier (GUAMI) as defined in TS 23.003 [22].

IE/Group Name	Presence	Range	IE type and reference	Semantics description
PLMN Identity	M		9.2.2.4	
AMF Identifier		*1*		
>AMF Region ID	M		BIT STRING (SIZE (8))	

IE/Group Name	Presence	Range	IE type and reference	Semantics description
>AMF Set ID	M		BIT STRING (SIZE (10))	
>AMF Pointer	M		BIT STRING (SIZE (6))	

9.2.3.25 Target Cell Global ID

This IE contains either an NR CGI or an E-UTRA CGI.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
CHOICE *Target Cell*	M			
>*NR*				
>>NR CGI	M		9.2.2.7	
>*E-UTRA*				
>>E-UTRA CGI	M		9.2.2.8	

9.2.3.26 AMF UE NGAP ID

This IE is defined in TS 38.413 [5] and used to uniquely identify the UE association over the source side NG interface instance.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
AMF UE NGAP ID	M		INTEGER (0 .. 2^{40} - 1)	

9.2.3.27 SCG Configuration Query

The *SCG Configuration Query* IE is used to request the S-NG-RAN node to provide current SCG configuration.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
SCG Configuration Query	M		ENUMERATED (True, …)	

9.2.3.28 RLC Mode

The *RLC Mode* IE indicates the RLC Mode used for a DRB.

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, …)	

9.2.3.29 Transport Layer Address

This IE is defined to contain an IP address.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Transport Layer Address	M		BIT STRING (SIZE(1..160, ...))	

9.2.3.30 UP Transport Layer Information

This element is used to provide the transport layer information associated with NG or Xn user plane transport. In this release it corresponds to an IP adress and a GTP Tunnel Endpoint Identifier. When the NR-DC UE is connected with an IAB, the QoS Mapping Information is used to set the IP header of packets in case that the S-NG-RAN node serves the IAB and the packets belonging to MN-terminated split bearer/SCG bearer are transmitted from M-NG-RAN node to S-NG-RAN node, and in case that the M-NG-RAN node serves the IAB and the packets belonging to SN-terminated split bearer/MCG bearer are transmitted from S-NG-RAN node to M-NG-RAN node.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
CHOICE *UP Transport Layer Information*	M				–	
>GTP tunnel						
>>Transport Layer Address	M		9.2.3.29	The Transport Layer Address is specified in TS 38.424 [19] and TS 38.414 [20].	–	
>>GTP-TEID	M		OCTET STRING (SIZE(4))	The Tunnel Endpoint Identifier (TEID) is specified in TS 29.281 [18]	–	
>>QoS Mapping Information	O		9.2.3.144		YES	reject

9.2.3.31 CP Transport Layer Information

This element is used to provide the transport layer information associated with NG or Xn control plane transport.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
CHOICE *CP Transport Layer Information*	M				–	
>Endpoint-IP-address						
>>Endpoint IP Address	M		Transport Layer Address 9.2.3.29		–	
>Endpoint-IP-address-and-port					YES	reject
>>Endpoint IP Address	M		Transport Layer Address 9.2.3.29		–	
>>Port Number	M		BIT STRING (SIZE(16))		–	

9.2.3.32 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

IE/Group Name	Presence	Range	IE type and reference	Semantics description
				[22] with the last 4 digits of the SNR masked by setting the corresponding bits to 1.

9.2.3.33 DRB ID

This IE contains the DRB ID.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
DRB ID	M		INTEGER (1..32, ...)	

9.2.3.34 DL Forwarding

This element indicates a proposal for forwarding of downlink packets.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
DL Forwarding	M		ENUMERATED (DL forwarding proposed, …)	

9.2.3.35 Data Forwarding Accepted

This element indicates that data forwarding was accepted.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Data Forwarding Accepted	M		ENUMERATED (data forwarding accepted, …)	

9.2.3.36 COUNT Value for PDCP SN Length 12

This information element indicates the 12-bit long PDCP sequence number and the corresponding 20 bits long Hyper Frame Number.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
PDCP-SN Length 12	M		INTEGER (0..4095)	
HFN for PDCP-SN Length 12	M		INTEGER (0..1048575)	

9.2.3.37 COUNT Value for PDCP SN Length 18

This information element indicates the 18-bit long PDCP sequence number and the corresponding 14 bits long Hyper Frame Number.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
PDCP-SN Length 18	M		INTEGER (0..262143)	
HFN for PDCP-SN Length 18	M		INTEGER (0..16383)	

9.2.3.38 RAN Paging Area

The *RAN Paging Area* IE defines the paging area within a PLMN for RAN paging a UE in RRC_INACTIVE state.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
PLMN Identity	M		9.2.2.4	
CHOICE RAN Paging Area Choice	M			
>*Cell List*				
>>**Cell List Item**		*1 .. < maxnoofCellsinRNA>*		
>>>NG-RAN Cell Identity	M		9.2.2.9	In this version of the specification, the RAN paging area should contain NG-RAN cells of the same RAT type.
>*RAN Area ID List*				
>>**RAN Area ID List Item**		*1 .. <maxnoofRanAreasinRNA>*		
>>>RAN Area ID	M		9.2.3.39	

Range bound	Explanation
maxnoofCellsinRNA	Maximum no. of cells in a RAN notification area. Value is 32.
maxnoofRanAreasinRNA	Maximum no. of RAN area IDs in a RAN notification area. Value is 16.

9.2.3.39 RAN Area ID

This IE defines the RAN Area ID.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
TAC	M		9.2.2.5	Tracking Area Code
RANAC	O		RAN Area Code 9.2.2.6	

9.2.3.40 UE Context ID

This IE is used to address a UE Context within an NG-RAN node.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
CHOICE *UE Context ID*	M			
>*RRC Resume*				
>>I-RNTI	M		9.2.3.46	
>>Allocated C-RNTI	M		BIT STRING (SIZE (16))	Temporary C-RNTI or C-RNTI allocated to the UE by the cell where the RRC connection has been requested to be resumed, contained in the MAC RAR or MAC MSGB as defined in TS 38.321 [35] or in TS 36.321 [36].
>>Access PCI	M		NG-RAN Cell PCI 9.2.2.10	The cell PCI where the RRC connection has been requested to be resumed.
>*RRC Reestablishment*				
>>C-RNTI	M		BIT STRING (SIZE (16))	Corresponds to information provided either in the *c-RNTI* contained in the *RRCReestablishmentRequest* message (TS 38.331 [10]) or in

IE/Group Name	Presence	Range	IE type and reference	Semantics description
				the *RRCConnectionReestablishment Request* message (TS 36.331 [14]).
>>Failure Cell PCI	M		NG-RAN Cell PCI 9.2.2.10	

9.2.3.41 Assistance Data for RAN Paging

This IE provides assistance information for RAN paging.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
RAN Paging Attempt Information	O		9.2.3.42		–	
NPN Paging Assistance Information	O		9.2.3.121		YES	ignore

9.2.3.42 RAN Paging Attempt Information

This IE includes information related to the RAN paging attempt over Xn.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Paging Attempt Count	M		INTEGER (1..16,...)	Number of the RAN paging attempt.
Intended Number of Paging Attempts	M		INTEGER (1..16,…)	Intended number of RAN paging attempts.
Next Paging Area Scope	O		ENUMERATED (same, changed, …)	Indicates whether the RAN paging area scope will change at next RAN paging attempt.

9.2.3.43 UE RAN Paging Identity

The IE defines the UE Identity for RAN paging a UE in RRC_INACTIVE.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
CHOICE *UE RAN Paging Identity*	M			
>I-RNTI full				
>>I-RNTI full	M		BIT STRING (SIZE (40))	

9.2.3.44 Paging Priority

This information element contains an indication of the priority to be considered for the paging request.

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.

9.2.3.45 Delivery Status

This IE provides the delivery status of RRC PDUs provided by RRC Transfer message.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
Delivery Status	M		INTEGER (0..2^{12}-1)	Highest successfully delivered NR PDCP SN, as defined in TS 38.323 [11].

9.2.3.46 I-RNTI

The I-RNTI is defined for allocation in an NR or E-UTRA serving cell as a reference to a UE Context within an NG-RAN node. The I-RNTI is partitioned into two parts, the first part identifies the NG-RAN node that allocated the I-RNTI and the second part identifies the UE context stored in this NG-RAN node, refer to Annex C in TS 38.300 [9], or the I-RNTI is partitioned into three parts, the first part indicates the length of NG-RAN Node ID part of the NG-RAN Node that allocated the I-RNTI, the second part identifies the NG-RAN node that allocated the I-RNTI and the third part identifies the UE context stored in this NG-RAN node, refer to Annex F in TS 38.300[9].

IE/Group Name	Presence	Range	IE type and reference	Semantics description
CHOICE *I-RNTI*				
>*I-RNTI full*				
>>I-RNTI full	M		BIT STRING (SIZE (40))	This IE is used to identify the suspended UE context of a UE in RRC_INACTIVE using 40 bits and corresponds to information provided either in the *I-RNTI-Value* IE as defined in TS 38.331 [10] or in the *I-RNTI* IE as defined in TS 36.331 [14]).
>*I-RNTI short*				
>>I-RNTI short	M		BIT STRING (SIZE (24))	This IE is used to identify the suspended UE context of a UE in RRC_INACTIVE using 24 bits and corresponds to information provided either in the *ShortI-RNTI-Value* IE as defined in TS 38.331 [10] or in the *ShortI-RNTI* IE as defined in TS 36.331 [14]).

9.2.3.47 Location Reporting Information

This information element indicates how the location information should be reported.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Event Type	M		ENUMERATED (report upon change of serving cell, report UE moving presence into or out of the Area of Interest, …, report upon change of serving cell and Area of Interest,		–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
			report aerial UE flight information)			
Report Area	M		ENUMERATED (Cell, …)		–	
Area of Interest Information	O		9.2.3.48		–	
Additional Location Information	O		ENUMERATED (Include PSCell, ...)		YES	ignore
Aerial UE Flight Information Reporting Control List		*0..1*			YES	ignore
>**Aerial UE Flight Information Reporting Control Item**		*1..<maxnoofFlightInfoReportControl>*			–	
>>Aerial UE Flight Information Reporting Control	M		9.2.3.212		–	

Range bound	Explanation
maxnoofFlightInfoReportControl	Maximum no. of Flight Info Report Control. Value is 64.

9.2.3.48 Area of Interest Information

This IE contains indicates the Area of Interest information, which may contain multiple Areas of Interest, as specified in TS 23.502 [13].

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Area of Interest Item		*1.. <maxnoofAoIs>*		
>List of TAIs in Area of Interest		*0..1*		
>>TAI in Area of Interest Item		*1..< maxnoofTAIsinAoI >*		
>>>PLMN Identity	M		9.2.2.4	
>>>TAC	M		9.2.2.5	
>List of Cells in Area of Interest		*0..1*		This IE may need to be refined with SA2.
>>Cell Item		*1..<maxnoofcellsinAoI>*		
>>>PLMN Identity	M		9.2.2.4	
>>>NG-RAN Cell Identity	M		9.2.2.9	
>List of Global NG-RAN Nodes in Area of Interest		*0..1*		
>>Global NG-RAN Node in Area of Interest Item		*1..<maxnoofRANNodesinAoI >*		
>>>Global NG-RAN Node ID	M		9.2.2.3	
>Request Reporting Reference ID	M		9.2.3.58	

Range bound	Explanation
maxnoofAOIs	Maximum no. of Areas of Interest. Value is 64.
maxnoofTAIsinAoI	Maximum no. of tracking areas in an Area of Interest. Value is 16.
maxnoofcellsinAoI	Maximum no. of cells in an Area of Interest. Value is 256.
maxnoofRANNodesinAoI	Maximum no. of global NG-RAN nodes in an Area of Interest. Value is 64.

9.2.3.49 UE Security Capabilities

The *UE Security Capabilities* IE defines the supported algorithms for encryption and integrity protection in the UE. Except as noted below, the NG-RAN nodes store and send the complete bitmaps without modification or truncation as specified in TS 38.300 [9].

NOTE: There is a 1-bit circular shift between the bitmaps of the IE in this specification and the corresponding bitmaps in TS 38.413 [5].

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
NR Encryption Algorithms	M		BIT STRING {nea1-128(1), nea2-128(2), nea3-128(3)} (SIZE(16, …))	Each position in the bitmap represents an encryption algorithm: "all bits equal to 0" – UE supports no other NR algorithm than NEA0, "second bit" – 128-NEA1, "third bit" – 128-NEA2, "fourth bit" – 128-NEA3, “fifth to eighth bit” correspond to bit 4 to bit 1 of octet 3 in the *UE Security Capability* IE defined in TS 24.501 [30], other bits reserved for future use. Value ‘1’ indicates support and value ‘0’ indicates no support of the algorithm. Algorithms are defined in TS 33.501 [28].
NR Integrity Protection Algorithms	M		BIT STRING {nia1-128(1), nia2-128(2), nia3-128(3)} (SIZE(16, …))	Each position in the bitmap represents an integrity protection algorithm: "all bits equal to 0" – UE supports no other NR algorithm than NIA0, "second bit" – 128-NIA1, "third bit" – 128-NIA2, "fourth bit" – 128-NIA3, “fifth to eighth bit” correspond to bit 4 to bit 1 of octet 4 in the *UE Security Capability* IE defined in TS 24.501 [30], other bits reserved for future use. Value ‘1’ indicates support and value ‘0’ indicates no support of the algorithm. Algorithms are defined in TS 33.501 [28].
E-UTRA Encryption Algorithms	M		BIT STRING {eea1-128(1), eea2-128(2), eea3-128(3)} (SIZE(16, …))	Each position in the bitmap represents an encryption algorithm: "all bits equal to 0" – UE supports no other algorithm than EEA0, "second bit" – 128-EEA1, "third bit" – 128-EEA2, "fourth bit" – 128-EEA3, “fifth to eighth bit” correspond to bit 4 to bit 1 of octet 5 in the *UE*

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
				Security Capability IE defined in TS 24.501 [30], other bits reserved for future use. Value '1' indicates support and value '0' indicates no support of the algorithm. Algorithms are defined in TS 33.401 [29].
E-UTRA Integrity Protection Algorithms	M		BIT STRING {eia1-128(1), eia2-128(2), eia3-128(3)} (SIZE(16, …))	Each position in the bitmap represents an integrity protection algorithm: "all bits equal to 0" – UE supports no other algorithm than EIA0, "second bit" – 128-EIA1, "third bit" – 128-EIA2, "fourth bit" – 128-EIA3, "fifth to eighth bit" correspond to bit 4 to bit 1 of octet 6 in the *UE Security Capability* IE defined in TS 24.501 [30], other bits reserved for future use. Value '1' indicates support and value '0' indicates no support of the algorithm. Algorithms are defined in TS 33.401 [29].

9.2.3.50 AS Security Information

The *AS Security Information* IE is used to generate the key material to be used for AS security with the UE.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
Key NG-RAN Star	M		BIT STRING (SIZE(256))	K_{NG-RAN}* defined in TS 33.501 [28].
Next Hop Chaining Count	M		INTEGER (0..7)	Next Hop Chaining Count (NCC) defined in TS 33.501 [28]

9.2.3.51 S-NG-RAN node Security Key

The *S-NG-RAN node Security Key* IE is used to apply security in the S-NG-RAN node as defined in TS 33.501 [28].

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
S-NG-RAN node Security Key	M		BIT STRING (SIZE(256))	The S-K_{SN} which is provided by the M-NG-RAN node, see TS 33.501 [28].

9.2.3.52 Security Indication

This IE contains the user plane integrity protection indication and confidentiality protection indication which indicates the requirements on UP integrity protection and ciphering for the corresponding PDU session, respectively. Additionally, this IE contains the maximum integrity protected data rate values (UL and DL) per UE for integrity protected DRBs.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description

Integrity Protection Indication	M		ENUMERATED (required, preferred, not needed,…)	Indicates whether UP integrity protection shall apply, should apply, or shall not apply for the concerned PDU session.
Confidentiality Protection Indication	M		ENUMERATED (required, preferred, not needed, …)	Indicates whether UP ciphering shall apply, should apply, or shall not apply for the concerned PDU session.
Maximum Integrity Protected Data Rate	C-ifIntegrityProtectionrequiredorpreferred		9.2.3.73	If present, this IE contains the values received from the CN for the overall UE capability. This IE may be ignored by the SN in the case of dual connectivity.

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

9.2.3.53 Mobility Restriction List

This IE defines roaming or access restrictions for subsequent mobility actions for which the NG-RAN provides information about the target of the mobility action towards the UE, e.g., handover, or for SCG selection during dual connectivity operation or for assigning proper RNAs. If the NG-RAN receives the *Mobility Restriction List* IE, it shall overwrite previously received restriction information. NG-RAN behaviour upon receiving this IE is specified in TS 23.501 [7].

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Serving PLMN	M		PLMN Identity 9.2.2.4		–	
Equivalent PLMNs		*0..<maxnoofEPLMNs>*		Allowed PLMNs in addition to Serving PLMN. This list corresponds to the list of "equivalent PLMNs" as defined in TS 24.501 [30]. This list is part of the roaming restriction information. Roaming restrictions apply to PLMNs other than the Serving PLMN and Equivalent PLMNs.	–	
>PLMN Identity	M		9.2.2.4		–	
RAT Restrictions		*0..<maxnoofPLMNs>*		This IE contains RAT restriction related information as specified in TS 23.501 [7].	–	
>PLMN Identity	M		9.2.2.4		–	
>RAT Restriction Information	M		BIT STRING { e-UTRA (0), nR (1), nR-unlicensed (2), nR-LEO (3), nR-MEO (4), nR-GEO (5), nR-OTHERSAT	Each position in the bitmap represents a RAT. If a bit is set to "1", the respective RAT is restricted for the UE. If a bit is set to "0",	–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
			(6)} (SIZE(8, …))	the respective RAT is not restricted for the UE. Bit 7 is reserved for future use.		
>Extended RAT Restriction Information	O		9.2.3.99	If this IE is included, the *RAT Restriction Information* IE is ignored.	YES	ignore
Forbidden Area Information		*0..<maxnoofPLMNs>*		This IE contains Forbidden Area information as specified in TS 23.501 [7].	–	
>PLMN Identity	M		9.2.2.4		–	
>Forbidden TACs		*1..<maxnoofForbiddenTACs>*			–	
>>TAC	M		9.2.2.5	The TAC of the forbidden TAI.	–	
Service Area Information		*0..<maxnoofPLMNs>*		This IE contains Service Area Restriction information as specified in TS 23.501 [7].	–	
>PLMN Identity	M		9.2.2.4		–	
>Allowed TACs		*0..<maxnoofAllowedAreas>*			–	
>>TAC	M		9.2.2.5	The TAC of the allowed TAI.	–	
>Not Allowed TACs		*0..<maxnoofAllowedAreas>*			–	
>>TAC	M		9.2.2.5	The TAC of the not-allowed TAI.	–	
Last E-UTRAN PLMN Identity	O		PLMN Identity 9.2.2.4	Indicates the E-UTRAN PLMN ID from where the UE formerly handed over to 5GS and which is preferred in case of subsequent mobility to EPS.	YES	ignore
Core Network Type Restriction for serving PLMN	O		ENUMERATED (EPCForbidden, …)	Indicates whether the UE is restricted to connect to EPC for the Serving PLMN as specified in TS 23.501 [7].	YES	ignore
Core Network Type Restriction for Equivalent PLMNs		*0..<maxnoofEPLMNs>*			YES	ignore
>PLMN Identity	M		9.2.2.4	Includes any of the Equivalent PLMNs listed in the *Mobility Restriction List* IE for which CN Type restriction applies as specified in TS	–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				23.501 [7].		
>Core Network Type Restriction	M		ENUMERATED (EPCForbidden, 5GCForbidden, …)	Indicates whether the UE is restricted to connect to EPC or to 5GC for this PLMN.	–	
NPN Mobility Information	O		9.2.3.119		YES	reject

Range bound	Explanation
maxnoofEPLMNs	Maximum no. of equivalent PLMNs. Value is 15.
maxnoofPLMNs	Maximum no. of allowed PLMNs. Value is 16.
maxnoofForbiddenTACs	Maximum no. of forbidden Tracking Area Codes. Value is 4096.
maxnoofAllowedAreas	Maximum no. of allowed or not allowed Tracking Areas. Value is 16.

9.2.3.54 Xn Benefit Value

The *Xn Benefit Value* IE indicates the quantified benefit of the signalling connection.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Xn Benefit Value	M		INTEGER (1..8, …)	Value 1 indicates lowest benefit, and 8 indicates highest benefit.

9.2.3.55 Trace Activation

This IE defines parameters related to a trace activation.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
NG-RAN Trace ID	M		9.2.3.97		–	
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, MaximumWithoutVendorSpecifi	Defined in TS 32.422 [23].	–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
			cExtension, …, MinimumOnlyVendorSpecificTraceRecord, MediumOnlyVendorSpecificTraceRecord, MaximumOnlyVendorSpecificTraceRecord)			
Trace Collection Entity IP Address	M		Transport Layer Address 9.2.3.29	For File based Reporting. Defined in TS 32.422 [23] Should be ignored if the *Trace Collection Entity* URI IE is present.	–	
Trace Collection Entity URI	O		URI 9.2.3.124	For Streaming based Reporting. Defined in TS 32.422 [23] Replaces Trace Collection Entity IP Address if present	YES	ignore
MDT Configuration	O		9.2.3.125	This IE defines the MDT configuration parameters.	YES	ignore

9.2.3.56 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, ...)	

9.2.3.57 QoS Flow Notification Control Indication Info

This IE provides information about QoS flows of a PDU Session Resource for which notification control has been requested.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
QoS Flow Notification Indication Info		*1*			–	
>QoS Flows Notify Item		*1..<maxnoofQoSFlows>*			–	
>>QoS Flow Identifier	M		9.2.3.10		–	
>>Notification Information	M		ENUMERATED (fulfilled, not fulfilled, …, not fulfilled DL, not fulfilled UL)		–	
>>Current QoS Parameters Set Index	O		Alternative QoS Parameters Set Notify Index 9.2.3.104	Index to the currently fulfilled alternative QoS parameters set.	YES	ignore

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				Value 0 indicates that NG-RAN cannot even fulfil the lowest alternative parameter set.		

Range bound	Explanation
maxnoofQoSFlows	Maximum no. of QoS flows allowed within one PDU session. Value is 64.

9.2.3.58 Request Reporting Reference ID

This IE contains the Request Reporting Reference ID and is used for UE presence in Area of Interest reporting as specified in TS 23.502 [13].

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
Request Reporting Reference ID	M		INTEGER (1..64, …)	

9.2.3.59 User plane traffic activity report

This IE is used to indicate user plane traffic activity.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
User plane traffic activity report	M		ENUMERATED (inactive, re-activated, …)	"re-activated" is only set after "inactive" has been reported for the concerned reporting object

9.2.3.60 Lower Layer presence status change

This IE is used to indicate that lower layer resources' presence status shall be changed. If the presence status is set to "release lower layers" or "suspend lower layers", SDAP entities, PDCP entities, Xn-U bearer resources, NG-U bearer resources and UE context information shall be kept.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Lower Layer presence status change	M		ENUMERATED (release lower layers, re-establish lower layers, ..., suspend lower layers, resume lower layers)	"re-establish lower layers" is only set after "release lower layers" has been indicated. "resume lower layers" shall restore SCG. "resume lower layers" shall be only set after "suspend lower layers" has been indicated.

9.2.3.61 RRC Resume Cause

The purpose of the *RRC Resume Cause* IE is to indicate to the old NG-RAN node the reason for the RRC Connection Resume as received from the UE in the *resumeCause-r15* defined in TS 36.331 [14] or in the *resumeCause* defined in TS 38.331 [10]. In this version of the specification, this is limited to the case of RNA update.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
RRC Resume Cause	M		ENUMERATED (rna-Update, ...)	

9.2.3.62 Priority Level

This IE indicates the Priority Level for a QoS flow.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Priority Level	M		INTEGER (1..127, ...)	Values ordered in decreasing order of priority, i.e. with 1 as the highest priority and 127 as the lowest priority.

9.2.3.63 PDCP SN Length

The *PDCP SN Length* IE is used to indicate the PDCP SN length configuration of the bearer.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
UL PDCP SN Length	M		ENUMERATED (12bits, 18bits, …)	This IE indicates the PDCP sequence number size for UL.
DL PDCP SN Length	M		ENUMERATED (12bits, 18bits, …)	This IE indicates the PDCP sequence number size for DL.

9.2.3.64 UE History Information

The *UE History Information* IE contains information about cells that a UE has been served by in RRC_CONNECTED state prior to the target cell. The overall mechanism is described in TS 38.300 [9].

NOTE: The definition of this IE is aligned with the definition of the *UE History Information* IE in TS 38.413 [5].

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
Last Visited Cell List		*1..<maxnoofCellsinUEHistoryInfo>*		Most recent information is added to the top of this list
>Last Visited Cell Information	M		9.2.3.65	

Range bound	Explanation
maxnoofCellsinUEHistoryInfo	Maximum number of last visited cell information records that can be reported in the IE. Value is 16.

9.2.3.65 Last Visited Cell Information

The Last Visited Cell Information may contain cell specific information.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
CHOICE *Last Visited Cell Information*	M			
>NG-RAN Cell				
>>Last Visited NG-RAN Cell Information	M		OCTET STRING	Defined in TS 38.413 [5].
>E-UTRAN Cell				
>>Last Visited E-UTRAN Cell Information	M		OCTET STRING	Defined in TS 36.413 [31].
>UTRAN Cell				
>>Last Visited UTRAN Cell Information	M		OCTET STRING	Defined in TS 25.413 [32].

IE/Group Name	Presence	Range	IE type and reference	Semantics description
>GERAN Cell				
>>Last Visited GERAN Cell Information	M		OCTET STRING	Defined in TS 36.413 [31].

9.2.3.66 Paging DRX

This IE indicates the RAN paging cycle as defined in TS 38.304 [33] and TS 36.304 [34].

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
Paging DRX	M		ENUMERATED (32, 64, 128, 256, ... , 512, 1024)	Unit is radio frame.

9.2.3.67 Security Result

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

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
Integrity Protection Result	M		ENUMERATED (performed, not performed, ...)	Indicates whether UP integrity protection is performed or not for the concerned PDU session.
Confidentiality Protection Result	M		ENUMERATED (performed, not performed, ...)	Indicates whether UP ciphering is performed or not for the concerned PDU session.

9.2.3.68 UE Context Kept Indicator

This IE indicates whether the UE Context is kept at the S-NG-RAN node in case of an inter-M-NG-RAN node handover without S-NG-RAN node change or inter-M-NG-RAN node RRC resume without S-NG-RAN node change.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
UE Context Kept Indicator	M		ENUMERATED (true, ...)	

9.2.3.69 PDU Session Aggregate Maximum Bit Rate

This IE is applicable for all Non-GBR QoS flows per PDU session which is defined for the downlink and the uplink direction and is provided at the Handover Preparation procedure to the target NG-RAN node and at the Retrieve UE Context procedure to the new NG-RAN node as received by the 5GC, during dual connectivity related procedures to the to the S-NG-RAN node as decided by the M-NG-RAN node, as specified in TS 37.340 [8].

IE/Group Name	Presence	Range	IE type and reference	Semantics description
PDU session Aggregate Maximum Bit Rate		*1*		Applicable for Non-GBR QoS flows.
>PDU session Aggregate Maximum Bit Rate Downlink	M		Bit Rate 9.2.3.4	This IE indicates the PDU session Aggregate Maximum Bit Rate as specified in TS 23.501 [7] in the downlink direction.
>PDU session Aggregate Maximum Bit Rate Uplink	M		Bit Rate 9.2.3.4	This IE indicates the PDU session Aggregate Maximum Bit Rate as specified in TS 23.501 [7] in the uplink direction.

9.2.3.70 LCID

This IE uniquely identifies a logical channel ID for the associated DRB.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
LCID	M		INTEGER (1..32, ...)	Corresponds to information provided in the *LogicalChannelIdentity* IE as defined in TS 38.331 [10].

9.2.3.71 Duplication Activation

The *Duplication Activation* IE indicates the initial status of UL PDCP duplication, i.e., 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, …)	

9.2.3.72 RRC Config Indication

This IE indicates the type of RRC configuration used at the S-NG-RAN node.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
RRC Config Indication	M		ENUMERATED (full config, delta config, ...)	

9.2.3.73 Maximum Integrity Protected Data Rate

This IE indicates the maximum aggregate data rate for integrity protected DRBs for a UE as defined in TS 38.300 [9].

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Maximum IP Rate Uplink	M		Maximum IP Rate 9.2.3.89	Indicates the maximum aggregate rate for integrity protected DRBs supported by the UE in UL. If the *Maximum IP Rate Downlink* IE is absent, this IE applies to both UL and DL.	–	
Maximum IP Rate Downlink	O		Maximum IP Rate 9.2.3.89	Indicates the maximum aggregate rate for integrity protected DRBs supported by the UE in the DL.	YES	ignore

9.2.3.74 PDCP Change Indication

The PDCP Change Indication IE is used for S-NG-RAN node to either initiate the security key update or to request PDCP data recovery in M-NG-RAN node. The PDCP Change Indication IE is also used for M-NG-RAN node to

request PDCP data recovery in S-NG-RAN node.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
CHOICE *PDCP Change Indication*	M			
>From S-NG-RAN node				
>>Indication from S-NG-RAN node to M-NG-RAN node	M		ENUMERATED (S-NG-RAN node key update required, PDCP data recovery required, ...)	S-NG-RAN node key update required indicates that the security key in S-NG-RAN node needs to be updated. The value of PDCP data recovery required indicates that the M-NG-RAN node needs to perform PDCP data recovery.
>From M-NG-RAN node				
>>Indication from M-NG-RAN node to S-NG-RAN node	M		ENUMERATED (PDCP data recovery required, ...)	The value of PDCP data recovery required indicates that the S-NG-RAN node needs to perform PDCP data recovery.

9.2.3.75 UL Configuration

This IE indicates how the UL PDCP is configured for the corresponding node.

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 the corresponding node.

9.2.3.76 UP Transport Parameters

This IE contains Xn-U related information related to a DRB.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
UP Transport Parameters		*1*		
>UP Transport Item		*1..<maxnoofSCellGroupsplus1>*		
>>UP Transport Layer Information	M		9.2.3.30	
>>Cell Group ID	M		INTEGER (0..maxnoofSCellGroups, ...)	This IE corresponds to information provided in the *CellGroupId* IE as defined in TS 38.331 [10] (0=MCG, 1=SCG). In this version of the specification, values "2" and "3" shall not be set by the sender and ignored by the receiver. For E-UTRA Cell Groups, the same encoding is used as for NR Cell Groups. NOTE: There is no corresponding IE defined in TS 36.331 [14].

Range bound	Explanation
maxnoofSCellGroups	Maximum no of Secondary Cell Groups. Value is 3.

9.2.3.77 Desired Activity Notification Level

This IE contains information on which level activity notification shall be performed.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Desired Activity Notification Level	M		ENUMERATED (None, QoS Flow, PDU session, UE, …)	

9.2.3.78 Number of DRB IDs

This IE indicates the number of DRB IDs.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Number of DRB IDs	M		INTEGER (1..32, ...)	

9.2.3.79 QoS Flow Mapping Indication

This IE is used to indicate whether only the uplink or the downlink of a QoS flow is mapped to a DRB.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
QoS Flow Mapping Indication	M		ENUMERATED (ul, dl, ...)	This IE indicates whether only the uplink or the downlink QoS flow is mapped to the DRB

9.2.3.80 RLC Status

The *RLC Status* 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	M		ENUMERATED (reestablished, ...)	Indicates that following the change of the radio status, the RLC has been re-established.

9.2.3.81 Expected UE Behaviour

This IE indicates the behaviour of a UE with predictable activity and/or mobility behaviour, to assist the NG-RAN node in determining the optimum RRC connection time and to help with the RRC_INACTIVE state transition and RNA configuration (e.g. size and shape of the RNA).

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Expected UE Activity Behaviour	O		9.2.3.82	
Expected HO Interval	O		ENUMERATED (sec15, sec30, sec60, sec90, sec120, sec180, long-time, …)	Indicates the expected time interval between inter NG-RAN node handovers. If "long-time" is included, the interval between inter NG-RAN node handovers is expected to be longer than 180 seconds.
Expected UE Mobility	O		ENUMERATED (stationary, mobile, ...)	Indicates whether the UE is expected to be stationary or mobile.
Expected UE Moving		*0..1*		Indicates the UE's expected

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Trajectory				geographical movement.
>Expected UE Moving Trajectory Item		*1..<maxnoofCellsUEMovingTrajectory>*		Includes list of visited and non-visited cells, where visited cells are listed in the order the UE visited them with the most recent cell being the first in the list. Non-visited cells are included immediately after the visited cell they are associated with.
>>Global NG-RAN Cell Identity	M		9.2.2.27	
>>Time Stayed in Cell	O		INTEGER (0..4095)	Included for visited cells and indicates the time a UE stayed in a cell in seconds. If the UE stays in a cell more than 4095 seconds, this IE is set to 4095.

Range bound	Explanation
maxnoofCellsUEMovingTrajectory	Maximum no. of cells of UE moving trajectory. Value is 16.

9.2.3.82 Expected UE Activity Behaviour

This IE indicates information about the expected "UE activity behaviour" of the UE or the PDU session as defined in TS 23.501 [7].

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Expected Activity Period	O		INTEGER (1..30|40|50|60|80|100|120|150|180|181, ...)	If set to "181" the expected activity time is longer than 180 seconds. The remaining values indicate the expected activity time in [seconds].
Expected Idle Period	O		INTEGER (1..30|40|50|60|80|100|120|150|180|181, ...)	If set to "181" the expected idle time is longer than 180 seconds. The remaining values indicate the expected idle time in [seconds].
Source of UE Activity Behaviour Information	O		ENUMERATED (subscription information, statistics, ...)	If "subscription information" is indicated, the information contained in the *Expected Activity Period* IE and the *Expected Idle Period* IE, if present, is derived from subscription information. If "statistics" is indicated, the information contained in the *Expected Activity Period* IE and the *Expected Idle Period* IE, if present, is derived from statistical information.

9.2.3.83 AMF Region Information

This IE indicates the Global AMF Region IDs of the AMF Regions to which the NG-RAN node belongs.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
AMF Region Information		*1*		
>Global AMF Region Information Item		*1..<maxnoofAMFRegions>*		

IE/Group Name	Presence	Range	IE type and reference	Semantics description
>>PLMN Identity	M		9.2.2.4	
>>AMF Region Identifier		*1*		
>>>AMF Region ID	M		BIT STRING (SIZE (8))	

Range bound	Explanation
maxnoofAMFRegions	Maximum no. of AMF Regions an NG-RAN node can be connected to. Value is 16.

9.2.3.84 TNL Association Usage

This IE indicates the usage of the TNL association.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
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.

9.2.3.85 Network Instance

This IE provides the network instance to be used by the NG-RAN node when selecting a particular transport network resource as described in TS 23.501 [7].

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Network Instance	M		INTEGER (1..256, …)	

9.2.3.86 PDCP Duplication Configuration

The *PDCP Duplication Configuration* IE indicates whether PDCP Duplication is configured or de-configured.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
PDCP Duplication Configuration	M		ENUMERATED (configured, de-configured, …)	

9.2.3.87 Secondary RAT Usage Information

This IE provides information on the Secondary RAT resources used by a PDU Session with MR-DC as specified in TS 37.340 [8].

IE/Group Name	Presence	Range	IE type and reference	Semantics description
PDU Session Usage Report		*0..1*		
>RAT Type	M		ENUMERATED (nR, e-UTRA, …, nR-unlicensed, eUTRA-unlicensed)	
>PDU Session Timed Report List	M		Volume Timed Report List 9.2.3.88	

IE/Group Name	Presence	Range	IE type and reference	Semantics description
QoS Flows Usage Report List		*0..1*		
>**QoS Flows Usage Report Item**		*1..<maxnoofQoSflows>*		
>>QoS Flow Identifier	M		9.2.3.10	
>>RAT Type	M		ENUMERATED (nR, eutra, …, nR-unlicensed, eUTRA-unlicensed)	
>>QoS Flows Timed Report List	M		Volume Timed Report List 9.2.3.88	

Range bound	Explanation
maxnoofQoSFlows	Maximum no. of QoS flows allowed within one PDU session. Value is 64.

9.2.3.88 Volume Timed Report List

This IE provides information on the data usage.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Volume Timed Report Item		*1.. <maxnoofTimePeriods>*		
>Start Timestamp	M		OCTET STRING (SIZE(4))	UTC time encoded in the same format as the first four octets of the 64-bit timestamp format as defined in section 6 of IETF RFC 5905 [37]. It indicates the start time of the collecting period of the included *Usage Count UL* IE and *Usage Count DL* IE.
>End Timestamp	M		OCTET STRING (SIZE(4))	UTC time encoded in the same format as the first four octets of the 64-bit timestamp format as defined in section 6 of IETF RFC 5905 [37]. It indicates the end time of the collecting period of the included *Usage Count UL* IE and *Usage Count DL* IE.
>Usage Count UL	M		INTEGER (0..2^{64}-1)	The unit is: octets.
>Usage Count DL	M		INTEGER (0..2^{64}-1)	The unit is: octets.

Range bound	Explanation
maxnoofTimePeriods	Maximum no. of time reporting periods. Value is 2.

9.2.3.89 Maximum IP Rate

This IE indicates the maximum aggregate data rate for integrity protected DRBs for a UE as defined in TS 38.300 [9].

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
Maximum Integrity Protected Data Rate	M		ENUMERATED (64kbps, max UE rate, …)	Defines the upper bound of the aggregate data rate of user plane integrity protected data.

9.2.3.90 UL Forwarding

This element indicates a proposal for forwarding of uplink packets.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
UL Forwarding	M		ENUMERATED (UL forwarding proposed, …)	

9.2.3.91 UE Radio Capability for Paging

This IE contains paging specific UE Radio Capability information.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
UE Radio Capability for Paging of NR	O		OCTET STRING	Includes the RRC *UERadioPagingInformation* message as defined in TS 38.331 [10].
UE Radio Capability for Paging of E-UTRA	O		OCTET STRING	Includes the RRC *UERadioPagingInformation* message as defined in TS 36.331 [14].

9.2.3.92 Common Network Instance

This IE provides the common network instance to be used by the NG-RAN node when selecting a particular transport network resource as described in TS 23.501 [7] in a format common with 5GC.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Common Network Instance	M		OCTET STRING	The octets of OCTET STRING are encoded as the Network Instance field of the *Network Instance* IE specified in TS 29.244 [45]

9.2.3.93 Default DRB Allowed

This IE is used to indicate whether the SN is allowed to configure the default DRB for a PDU session or not.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Default DRB Allowed	M		ENUMERATED (true, false, ...)	

9.2.3.94 Split Session Indicator

This IE indicates whether admitting the requested resources results in a split PDU session.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Split Session Indicator	M		ENUMERATED (split, …)	

9.2.3.95 UL Forwarding Proposal

This IE indicates a proposal for forwarding of uplink packets.

IE/Group Name	Presence	Range	IE type and	Semantics description

			reference	
UL Forwarding Proposal	M		ENUMERATED (UL data forwarding proposed, …)	

9.2.3.96 TNL Configuration Info

This IE is used for signalling IP addresses of GTP-U endpoints and additionally of IPSec endpoints used for establishment of IPSec tunnels.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Extended UP Transport Layer Addresses To Add List		*0..1*		
>Extended UP Transport Layer Addresses To Add Item		*1..<maxnoofExtTLAs>*		
>>IP-Sec Transport Layer Address	O		Transport Layer Address 9.2.3.29	Transport Layer Addresses for IP-Sec endpoint.
>>GTP Transport Layer Addresses To Add List		*0..1*		
>>>GTP Transport Layer Addresses To Add Item		*1..<maxnoofGTPTLAs>*		
>>>>GTP Transport Layer Address Info	M		Transport Layer Address 9.2.3.29	GTP Transport Layer Addresses for GTP end-points.
Extended UP Transport Layer Addresses To Remove List		*0..1*		
>Extended UP Transport Layer Addresses To Remove Item		*0..<maxnoofExtTLAs>*		
>>IP-Sec Transport Layer Address	O		Transport Layer Address 9.2.3.29	Transport Layer Addresses for IP-Sec endpoint.
>>GTP Transport Layer Addresses To Remove List		*0..1*		
>>>GTP Transport Layer Addresses To Remove Item		*1..<maxnoofGTPTLAs>*		
>>>>GTP Transport Layer Address Info	M		Transport Layer Address 9.2.3.29	GTP Transport Layer Addresses for GTP end-points.

Range bound	Explanation
maxnoofExtTLAs	Maximum no. of Extended Transport Layer Addresses in the message. Value is 16.
maxnoofGTPTLAs	Maximum no. of GTP Transport Layer Addresses for a GTP end-point in the message. Value is 16.

9.2.3.97 NG-RAN Trace ID

This IE defines the NG-RAN Trace ID.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
NG-RAN Trace ID	M		OCTET STRING (SIZE(8))	This IE is composed of the following: Trace Reference defined in TS 32.422 [23] (leftmost 6 octets, with PLMN information encoded as in

IE/Group Name	Presence	Range	IE type and reference	Semantics description
				9.2.2.4), and Trace Recording Session Reference defined in TS 32.422 [23] (last 2 octets).

9.2.3.98 Non-GBR Resources Offered

This IE indicates whether the MCG offers non-GBR resources for non-GBR QoS flows of the PDU Session Resource.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Non-GBR Resources Offered	M		ENUMERATED (true, …)	

9.2.3.99 Extended RAT Restriction Information

This element provides RAT restrictions as specified in TS 23.501 [7].

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Primary RAT Restriction	M		BIT STRING { e-UTRA (0), nR (1), nR-unlicensed (2), nR-LEO (3), nR-MEO (4), nR-GEO (5), nR-OTHERSAT (6), e-UTRA-LEO (7), e-UTRA-MEO (8), e-UTRA-GEO (9), e-UTRA-OTHERSAT (10)} (SIZE(8, …, 16))	Each position in the bitmap represents a Primary RAT. If a bit is set to "1", the respective RAT is restricted for the UE. If a bit is set to "0", the respective RAT is not restricted for the UE. Bits 11-15 reserved for future use. The Primary RAT is the RAT used in the access cell, or target cell.
Secondary RAT Restriction	M		BIT STRING { e-UTRA (0), nR (1), e-UTRA-unlicensed (2), nR-unlicensed (3)} (SIZE(8, …))	Each position in the bitmap represents a Secondary RAT. If a bit is set to "1", the respective RAT is restricted for the UE. If a bit is set to "0", the respective RAT is not restricted for the UE. Bits 4-7 reserved for future use. A Secondary RAT is a RAT, distinct from the UE's primary RAT, used in any cell serving the UE excluding the PCell.

9.2.3.100 5GC Mobility Restriction List Container

This IE contains the *Mobility Restriction List* IE specified in TS 38.413 [5] as received by the NG-RAN from the 5GC.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
5GC Mobility Restriction List Container	M		OCTET STRING	The octets of the OCTET STRING are encoded according to the specifications of the *Mobility Restriction List* IE specified in TS 38.413 [5].

9.2.3.101 Maximum Number of CHO Preparations

This IE indicates the maximum number of concurrently prepared CHO candidate cells for a UE at a candidate target NG-RAN node.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Maximum Number of CHO Preparations	M		INTEGER (1..8, ...)	

9.2.3.102 Alternative QoS Parameters Set List

This IE contains alternative sets of QoS parameters which the NG-RAN node can indicate to be fulfilled when notification control is enabled and it cannot fulfil the requested list of QoS parameters.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Alternative QoS Parameters Set Item		*1..<maxnoofQoSparaSets>*			–	
>Alternative QoS Parameters Set Index	M		9.2.3.103		–	
>Guaranteed Flow Bit Rate Downlink	O		Bit Rate 9.2.3.4		–	
>Guaranteed Flow Bit Rate Uplink	O		Bit Rate 9.2.3.4		–	
>Packet Delay Budget	O		9.2.3.12		–	
>Packet Error Rate	O		9.2.3.13		–	
>Maximum Data Burst Volume	O		9.2.3.15	Maximum Data Burst Volume is specified in TS 23.501 [7]. This IE may be included if the *Delay Critical* IE is set to "delay critical" and is ignored otherwise.	YES	ignore
>PDU Set Delay Budget Downlink	O		Extended Packet Delay Budget 9.2.3.113		YES	ignore
>PDU Set Delay Budget Uplink	O		Extended Packet Delay Budget 9.2.3.113		YES	ignore
>PDU Set Error Rate Downlink	O		Packet Error Rate 9.2.3.13		YES	ignore
>PDU Set Error Rate Uplink	O		Packet Error Rate 9.2.3.13		YES	ignore

Range bound	Explanation
maxnoofQoSparaSets	Maximum no. of alternative sets of QoS Parameters allowed for the QoS profile. Value is 8.

9.2.3.103 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.

9.2.3.104 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 *Alternative QoS Parameters Set List* IE corresponding to the currently fulfilled alternative QoS parameters set. Value 0 indicates that NG-RAN cannot even fulfil the lowest priority alternative QoS parameters set.

9.2.3.105 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

9.2.3.106 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

9.2.3.107 NR UE Sidelink Aggregate Maximum Bit Rate

This IE provides information on the Aggregate Maximum Bitrate of the UE's sidelink communication.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
NR UE Sidelink Aggregate Maximum Bit Rate	M		Bit Rate 9.2.3.4	Value 0 shall be considered as a logical error by the receiving NG-RAN node.

9.2.3.108 LTE UE Sidelink Aggregate Maximum Bit Rate

This IE provides information on the Aggregate Maximum Bitrate of the UE's sidelink communication for LTE V2X services.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
LTE UE Sidelink Aggregate Maximum Bit Rate	M		Bit Rate 9.2.3.4	Value 0 shall be considered as a logical error by the receiving NG-RAN node.

9.2.3.109 PC5 QoS Parameters

This IE provides information on the PC5 QoS parameters of the UE's sidelink communication for NR PC5.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
PC5 QoS Flow List		*1*		
>PC5 QoS Flow Item		*1..<maxnoofPC5QoSFlows>*		
>>PQI	M		INTEGER (0..255, …)	PQI is a special 5QI as specified in TS 23.501 [7].
>>PC5 Flow Bit Rates	O			Only applies for GBR QoS Flows.
>>>Guaranteed Flow Bit Rate	M		Bit Rate 9.2.3.4	Guaranteed Bit Rate for the PC5 QoS flow. Details in TS 23.501 [7].
>>>Maximum Flow Bit Rate	M		Bit Rate 9.2.3.4	Maximum Bit Rate for the PC5 QoS flow. Details in TS 23.501 [7].
>>Range	O		ENUMERATED (m50, m80, m180, m200, m350, m400, m500, m700, m1000, …)	Only applies for groupcast.
PC5 Link Aggregate Bit Rates	O		Bit Rate 9.2.3.4	Only applies for non-GBR QoS Flows.

Range bound	Explanation
maxnoofPC5QoSFlows	Maximum no. of PC5 QoS flows allowed towards one UE. Value is 2048. NOTE: ASN.1 value definition of the *maxnoofPC5QoSFlows* is 2064. The size of the PC5 QoS Flow List shall not exceed 2048 items.

9.2.3.110 UE History Information from the UE

This IE contains information about mobility history report for a UE.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
CHOICE *UE History Information from the UE*	M			
>NR				
>>NR Mobility History Report	M		OCTET STRING	*Includes the VisitedCellInfoList* IE provided in the *UEInformationResponse* message as defined in TS 38.331 [10].

9.2.3.111 RLC Duplication Information

This IE indicates the RLC duplication configuration in case that the indicated DRB is configured with more than two

RLC entities as specified in TS 38.331 [10].

IE/Group Name	Presence	Range	IE type and reference	Semantics description
RLC Activation State List		*1*		
>RLC Activation State Items		*1 .. < maxnoofRLCDuplicationstate >*		This IE indicates information on the initial secondary RLC activation state of UL PDCP duplication. Each position in the list represents a secondary RLC entity in ascending order by the LCH ID in the order of MCG and SCG.
>>Duplication State	M		ENUMERATED (Active, Inactive, ...)	
Primary RLC Indication	O		ENUMERATED (True, False, …)	This IE is present when DC based PDCP duplication is configured. This IE indicates whether the primary RLC entity located at the assisting node.

Range bound	Explanation
maxnoofRLCDuplicationstate	Maximum no of Secondary RLC entities. Value is 3.

9.2.3.112 Redundant PDU Session Information

This IE provides Redundancy information to be applied to a PDU Session.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
RSN	M		ENUMERATED (v1, v2, …)		–	
PDU Session Pair ID	O		INTEGER (0..255, ...)	as defined in TS 23.501 [7]. This IE is not used in the response message. If received, the M-NG-RAN node shall ignore it.	YES	ignore

9.2.3.113 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.

9.2.3.114 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 9.2.3.115	

IE/Group Name	Presence	Range	IE type and reference	Semantics description
TSC Assistance Information Uplink	O		TSC Assistance Information 9.2.3.115	

9.2.3.115 TSC Assistance Information

This IE provides the TSC assistance information for a TSC QoS flow in the uplink or downlink (see TS 23.501 [7]).

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Periodicity	M		9.2.3.116	Periodicity as specified in TS 23.501 [7].	–	
Burst Arrival Time	O		9.2.3.117	Burst Arrival Time as specified in TS 23.501 [7].	–	
Survival Time	O		9.2.3.152		YES	ignore
Capability for BAT Adaptation	O		ENUMERATED (true, …)		YES	ignore
N6 Jitter Information	O		9.2.3.204		YES	ignore

9.2.3.116 Periodicity

This IE indicates the Periodicity of the TSC QoS flow as defined in TS 23.501 [7].

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Periodicity	M		INTEGER (0..640000, …)	Periodicity expressed in units of 1 us.

9.2.3.117 Burst Arrival Time

This IE indicates the Burst Arrival Time of the TSC QoS flow as defined in TS 23.501 [7].

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Burst Arrival Time	M		OCTET STRING	Encoded in the same format as the *ReferenceTime* IE as defined in TS 38.331 [10]. The value is provided with 1 us accuracy.

9.2.3.118 Redundant QoS Flow Indicator

This IE provides the Redundant QoS Flow Indicator for a QoS flows as specified in TS 23.501 [7].

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Redundant QoS Flow Indicator	M		ENUMERATED (true, false)	This IE indicates if this QoS flow is requested for the redundant transmission. Value "true" indicates that redundant transmission is requested for this QoS flow. Value "false" indicates that redundant transmission is requested to be stopped if started.

9.2.3.119 NPN Mobility Information

This information element indicates the access restrictions related to an NPN.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
CHOICE *NPN Mobility Information*	M				–	
>SNPN Mobility Information						
>>Serving NID	M		NID 9.2.2.65		–	
>>Equivalent SNPNs		*0..<maxnoofESNPNs>*		Allowed SNPNs in addition to Serving SNPN. This list corresponds to the list of "equivalent SNPNs" as defined in TS 24.501 [30]. This list is part of the roaming restriction information. Roaming restrictions apply to SNPNs other than the Serving SNPN and Equivalent SNPNs.	YES	reject
>>>PLMN Identity	M		9.2.2.4		–	
>>>NID	M		9.2.2.65		–	
>PNI-NPN Mobility Information						
>>Allowed PNI-NPN ID List	M		9.2.3.120		–	

Range bound	Explanation
maxnoofESNPNs	Maximum no. of equivalent SNPNs. Value is 15.

9.2.3.120 Allowed PNI-NPN ID List

This IE contains information on allowed UE mobility in PNI-NPN including allowed PNI-NPNs and whether the UE is allowed to access non-CAG cells for each PLMN.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Allowed PNI-NPN ID List		*1..<maxnoofEPLMNs+1>*		
>PLMN Identity	M		9.2.2.4	
>PNI-NPN Restricted Information	M		9.2.3.123	
>Allowed CAG-Identifier List per PLMN		*1..<maxnoofCAGsperPLMN>*		
>>CAG-Identifier	M		9.2.2.66	

Range bound	Explanation
maxnoofEPLMNs+1	Maximum no. of equivalent PLMNs plus one serving PLMN. Value is 16.
maxnoofCAGsperPLMN	Maximum number of CAGs per PLMN in UE's Allowed PNI-NPN ID List. Value is 256.

9.2.3.121 NPN Paging Assistance Information

This IE contains NPN Paging Assistance Information.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
CHOICE *NPN Mobility Information*	M			
>PNI-NPN Information				
>>Allowed PNI-NPN ID List	M		9.2.3.120	

9.2.3.122 Void

Void.

9.2.3.123 PNI-NPN Restricted Information

This IE indicates whether the UE is allowed to access cells that support PNI-NPNs for a PLMN.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
PNI-NPN Restricted Information	M		ENUMERATED (restricted, not-restricted, …)	If set to "restricted", the IE indicates that the UE is not allowed to access non-CAG cells for a PLMN.

9.2.3.124 URI

This IE is defined to contain a URI address.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
URI	M		VisibleString	String representing URI (Uniform Resource Identifier)

9.2.3.125 MDT Configuration

The IE defines the MDT configuration parameters.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
MDT Configuration-NR	O		9.2.3.126		–	
MDT Configuration-EUTRA	O		9.2.3.127		–	
MN only MDT collection	O		ENUMERATED (MN Only, …)	The indication to flexible control of the MDT data collection trigger.	YES	ignore

9.2.3.126 MDT Configuration-NR

The IE defines the MDT configuration parameters of NR.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
MDT Activation	M		ENUMERATED (Immediate MDT only, Immediate MDT and Trace, Logged MDT only, ...)		–	
CHOICE *Area Scope of MDT-NR*	O				–	
>*Cell based*				If *PNI-NPN Area Scope of MDT* IE is present, this IE covers non-CAG cells only, where non-CAG cells refer to cells that only provide public access.		
>>**Cell ID List for MDT-NR**		*1 .. <maxnoofCellIDforMDT>*			–	
>>>NR CGI	M		9.2.2.7		–	
>*TA based*				If *PNI-NPN Area Scope of MDT* IE is present, this IE covers non-CAG cells only, where non-CAG cells refer to cells that only provide public access.		
>>**TA List for MDT**		*1 .. <maxnoofTAforMDT>*			–	
>>>TAC	M		9.2.2.5	The TAI is derived using the current serving PLMN.	–	
>*TAI based*				If *PNI-NPN Area Scope of MDT* IE is present, it covers non-CAG cells only, where non-CAG cells refer to cells that only provide public access.		
>>**TAI List for MDT**		*1*			–	
>>>**TAI List for MDT Item**		*1 .. <maxnoofTAforMDT>*			–	
>>>>PLMN Identity	M		9.2.2.4		–	
>>>>TAC	M		9.2.2.5		–	
>*PNI-NPN Based MDT*					YES	ignore
>>CAG List for MDT			9.2.3.191		–	
>*SNPN Cell Based MDT*					YES	ignore
>>**SNPN *Cell ID List for MDT***		*1..<maxnoofCellIDforMDT>*			–	
>>>NR CGI	M		9.2.2.7		–	
>>>NID	M		9.2.2.65	Identifies an SNPN together with the PLMN Identity in the *NR CGI* IE.	–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
>*SNPN TAI Based MDT*					YES	ignore
>>SNPN TAI List for MDT		*1..<maxnoofTAforMDT>*			–	
>>>PLMN Identity	M		9.2.2.4		–	
>>>TAC	M		9.2.2.5		–	
>>>NID	M		9.2.2.65	Identifies an SNPN together with the *PLMN Identity* IE.	–	
>*SNPN Based MDT*					YES	ignore
>>SNPN List for MDT		*1..<maxnoofMDTSNPNs>*			–	
>>>PLMN Identity	M		9.2.2.4		–	
>>>NID	M		9.2.2.65	Identifies an SNPN together with the *PLMN Identity* IE.	–	
>*Geography Based MDT*				The geographical area scope can be used with NTN deployment.	YES	ignore
>>Geographical Area			9.2.3.240		–	
CHOICE *MDT Mode*	M				–	
>*Immediate MDT-NR*						
>>Measurements to Activate	M		BIT STRING (SIZE(8))	Each position in the bitmap indicates a MDT measurement, as defined in TS 37.320 [43]. First Bit = M1, Second Bit= M2, Fourth Bit = M4, Fifth Bit = M5, Sixth Bit = logging of M1 from event triggered measurement reports according to existing RRM configuration, 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 3.	–	
>>M1 Configuration	C-ifM1		9.2.3.128		–	
>>M4 Configuration	C-ifM4		9.2.3.129		–	
>>M5 Configuration	C-ifM5		9.2.3.130		–	
>>MDT Location Information	O		BIT STRING (SIZE(8))	Each position in the bitmap represents requested location information as defined in TS 37.320 [43]. First Bit = GNSS Other bits are	–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				reserved for future use and are ignored if received. Value "1" indicates "activate" and value "0" indicates "do not activate". The eNB shall ignore the first bit unless the *Measurements to Activate* IE has the first bit or the sixth bit set to "1".		
>>M6 Configuration	C-ifM6		9.2.3.131		–	
>>M7 Configuration	C-ifM7		9.2.3.132		–	
>>Bluetooth Measurement Configuration	O		9.2.3.134		–	
>>WLAN Measurement Configuration	O		9.2.3.135		–	
>>Sensor Measurement Configuration	O		9.2.3.136		–	
>*Logged MDT-NR*						
>>Logging interval	M		ENUMERATED (ms320, ms640, ms1280, ms2560, ms5120, ms10240, ms20480, ms30720, ms40960 , ms61440, infinity, ...)	Corresponds to information provided in the *LoggingInterval* IE as defined in TS 38.331 [10]. The value "infinity" represents one shot logging, i.e., only one log per event in the logged MDT report.	–	
>>Logging duration	M		ENUMERATED (10, 20, 40, 60, 90, 120)	Corresponds to information provided in the *LoggingDuration* IE as defined in TS 38.331 [10]. Unit: [minute].	–	
>>CHOICE *Report Type*	M				–	
>>>*Periodical*						
>>>*Event Triggered*						
>>>>Logged Event Trigger Config	M		9.2.3.137		–	
>>Bluetooth Measurement Configuration	O		9.2.3.134		–	
>>WLAN Measurement Configuration	O		9.2.3.135		–	
>>Sensor Measurement Configuration	O		9.2.3.136		–	
>>Area Scope of	O		9.2.3.140		–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Neighbour Cells						
>>Early Measurement	O		ENUMERATED (true, ...)	This IE indicates whether the UE is allowed to log measurements on early measurement related frequencies in logged MDT as specified in TS 38.331 [10].	–	
Signalling based MDT PLMN List	O		MDT PLMN List 9.2.3.133		–	
PNI-NPN Area Scope of MDT		*0..1*			YES	Ignore
>CAG List for MDT	M		9.2.3.191		–	
Network Slice Area Scope of MDT	O		9.2.3.239		YES	ignore

Range bound	Explanation
maxnoofCellIDforMDT	Maximum no. of Cell ID subject for MDT scope. Value is 32.
maxnoofTAforMDT	Maximum no. of TA subject for MDT scope. Value is 8.
maxnoofMDTSNPNs	Maximum no. of SNPNs in the MDT SNPN list. Value is 16.

Condition	Explanation
ifM1	This IE shall be present if the *Measurements to Activate* IE has the first bit set to "1".
ifM4	This IE shall be present if the *Measurements to Activate* IE has the fourth bit set to "1".
ifM5	This IE shall be present if the *Measurements to Activate* IE has the fifth bit set to "1".
ifM6	This IE shall be present if the *Measurements to Activate* IE has the seventh bit set to "1".
ifM7	This IE shall be present if the *Measurements to Activate* IE has the eighth bit set to "1".

9.2.3.127 MDT Configuration-EUTRA

The IE defines the MDT configuration parameters of EUTRA.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
MDT Activation	M		ENUMERATED(Immediate MDT only, Immediate MDT and Trace, Logged MDT only, ...)	
CHOICE *Area Scope of MDT-E-UTRA*	O			
>Cell based				
>>**Cell ID List for MDT**		*1 .. <maxnoofCellIDforMDT>*		
>>>E-UTRA CGI	M		9.2.2.8	
>TA based				
>>**TA List for MDT**		*1 .. <maxnoofTAforMDT>*		
>>>TAC	M		9.2.2.5	The TAI is derived using the current serving PLMN.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
>*TAI based*				
>>**TAI List for MDT**		*1*		
>>>**TAI List for MDT Item**		*1 .. <maxnoofTAforMDT>*		
>>>>PLMN Identity	M		9.2.2.4	
>>>>TAC	M		9.2.2.5	
MDT Mode E-UTRA	M		OCTET STRING	*MDTMode* IE defined in TS 36.413 [31].
Signalling based MDT PLMN List	M		MDT PLMN List 9.2.3.133	

Range bound	Explanation
maxnoofCellIDforMDT	Maximum no. of Cell ID subject for MDT scope. Value is 32.
maxnoofTAforMDT	Maximum no. of TA subject for MDT scope. Value is 8.

9.2.3.128 M1 Configuration

This IE defines the parameters for M1 measurement collection.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
M1 Reporting Trigger	M		ENUMERATED (periodic, A2event-triggered, A2event-triggered periodic, …)		–	
M1 Threshold Event A2	C-ifM1A2trigger			Included in case of event-triggered or event-triggered periodic reporting for measurement M1.	–	
>CHOICE *Threshold*	M				–	
>>*RSRP*						
>>>Threshold RSRP	M		INTEGER (0..127)	Corresponds to information provided in the *RSRP-Range* IE as defined in TS 38.331 [10].	–	
>>*RSRQ*						
>>>Threshold RSRQ	M		INTEGER (0..127)	Corresponds to information provided in the *RSRQ-Range* IE as defined in TS 38.331 [10].	–	
>>*SINR*						
>>>Threshold SINR	M		INTEGER (0..127)	Corresponds to information provided in the *SINR-Range* IE as defined in TS 38.331 [10].	–	
M1 Periodic reporting	C-ifperiodicMDT			Included in case of periodic or event-triggered periodic reporting for measurement M1.	–	
>Report interval	M		ENUMERATED	Corresponds to	–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
			(ms120, ms240, ms480, ms640, ms1024, ms2048, ms5120, ms10240, min1, min6, min12, min30, min60)	information provided in the *ReportInterval* IE as defined in TS 38.331 [10]. The value min60 is not used in the specification.		
>Report amount	M		ENUMERATED (1, 2, 4, 8, 16, 32, 64, infinity)	Corresponds to information provided in the *reportAmount* as defined in TS 38.331 [10] and represents the number of reports.	–	
>Extended Report interval	O		ENUMERATED (ms20480, ms40960,...)	This IE is the extension of *Report interval* IE and corresponds to information provided in the *ReportInterval* IE as defined in TS 38.331 [10]. If this IE is present, the *Report interval* IE is ignored.	YES	ignore
Include Beam Measurements Indication	O		ENUMERATED (true, …)	To configure whether the UE should include beam level measurements.	YES	ignore
Beam Measurements Report Configuration	C-ifM1BeamMeasInd				YES	ignore
>Beam Measurements Report Quantity	O			This IE indicates the beam measurement quantity and corresponds to information provided in the *MeasReportQuantity* IE as defined in TS 38.331 [10].	–	
>>RSRP	M		ENUMERATED (true, …, false)		–	
>>RSRQ	M		ENUMERATED (true, …, false)		–	
>>SINR	M		ENUMERATED (true, …, false)		–	
>MaxNrofRS-IndexesTo Report	O		INTEGER (1..64, …)	Indicates the max number of beam measurements to be reported and corresponds to information provided in the *maxNrofRS-IndexesToReport* as defined in TS 38.331 [10].	–	

Condition	Explanation

ifM1A2trigger	This IE shall be present if the *Measurements to Activate* IE has the first bit set to "1" and the *M1 Reporting Trigger* IE is set to "A2event-triggered" or to "A2event-triggered periodic".
ifperiodicMDT	This IE shall be present if the *M1 Reporting Trigger* IE is set to "periodic", or to "A2event-triggered periodic".
ifM1BeamMeasInd	This IE shall be present if the *Include Beam Measurements Indication* IE is set to "true".

9.2.3.129 M4 Configuration

This IE defines the parameters for M4 measurement collection.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
M4 Collection Period	M		ENUMERATED (ms1024, ms2048, ms5120, ms10240, min1, …)		–	
M4 Links to log	M		ENUMERATED (uplink, downlink, both-uplink-and-downlink, …)		–	
M4 Report Amount	O		ENUMERATED (1, 2, 4, 8, 16, 32, 64, infinity …)	Number of reports.	YES	ignore

9.2.3.130 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, 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

9.2.3.131 M6 Configuration

This IE defines the parameters for M6 measurement collection.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
M6 Report Interval	M		ENUMERATED (ms120,ms240, ms480,ms640, ms1024,		–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
			ms2048, ms5120, ms10240, ms20480,ms40960,min1,min6, min12,min30, …)			
M6 Links to log	M		ENUMERATED (uplink, downlink, both-uplink-and-downlink, …)		–	
M6 Report Amount	O		ENUMERATED (1, 2, 4, 8, 16, 32, 64, infinity …)	Number of reports.	YES	ignore
Excess Packet Delay Threshold Configuration	O		9.2.3.171		YES	ignore

9.2.3.132 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 (uplink, downlink, both-uplink-and-downlink, …)		–	
M7 Report Amount	O		ENUMERATED (1, 2, 4, 8, 16, 32, 64, infinity …)	Number of reports.	YES	ignore

9.2.3.133 MDT PLMN List

The purpose of the *MDT PLMN List* IE is to provide the list of PLMN allowed for MDT.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
MDT PLMN List		*1..<maxnoofMDTPLMNs>*		
>PLMN Identity	M		9.2.2.4	

Range bound	Explanation
maxnoofMDTPLMNs	Maximum no. of PLMNs in the MDT PLMN list. Value is 16.

9.2.3.134 Bluetooth Measurement Configuration

This IE defines the parameters for Bluetooth measurement collection.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Bluetooth Measurement Configuration	M		ENUMERATED (Setup, …)	
Bluetooth Measurement		*0..1*		This IE is present if the *Bluetooth*

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Configuration Name List				*Measurement Configuration* IE is set to "Setup".
>**Bluetooth Measurement Configuration Name Item IEs**		*1 .. <maxnoofBluetoothName>*		
>>Bluetooth Measurement Configuration Name	M		OCTET STRING (SIZE (1..248))	
BT RSSI	O		ENUMERATED (True, …)	In case of Immediate MDT, it corresponds to M8 measurement as defined in TS 37.320 [43].

Range bound	Explanation
maxnoofBluetoothName	Maximum no. of Bluetooth local name used for Bluetooth measurement collection. Value is 4.

9.2.3.135 WLAN Measurement Configuration

This IE defines the parameters for WLAN measurement collection.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
WLAN Measurement Configuration	M		ENUMERATED (Setup, …)	
WLAN Measurement Configuration Name List		*0..1*		This IE is present if the *WLAN Measurement Configuration* IE is set to "Setup".
>**WLAN Measurement Configuration Name Item IEs**		*1 .. <maxnoofWLANName>*		
>>WLAN Measurement Configuration Name	M		OCTET STRING (SIZE (1..32))	
WLAN RSSI	O		ENUMERATED (True, …)	In case of Immediate MDT, it corresponds to M8 as defined in TS 37.320 [43].
WLAN RTT	O		ENUMERATED (True, …)	In case of Immediate MDT, it corresponds to M9 as defined in TS 37.320 [43].

Range bound	Explanation
maxnoofWLANName	Maximum no. of WLAN SSID used for WLAN measurement collection. Value is 4.

9.2.3.136 Sensor Measurement Configuration

This IE defines the parameters for Sensor measurement collection.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Sensor Measurement Configuration	M		ENUMERATED (Setup, …)	
Sensor Measurement Configuration Name List		*0..1*		
>**Sensor Measurement Configuration Name Item IEs**		*1 .. <maxnoofSensorName>*		
>>Uncompensated Barometric Configuration	O		ENUMERATED (True, …)	
>>UE Speed	O		ENUMERATED	

Configuration			(True, …)	
>>UE Orientation Configuration	O		ENUMERATED (True, …)	

Range bound	Explanation
maxnoofSensorName	Maximum no. of Sensor local name used for Sensor measurement collection. Value is 3

9.2.3.137 Logged Event Trigger Config

This IE configures with UE with specific events for triggering MDT configuration. Current specified event is based on out of coverage (OOC) detection.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
CHOICE *Event Type Trigger*	M			
>Out of Coverage				
>>Out of Coverage Indication	M		ENUMERATED (true, …)	
>L1 Event				
>>CHOICE *L1 Event Threshold*	M			
>>>RSRP				
>>>>Threshold RSRP	M		INTEGER (0..127)	Corresponds to information provided in the *RSRP-Range* IE as defined in TS 38.331 [10].
>>>RSRQ				
>>>>Threshold RSRQ	M		INTEGER (0..127)	Corresponds to information provided in the *RSRQ-Range* IE as defined in TS 38.331 [10].
>>Hysteresis	M		INTEGER (0..30)	This parameter is used within the entry and leave condition of an event triggered reporting condition and corresponds to information provided in the *Hysteresis* IE as defined in TS 38.331 [10].
>>Time to trigger	M		ENUMERATED (ms0, ms40, ms64, ms80, ms100, ms128, ms160, ms256, ms320, ms480, ms512, ms640, ms1024, ms1280, ms2560, ms5120)	Time during which specific criteria for the event needs to be met in order to trigger a measurement report. Corresponds to information provided in the *TimeToTrigger* IE as defined in TS 38.331 [10]

9.2.3.138 UE Radio Capability ID

This IE contains UE Capability ID as defined in TS 23.003 [22].

IE/Group Name	Presence	Range	IE type and reference	Semantics description
UE Radio Capability ID	M		OCTET STRING	

9.2.3.139 Extended Slice Support List

This IE indicates a list of supported slices.

IE/Group Name	Presence	Range	IE type and	Semantics description

			reference	
Slice Support Item		*1..<maxnoofExtSliceItems>*		
>S-NSSAI	M		9.2.3.21	

Range bound	Explanation
maxnoofExtSliceItems	Maximum no. of signalled slice support items. Value is 65535.

9.2.3.140 Area Scope of Neighbour Cells

This IE defines the area scope of neighbour cells for logged MDT.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Area Scope of Neighbour Cells	M	*1 .. <maxnoofFreqforMDT>*		
>NR FreqInfo	M		NR Frequency Info 9.2.2.19	
>**PCI List for MDT**	O	*1 .. <maxnoofNeighPCIforMDT>*		
>>NRPCI	M		INTEGER (0..1007)	NR Physical Cell ID

Range bound	Explanation
maxnoofFreqforMDT	Maximum no. of Frequency Information subject for MDT scope. Value is 8.
maxnoofNeighPCIforMDT	Maximum no. of Neighbour cells subject for MDT scope. Value is 32.

9.2.3.141 Extended UE Identity Index Value

This IE is used by the target NG-RAN node to calculate the Paging Frame and Paging Occasion as specified in TS 36.304 [34], the Paging Frame and Paging Occasion for eDRX and the UE_ID based subgroup ID for PEI as specified in TS 38.304 [33].

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Extended UE Identity Index Value	M		BIT STRING (SIZE(16))	

9.2.3.142 E-UTRA Paging eDRX Information

This IE indicates the E-UTRA Paging eDRX parameters for RRC_IDLE as defined in TS 36.304 [34], if configured by higher layers.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
E-UTRA Paging eDRX Cycle	M		ENUMERATED (hfhalf, hf1, hf2, hf4, hf6, hf8, hf10, hf12, hf14, hf16, hf32, hf64, hf128, hf256, ...)	The DRX defined in TS 36.304 [34]. Unit: [number of hyperframes].
E-UTRA Paging Time Window	O		ENUMERATED (s1, s2, s3, s4, s5, s6, s7, s8, s9, s10, s11, s12, s13, s14, s15, s16, ...)	Unit: [1.28 second].

9.2.3.143 UE Specific DRX

This IE indicates the UE specific paging cycle as defined in TS 36.304 [34] and TS 38.304 [33].

IE/Group Name	Presence	Range	IE type and reference	Semantics description
UE Specific DRX	M		ENUMERATED (32, 64, 128, 256, …)	Unit is radio frame.

9.2.3.144 QoS Mapping Information

This IE indicates the DSCP and/or IPv6 Flow Label field(s) of IP packets sent in the corresponding GTP-U tunnel.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
DSCP	O		BIT STRING (SIZE(6))	
Flow label	O		BIT STRING (SIZE(20))	

9.2.3.144a Hashed UE Identity Index Value

This IE contains the 13 Most Significant Bits (MSBs) of the Hashed ID defined in TS 38.304 [33] or TS 36.304 [34].

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Hashed UE Identity Index Value	M		BIT STRING (SIZE(13, …))	

9.2.3.145 MRB ID

This IE contains the MRB ID as specified in TS 38.401 [2].

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

9.2.3.146 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))	Encoded as defined in TS 23.003 [22].
NID	O		9.2.2.65	

9.2.3.147 MRB Progress Information

This IE contains the MRB progress Information.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
CHOICE *PDCP SN Status*	M			
>12bits				

>>PDCP SN Length 12	M		INTEGER (0..4095)	
>18bits				
>>PDCP SN Length 18	M		INTEGER (0..262143)	

9.2.3.148 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, …)	

9.2.3.149 MBS Service Area information

This IE contains the MBS service area information.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
MBS Service Area Cell List		*0..<maxnoofCellsforMBS>*		
>NR CGI	M		9.2.2.7	
MBS Service Area TAI List		*0..<maxnoofTAIforMBS>*		
>PLMN Identity	M		9.2.2.4	
>TAC	M		9.2.2.5	

Range bound	Explanation
maxnoofCellsforMBS	Maximum no. of cells allowed within one MBS Service Area. Value is 8192.
maxnoofTAIforMBS	Maximum no. of TAs allowed within one MBS Service Area. Value is 1024.

9.2.3.150 MBS Service Area

This IE contains the MBS service area.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
CHOICE *MBS Service Area*	M			
>location independent				
>>MBS Service Area Information	M		9.2.3.149	
>location dependent				
>>MBS Service Area Information Location Dependent List		*1..<maxnoofMBSServiceAreaInformation>*		
>>>MBS Area Session ID	M		9.2.3.148	
>>>MBS Service Area Information	M		9.2.3.149	

Range bound	Explanation
maxnoofMBSServiceAreaInformation	Maximum no. of MBS Service Area Information elements in the MBS Service Area Information LocationDependent List IE. Value is 256.

9.2.3.151 SCG UE History Information

This IE contains information about the PSCells served by the secondary node in RRC_CONNECTED state.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
Last Visited PSCell List		*0..<maxnoofPSCellsPerSN>*		List of cells configured as PSCells. Most recent PSCell related information is added to the top of the list.
>Last Visited PSCell Information	M		OCTET STRING	Defined in TS 38.413 [5]

Range bound	Explanation
maxnoofPSCellsPerSN	Maximum number of last visited PSCell information records that can be reported in the IE. Value is 8.

9.2.3.152 Survival Time

This IE provides the Survival Time for a TSC QoS flow (see TS 23.501 [7]).

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Survival Time	M		INTEGER (0..1920000, …)	Expressed in units of 1 us.

9.2.3.153 Time Synchronisation Assistance Information

This IE indicates the 5G access stratum time distribution parameters as specified in TS 23.501 [7].

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Time Distribution indication	M		ENUMERATED (enabled, disabled, …)		–	
Uu Time Synchronization Error Budget	C-ifEnabled		INTEGER (0..1000000, …)	Expressed in units of 1 ns.	–	
Clock Quality Reporting Control Information	O		9.2.3.189		YES	ignore

Condition	Explanation
ifEnabled	This IE shall be present if the *Time Distribution Indication* IE is set to "enabled".

9.2.3.154 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, …)	

9.2.3.155 SCG Activation Status

This IE indicates the status of the SCG resources.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
SCG Activation Status	M		ENUMERATED	

			(SCG activated, SCG deactivated, …)	

9.2.3.156 QMC Configuration Information

This IE contains the information about the QoE Measurement Collection (QMC) configuration.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
UE Application Layer Measurement Information List		*1*		
>UE Application Layer Measurement Information Item		*1..<maxnoofUEAppLayerMeas>*		
>>UE Application Layer Measurement Configuration Information	M		9.2.3.157	

Range bound	Explanation
maxnoofUEAppLayerMeas	Maximum no. of simultaneous QoE measurement configurations at a UE. In this version of the specification, the value is 16.

9.2.3.157 UE Application Layer Measurement Configuration Information

This IE defines the information about the QoE Measurement Collection (QMC) configuration.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
QoE Reference	M		OCTET STRING (SIZE(6))	*QoE Reference*, as defined in clause 5.2 of TS 28.405 [55]. It consists of MCC+MNC+QMC ID, where the MCC and MNC are received with the QMC activation request from the management system to identify one PLMN hosting the management system, and QMC ID is a 3-byte Octet String.	–	
Measurement Configuration Application Layer ID	O		INTEGER (0..15, ...)	This IE indicates the identity of the application layer measurement configuration, and corresponds to information provided in the *MeasConfigAppLayerId* IE as defined in TS 38.331 [10].	–	
Service Type	M		ENUMERATED	This IE indicates	–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
			(QMC for DASH streaming, QMC for MTSI, QMC for VR, ...)	the service type of QoE measurements.		
QoE Measurement Status	O		ENUMERATED (ongoing, ...)	Indicates whether the QoE measurement has started.	–	
Container for Application Layer Measurement Configuration	O		OCTET STRING (SIZE(1..8000))	Contains the signalling based QoE measurement configuration, see Annex L in TS 26.247 [47], clause 16.5 in TS 26.114 [53] and clause 9 in TS 26.118 [54].	–	
CHOICE *MDT Alignment Information*	O			Indicates the MDT measurements with which alignment is required.	–	
>*S-based MDT*						
>>NG-RAN Trace ID	M		9.2.3.97	Indicates the signalling-based MDT measurements with which alignment is required.	–	
Measurement Collection Entity IP Address	O		Transport Layer Address 9.2.3.29	The IP address of the entity receiving the QoE measurement report.	–	
CHOICE *Area Scope of QMC*	O				–	
>*Cell based*						
>>Cell ID List for QMC		*1 .. <maxnoofCellIDforQMC>*			–	
>>>Global NG-RAN Cell Identity	M		9.2.2.27	This IE can indicate an NR CGI or an E-UTRA CGI.	–	
>*TA based*						
>>TA List for QMC		*1 .. <maxnoofTAforQMC>*			–	
>>>TAC	M		9.2.2.5	The TAI is derived using the current serving PLMN.	–	
>*TAI based*						
>>TAI List for QMC		*1 .. <maxnoofTAforQMC>*			–	
>>>PLMN Identity	M		9.2.2.4		–	
>>>TAC	M		9.2.2.5		–	
>*PLMN based*						
>>PLMN List for		*1 ..*			–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
QMC		*<maxnoofPLMNforQMC>*				
>>>PLMN Identity	M		9.2.2.4		–	
S-NSSAI List		*0..1*			–	
>S-NSSAI Item		*1 .. <maxnoofSNSSAIforQMC>*			–	
>>S-NSSAI	M		9.2.3.21		–	
Available RAN Visible QoE Metrics	O		9.2.3.158	Present in case of signalling-based QoE.	–	
MBS Communication Service Type	O		ENUMERATED (multicast, broadcast, …)	This IE indicates the type of MBS communication service for which the QoE measurement collection should be performed.	YES	ignore
Assistance Information for QoE Measurement	O		INTEGER (1..16, …)	This IE indicates the suggested priority of the application layer measurement configuration. Values are ordered in decreasing order of priority, i.e., with 1 as the highest priority and 16 as the lowest priority.	YES	ignore
QoE and RVQoE Reporting Paths	O		9.2.3.200	This IE indicates the SRB(s) currently used for QoE and RVQoE reporting.	YES	ignore

Range bound	Explanation
maxnoofCellIDforQMC	Maximum no. of Cell IDs comprising the QMC scope. Value is 32.
maxnoofTAforQMC	Maximum no. of TA comprising the QMC scope. Value is 8.
maxnoofPLMNforQMC	Maximum no. of PLMNs in the PLMN list for QMC scope. Value is 16.
maxnoofSNSSAIforQMC	Maximum no. of S-NSSAIs comprising the QMC scope. Value is 16.

9.2.3.158 Available RAN Visible QoE Metrics

This IE indicates which RAN visible QoE metrics can be configured by the NG-RAN for the RAN visible QoE measurement.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Buffer Level	O		ENUMERATED (true, ...)	This IE defines whether the Buffer Level can be collected as a RAN visible QoE metric by NG-RAN from UE, for DASH streaming and VR service types.
Playout Delay for Media Startup	O		ENUMERATED (true, ...)	This IE defines whether the Playout delay can be collected as a RAN visible QoE metric by NG-RAN from UE, for DASH

				streaming and VR service types.

9.2.3.159 5G ProSe Authorized

This IE provides information on the authorization status of the UE to use the 5G ProSe services.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
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.	–	
5G ProSe Layer-2 Multi-path	O		ENUMERATED (authorized, not authorized, ...)	Indicates whether the 5G ProSe Layer-2 Remote UE is authorized for 5G ProSe Multi-path transmission.	YES	ignore
5G ProSe Layer-2 UE-to-UE Relay	O		ENUMERATED (authorized, not authorized, ...)	Indicates whether the UE is authorized for 5G ProSe Layer-2 UE-to-UE Relay UE	YES	ignore
5G ProSe Layer-2 UE-to-UE Remote	O		ENUMERATED (authorized, not authorized, ...)	Indicates whether the UE is authorized for 5G ProSe Layer-2 UE-to-UE Remote UE.	YES	ignore
5G ProSe Layer-3 Multi-Hop UE-to-Network Relay	O		ENUMERATED (authorized, not authorized, ...)	Indicates whether the UE is authorized for 5G ProSe Layer-3 Multi-Hop UE-to-Network Relay.	YES	ignore
5G ProSe Layer-2 Multi-Hop UE-to-Network Relay	O		ENUMERATED (authorized, not authorized, ...)	Indicates whether the UE is authorized for 5G ProSe Layer-2 Multi-Hop UE-to-Network Relay.	YES	ignore

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
5G ProSe Layer-2 Multi-Hop Intermediate UE-to-Network Relay	O		ENUMERATED (authorized, not authorized, ...)	Indicates whether the UE is authorized for 5G ProSe Layer-2 Multi-Hop Intermediate UE-to-Network Relay.	YES	ignore
5G ProSe Layer-2 Multi-Hop Remote	O		ENUMERATED (authorized, not authorized, ...)	Indicates whether the UE is authorized for 5G ProSe Layer-2 Multi-Hop Remote.	YES	ignore

9.2.3.160 5G ProSe PC5 QoS Parameters

This IE provides information on the 5G ProSe PC5 QoS parameters of the UE's sidelink communication for 5G ProSe services.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
5G ProSe PC5 QoS Flow List		*1*		
>5G ProSe PC5 QoS Flow Item		*1..<maxnoofPC5QoSFlows>*		
>>PQI	M		INTEGER (0..255, …)	PQI is a special 5QI as specified in TS 23.501 [7].
>>5G ProSe PC5 Flow Bit Rates	O			Only applies for GBR QoS Flows.
>>>Guaranteed Flow Bit Rate	M		Bit Rate 9.2.3.4	Guaranteed Bit Rate for the 5G ProSe PC5 QoS flow. Details in TS 23.501 [7].
>>>Maximum Flow Bit Rate	M		Bit Rate 9.2.3.4	Maximum Bit Rate for the 5G ProSe PC5 QoS flow. Details in TS 23.501 [7].
>>Range	O		ENUMERATED (m50, m80, m180, m200, m350, m400, m500, m700, m1000, …)	Only applies for groupcast.
5G ProSe PC5 Link Aggregate Bit Rates	O		Bit Rate 9.2.3.4	Only applies for non-GBR QoS Flows.

Range bound	Explanation
maxnoofPC5QoSFlows	Maximum no. of 5G ProSe PC5 QoS flows allowed towards one UE. Value is 2048.

9.2.3.161 NR Paging eDRX Information

This IE indicates the NR Paging eDRX parameters as defined in TS 38.304 [33].

IE/Group Name	Presence	Range	IE type and reference	Semantics description
NR Paging eDRX Cycle	M		ENUMERATED (hfquarter, hfhalf, hf1, hf2, hf4, hf8, hf16, hf32, hf64, hf128, hf256, hf512, hf1024, …)	$T_{eDRX, CN}$ defined in TS 38.304 [33]. Unit: [number of hyperframes].
NR Paging Time Window	O		ENUMERATED (s1, s2, s3, s4, s5, s6,	Unit: [1.28 seconds]

IE/Group Name	Presence	Range	IE type and reference	Semantics description
			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)	

9.2.3.162 NR Paging eDRX Information for RRC INACTIVE

This IE indicates the NR Paging eDRX parameters for RRC_INACTIVE as defined in TS 38.304 [33].

IE/Group Name	Presence	Range	IE type and reference	Semantics description
NR Paging eDRX Cycle Inactive	M		ENUMERATED (hfquarter, hfhalf, hf1, …)	$T_{eDRX, RAN}$ defined in TS 38.304 [33]. Unit: [number of hyperframes].

9.2.3.163 SDT Support Request

This IE indicates that the UE requested for SDT and may include additional assistance information.

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.

9.2.3.164 Partial UE Context Information for SDT

This IE contains the UE context information within the PARTIAL UE CONTEXT TRANSFER message for NR SDT.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
SDT DRBs To Be Setup List		*0..1*			YES	ignore
>SDT DRBs to Be Setup Item		*1 .. <maxnoof DRBs>*			–	
>>DRB ID	M		9.2.3.33		–	
>>UL TNL Information	M		UP Transport Layer Information 9.2.3.30		–	
>>DRB RLC Bearer Configuration	M		OCTET STRING	Includes the *RLC-BearerConfig* IE as defined in subclause 6.3.2 of TS 38.331 [10]	–	
>>DRB QoS	M		QoS Flow Level QoS Parameters 9.2.3.5		–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
>>RLC Mode	M		9.2.3.28		–	
>>S-NSSAI	M		9.2.3.21		–	
>>PDCP SN Length	M		9.2.3.63		–	
>>Flows Mapped to DRB List		*1*			–	
>>>Flows Mapped to DRB Item		*1 .. <maxnoofQoSFlows>*			–	
>>>>QoS Flow Identifier	M		9.2.3.10		–	
>>>>QoS Flow Level QoS Parameters	M		9.2.3.5		–	
>>>>QoS Flow Mapping Indication	O		9.2.3.79		–	
SDT SRBs to Be Setup List		*1*		SRB1 is always included.	YES	ignore
>SDT SRBs to Be Setup Item		*1 .. <maxnoofSRBs>*			–	
>>SRB ID	M		9.2.3.165	In this version of the specification, values "0", "3", and "4" are not set by the sender and ignored by the receiver.	–	
>>SRB RLC Bearer Configuration	M		OCTET STRING	Includes the *RLC-BearerConfig* IE as defined in subclause 6.3.2 of TS 38.331 [10].	–	

Range bound	Explanation
maxnoofDRBs	Maximum no. of DRB allowed towards one UE, the maximum value is 32.
maxnoofSRBs	Maximum no. of SRB allowed towards one UE, the maximum value is 5.

9.2.3.165 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..4, ...)	Corresponds to information provided either in the *SRB-Identity* IE or in the *SRB-Identity-v1700* IE as defined in TS 38.331 [10].

9.2.3.166 PEIPS Assistance Information

This IE provides the information related to CN paging subgrouping for a particular UE, as specified in TS 38.304 [33].

IE/Group Name	Presence	Range	IE type and reference	Semantics description
CN Subgroup ID	M		INTEGER (0..7, …)	

9.2.3.167 UE Slice Maximum Bit Rate List

The UE Slice Maximum Bit Rate List includes a list of UE Slice Maximum Bit Rate, each UE Slice Maximum Bit Rate is applicable for all PDU Sessions associated with a specific S-NSSAI of that UE, which is defined for the Downlink and the Uplink direction as specified in TS 23.501 [7].

IE/Group Name	Presence	Range	IE type and reference	Semantics description
UE Slice Maximum Bit Rate		*1..<maxnoofSMBR>*		
>S-NSSAI	M		9.2.3.21	
>UE Slice Maximum Bit Rate Downlink	M		Bit Rate 9.2.3.4	This IE indicates the UE Slice Maximum Bit Rate as specified in TS 23.501 [7] in the downlink direction.
>UE Slice Maximum Bit Rate Uplink	M		Bit Rate 9.2.3.4	This IE indicates the UE Slice Maximum Bit Rate as specified in TS 23.501 [7] in the uplink direction.

Range bound	Explanation
maxnoofSMBR	Maximum no. of SLICE MAXIMUM BIT RATE for a UE. Value is 8.

9.2.3.168 Positioning Information

This IE contains positioning information that assists in the SRS configuration of the UE.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Requested SRS Transmission Characteristics	M		OCTET STRING	Requested SRS Transmission Characteristics, as defined in TS 38.455 [49].
Routing ID	M		OCTET STRING	The maximum length corresponds to NfInstanceId defined in TS 29.571 [50].
NRPPa Transaction ID	M		INTEGER (0..32767)	NRPPa Transaction ID, as defined in TS 38.455 [49]

9.2.3.169 MDT PLMN Modification List

The purpose of the *MDT PLMN Modification List* IE is to provide the modified list of PLMN allowed for MDT.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
MDT PLMN Modification List		*0..<maxnoofMDTPLMNs>*		An empty list indicates there is no PLMN allowed for MDT.
>PLMN Identity	M		9.2.2.4	

Range bound	Explanation
maxnoofMDTPLMNs	Maximum no. of PLMNs in the MDT PLMN list. Value is 16.

9.2.3.170 TAI NSAG Support List

This IE indicates the slice group mapping for all groups supported at the NG-RAN node per TAI.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
NSAG Support Item		*1..<maxnoofNSAGs>*		
>NSAG ID	M		INTEGER (0..	

			255, …)	
>NSAG Slice Support List	M		Extended Slice Support List 9.2.3.139	Indicates the list of slices which belong to the NSAG.

Range bound	Explanation
maxnoofNSAGs	Maximum no. of Slice Groups for the TAI. Value is 256.

9.2.3.171 Excess Packet Delay Threshold Configuration

This IE defines the parameters for Excess Packet Delay Threshold configuration to support the calculation of the PDCP Excess Packet Delay in the UL per DRB as specified in TS 38.314 [42].

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Excess Packet Delay Threshold Item		*1..<maxnoofThresholds>*		
>5QI	M		INTEGER (0..255, …)	Indicates the standardized or pre-configured 5QI as specified in TS 23.501 [7]
>Excess Packet Delay Threshold Value	M		ENUMERATED (ms0.25, ms0.5, ms1, ms2, ms4, ms5, ms10, ms20, ms30, ms40, ms50, ms60, ms70, ms80, ms90, ms100, ms150, ms300, ms500, …)	

Range bound	Explanation
maxnoofThresholdsForExcessPacketDelay	Maximum no. of thresholds for Excess Packet Delay configuration. Value is 255.

9.2.3.172 MT-SDT Information

This IE provides the assistance information for MT-SDT.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
MT-SDT Indicator	M		ENUMERATED (true, ...)	
MT-SDT Data Size	M		INTEGER (1..96000, ...)	Indicates the total data size for DL NAS signalling and user plane data for all SDT bearers. Unit: byte. Corresponds to the PDCP SDU size for the DL NAS signalling and the SDAP SDU size for the received DL user plane data. If the total data size exceeds 96000 bytes, the value is set to 96000.

9.2.3.173 Partial UE Context Information for Positioning

This IE contains the UE context information within the PARTIAL UE CONTEXT TRANSFER message for NR Positioning.

IE/Group Name	Presence	Range	IE type and	Semantics description

			reference	
Requested SRS Transmission Characteristics	O		OCTET STRING	Includes the *Requested SRS Transmission Characteristics* IE, as defined in TS 38.455 [49].

9.2.3.174 DL LBT Failure Information

This IE contains information on DL LBT Failures at the target gNB that results in mobility failures.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
UE Assistant Identifier	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the source gNB.
Number of DL LBT Failures	O		INTEGER (1..1000,…)	This IE indicates the number of DL LBT Failures, if available, occurring at the target gNB

9.2.3.175 Aerial UE Subscription Information

This information element is used by the NG-RAN node to know if the UE is allowed to use aerial function, refer to TS 23.501 [7].

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Aerial UE Subscription Information	M		ENUMERATED (allowed, not allowed,…)	

9.2.3.176 NR A2X Services Authorized

This IE provides information on the authorization status of the UE to use the NR A2X services.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Aerial UE	O		ENUMERATED (authorized, not authorized, ...)	Indicates whether the UE is authorized as Aerial UE.
Aerial Controller UE	O		ENUMERATED (authorized, not authorized, ...)	Indicates whether the UE is authorized as Aerial Controller UE.

9.2.3.177 LTE A2X Services Authorized

This IE provides information on the authorization status of the UE to use the LTE A2X services.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Aerial UE	O		ENUMERATED (authorized, not authorized, ...)	Indicates whether the UE is authorized as Aerial UE.
Aerial Controller UE	O		ENUMERATED (authorized, not authorized, ...)	Indicates whether the UE is authorized as Aerial Controller UE.

9.2.3.178 A2X PC5 QoS Parameters

This IE provides information on the A2X PC5 QoS parameters of the UE's PC5 communication for A2X service.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
A2X PC5 QoS Flow List		*1*		
>A2X PC5 QoS Flow Item		*1..<maxnoofPC5QoSFlows>*		
>>PQI	M		INTEGER (0..255, …)	PQI is a special 5QI as specified in TS 23.501 [7].
>>A2X PC5 Flow Bit Rates	O			Only applies for GBR QoS Flows.
>>>Guaranteed Flow Bit Rate	M		Bit Rate 9.2.3.4	Guaranteed Bit Rate for the A2X PC5 QoS flow. Details in TS 23.501 [7].
>>>Maximum Flow Bit Rate	M		Bit Rate 9.2.3.4	Maximum Bit Rate for the A2X PC5 QoS flow. Details in TS 23.501 [7].
>>Range	O		ENUMERATED (m50, m80, m180, m200, m350, m400, m500, m700, m1000, …)	Only applies for groupcast.
A2X PC5 Link Aggregate Bit Rates	O		Bit Rate 9.2.3.4	Only applies for non-GBR QoS Flows.

Range bound	Explanation
maxnoofPC5QoSFlows	Maximum no. of A2X PC5 QoS flows allowed towards one UE. Value is 2048.

9.2.3.179 UE Performance

This IE indicates the UE performance measurements metrics.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
Average UE Throughput DL	O		Bit Rate 9.2.3.4	Corresponds to Average UE Throughput DL per-UE as specified in TS 28.558 [58] clause 6.3.1.4.1.	–	
Average UE Throughput UL	O		Bit Rate 9.2.3.4	Corresponds to Average UE Throughput UL per-UE as specified in TS 28.558 [58] clause 6.3.1.4.2.	–	
Average Packet Delay	O		9.2.3.187		–	
Average Packet Drop DL	O		INTEGER (0..1000000, ...)	Corresponds to DL PDCP SDU Drop Rate in gNB per-UE as specified in TS 28.558 [58], clause 6.3.1.6.1.1.	–	
Average Packet Loss UL	O		INTEGER (0..1000000, …)	Corresponds to UL PDCP SDU Loss Rate per-UE as specified in TS 28.558 [58], clause 6.3.1.7.1.	YES	ignore

9.2.3.180 Cell Based UE Trajectory Prediction

The *Cell Based UE Trajectory Prediction* IE contains information related to NG-RAN cells where the UE is predicted to connect.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
Cell Based UE Trajectory Prediction		*1*		List of cells where the UE is predicted to connect, in chronological order. The first predicted cell added to the top of this list, is the cell in the target node where the UE will move to after the serving cell at the source node.
>Predicted UE Trajectory Item		*1..<maxnoofCellsTrajectoryPredict>*		
>>Predicted Trajectory Cell Information	M		9.2.3.181	

Range bound	Explanation
maxnoofCellsTrajectoryPredict	Maximum number of cells that can be predicted for UE trajectory. Value is 16.

9.2.3.181 Predicted Trajectory Cell Information

The *Predicted Trajectory Cell Information* IE contains information related to the predicted NG-RAN cells for cell based UE trajectory prediction.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
CHOICE *Predicted Trajectory Cell Information*	M			
>NG-RAN Cell				
>>Global NG-RAN Cell Identity	M		9.2.2.27	Indicates an NR Cell Identity.
>>Predicted Time UE Stays in Cell	O		INTEGER (0..4095)	The duration of time the UE is expected to stay in the cell, in seconds. If the duration is more than 4095s, this IE is set to 4095.

9.2.3.182 Measured UE Trajectory

The *Measured UE Trajectory* IE contains information related to NG-RAN cells where the UE connected after being handed over to the target NG-RAN node.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
Measured UE Trajectory		*1*		List of cells where the UE connected, in chronological order. Most recent information is added to the top of this list.
>Measured UE Trajectory Item		*1..<maxnoofCellsTrajectory>*		
>>Measured Trajectory Cell Information	M		9.2.3.183	

Range bound	Explanation
maxnoofCellsTrajectory	Maximum number of cells that can be reported for UE trajectory. Value is 16.

9.2.3.183 Measured Trajectory Cell Information

The Measured Trajectory Cell Information contains information related to the NG-RAN cells where a UE connected after being handed over to the target NG-RAN node.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
CHOICE *Measured Trajectory Cell Information*	M			
>NG-RAN Cell				
>>Global NG-RAN Cell Identity	M		9.2.2.27	Indicates an NR Cell Identity.
>>Time UE Stayed in Cell	M		INTEGER (0..4095)	The duration of time the UE stayed in the cell If the duration is more than 4095s, this IE is set to 4095.

9.2.3.184 Data Collection ID

This IE indicates the NG-RAN Node Measurement IDs which identify a Data Collection Reporting context.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
NG-RAN node1 Measurement ID	M		INTEGER (1..4095,...)	Together with NG-RAN node2 Measurement ID, identifies a Data Collection Reporting context.
NG-RAN node2 Measurement ID	M		INTEGER (1..4095,...)	Together with NG-RAN node1 Measurement ID, identifies a Data Collection Reporting context.

9.2.3.185 UE Trajectory Collection Configuration

This IE contains configurations for UE trajectory collection after successful handover.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
Collection Time Duration for UE Trajectory	M		INTEGER (1..4096, …)	Time duration starting at successful handover within which UE Trajectory Information is collected. Unit: second
Number of Visited Cells	O		INTEGER (1..16, …)	Maximum number of intra-node visited cells.

9.2.3.186 UE Performance Collection Configuration

This IE indicates the configuration for UE performance measurement collection.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
Collection Time Duration for UE Performance	M		INTEGER(1..5000, ...)	Time duration starting at successful handover or at successful SN addition within which the UE performance measurements are collected. Unit: millisecond

9.2.3.187 Average Packet Delay

This IE indicates the RAN part of the average packet delay in the UL and DL directions.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Average Packet Delay UL	M		INTEGER (0.. 10000)	Corresponds to the Packet delay per-UE as specified in TS 28.558 [58], clause 6.3.1.1. Unit: 0.1 millisecond
Average Packet Delay DL	M		INTEGER (0.. 10000)	Corresponds to the Packet delay per-UE as specified in TS 28.558 [58], clause 6.3.1.1. Unit: 0.1 millisecond

9.2.3.188 Candidate Relay UE Info List

This IE contains the identity of the candidate relay UE(s) when the source NG-RAN decides to switch the UE to an indirect path at the target NG-RAN.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Candidate Relay UE Info Item		*1..<maxnoofCandidateRelayUEs>*		
>Candidate Relay UE ID	M		BIT STRING(SIZE(24))	Includes the *SL-SourceIdentity* IE for the candidate relay UE as defined in TS 38.331 [10].

Range bound	Explanation
maxnoofCandidateRelayUEs	Maximum number of candidate relay UE(s). The value is 32.

9.2.3.189 Clock Quality Reporting Control Information

This IE indicates the clock quality reporting control information as defined in TS 23.501 [7].

IE/Group Name	Presence	Range	IE type and reference	Semantics description
CHOICE *Clock Quality Detail Level*	M			
>clock quality metrics			NULL	
>acceptance indication				
>>Clock Quality Acceptance Criteria	M		9.2.3.190	

9.2.3.190 Clock Quality Acceptance Criteria

This IE indicates the clock quality acceptance criteria as defined in TS 23.501 [7].

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Synchronisation State	O		BIT STRING { locked (0), holdover (1), freeRun (2) } (SIZE (8, …))	Each position in the bitmap represents a synchronisation state. If a bit is set to "1", the respective synchronisation state is acceptable. If a bit is set to "0", the respective synchronisation state is not acceptable. Bits 3-7 reserved for future use.
Traceable to UTC	O		ENUMERATED (true, …)	
Traceable to GNSS	O		ENUMERATED (true, …)	
Clock Frequency Stability	O		BIT STRING (SIZE	Indicates the

IE/Group Name	Presence	Range	IE type and reference	Semantics description
			(16))	offsetScaledLogVariance as specified in TS 23.501 [7].
Clock Accuracy	O		INTEGER (1..40000000, …)	Clock accuracy expressed in units of 25 ns.
Parent Time Source	O		BIT STRING { syncE (0), pTP (1), gNSS (2), atomicClock (3), terrestrialRadio (4), serialTimeCode (5), nTP (6), handset (7), other (8) } (SIZE (16, …))	Each position in the bitmap represents a parent time source. If a bit is set to "1", the respective parent time source is acceptable. If a bit is set to "0", the respective parent time source is not acceptable. Bits 9-15 reserved for future use.

9.2.3.191 CAG List for MDT

This IE is used to identify the list of Public Network Integrated NPNs for MDT.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
CAG List for MDT		*1*		For logged MDT, this list contains a maximum of 144 Public Network Integrated NPNs with a maximum of 12 different PLMN identities, configurable to the *CAG-ConfigList* IE defined in TS 38.331 [10] where a PLMN Identity may be repeated more than once.
>CAG List for MDT Item		*1..< maxnoofCAGforMDT >*		
>>PLMN Identity	M		9.2.2.4	
>>CAG-Identifier	M		9.2.2.66	

Range bound	Explanation
maxnoofCAGforMDT	Maximum no. of CAG IDs for MDT area scope. Value is 256.

9.2.3.192 S-CPAC Request Information

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
S-CPAC Security Configurations List	M		9.2.3.193	Indicates the security configurations for S-CPAC, which will replace the previous configuration if any.
S-CPAC Multiple Target S-NG-RAN Node List		*0 .. <maxnoofTargetSNsMinusOne>*		
>Target S-NG-RAN node ID	M		Global NG-RAN Node ID 9.2.2.3	Other candidate SN under preparation for S-CPAC.
>Recommended Candidate PSCells	M		OCTET STRING	Includes either the *candidateCellInfoListMN* in case of MN-initiated inter-SN S-CPAC or the *candidateCellListCPC* in case of SN-initiated inter-SN S-CPAC, contained in the *CG-ConfigInfo* message as defined in TS 38.331 [10],

Range bound	Explanation
maxnoofTargetSNsMinusOne	Maximum no. of the target S-NG-RAN nodes minus 1. Value is 7

9.2.3.193 S-CPAC Security Configurations List

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
S-CPAC Security Configurations List		*1*		
>S-CPAC Security Configurations Item		*1 .. <maxnoofSecurityConfigurations>*		
>>S-NG-RAN node Security Key	M		BIT STRING (SIZE(256))	The S-K_{SN} which is provided by the M-NG-RAN node, see TS 33.501 [28].
>>SK-counter	M		INTEGER (0..65535)	

Range bound	Explanation
maxnoofSecurityConfigurations	Maximum no. of S-CPAC security configurations. Value is 8.

9.2.3.194 Complete Candidate Configuration Indicator

This IE indicates that the complete candidate configuration is used at the S-NG-RAN node for S-CPAC.

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
Complete Candidate Configuration Indicator	M		ENUMERATED (complete candidate config, ...)	

9.2.3.195 NR Paging Long eDRX Information for RRC INACTIVE

This IE indicates the NR Paging long eDRX parameters as defined in TS 38.304 [33].

IE/Group Name	Presence	Range	IE type and reference	Semantics description
NR Paging Long eDRX Cycle for RRC INACTIVE	M		ENUMERATED (hf2, hf4, hf8, hf16, hf32, hf64, hf128, hf256, hf512, hf1024, …)	$T_{eDRX, RAN}$ defined in TS 38.304 [33]. Unit: [number of hyperframes].
NR Paging Time Window for RRC_INACTIVE	M		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 seconds]

9.2.3.196 MBS Assistance Information

This IE provides the MBS Assistance Information as specified in TS 38.300 [9] and TS 23.247 [46].

IE/Group Name	Presence	Range	IE type and reference	Semantics description
MBS Assistance Information	M		ENUMERATED (true, …)	

9.2.3.197 QMC Coordination Request

This IE contains the information that the S-NG-RAN node needs to provide to the M-NG-RAN node, or the information that the M-NG-RAN node needs to provide to the S-NG-RAN node, for managing configuration and reporting of one or more QoE and/or RAN visible QoE measurements.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
MN to SN QMC Coordination Request List		*0..1*		
>MN to SN QMC Coordination Request Item		*1..<maxnoofUE AppLayerMeas>*		
>>QoE Reference	M		OCTET STRING (SIZE(6))	QoE Reference, as defined in clause 5.2 of TS 28.405 [55]. It consists of MCC+MNC+QMC ID, where the MCC and MNC are received with the QMC activation request from the management system to identify one PLMN hosting the management system, and QMC ID is a 3-byte Octet String.
>>Measurement Configuration Application Layer ID	O		INTEGER (0..15, ...)	This IE indicates the identity of the application layer measurement configuration, and corresponds to information provided in the *MeasConfigAppLayerId* IE as defined in TS 38.331 [10]. This IE is allocated by the M-NG-RAN node.
>>Measurement Collection Entity IP Address	O		Transport Layer Address 9.2.3.29	The IP address of the entity receiving the QoE measurement report.
>>QoE Reporting Path Request	O		ENUMERATED (srb4, srb5, …)	This IE indicates the preferred SRB for receiving the QoE

IE/Group Name	Presence	Range	IE type and reference	Semantics description
				reports.
>>RAN Visible QoE Reporting Path Request	O		ENUMERATED (srb4, srb5, …)	This IE indicates the preferred SRB for receiving the RAN Visible QoE reports.
>>Further RAN Visible QoE Interest Inquiry	O		ENUMERATED (true, ...)	This IE is used by the M-NG-RAN node when the M-NG-RAN node is the RAN Visible QoE configuring node and the S-NG-RAN node provides the bearers for the application session, to request from the S-NG-RAN node to indicate whether the S-NG RAN node is interested in receiving further RVQoE reports.
>>Further RAN Visible QoE Reporting Path Inquiry	O		ENUMERATED (true, ...)	This IE is used by the M-NG-RAN node when the M-NG-RAN node is the RAN Visible QoE configuring node and the S-NG-RAN node provides the bearers for the application session, to request from the S-NG-RAN node an indication of the preferred SRB for receiving further RAN Visible QoE reports.
>>Current RAN Visible QoE Configuration	O		RAN Visible QoE Configuration 9.2.3.201	This IE is to indicate the current RAN Visible QoE configuration and inquire about the RAN Visible QoE Configuration preference of the S-NG-RAN node.
>>Available RAN Visible QoE Metrics	O		9.2.3.158	
>>Configuration Release Indication	O		ENUMERATED (rvqoe, qoe and rvqoe, …)	This IE indicates that the configuration has been released by the M-NG-RAN node.
SN to MN QMC Coordination Request List		*0..1*		
>SN to MN QMC Coordination Request Item		*1..<maxnoofUE AppLayerMeas>*		
>>QoE Reference	M		OCTET STRING (SIZE(6))	QoE Reference, as defined in clause 5.2 of TS 28.405 [55]. It consists of MCC+MNC+QMC ID, where the MCC and MNC are received with the QMC activation request from the management system to identify one PLMN hosting the management system, and QMC ID is a 3-byte Octet String.
>>Measurement Collection Entity IP Address	O		Transport Layer Address 9.2.3.29	The IP address of the entity receiving the QoE measurement report.
>>QoE Reporting Path Request	O		ENUMERATED (srb4, srb5, ...)	This IE indicates the preferred SRB for receiving the QoE reports.
>>RAN Visible QoE Reporting Path Request	O		ENUMERATED (srb4, srb5, ...)	This IE indicates the preferred SRB for receiving the RAN Visible QoE reports.
>>Further RAN Visible QoE Interest Inquiry	O		ENUMERATED (true, ...)	This IE is used by the S-NG-RAN node when the S-NG-RAN node is the RAN Visible QoE configuring node and the M-NG-RAN node provides the bearers for the application session, to

IE/Group Name	Presence	Range	IE type and reference	Semantics description
				request from the M-NG-RAN node to indicate whether the M-NG-RAN node is interested in receiving further RVQoE reports.
>>Further RAN Visible QoE Reporting Path Inquiry	O		ENUMERATED (true, ...)	This IE is used by the S-NG-RAN node when the S-NG-RAN node is the RAN Visible QoE configuring node and the M-NG-RAN node provides the bearers for the application session, to request from the M-NG-RAN node an indication of the preferred SRB for receiving further RVQoE reports.
>>Current RAN Visible QoE Configuration	O		RAN Visible QoE Configuration 9.2.3.201	This IE is to indicate the current RAN Visible QoE configuration.
>>Available RAN Visible QoE Metrics	O		9.2.3.158	
>>Configuration Release Indication	O		ENUMERATED (rvqoe, qoe and rvqoe, ...)	This IE indicates that the configuration has been released by the S-NG-RAN node.

Range bound	Explanation
maxnoofUEAppLayerMeas	Maximum no. of simultaneous QoE measurement configurations at a UE. In this version of the specification, the value is 16.

9.2.3.198 QMC Coordination Response

This IE contains the information that the M-NG-RAN node needs to provide to the S-NG-RAN node, or the information that the S-NG-RAN node needs to provide to the M-NG-RAN node in response to the QMC Coordination Request.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
MN to SN QMC Coordination Response List		*0..1*		
>MN to SN QMC Coordination Response Item		*1..<maxnoofUEAppLayerMeas>*		
>>QoE Reference	M		OCTET STRING (SIZE(6))	QoE Reference, as defined in clause 5.2 of TS 28.405 [55]. It consists of MCC+MNC+QMC ID, where the MCC and MNC are received with the QMC activation request from the management system to identify one PLMN hosting the management system, and QMC ID is a 3-byte Octet String.
>>Measurement Configuration Application Layer ID	O		INTEGER (0..15, ...)	This IE indicates the identity of the application layer measurement configuration, and corresponds to information provided in the *MeasConfigAppLayerId* IE as defined in TS 38.331 [10].
>>QoE Configuration Sending Path	O		ENUMERATED (mn, sn, …)	
>>QoE Reporting Path Response	O		ENUMERATED (accepted, rejected, …)	
>>RVQoE Reporting	O		ENUMERATED	

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Path Response			(accepted, rejected, …)	
>>Further RAN Visible QoE Interest Response	O		ENUMERATED (interested, not-interested, ...)	This IE is to indicate whether the M-NG-RAN node is interested in receiving further RAN Visible QoE reports.
>>Further RAN Visible QoE Reporting Path Response	O		ENUMERATED (srb4, srb5, ...)	This IE indicates the preferred path for further RAN Visible QoE reporting.
>>Preferred RAN Visible QoE Configuration	O		RAN Visible QoE Configuration 9.2.3.201	The RAN Visible QoE Configuration preference of the M-NG-RAN node.
SN to MN QMC Coordination Response List		*0..1*		
>SN to MN QMC Coordination Response Item		*1..<maxnoofUEAppLayerMeas>*		
>>QoE Reference	M		OCTET STRING (SIZE(6))	QoE Reference, as defined in clause 5.2 of TS 28.405 [55]. It consists of MCC+MNC+QMC ID, where the MCC and MNC are received with the QMC activation request from the management system to identify one PLMN hosting the management system, and QMC ID is a 3-byte Octet String.
>>QoE Reporting Path Response	O		ENUMERATED (accepted, rejected, …)	
>>RAN Visible QoE Reporting Path Response	O		ENUMERATED (accepted, rejected, …)	
>>Further RAN Visible QoE Interest Response	O		ENUMERATED (interested, not-interested, ...)	This IE indicates whether the S-NG-RAN node is interested in receiving further RAN Visible QoE reports.
>>Further RAN Visible QoE Reporting Path Response	O		ENUMERATED (srb4, srb5, ...)	This IE indicates the preferred path for further RAN Visible QoE reporting.
>>Preferred RAN Visible QoE Configuration	O		RAN Visible QoE Configuration 9.2.3.201	The RAN Visible QoE Configuration preference of the S-NG-RAN node.

Range bound	Explanation
maxnoofUEAppLayerMeas	Maximum no. of simultaneous QoE measurement configurations at a UE. In this version of the specification, the value is 16.

9.2.3.199 Void

9.2.3.200 QoE and RVQoE Reporting Paths

This IE indicates the SRB currently used for receiving the QoE reports and RAN visible QoE reports.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
QoE Reporting Path	O		ENUMERATED (srb4, srb5, …)	This IE indicates the SRB currently used for receiving the QoE reports.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
RVQoE Reporting Path	O		ENUMERATED (srb4, srb5, …)	This IE indicates the SRB currently used for receiving the RAN Visible QoE reports.

9.2.3.201 RAN Visible QoE Configuration

This IE provides information of RAN visible QoE configuration.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
RAN Visible QoE Metrics	O		Available RAN Visible QoE Metrics 9.2.3.158	
Reporting Periodicity	O		ENUMERATED (ms120, ms240, ms480, ms640, ms1024, …)	

9.2.3.202 CHO-CPAC Information

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
CHO-CPAC Configuration Indicator	O		ENUMERATED (cho-only-not-prepared, …)	The value “cho-only-not-prepared” indicates that either CHO without SCG or CHO with SCG has not been prepared.
Multiple Target S-NG-RAN Node List		*1*		
>Multiple Target S-NG-RAN Node Item		*1 .. <maxnoofTargetSNs>*		
>>Target S-NG-RAN node ID	M		Global NG-RAN Node ID 9.2.2.3	
>>PDU Session Resources Admitted List	M		9.2.1.2	
>>Candidate PSCell List		*1*		
>>>Candidate PSCell Item		*1 .. <maxnoofPSCellCandidate>*		
>>>>PSCell ID	M		NR CGI 9.2.2.7	
>>>>Target NG-RAN node To Source NG-RAN node Container	M		OCTET STRING	Includes the *HandoverCommand* message as defined in subclause 11.2.2 of TS 38.331 [10], if the target NG-RAN node is a gNB.

Range bound	Explanation
maxnoofTargetSNs	Maximum number of the target S-NG-RAN nodes. Value is 8.
maxnoofPSCellCandidate	Maximum number of the candidate PSCells. Value is 8.

9.2.3.203 PDU Set QoS Information

This IE defines the PDU Set QoS Information to be applied to a QoS flow.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
PDU Set Delay Budget	O		Extended Packet Delay Budget 9.2.3.113	PDU Set Delay Budget as defined in TS 23.501 [7].
PDU Set Error Rate	O		Packet Error Rate 9.2.3.13	PDU Set Error Rate as defined in TS 23.501 [7].
PDU Set Integrated Handling Information	O		ENUMERATED(true, false, …)	PDU Set Integrated handling Information as defined in TS 23.501 [7].

9.2.3.204 N6 Jitter Information

This IE indicates the N6 jitter information.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
N6 Jitter Lower Bound	M		INTEGER (-127..127)	Indicates the lower bound of the N6 jitter. The unit is: 0.5ms.
N6 Jitter Upper Bound	M		INTEGER (-127..127)	Indicates the upper bound of the N6 jitter. The unit is: 0.5ms.

9.2.3.205 ECN Marking or Congestion Information Reporting Request

This IE indicates to the NG-RAN node to perform ECN marking or to report information for ECN marking or to report congestion information for a QoS flow or a DRB.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
CHOICE *ECN Marking or Congestion Information Request*	M			
>ECN Marking at RAN				
>>ECN Marking at RAN Request	M		ENUMERATED (ul, dl, both, stop, …)	
>ECN Marking at UPF				
>>ECN Marking at UPF Request	M		ENUMERATED (ul, dl, both, stop, …)	
>Congestion Information				
>>Congestion Information Request	M		ENUMERATED (ul, dl, both, stop, …)	

9.2.3.206 PDU Set based Handling Indicator

This IE indicates whether PDU Set based handling is supported for by the NG-RAN node.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
PDU Set based Handling Indicator	M		ENUMERATED (supported, …)	

9.2.3.207 TAI Slice Unavailable Cell List

This IE is used by the NG-RAN to indicate resource configuration of a slice for the cells of the TA.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
TAI Slice Unavailable Cell Item		*1..<maxnoofExtSliceItems>*		
>S-NSSAI	M		9.2.3.21	
>CHOICE *Slice Cell Availability List*	M			
>>Unavailable *cell list*				
>>>Unavailable NR Cell List		*1*		
>>>>NR-CGI		*1 .. < maxnoofCellsinNG-RAN node>*	9.2.2.7	Indicates the cells of the TAI configured with zero resources for the indicated slice.
>>Available cell list				
>>>Available NR Cell List		*1*		
>>>>NR-CGI		*1 .. < maxnoofCellsinNG-RAN node>*	9.2.2.7	Indicates the cells configured with more than zero resources for the indicated slice in a TAI in which the other cells of the TAI have been configured with zero resources.

Range bound	Explanation
maxnoofExtSliceItems	Maximum no. of signalled slice support items. Value is 65535.
maxnoofCellsinNG-RAN node	Maximum no. of cells of the TAI configured with zero resources for the indicated slice. Value is 16384.

9.2.3.208 Ranging and Sidelink Positioning Services Information

This IE provides information for UE's Ranging and Sidelink Positioning services.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Ranging and Sidelink Positioning Authorized	M		ENUMERATED (authorized, not authorized, ...)	This IE indicates whether the UE is authorized to use RSPP communication resources and SL-PRS resources.
RSPP Transport QoS Parameters	O		9.2.3.209	This IE applies only if the UE is authorized for Ranging and Sidelink Positioning service.

9.2.3.209 RSPP Transport QoS Parameters

This IE provides information on the RSPP Transport QoS Parameters.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
RSPP Transport QoS Flow List		*1*		
>RSPP Transport QoS Flow Item		*1..<maxnoofRSPPQoSFlows>*		
>>PQI	M		INTEGER (0..255, …)	PQI is a special 5QI as specified in TS 23.501 [7].
>>RSPP Transport Bit Rates		*0..1*		Only applies for GBR QoS flows.
>>>Guaranteed Flow Bit Rate	M		Bit Rate 9.2.3.4	Guaranteed Bit Rate for the RSPP QoS flow. Details in TS 23.501 [7].

>>>Maximum Flow Bit Rate	M		Bit Rate 9.2.3.4	Maximum Bit Rate for the RSPP QoS flow. Details in TS 23.501 [7].
>>Range	O		ENUMERATED (m50, m80, m180, m200, m350, m400, m500, m700, m1000, …)	Only applies for groupcast.
RSPP Transport Link Aggregate Bit Rates	O		Bit Rate 9.2.3.4	Only applies for Non-GBR QoS flows.

Range bound	Explanation
maxnoofRSPPQoSFlows	Maximum no. of RSPP QoS flows allowed towards one UE for NR Ranging and Positioning sidelink communication, the maximum value is 2048.

9.2.3.210 User Plane Failure Indication

This IE is used to notify the S-NG-RAN node that a user plane failure occurred over NG-U interface.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
User Plane Failure Type	M		ENUMERATED (GTP-U Error Indication Received, UP Path Failure, …)	Indicates the type of NG-U failure.
UL NG-U UP TNL Information	M		UP Transport Layer Information 9.2.3.30	Identifies the NG-U transport bearer at the UPF node.
DL NG-U UP TNL Information	M		UP Transport Layer Information 9.2.3.30	Identifies the NG-U transport bearer at the S-NG-RAN node.

9.2.3.211 NRPPa Positioning Information

This IE contains positioning information that assists in the NG-RAN node to respond to the LMF.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Routing ID	M		OCTET STRING	The maximum length corresponds to NfInstanceId defined in TS 29.571 [50].
NRPPa Transaction ID	M		INTEGER (0..32767)	NRPPa Transaction ID, as defined in TS 38.455 [49]

9.2.3.212 Aerial UE Flight Information Reporting Control

This information element indicates aerial UE information reporting control as defined in TS 38.413[5].

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Higher Altitude Threshold	M		Altitude 9.2.3.213	Indicates the higher altitude threshold information for the aerial UE reporting.
Lower Altitude Threshold	M		Altitude 9.2.3.213	Indicates the lower altitude threshold information for the aerial UE reporting.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Aerial UE Reporting Periodicity	O		ENUMERATED {ms120, ms240, ms480, ms640, ms1024, ms2048, ms5120, ms10240, ms20480, ms40960, min1, min6, min12, min30, …}	Indicates the periodicity of the aerial UE reporting.
CHOICE *Area Scope*	M			
>TAI				
>>PLMN Identity	M		9.2.2.4	
>>TAC	M		9.2.2.5	
>RAN Node				
>>Global NG-RAN Node ID	M		9.2.2.3	
>NG-RAN CGI				
>> Global NG-RAN Cell Identity	M		9.2.2.27	

9.2.3.213 Altitude

This IE contains altitude information.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Altitude	M		INTEGER (-420..10000, ...)	Corresponds to Aerial UE altitude information as provided in the *Altitude* IE specified in TS 38.331[10]. The unit of this IE is meter

9.2.3.214 ECN Marking or Congestion Information Reporting Status

This IE indicates whether ECN marking at NG-RAN or ECN marking at UPF or congestion information reporting is active or not active.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
ECN Marking or Congestion Information Reporting Status	O		ENUMERATED (active, not active, ...)	Indicates whether ECN marking at NG-RAN or ECN marking at UPF or congestion information reporting is active or not active.

9.2.3.215 Additional DRB Setup Info List

This IE indicates the ECN Marking or Congestion Information Reporting Status for a list of DRBs.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Additional DRB Setup Info List		*1*		
>Additional DRBs to Be Setup Item		*1 .. <maxnoofDRBs>*		Includes a list of DRBs admitted for SCG bearers together with their ECN Marking or Congestion Information Reporting Status
>>DRB ID	M		9.2.3.33	
>>Additional QoS Flows Mapped To DRB Setup Info List		*1*		

>>>Additional QoS Flows Mapped To DRB Setup Info Item		*1 .. <maxnoofQoS Flows>*		
>>>>QoS Flow Identifier	M		9.2.3.10	
>>ECN Marking or Congestion Information Reporting Status	M		9.2.3.214	

Range bound	Explanation
maxnoofDRBs	Maximum no. of DRBs allowed towards one UE. Value is 32.
maxnoofQoSFlows	Maximum no. of QoS flows. Value is 64.

9.2.3.216 Available Bitrate Report Threshold List

This IE contains a list of available Bitrate report thresholds. It is used for available Bitrate report for UL and DL as specified in TS 23.501 [7].

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Available Bitrate Report Threshold Item		*1..<maxnoofThresholds>*		
>Reporting Threshold	M		INTEGER (0.. 4000000000, …)	This IE indicates the Reporting threshold as specified in TS 23.501 [7]. The unit is Kbps.

Range bound	Explanation
maxnoofThresholds	Maximum no. of thresholds allowed to be provided by the SMF. Value is 8.

9.2.3.217 Early Sync Information Request

This IE contains a request for the early synchronization information.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Early Sync Configuration Request	M		ENUMERATED (true, …)	
Early RACH Resources Providers List		*0..1*		
>Early RACH Resources Item		*1..< maxnoofEarly RACHResourc esID>*		
>>Global gNB ID	M		9.2.2.1	
>>Early RACH Resources Requester ID	M		9.2.3.220	Identifies the entity requesting Early RACH resources.

Range bound	Explanation
maxnoofEarlyRACHResourcesID	Maximum no. of Early RACH resources identities allowed to be configured with LTM towards one UE, the maximum value is 8.

9.2.3.218 Early Sync Information

This IE contains the early synchronization related information.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Early UL Sync Configuration	O		9.2.3.219	Early UL sync configurations for the UE.
Early UL Sync	O		Early UL Sync	Early UL sync configurations for

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Configuration for SUL			Configuration 9.2.3.219	the UE for SUL carrier.

9.2.3.219 Early UL Sync Configuration

This IE indicates the Early UL sync configurations for the UE.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
RACH Configuration	M		OCTET STRING	Includes the *EarlyUL-SyncConfig* IE, as defined in TS 38.331 [10].
Early RACH Resources List		*0..1*		
>Early RACH Resources Item IEs		*1..< maxnoofEarly RACHResourc esID>*		
>>Global gNB ID	M		9.2.2.1	
>>Early RACH Resources Requester ID	M		9.2.3.220	Identifies the entity requesting Early RACH resources.
>>Preamble Index List	O		9.2.3.222	

Range bound	Explanation
maxnoofEarlyRACHResourcesID	Maximum no. of Early RACH resources identities allowed to be configured with LTM towards one UE, the maximum value is 8.

9.2.3.220 Early RACH Resources Requester ID

This IE indicates the identity of the Early RACH resources requester.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Early RACH Resources Requester ID	M		INTEGER (0 .. 2^{36}-1)	Identifies requester of the Early RACH resources.

9.2.3.221 LTM Configuration ID Mapping List

This IE indicates the list of LTM candidate cells associated with its configuration IDs.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Configuration ID Mapping Item IEs		*1..< maxnoofLTMC ells>*		
>LTM Cell ID	M		NR CGI 9.2.2.7	
>LTM Configuration ID	M		INTEGER (1..8)	Corresponds to information provided in the *LTM-CandidateId* IE, as defined in TS 38.331 [10].

Range bound	Explanation
maxnoofLTMCells	Maximum no. of Cells configured for LTM allowed towards one UE, the maximum value is 8.

9.2.3.222 Preamble Index List

This IE indicates the list of preamble indexes to be used for the UE.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Preamble Index Item IEs		*1..< maxNoofPreambleIndexes>*		
>Preamble Index	M		INTEGER (0..63)	

Range bound	Explanation
maxNoofPreambleIndexes	Maximum no. of preamble indexes per cell, the maximum value is 64.

9.2.3.223 CSI Resource Configuration

This IE contains the CSI resource configuration used for LTM.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
CSI Resource Configuration to AddModList	O		OCTET STRING	Includes the *ltm-CSI-ResourceConfigToAddModList* as defined in TS 38.331 [10].
CSI Resource Configuration to Release List	O		OCTET STRING	Includes the *ltm-CSI-ResourceConfigToReleaseList* c ontained in the *LTM-Config* IE as defined in TS 38.331 [10].

9.2.3.224 CSI-RS Resource Configuration

This IE contains the CSI resource configuration used for LTM.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Periodic NZP CSI-RS Resource Configuration	O		NZP CSI-RS Resource Configuration 9.2.3.225	
Semi-Persistent NZP CSI-RS Resource Configuration	O		NZP CSI-RS Resource Configuration 9.2.3.225	
Periodic NZP CSI-RS Resource Set Configuration	O		NZP CSI-RS Resource Set Configuration 9.2.3.226	
Semi-Persistent NZP CSI-RS Resource Set Configuration	O		NZP CSI-RS Resource Set Configuration 9.2.3.226	
Periodic CSI-IM Resource Configuration	O		CSI-IM Resource Configuration 9.2.3.227	
Semi-Persistent CSI-IM Resource Configuration	O		CSI-IM Resource Configuration 9.2.3.227	

9.2.3.225 NZP CSI-RS Resource Configuration

This IE contains the CSI-RS resource configuration used for LTM.

IE/Group Name	Presence	Range	IE type and	Semantics description

			reference	
CSI-RS Resource to AddMod List	O		OCTET STRING	Includes the *ltm-NZP-CSI-RS-ResourceToAddModList* as defined in TS 38.331 [10].
CSI-RS Resource to Release List	O		OCTET STRING	Includes the *ltm-NZP-CSI-RS-ResourceToReleaseList* as defined in TS 38.331 [10].

9.2.3.226 NZP CSI-RS Resource Set Configuration

This IE contains the CSI-RS resource set configuration used for LTM.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
CSI-RS Resource Set to AddMod List	O		OCTET STRING	Includes *ltm-NZP-CSI-RS-ResourceSetToAddModList* contained in the *LTM-Config* IE as defined in TS 38.331 [10].
CSI-RS Resource Set to Release List	O		OCTET STRING	Includes *ltm-NZP-CSI-RS-ResourceSetToReleaseList* contained in the *LTM-Config* IE as defined in TS 38.331 [10].

9.2.3.227 CSI-IM Resource Configuration

This IE contains the CSI-IM resource configuration used for LTM.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
CSI-IM Resource to AddMod List	O		OCTET STRING	Includes *ltm-CSI-IM-ResourceToAddModList* contained in the *LTM-Config* IE as defined in TS 38.331 [10].
CSI-IM Resource to Release List	O		OCTET STRING	Includes *ltm-CSI-IM-ResourceToReleaseList* contained in the *LTM-Config* IE as defined in TS 38.331 [10].
CSI-IM ResourceSet to AddMod List	O		OCTET STRING	Includes *ltm-CSI-IM-*ResourceSetToAddModList contained in the *LTM-Config* IE as defined in TS 38.331 [10].
CSI-IM ResourceSet to Release List	O		OCTET STRING	Includes *ltm-CSI-IM-*ResourceSetToReleaseList contained in the *LTM-Config* IE as defined in TS 38.331 [10].

9.2.3.228 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 9.2.3.229	
>>PCI	M		INTEGER (0..1007)	

Range bound	Explanation
maxNoSSBs	Maximum no of SSBs for which the configuration can be provided. Value is 255.

9.2.3.229 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 (kHz15, kHz30, kHz120, kHz240, spare3, spare2, spare1, …)	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)	
SSB Positions In Burst	O		9.2.2.64	

9.2.3.230 LTM UE Security Information

This IE contains the UE security related information for subsequent LTM.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
LTM UE Security Capabilities	M			
>NR Encryption Algorithms	M		BIT STRING {nea1-128(1), nea2-128(2), nea3-128(3)} (SIZE(16, …))	Each position in the bitmap represents an encryption algorithm: "all bits equal to 0" – UE supports no other NR algorithm than NEA0, "second bit" – 128-NEA1, "third bit" – 128-NEA2, "fourth bit" – 128-NEA3, “fifth to eighth bit” correspond to bit 4 to bit 1 of octet 3 in the *UE Security Capability* IE defined in TS 24.501 [30], other bits reserved for future use. Value ‘1’ indicates support and value ‘0’ indicates no support of the algorithm. Algorithms are defined in TS 33.501 [28].
>NR Integrity Protection Algorithms	M		BIT STRING {nia1-128(1), nia2-128(2), nia3-128(3)} (SIZE(16, …))	Each position in the bitmap represents an integrity protection algorithm: "all bits equal to 0" – UE supports no other NR algorithm than NIA0, "second bit" – 128-NIA1, "third bit" – 128-NIA2, "fourth bit" – 128-NIA3, “fifth to eighth bit” correspond to bit 4 to bit 1 of octet 4 in the *UE Security Capability* IE defined in TS 24.501 [30], other bits reserved for future use. Value ‘1’ indicates support and value ‘0’ indicates no support of the algorithm. Algorithms are defined in TS 33.501 [28].
LTM User Plane Security Information List		*1*		
>LTM User Plane Information Item		*1 .. <maxnoof PDU sessions >*		
>>PDU Session ID	M		9.2.3.18	
>>Security Indication	O		9.2.3.52	

Range bound	Explanation
maxnoofPDUSessions	Maximum no. of PDU sessions. Value is 256.
maxnoofLTMCells	Maximum no. of Cells configured for LTM allowed towards one UE, the maximum value is 8.

9.2.3.231 LTM No Security Change ID List

This IE contains the UE security related information for LTM.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
LTM No Security Change ID List		*1.. <maxnoofLTM Cells>*		
>LTM No Security	M		9.2.3.231a	

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Change ID				

Range bound	Explanation
maxnoofLTMCells	Maximum no. of Cells configured for LTM allowed towards one UE, the maximum value is 8.

9.2.3.231a LTM No Security Change ID

This IE corresponds to information provided in the *LTM-NoSecurityChangeId* IE as defined in TS 38.331 [10].

IE/Group Name	Presence	Range	IE type and reference	Semantics description
LTM No Security Change ID	M		INTEGER(1..9,…)	

9.2.3.232 LTM CFRA Resource Information

This IE contains information related to CFRA resources for LTM.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
LTM CFRA Resource Configuration	O		OCTET STRING	Includes the *RACH-ConfigDedicated* IE, as defined in TS 38.331 [10].
LTM CFRA Resource Configuration for SUL	O		OCTET STRING	Includes the *RACH-ConfigDedicated* IE, as defined in TS 38.331 [10]. This IE applies for SUL carrier.

9.2.3.233 LP-WUSPS Assistance Information

This IE provides the information related to LP-WUS paging subgrouping for a particular UE, as specified in TS 38.304 [33].

IE/Group Name	Presence	Range	IE type and reference	Semantics description
LP-WUS CN Subgroup ID	M		INTEGER (0..30, …)	

9.2.3.234 Further Extended UE Identity Index Value

This IE is used by the NG-RAN node to calculate the Paging Frame and Paging Occasion for eDRX, and the UE_ID based subgroup ID for PEI and LP-WUS as specified in TS 38.304 [33].

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Further Extended UE Identity Index Value	M		BIT STRING (SIZE(20))	Encoded as 5G-S-TMSI mod 1048576.

9.2.3.235 Slice Measurement Initiation Result

This IE indicates the list of measurement objects that failed to be initiated per slice.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Slice Measurement		*1*		

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Initiation Result List				
>Slice Measurement Initiation Result Item		*1..< maxnoofBPLMNs >*		
>>PLMN Identity	M		9.2.2.4	Broadcast PLMN
>>S-NSSAI Measurement Initiation Result List		*1*		
>>>S-NSSAI Measurement Initiation Result Item		*1 .. < maxnoofSliceItems>*		
>>>>S-NSSAI	M		9.2.3.21	
>>>>S-NSSAI Measurement Failure Cause List		*0..1*		Indicates that NG-RAN node$_2$ could not initiate the measurement for at least one of the requested measurement objects in the slice.
>>>>>S-NSSAI Measurement Failure Cause Item		*1 .. <maxFailedSliceMeasObjects>*		
>>>>>>S-NSSAI Measurement Failed Report Characteristics	M		BITSTRING (SIZE(32))	Each position in the bitmap indicates measurement objects that failed to be initiated in the NG-RAN node$_2$. First Bit = Predicted Radio Resource Status, Second Bit = Predicted Slice Available Capacity Other bits are ignored by the NG-RAN node$_1$.
>>>>>>Cause	M		9.2.3.2	Failure cause for measurement objects for which the measurement cannot be initiated.

Range bound	Explanation
maxnoofSliceItems	Maximum no. of signalled slice support items. Value is 1024.
maxnoofBPLMNs	Maximum no. of PLMN IDs broadcast in a cell. Value is 12.
maxFailedSliceMeasObjects	Maximum number of measurement objects that can fail per slice. Value is 124.

9.2.3.236 Slice UE Performance

This IE indicates per Slice UE performance measurements metrics.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
PLMN Identity	M		9.2.2.4	Broadcast PLMN
S-NSSAI UE Performance List		*1*		Indicates the UE performance per network slice
>S-NSSAI UE Performance Item		*1 .. < maxnoofSliceItems>*		
>>S-NSSAI	M		9.2.3.21	
>>Slice Based UE Performance	M		9.2.3.238	

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

9.2.3.237 Predicted Slice Available Capacity Group

The IE indicates the predicted amount of resources per network slice that are available per cell relative to the total NG-RAN resources per cell. The predicted slice available capacity can be weighted according to the ratio of the corresponding cell capacity class values, if available.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Predicted Slice available Capacity	M		Slice Available Capacity 9.2.2.55	
Cell Capacity Class Value Downlink	O		Cell Capacity Class Value 9.2.2.53	
Cell Capacity Class Value Uplink	O		Cell Capacity Class Value 9.2.2.53	

9.2.3.238 Slice Based UE Performance

This IE represents UE performance metrics per S-NSSAI.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Slice Average UE Throughput DL	O		Bit Rate 9.2.3.4	Corresponds to Average UE Throughput DL per S-NSSAI as specified in TS 28.558 [58] clause 6.3.1.4.1.
Slice Average UE Throughput UL	O		Bit Rate 9.2.3.4	Corresponds to Average UE Throughput UL per S-NSSAI as specified in TS 28.558 [58] clause 6.3.1.4.2.
Slice Average Packet Delay	O		Average Packet Delay 9.2.3.187	
Slice Average Packet Drop DL	O		INTEGER (0..1000000, ...)	Corresponds to DL PDCP SDU Drop Rate in gNB per S-NSSAI as specified in TS 28.558 [58], clause 6.3.1.6.1.1.
Slice Average Packet Loss UL	O		INTEGER (0..1000000, ...)	Corresponds to UL PDCP SDU Loss Rate per S-NSSAI as specified in TS 28.558 [58], clause 6.3.1.7.1.

9.2.3.239 Network Slice Area Scope of MDT

This IE is used to identify the list of network slices for MDT.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Network Slice List for MDT		*1*		
>Network Slice Item for MDT		*1..<maxnoofMDTPLMNs>*		
>>PLMN Identity	M		9.2.2.4	
>>Slice MDT List		*1*		
>>>Slice MDT Item		*1..<maxnoofSliceItemsforMDT >*		
>>>>S-NSSAI	M		9.2.3.21	

Range bound	Explanation
maxnoofMDTPLMNs	Maximum no. of PLMNs in the MDT PLMN list. Value is 16.
maxnoofSliceItemsforMDT	Maximum no. of S-NSSAIs for MDT area scope. Value is 1024.

9.2.3.240 Geographical Area

This IE is used to indicate the geographical area scope for NTN MDT.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
NTN Geographical Area		*1*		
>NTN Geographical Area Item		*1..<maxnoofAreaNTNforMDT>*		
>>CHOICE *Area Type*	M			
>>>*Circle*				
>>>>Reference Location	M		OCTET STRING	*ReferenceLocation-r17* as defined in TS 38.331[10].
>>>>Distance Radius	M		INTEGER(1..65535)	Each step represents 50m distance.
>>>*Polygon*				
>>>>Polygon	M		OCTET STRING	The first/leftmost bit of the first octet contains the most significant bit, as defined in TS 37.355 [59].
>MDT PLMN List	O		9.2.3.133	

Range bound	Explanation
maxnoofAreaNTNforMDT	Maximum no. of the geographical area configurations. Value is 8.

9.2.3.241 LTM SCG Security Configuration

This IE is used to apply security in the S-NG-RAN node for SCG LTM as defined in TS 37.340 [8].

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
LTM SCG No Security Change ID List		*1*		
>LTM SCG No Security Change ID item		*1 .. <maxnoofLTMCellsPlusOne>*		
>>LTM No Security Change ID	M		9.2.3.231a	
>>LTM SCG Security Configuration Information		*1 .. <maxnoofSCGLTMSecurityConfigurations>*		
>>>S-NG-RAN node Security Key	M		BIT STRING (SIZE(256))	The S-KSN which is provided by the M-NG-RAN node, see TS 33.501 [28].
>>>SK-counter	M		INTEGER (0..65535)	

Range bound	Explanation
maxnoofLTMCellsPlusOne	Maximum no. of cells configured for LTM allowed towards one UE plus one. Value is 9.
maxnoofSCGLTMSecurityConfigurations	Maximum no. of SCG LTM security configurations. Value is 8.

9.2.3.242 LTM Candidate PSCell Request List

This IE provides the information related to the requested LTM candidate PSCell(s).

IE/Group Name	Presence	Range	IE type and reference	Semantics description
LTM Candidate PSCell Request List		*1*		
>LTM Candidate PSCell Request Item		*1 .. < maxnoofLTM Cells>*		
>>PSCell ID	M		NR CGI 9.2.2.7	
>>Early Sync Information Request	O		9.2.3.217	
>>Request for CSI-RS Resource Configuration for L1 Measurements	O		ENUMERATED (true, …)	

Range bound	Explanation
maxnoofLTMCells	Maximum no. of Cells configured for LTM allowed towards one UE, the maximum value is 8.

9.2.3.243 LTM Candidate PSCell Prepared List

This IE provides the information related to the prepared LTM candidate PSCell(s).

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
LTM Candidate PSCell Prepared List		*1*			–	
>LTM Candidate PSCell Prepared Item		*1 .. < maxnoofLTMCells>*			–	
>>PSCell ID	M		NR CGI 9.2.2.7		–	
>>LTM No Security Change ID	M		9.2.3.231a		–	
>>TCI States Configurations List	M		OCTET STRING	Includes the *LTM-TCI-Info* IE, as defined in TS 38.331 [10].	–	
>>SSB Information	M		9.2.3.228		–	
>>Early Sync Information	O		9.2.3.218		–	
>>LTM CFRA Resource Information	O		9.2.3.232		–	
>>CSI-RS Resource Configuration for Layer 1 Measurements	O		CSI-RS Resource Configuration 9.2.3.224		–	
>>CSI-RS Resource Configuration for Early CSI Acquisition	O		CSI-RS Resource Configuration 9.2.3.224		–	
>>Complete Candidate Configuration Indicator	O		ENUMERATED (complete, ...)		–	

>>LTM L2 Reset Configuration	O		INTEGER (1..9, …)	Corresponds to the *ltm-NoResetID* as defined in TS 38.331 [10], for the LTM candidate cell identified by the *PSCell ID* IE.	–	
>>UE Based TA Measurement Configuration	O		OCTET STRING	Includes the *ltm-UE-MeasuredTA-ID* contained in the *LTM-Candidate* IE, as defined in TS 38.331 [10], for the LTM candidate PSCell identified by the *PSCell ID* IE.	YES	ignore

Range bound	Explanation
maxnoofLTMCells	Maximum no. of Cells configured for LTM allowed towards one UE, the maximum value is 8.

9.2.3.244 PSI based SDU Discard UL

This IE indicates whether UL PSI based SDU discard is (re)configured or released for the DRB. The codepoint “start” means that UL PSI based discarding is (re)configured, while the codepoint "stop" means that UL PSI based discarding is released. Up to 8 DRBs can be set as "start".

IE/Group Name	Presence	Range	IE type and reference	Semantics description
PSI based SDU Discard UL	O		ENUMERATED (start, stop, …)	

9.2.3.245 PSI based SDU Discard DL

Theis IE indicates whether DL PSI based SDU discard is configured or not for the DRB.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
PSI based SDU Discard DL	O		ENUMERATED (configured, not-configured, ...)	

9.2.3.246 Semi-persistent Positioning Information

This IE contains semi-persistent positioning information to notify the activation or deactivation of semi-persistent SRS transmission for area-specific SRS configuration.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
SRS Transmission Type	M	ENUMERATED (activate, deactivate, …)		
SRS Resource Set ID	M	OCTET STRING		Includes the *SRS Resource Set ID* IE, as defined in TS 38.455 [49].
SRS Spatial Relation	O	OCTET STRING		Includes the *SRS Spatial Relation* IE, as defined in TS 38.455 [49]. Applicable only if the *SRS Transmission Type* IE is set to "activate".
Spatial Relation Information per SRS Resource	O	OCTET STRING		Includes the *Spatial Relation Information per SRS Resource* IE as defined in TS 38.455 [49]. Applicable only if the *SRS Transmission Type* IE is set to "activate".

9.2.3.247 LTM Cells To Be Cancelled List

This IE indicates a list of LTM cells to be cancelled.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
LTM Cells To Be Cancelled Item IEs		*1 .. <maxnoofLTMCells>*			EACH	reject
>LTM Cell ID	M		NR CGI 9.2.2.7	NG-RAN CGI of the LTM candidate cell	–	

Range bound	Explanation
maxnoofLTMCells	Maximum no. of Cells configured for LTM allowed towards one UE, the maximum value is 8.

9.2.3.248 LTM L2 Reset Configuration List

This IE contains the L2 Reset Configuration information for LTM.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
LTM L2 Reset Configuration List		*1.. <maxnoofLTMCells>*		
>LTM L2 Reset Configuration	M		INTEGER (1.. 9, …)	Corresponds to the *ltm-NoResetID* as defined in TS 38.331 [10], for a LTM candidate cell

Range bound	Explanation
maxnoofLTMCells	Maximum no. of Cells configured for LTM allowed towards one UE, the maximum value is 8.

9.2.3.249 LTM UE Based TA Measurement ID List

This IE contains the UE Based TA Measurement Configuration information for LTM.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
LTM UE Based TA Measurement ID Item		*1.. <maxnoofLTM Cells>*		
>UE Based TA Measurement Configuration	M		OCTET STRING	Includes the *ltm-UE-MeasuredTA-ID* contained in the *LTM-Candidate* IE, as defined in TS 38.331 [10], for a LTM candidate cell.

Range bound	Explanation
maxnoofLTMCells	Maximum no. of Cells configured for LTM allowed towards one UE, the maximum value is 8.

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

9.3.1 General

XnAP ASN.1 definition conforms to ITU-T Rec. X.680 [16] and ITU-T Rec. X.681 [17].

Sub clause 9.3 presents the Abstract Syntax of the XnAP protocol with ASN.1. In case there is contradiction between the ASN.1 definition in this sub clause and the tabular format in sub clause 9.1 and 9.2, the ASN.1 shall take precedence, except for the definition of conditions for the presence of conditional elements, in which the tabular format shall take precedence.

The ASN.1 definition specifies the structure and content of XnAP messages. XnAP 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 XnAP 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 in which 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 have different IE IDs.

If an XnAP 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.

9.3.2 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 inter-operability.
- 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.

9.3.3 Elementary Procedure Definitions

```
-- ASN1START
```

```
-- **************************************************************
--
-- Elementary Procedure definitions
--
-- **************************************************************

XnAP-PDU-Descriptions {
itu-t (0) identified-organization (4) etsi (0) mobileDomain (0)
ngran-access (22) modules (3) xnap (2) version1 (1) xnap-PDU-Descriptions (0) }

DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

-- **************************************************************
--
-- IE parameter types from other modules.
--
-- **************************************************************

IMPORTS
    Criticality,
    ProcedureCode

FROM XnAP-CommonDataTypes

    HandoverRequest,
    HandoverRequestAcknowledge,
    HandoverPreparationFailure,
    SNStatusTransfer,
    UEContextRelease,
    HandoverCancel,
    NotificationControlIndication,
    RANPaging,
    RetrieveUEContextRequest,
    RetrieveUEContextResponse,
    RetrieveUEContextConfirm,
    RetrieveUEContextFailure,
    XnUAddressIndication,
    SecondaryRATDataUsageReport,
    SNodeAdditionRequest,
    SNodeAdditionRequestAcknowledge,
    SNodeAdditionRequestReject,
    SNodeReconfigurationComplete,
    SNodeModificationRequest,
    SNodeModificationRequestAcknowledge,
    SNodeModificationRequestReject,
    SNodeModificationRequired,
    SNodeModificationConfirm,
    SNodeModificationRefuse,
    SNodeReleaseRequest,
    SNodeReleaseRequestAcknowledge,
    SNodeReleaseReject,
    SNodeReleaseRequired,
```

```
    SNodeReleaseConfirm,
    SNodeCounterCheckRequest,
    SNodeChangeRequired,
    SNodeChangeConfirm,
    SNodeChangeRefuse,
    RRCTransfer,
    XnRemovalRequest,
    XnRemovalResponse,
    XnRemovalFailure,
    XnSetupRequest,
    XnSetupResponse,
    XnSetupFailure,
    NGRANNodeConfigurationUpdate,
    NGRANNodeConfigurationUpdateAcknowledge,
    NGRANNodeConfigurationUpdateFailure,
    E-UTRA-NR-CellResourceCoordinationRequest,
    E-UTRA-NR-CellResourceCoordinationResponse,
    ActivityNotification,
    CellActivationRequest,
    CellActivationResponse,
    CellActivationFailure,
    ResetRequest,
    ResetResponse,
    ErrorIndication,
    PrivateMessage,
    DeactivateTrace,
    TraceStart,
    HandoverSuccess,
    ConditionalHandoverCancel,
    EarlyStatusTransfer,
    FailureIndication,
    HandoverReport,
    SCGFailureIndication,
    ResourceStatusRequest,
    ResourceStatusResponse,
    ResourceStatusFailure,
    ResourceStatusUpdate,
    MobilityChangeRequest,
    MobilityChangeAcknowledge,
    MobilityChangeFailure,
    AccessAndMobilityIndication,
    CellTrafficTrace,
    RANMulticastGroupPaging,
    ScgFailureInformationReport,
    ScgFailureTransfer,
    F1CTrafficTransfer,
    IABTransportMigrationManagementRequest,
    IABTransportMigrationManagementResponse,
    IABTransportMigrationManagementReject,
    IABTransportMigrationModificationRequest,
    IABTransportMigrationModificationResponse,
    IABResourceCoordinationRequest,
    IABResourceCoordinationResponse,
    CPCCancel,
```

```
    PartialUEContextTransfer,
    PartialUEContextTransferAcknowledge,
    PartialUEContextTransferFailure,
    RachIndication,
    DataCollectionRequest,
    DataCollectionResponse,
    DataCollectionFailure,
    DataCollectionUpdate,
    ODSIB1ConfigurationProvisionRequest,
    ODSIB1ConfigurationProvisionResponse,
    ODSIB1ConfigurationProvisionFailure,
    ODSIB1ConfigurationProvisionStatusUpdate,
    LTMConfigurationUpdate,
    LTMConfigurationUpdateAcknowledge,
    LTMConfigurationUpdateFailure,
    CSIRSCoordinationRequest,
    CSIRSCoordinationResponse,
    CellSwitchNotification,
    TAInformationTransfer,
    LTMCancel,
    CLI-Indication



FROM XnAP-PDU-Contents

    id-handoverPreparation,
    id-sNStatusTransfer,
    id-handoverCancel,
    id-notificationControl,
    id-retrieveUEContext,
    id-rANPaging,
    id-xnUAddressIndication,
    id-uEContextRelease,
    id-secondaryRATDataUsageReport,
    id-sNGRANnodeAdditionPreparation,
    id-sNGRANnodeReconfigurationCompletion,
    id-mNGRANnodeinitiatedSNGRANnodeModificationPreparation,
    id-sNGRANnodeinitiatedSNGRANnodeModificationPreparation,
    id-mNGRANnodeinitiatedSNGRANnodeRelease,
    id-sNGRANnodeinitiatedSNGRANnodeRelease,
    id-sNGRANnodeCounterCheck,
    id-sNGRANnodeChange,
    id-activityNotification,
    id-rRCTransfer,
    id-xnRemoval,
    id-xnSetup,
    id-nGRANnodeConfigurationUpdate,
    id-e-UTRA-NR-CellResourceCoordination,
    id-cellActivation,
    id-reset,
    id-errorIndication,
```

```
    id-privateMessage,
    id-deactivateTrace,
    id-traceStart,
    id-handoverSuccess,
    id-conditionalHandoverCancel,
    id-earlyStatusTransfer,
    id-failureIndication,
    id-handoverReport,
    id-scgFailureIndication,
    id-resourceStatusReportingInitiation,
    id-resourceStatusReporting,
    id-mobilitySettingsChange,
    id-accessAndMobilityIndication,
    id-cellTrafficTrace,
    id-RANMulticastGroupPaging,
    id-scgFailureInformationReport,
    id-scgFailureTransfer,
    id-f1CTrafficTransfer,
    id-iABTransportMigrationManagement,
    id-iABTransportMigrationModification,
    id-iABResourceCoordination,
    id-retrieveUEContextConfirm,
    id-cPCCancel,
    id-partialUEContextTransfer,
    id-rachIndication,
    id-dataCollectionReportingInitiation,
    id-dataCollectionReporting,
    id-ODSIB1ConfigurationProvision,
    id-ODSIB1ConfigurationProvisionStatusUpdate,
    id-lTMConfigurationUpdate,
    id-cSIRSCoordination,
    id-cellSwitchNotification,
    id-tAInformationTransfer,
    id-lTMCancel,
    id-cLI-Indication




FROM XnAP-Constants;

-- ************************************************************
--
-- Interface Elementary Procedure Class
--
-- ************************************************************

XNAP-ELEMENTARY-PROCEDURE ::= CLASS {
    &InitiatingMessage              ,
    &SuccessfulOutcome              OPTIONAL,
    &UnsuccessfulOutcome                OPTIONAL,
    &procedureCode          ProcedureCode   UNIQUE,
    &criticality            Criticality     DEFAULT ignore
```

```
}
WITH SYNTAX {
    INITIATING MESSAGE      &InitiatingMessage
    [SUCCESSFUL OUTCOME     &SuccessfulOutcome]
    [UNSUCCESSFUL OUTCOME       &UnsuccessfulOutcome]
    PROCEDURE CODE          &procedureCode
    [CRITICALITY            &criticality]
}

-- **************************************************************
--
-- Interface PDU Definition
--
-- **************************************************************

XnAP-PDU ::= CHOICE {
    initiatingMessage   InitiatingMessage,
    successfulOutcome   SuccessfulOutcome,
    unsuccessfulOutcome UnsuccessfulOutcome,
    ...
}

InitiatingMessage ::= SEQUENCE {
    procedureCode   XNAP-ELEMENTARY-PROCEDURE.&procedureCode        ({XNAP-ELEMENTARY-PROCEDURES}),
    criticality     XNAP-ELEMENTARY-PROCEDURE.&criticality          ({XNAP-ELEMENTARY-PROCEDURES}{@procedureCode}),
    value           XNAP-ELEMENTARY-PROCEDURE.&InitiatingMessage    ({XNAP-ELEMENTARY-PROCEDURES}{@procedureCode})
}

SuccessfulOutcome ::= SEQUENCE {
    procedureCode   XNAP-ELEMENTARY-PROCEDURE.&procedureCode        ({XNAP-ELEMENTARY-PROCEDURES}),
    criticality     XNAP-ELEMENTARY-PROCEDURE.&criticality          ({XNAP-ELEMENTARY-PROCEDURES}{@procedureCode}),
    value           XNAP-ELEMENTARY-PROCEDURE.&SuccessfulOutcome    ({XNAP-ELEMENTARY-PROCEDURES}{@procedureCode})
}

UnsuccessfulOutcome ::= SEQUENCE {
    procedureCode   XNAP-ELEMENTARY-PROCEDURE.&procedureCode        ({XNAP-ELEMENTARY-PROCEDURES}),
    criticality     XNAP-ELEMENTARY-PROCEDURE.&criticality          ({XNAP-ELEMENTARY-PROCEDURES}{@procedureCode}),
    value           XNAP-ELEMENTARY-PROCEDURE.&UnsuccessfulOutcome  ({XNAP-ELEMENTARY-PROCEDURES}{@procedureCode})
}

-- **************************************************************
--
-- Interface Elementary Procedure List
--
-- **************************************************************

XNAP-ELEMENTARY-PROCEDURES XNAP-ELEMENTARY-PROCEDURE ::= {
    XNAP-ELEMENTARY-PROCEDURES-CLASS-1          |
    XNAP-ELEMENTARY-PROCEDURES-CLASS-2          ,
    ...
}

XNAP-ELEMENTARY-PROCEDURES-CLASS-1 XNAP-ELEMENTARY-PROCEDURE ::= {
    handoverPreparation                                     |
```

```
    retrieveUEContext                                       |
    sNGRANnodeAdditionPreparation                           |
    mNGRANnodeinitiatedSNGRANnodeModificationPreparation    |
    sNGRANnodeinitiatedSNGRANnodeModificationPreparation    |
    mNGRANnodeinitiatedSNGRANnodeRelease                    |
    sNGRANnodeinitiatedSNGRANnodeRelease                    |
    sNGRANnodeChange                                        |
    xnRemoval                                               |
    xnSetup                                                 |
    nGRANnodeConfigurationUpdate                            |
    e-UTRA-NR-CellResourceCoordination                      |
    cellActivation                                          |
    reset                                                   |
    resourceStatusReportingInitiation                       |
    mobilitySettingsChange                                  |
    iABTransportMigrationManagement                         |
    iABTransportMigrationModification                       |
    iABResourceCoordination                                 |
    partialUEContextTransfer                                |
    dataCollectionReportingInitiation                       |
    oDSIB1ConfigurationProvision                            |
    lTMConfigurationUpdate                                  |
    cSIRSCoordination                                       |
    cLI-Indication,
    ...
}

XNAP-ELEMENTARY-PROCEDURES-CLASS-2 XNAP-ELEMENTARY-PROCEDURE ::= {
    sNStatusTransfer                        |
    handoverCancel                          |
    rANPaging                               |
    xnUAddressIndication                    |
    uEContextRelease                        |
    sNGRANnodeReconfigurationCompletion     |
    sNGRANnodeCounterCheck                  |
    rRCTransfer                             |
    errorIndication                         |
    privateMessage                          |
    notificationControl                     |
    activityNotification                    |
    secondaryRATDataUsageReport             |
    deactivateTrace                         |
    traceStart                              |
    handoverSuccess                         |
    conditionalHandoverCancel               |
    earlyStatusTransfer                     |
    failureIndication                       |
    handoverReport                          |
    scgFailureIndication                    |
    resourceStatusReporting                 |
    accessAndMobilityIndication             |
    cellTrafficTrace                        |
    rANMulticastGroupPaging                 |
    scgFailureInformationReport             |
```

```
    scgFailureTransfer                      |
    f1CTrafficTransfer                      |
    retrieveUEContextConfirm                |
    cPCCancel                               |
    rachIndication                          |
    dataCollectionReporting                 |
    oDSIB1ConfigurationProvisionStatusUpdate|
    cellSwitchNotification                  |
    tAInformationTransfer                   |
    lTMCancel,
    ...

}

-- ************************************************************
--
-- Interface Elementary Procedures
--
-- ************************************************************

handoverPreparation XNAP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE      HandoverRequest
    SUCCESSFUL OUTCOME      HandoverRequestAcknowledge
    UNSUCCESSFUL OUTCOME    HandoverPreparationFailure
    PROCEDURE CODE          id-handoverPreparation
    CRITICALITY             reject
}


sNStatusTransfer    XNAP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE      SNStatusTransfer
    PROCEDURE CODE          id-sNStatusTransfer
    CRITICALITY             ignore
}


handoverCancel  XNAP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE      HandoverCancel
    PROCEDURE CODE          id-handoverCancel
    CRITICALITY             ignore
}


retrieveUEContext   XNAP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE      RetrieveUEContextRequest
    SUCCESSFUL OUTCOME      RetrieveUEContextResponse
    UNSUCCESSFUL OUTCOME    RetrieveUEContextFailure
    PROCEDURE CODE          id-retrieveUEContext
    CRITICALITY             reject
}


rANPaging   XNAP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE      RANPaging
```

```
    PROCEDURE CODE          id-rANPaging
    CRITICALITY             reject
}


xnUAddressIndication    XNAP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE      XnUAddressIndication
    PROCEDURE CODE          id-xnUAddressIndication
    CRITICALITY             reject
}


uEContextRelease    XNAP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE      UEContextRelease
    PROCEDURE CODE          id-uEContextRelease
    CRITICALITY             reject
}


sNGRANnodeAdditionPreparation   XNAP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE      SNodeAdditionRequest
    SUCCESSFUL OUTCOME      SNodeAdditionRequestAcknowledge
    UNSUCCESSFUL OUTCOME    SNodeAdditionRequestReject
    PROCEDURE CODE          id-sNGRANnodeAdditionPreparation
    CRITICALITY             reject
}


sNGRANnodeReconfigurationCompletion XNAP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE      SNodeReconfigurationComplete
    PROCEDURE CODE          id-sNGRANnodeReconfigurationCompletion
    CRITICALITY             reject
}


mNGRANnodeinitiatedSNGRANnodeModificationPreparation    XNAP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE      SNodeModificationRequest
    SUCCESSFUL OUTCOME      SNodeModificationRequestAcknowledge
    UNSUCCESSFUL OUTCOME    SNodeModificationRequestReject
    PROCEDURE CODE          id-mNGRANnodeinitiatedSNGRANnodeModificationPreparation
    CRITICALITY             reject
}


sNGRANnodeinitiatedSNGRANnodeModificationPreparation    XNAP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE      SNodeModificationRequired
    SUCCESSFUL OUTCOME      SNodeModificationConfirm
    UNSUCCESSFUL OUTCOME    SNodeModificationRefuse
    PROCEDURE CODE          id-sNGRANnodeinitiatedSNGRANnodeModificationPreparation
    CRITICALITY             reject
}


mNGRANnodeinitiatedSNGRANnodeRelease    XNAP-ELEMENTARY-PROCEDURE ::= {
```

```
    INITIATING MESSAGE      SNodeReleaseRequest
    SUCCESSFUL OUTCOME      SNodeReleaseRequestAcknowledge
    UNSUCCESSFUL OUTCOME    SNodeReleaseReject
    PROCEDURE CODE          id-mNGRANnodeinitiatedSNGRANnodeRelease
    CRITICALITY             reject
}


sNGRANnodeinitiatedSNGRANnodeRelease    XNAP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE      SNodeReleaseRequired
    SUCCESSFUL OUTCOME      SNodeReleaseConfirm
    PROCEDURE CODE          id-sNGRANnodeinitiatedSNGRANnodeRelease
    CRITICALITY             reject
}


sNGRANnodeCounterCheck  XNAP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE      SNodeCounterCheckRequest
    PROCEDURE CODE          id-sNGRANnodeCounterCheck
    CRITICALITY             reject
}


sNGRANnodeChange        XNAP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE      SNodeChangeRequired
    SUCCESSFUL OUTCOME      SNodeChangeConfirm
    UNSUCCESSFUL OUTCOME    SNodeChangeRefuse
    PROCEDURE CODE          id-sNGRANnodeChange
    CRITICALITY             reject
}


rRCTransfer XNAP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE      RRCTransfer
    PROCEDURE CODE          id-rRCTransfer
    CRITICALITY             reject
}


xnRemoval   XNAP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE      XnRemovalRequest
    SUCCESSFUL OUTCOME      XnRemovalResponse
    UNSUCCESSFUL OUTCOME        XnRemovalFailure
    PROCEDURE CODE          id-xnRemoval
    CRITICALITY             reject
}


xnSetup XNAP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE      XnSetupRequest
    SUCCESSFUL OUTCOME      XnSetupResponse
    UNSUCCESSFUL OUTCOME        XnSetupFailure
    PROCEDURE CODE          id-xnSetup
    CRITICALITY             reject
```

```
}


nGRANnodeConfigurationUpdate    XNAP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE      NGRANNodeConfigurationUpdate
    SUCCESSFUL OUTCOME      NGRANNodeConfigurationUpdateAcknowledge
    UNSUCCESSFUL OUTCOME    NGRANNodeConfigurationUpdateFailure
    PROCEDURE CODE          id-nGRANnodeConfigurationUpdate
    CRITICALITY             reject
}

partialUEContextTransfer    XNAP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE      PartialUEContextTransfer
    SUCCESSFUL OUTCOME      PartialUEContextTransferAcknowledge
    UNSUCCESSFUL OUTCOME    PartialUEContextTransferFailure
    PROCEDURE CODE          id-partialUEContextTransfer
    CRITICALITY             reject
}

e-UTRA-NR-CellResourceCoordination  XNAP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE      E-UTRA-NR-CellResourceCoordinationRequest
    SUCCESSFUL OUTCOME      E-UTRA-NR-CellResourceCoordinationResponse
    PROCEDURE CODE          id-e-UTRA-NR-CellResourceCoordination
    CRITICALITY             reject
}


cellActivation  XNAP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE      CellActivationRequest
    SUCCESSFUL OUTCOME      CellActivationResponse
    UNSUCCESSFUL OUTCOME    CellActivationFailure
    PROCEDURE CODE          id-cellActivation
    CRITICALITY             reject
}


reset   XNAP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE      ResetRequest
    SUCCESSFUL OUTCOME      ResetResponse
    PROCEDURE CODE          id-reset
    CRITICALITY             reject
}


errorIndication XNAP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE      ErrorIndication
    PROCEDURE CODE          id-errorIndication
    CRITICALITY             ignore
}


notificationControl         XNAP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE      NotificationControlIndication
    PROCEDURE CODE          id-notificationControl
```

```
    CRITICALITY             ignore
}


activityNotification        XNAP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE      ActivityNotification
    PROCEDURE CODE          id-activityNotification
    CRITICALITY             ignore
}


privateMessage          XNAP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE      PrivateMessage
    PROCEDURE CODE          id-privateMessage
    CRITICALITY             ignore
}

secondaryRATDataUsageReport XNAP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE      SecondaryRATDataUsageReport
    PROCEDURE CODE          id-secondaryRATDataUsageReport
    CRITICALITY             reject
}

deactivateTrace XNAP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE      DeactivateTrace
    PROCEDURE CODE          id-deactivateTrace
    CRITICALITY             ignore
}

traceStart XNAP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE      TraceStart
    PROCEDURE CODE          id-traceStart
    CRITICALITY             ignore
}

handoverSuccess         XNAP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE      HandoverSuccess
    PROCEDURE CODE          id-handoverSuccess
    CRITICALITY             ignore
}

conditionalHandoverCancel   XNAP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE      ConditionalHandoverCancel
    PROCEDURE CODE          id-conditionalHandoverCancel
    CRITICALITY             ignore
}

earlyStatusTransfer     XNAP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE      EarlyStatusTransfer
    PROCEDURE CODE          id-earlyStatusTransfer
    CRITICALITY             ignore
}

failureIndication XNAP-ELEMENTARY-PROCEDURE ::= {
```

```
    INITIATING MESSAGE      FailureIndication
    PROCEDURE CODE          id-failureIndication
    CRITICALITY             ignore
}

handoverReport XNAP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE      HandoverReport
    PROCEDURE CODE          id-handoverReport
    CRITICALITY             ignore
}

scgFailureIndication XNAP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE      SCGFailureIndication
    PROCEDURE CODE          id-scgFailureIndication
    CRITICALITY             ignore
}

resourceStatusReportingInitiation   XNAP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE              ResourceStatusRequest
    SUCCESSFUL OUTCOME              ResourceStatusResponse
    UNSUCCESSFUL OUTCOME            ResourceStatusFailure
    PROCEDURE CODE                  id-resourceStatusReportingInitiation
    CRITICALITY                     reject
}

resourceStatusReporting XNAP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE      ResourceStatusUpdate
    PROCEDURE CODE          id-resourceStatusReporting
    CRITICALITY             ignore
}

mobilitySettingsChange  XNAP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE              MobilityChangeRequest
    SUCCESSFUL OUTCOME              MobilityChangeAcknowledge
    UNSUCCESSFUL OUTCOME            MobilityChangeFailure
    PROCEDURE CODE                  id-mobilitySettingsChange
    CRITICALITY                     reject
}


accessAndMobilityIndication XNAP-ELEMENTARY-PROCEDURE ::={
    INITIATING MESSAGE      AccessAndMobilityIndication
    PROCEDURE CODE          id-accessAndMobilityIndication
    CRITICALITY             ignore
}

cellTrafficTrace XNAP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE      CellTrafficTrace
    PROCEDURE CODE          id-cellTrafficTrace
    CRITICALITY             ignore
}

rANMulticastGroupPaging     XNAP-ELEMENTARY-PROCEDURE ::={
    INITIATING MESSAGE      RANMulticastGroupPaging
```

```
    PROCEDURE CODE          id-RANMulticastGroupPaging
    CRITICALITY             reject
}

scgFailureInformationReport XNAP-ELEMENTARY-PROCEDURE ::={
    INITIATING MESSAGE      ScgFailureInformationReport
    PROCEDURE CODE          id-scgFailureInformationReport
    CRITICALITY             ignore
}

scgFailureTransfer XNAP-ELEMENTARY-PROCEDURE ::={
    INITIATING MESSAGE      ScgFailureTransfer
    PROCEDURE CODE          id-scgFailureTransfer
    CRITICALITY             ignore
}

f1CTrafficTransfer          XNAP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE      F1CTrafficTransfer
    PROCEDURE CODE          id-f1CTrafficTransfer
    CRITICALITY             reject
}

iABTransportMigrationManagement XNAP-ELEMENTARY-PROCEDURE ::={
    INITIATING MESSAGE      IABTransportMigrationManagementRequest
    SUCCESSFUL OUTCOME      IABTransportMigrationManagementResponse
    UNSUCCESSFUL OUTCOME    IABTransportMigrationManagementReject
    PROCEDURE CODE          id-iABTransportMigrationManagement
    CRITICALITY             reject
}

iABTransportMigrationModification XNAP-ELEMENTARY-PROCEDURE ::={
    INITIATING MESSAGE      IABTransportMigrationModificationRequest
    SUCCESSFUL OUTCOME      IABTransportMigrationModificationResponse
    PROCEDURE CODE          id-iABTransportMigrationModification
    CRITICALITY             reject
}

iABResourceCoordination XNAP-ELEMENTARY-PROCEDURE ::={
    INITIATING MESSAGE      IABResourceCoordinationRequest
    SUCCESSFUL OUTCOME      IABResourceCoordinationResponse
    PROCEDURE CODE          id-iABResourceCoordination
    CRITICALITY             reject
}

retrieveUEContextConfirm    XNAP-ELEMENTARY-PROCEDURE ::={
    INITIATING MESSAGE      RetrieveUEContextConfirm
    PROCEDURE CODE          id-retrieveUEContextConfirm
    CRITICALITY             reject
}

cPCCancel XNAP-ELEMENTARY-PROCEDURE ::={
    INITIATING MESSAGE      CPCCancel
    PROCEDURE CODE          id-cPCCancel
    CRITICALITY             ignore
```

```
}

rachIndication XNAP-ELEMENTARY-PROCEDURE ::={
    INITIATING MESSAGE      RachIndication
    PROCEDURE CODE          id-rachIndication
    CRITICALITY             ignore
}

dataCollectionReportingInitiation   XNAP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE              DataCollectionRequest
    SUCCESSFUL OUTCOME              DataCollectionResponse
    UNSUCCESSFUL OUTCOME            DataCollectionFailure
    PROCEDURE CODE                  id-dataCollectionReportingInitiation
    CRITICALITY                     reject
}

dataCollectionReporting XNAP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE      DataCollectionUpdate
    PROCEDURE CODE          id-dataCollectionReporting
    CRITICALITY             ignore
}

oDSIB1ConfigurationProvision        XNAP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE              ODSIB1ConfigurationProvisionRequest
    SUCCESSFUL OUTCOME              ODSIB1ConfigurationProvisionResponse
    UNSUCCESSFUL OUTCOME            ODSIB1ConfigurationProvisionFailure
    PROCEDURE CODE                  id-ODSIB1ConfigurationProvision
    CRITICALITY                     reject
}

oDSIB1ConfigurationProvisionStatusUpdate    XNAP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE      ODSIB1ConfigurationProvisionStatusUpdate
    PROCEDURE CODE          id-ODSIB1ConfigurationProvisionStatusUpdate
    CRITICALITY             ignore
}


lTMConfigurationUpdate      XNAP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE              LTMConfigurationUpdate
    SUCCESSFUL OUTCOME              LTMConfigurationUpdateAcknowledge
    UNSUCCESSFUL OUTCOME            LTMConfigurationUpdateFailure
    PROCEDURE CODE                  id-lTMConfigurationUpdate
    CRITICALITY                     reject
}


cSIRSCoordination           XNAP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE              CSIRSCoordinationRequest
    SUCCESSFUL OUTCOME              CSIRSCoordinationResponse
    PROCEDURE CODE                  id-cSIRSCoordination
    CRITICALITY                     reject
}
```

```
cellSwitchNotification      XNAP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE              CellSwitchNotification
    PROCEDURE CODE                  id-cellSwitchNotification
    CRITICALITY                     ignore
}

tAInformationTransfer       XNAP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE              TAInformationTransfer
    PROCEDURE CODE                  id-tAInformationTransfer
    CRITICALITY                     ignore
}

lTMCancel                   XNAP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE              LTMCancel
    PROCEDURE CODE                  id-lTMCancel
    CRITICALITY                     ignore
}

cLI-Indication  XNAP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE      CLI-Indication
    PROCEDURE CODE          id-cLI-Indication
    CRITICALITY             ignore
}


END
-- ASN1STOP
```

9.3.4 PDU Definitions

```
-- ASN1START
-- **************************************************************
--
-- PDU definitions for XnAP.
--
-- **************************************************************

XnAP-PDU-Contents {
itu-t (0) identified-organization (4) etsi (0) mobileDomain (0)
ngran-access (22) modules (3) xnap (2) version1 (1) xnap-PDU-Contents (1) }

DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

-- **************************************************************
--
-- IE parameter types from other modules.
--
-- **************************************************************

IMPORTS
```

```
    ActivationIDforCellActivation,
    AMF-Region-Information,
    AMF-UE-NGAP-ID,
    AS-SecurityInformation,
    AssistanceDataForRANPaging,
    AerialUESubscriptionInformation,
    A2XPC5QoSParameters,
    BitRate,
    Cause,
    CellAndCapacityAssistanceInfo-EUTRA,
    CellAndCapacityAssistanceInfo-NR,
    CellAssistanceInfo-EUTRA,
    CellAssistanceInfo-NR,
    CHOinformation-Req,
    CHOinformation-Ack,
    CHOinformation-AddReq,
    CHOinformation-AddReqAck,
    CHOinformation-ModReq,
    CHO-MRDC-EarlyDataForwarding,
    CHO-MRDC-Indicator,
    CPTransportLayerInformation,
    TNLA-To-Add-List,
    TNLA-To-Update-List,
    TNLA-To-Remove-List,
    TNLA-Setup-List,
    TNLA-Failed-To-Setup-List,
    CriticalityDiagnostics,
    XnUAddressInfoperPDUSession-List,
    DAPSResponseInfo-List,
    DataTrafficResourceIndication,
    DeliveryStatus,
    DesiredActNotificationLevel,
    DRB-ID,
    DRB-List,
    DRB-Number,
    DRBsSubjectToDLDiscarding-List,
    DRBsSubjectToEarlyStatusTransfer-List,
    DRBsSubjectToStatusTransfer-List,
    DRBToQoSFlowMapping-List,
    E-UTRA-CGI,
    ExpectedUEActivityBehaviour,
    ExpectedUEBehaviour,
    ExtendedUEIdentityIndexValue,
    FiveGCMobilityRestrictionListContainer,
    GlobalCell-ID,
    GlobalNG-RANNode-ID,
    GlobalNG-RANCell-ID,
    GUAMI,
    InterfaceInstanceIndication,
    I-RNTI,
    Local-NG-RAN-Node-Identifier,
    LocationInformationSNReporting,
    LocationReportingInformation,
    LowerLayerPresenceStatusChange,
```

```
    LTEA2XServicesAuthorized,
    LTEUESidelinkAggregateMaximumBitRate,
    LTEV2XServicesAuthorized,
    MR-DC-ResourceCoordinationInfo,
    ServedCells-E-UTRA,
    ServedCells-NR,
    ServedCellsToUpdate-E-UTRA,
    ServedCellsToUpdate-NR,
    MAC-I,
    MaskedIMEISV,
    MDT-Configuration,
    MDTPLMNList,
    MobilityRestrictionList,
    Neighbour-NG-RAN-Node-List,
    NG-RAN-Cell-Identity,
    NG-RANnodeUEXnAPID,
    NR-CGI,
    NE-DC-TDM-Pattern,
    NRA2XServicesAuthorized,
    NRUESidelinkAggregateMaximumBitRate,
    NRV2XServicesAuthorized,
    PagingDRX,
    EUTRAPagingeDRXInformation,
    PagingPriority,
    PartialListIndicator,
    PLMN-Identity,
    PDCPChangeIndication,
    PDUSessionAggregateMaximumBitRate,
    PDUSession-ID,
    PDUSession-List,
    PDUSession-List-withCause,
    PDUSession-List-withDataForwardingFromTarget,
    PDUSession-List-withDataForwardingRequest,
    PDUSessionResourcesAdmitted-List,
    PDUSessionResourcesNotAdmitted-List,
    PDUSessionResourcesToBeSetup-List,
    PDUSessionResourceChangeRequiredInfo-SNterminated,
    PDUSessionResourceChangeRequiredInfo-MNterminated,
    PDUSessionResourceChangeConfirmInfo-SNterminated,
    PDUSessionResourceChangeConfirmInfo-MNterminated,
    PDUSessionResourceSecondaryRATUsageList,
    PDUSessionResourceSetupInfo-SNterminated,
    PDUSessionResourceSetupInfo-MNterminated,
    PDUSessionResourceSetupResponseInfo-SNterminated,
    PDUSessionResourceSetupResponseInfo-MNterminated,
    PDUSessionResourceModificationInfo-SNterminated,
    PDUSessionResourceModificationInfo-MNterminated,
    PDUSessionResourceModificationResponseInfo-SNterminated,
    PDUSessionResourceModificationResponseInfo-MNterminated,
    PDUSessionResourceModConfirmInfo-SNterminated,
    PDUSessionResourceModConfirmInfo-MNterminated,
    PDUSessionResourceModRqdInfo-SNterminated,
    PDUSessionResourceModRqdInfo-MNterminated,
    PDUSessionType,
```

```
    PC5QoSParameters,
    QoSFlowIdentifier,
    QoSFlowNotificationControlIndicationInfo,
    QoSFlows-List,
    RANPagingArea,
    ResetRequestTypeInfo,
    ResetResponseTypeInfo,
    RFSP-Index,
    RRCConfigIndication,
    RRCResumeCause,
    SCGConfigurationQuery,
    SCGreconfigNotification,
    SecurityIndication,
    S-NG-RANnode-SecurityKey,
    SpectrumSharingGroupID,
    SplitSRBsTypes,
    S-NG-RANnode-Addition-Trigger-Ind,
    S-NSSAI,
    TargetCellList,
    TAISupport-List,
    Target-CGI,
    TimeToWait,
    TraceActivation,
    UEAggregateMaximumBitRate,
    UEContextID,
    UEContextInfoRetrUECtxtResp,
    UEContextKeptIndicator,
    UEHistoryInformation,
    UEIdentityIndexValue,
    UERadioCapabilityForPaging,
    UERadioCapabilityID,
    UERANPagingIdentity,
    UESecurityCapabilities,
    UPTransportLayerInformation,
    UserPlaneTrafficActivityReport,
    XnBenefitValue,
    RANPagingFailure,
    TNLConfigurationInfo,
    MaximumCellListSize,
    MessageOversizeNotification,
    NG-RANTraceID,
    MobilityInformation,
    InitiatingCondition-FailureIndication,
    HandoverReportType,
    TargetCellinEUTRAN,
    C-RNTI,
    UERLFReportContainer,
    Measurement-ID,
    RegistrationRequest,
    ReportCharacteristics,
    CellToReport,
    ReportingPeriodicity,
    CellMeasurementResult,
    UEHistoryInformationFromTheUE,
```

```
    MobilityParametersInformation,
    MobilityParametersModificationRange,
    RAReport,
    IABNodeIndication,
    SNTriggered,
    SCGIndicator,
    UESpecificDRX,
    DirectForwardingPathAvailability,
    TransportLayerAddress,
    PrivacyIndicator,
    URIaddress,
    MBS-Session-ID,
    UEIdentityIndexList-MBSGroupPaging,
    MBS-SessionInformation-List,
    MBS-SessionInformationResponse-List,
    SuccessfulHOReportInformation,
    PSCellHistoryInformationRetrieve,
    SSBOffsets-List,
    NG-RANnode2SSBOffsetsModificationRange,
    Coverage-Modification-List,
    SCGFailureReportContainer,
    SNMobilityInformation,
    PSCellChangeHistory,
    CHOConfiguration,
    SCGUEHistoryInformation,
    F1CTrafficContainer,
    NoPDUSessionIndication,
    IAB-TNL-Address-Request,
    IAB-TNL-Address-Response,
    TrafficIndex,
    TrafficProfile,
    TrafficToBeReleaseInformation,
    F1-TerminatingTopologyBHInformation,
    Non-F1-TerminatingTopologyBHInformation,
    BHInfoList,
    IABTNLAddress,
    IABCellInformation,
    IABTNLAddressException,
    TimeSynchronizationAssistanceInformation,
    SCGActivationRequest,
    SCGActivationStatus,
    CPAInformationRequest,
    CPAInformationAck,
    CPCInformationRequired,
    CPCInformationConfirm,
    CPAInformationModReq,
    CPAInformationModReqAck,
    CPC-DataForwarding-Indicator,
    CPCInformationUpdate,
    CPACInformationModRequired,
    QMCConfigInfo,
    FiveGProSeAuthorized,
    FiveGProSePC5QoSParameters,
    ServedCellSpecificInfoReq-NR,
```

```
    NRPagingeDRXInformation,
    NRPagingeDRXInformationforRRCINACTIVE,
    SDTSupportRequest,
    SDT-Termination-Request,
    SDTPartialUEContextInfo,
    SDTDataForwardingDRBList,
    PEIPSassistanceInformation,
    UESliceMaximumBitRateList,
    PagingCause,
    MDTPLMNModificationList,
    F1-terminatingIAB-donorIndicator,
    SRB-ID,
    AdditionalListofPDUSessionResourceChangeConfirmInfo-SNterminated,
    HashedUEIdentityIndexValue,
    MBS-DataForwarding-Indicator,
    IABAuthorizationStatus,
    NID,
    MT-SDT-Information,
    PosPartialUEContextInfo,
    SRSConfiguration,
    RaReportIndicationList,
    SuccessfulPSCellChangeReportInformation,
    CPACConfiguration,
    TimeSinceFailure,
    SPRAvailability,
    DLLBTFailureInformationRequest,
    DLLBTFailureInformationList,
    CellBasedUETrajectoryPrediction,
    DataCollectionID,
    RequestedPredictionTime,
    NodeMeasurementInitiationResult-List,
    CellMeasurementInitiationResult-List,
    UEAssociatedInfoResult-List,
    UETrajectoryCollectionConfiguration,
    UEPerformanceCollectionConfiguration,
    CellMeasurementResultForDataCollection-List,
    CellToReportForDataCollection-List,
    CandidateRelayUEInfoList,
    NRPagingLongeDRXInformationforRRCINACTIVE,
    QMCCoordinationRequest,
    QMCCoordinationResponse,
    DirectForwardingPathAvailabilityWithSourceMN,
    Conditional-Reconfig-List,
    PDUSetbasedHandlingIndicator,
    MobileIAB-AuthorizationStatus,
    BAPAddress,
    S-CPAC-Request,
    SK-COUNTER,
    RegistrationRequestForDataCollection,
    ReportCharacteristicsForDataCollection,
    ReportingPeriodicityForDataCollection,
    NodeAssociatedInfoResult,
    SLPositioning-Ranging-Services-Info,
    PDUSessionsListToBeReleased-UPError,
```

```
    UserPlaneFailureIndication,
    SRSPositioningConfigOrActivationRequest,
    NRPPaPositioningInformation,
    LTMHandoverInformationRequest,
    EarlySyncInformationRequest,
    LTMHandoverInformationRequestAcknowledge,
    EarlySyncInformation,
    LTMCellSwitchInformation,
    LTMUEAssociationInformation-List,
    CellSwitchTAInformation-List,
    TAInformation-List,
    LTMUpdatesToCandidateNodeInformation,
    LTMUpdatesToCandidateCellInformation-List,
    LTMUESecurityInformation,
    LTMUpdatesFromCandidateCellInformation-List,
    LTMCandidateCellsToBeCancelled-List,
    CSI-RSCoordinationRequestList,
    CSI-RSCoordinationResultList,
    CLI-MeasurementResult-List,
    SRS-Resource-Indication,
    WAB-MT-ID,
    LPWUSPSassistanceInformation,
    FurtherExtended-UEIdentityIndexValue,
    Future-Coverage-Modification-List,
    TimeSCG-Failure,
    FailureType,
    LTMInformationSCG-AddReq,
    LTMInformationSCG-AddReqAck,
    LTMInformationSCG-ModReq,
    LTMInterSNExecutionNotification,
    LTMPSCellInformation-AddReq,
    LTMPSCellInformation-AddReqAck,
    LTMPSCellInformation-UpdateReq,
    LTMPSCellInformation-UpdateReqAck,
    LTMPSCellInformation-UpdateRequired,
    LTMPSCellInformation-UpdateConfirm,
    LTMPSCellInformation-ChangeRequired,
    LTMPSCellInformation-ChangeConfirm,
    LTM-DC-DataForwarding-Indicator,
    SemipersistentPositioningInformation,
    LP-WUS-Disable-Indication




FROM XnAP-IEs

    PrivateIE-Container{},
    ProtocolExtensionContainer{},
    ProtocolIE-Container{},
    ProtocolIE-ContainerList{},
    ProtocolIE-ContainerPair{},
```

```
    ProtocolIE-ContainerPairList{},
    ProtocolIE-Single-Container{},
    XNAP-PRIVATE-IES,
    XNAP-PROTOCOL-EXTENSION,
    XNAP-PROTOCOL-IES,
    XNAP-PROTOCOL-IES-PAIR
FROM XnAP-Containers


    id-A2XPC5QoSParameters,
    id-ActivatedServedCells,
    id-ActivationIDforCellActivation,
    id-AdditionalDRBIDs,
    id-AerialUESubscriptionInformation,
    id-AMF-Region-Information,
    id-AMF-Region-Information-To-Add,
    id-AMF-Region-Information-To-Delete,
    id-AssistanceDataForRANPaging,
    id-AvailableDRBIDs,
    id-Cause,
    id-cellAssistanceInfo-EUTRA,
    id-cellAssistanceInfo-NR,
    id-CellAndCapacityAssistanceInfo-EUTRA,
    id-CellAndCapacityAssistanceInfo-NR,
    id-ConfigurationUpdateInitiatingNodeChoice,
    id-UEContextID,
    id-CriticalityDiagnostics,
    id-XnUAddressInfoperPDUSession-List,
    id-DesiredActNotificationLevel,
    id-DRBsSubjectToStatusTransfer-List,
    id-ExpectedUEBehaviour,
    id-ExtendedUEIdentityIndexValue,
    id-FiveGCMobilityRestrictionListContainer,
    id-GlobalNG-RAN-node-ID,
    id-GUAMI,
    id-indexToRatFrequSelectionPriority,
    id-List-of-served-cells-E-UTRA,
    id-List-of-served-cells-NR,
    id-LocationInformationSN,
    id-LocationInformationSNReporting,
    id-LocationReportingInformation,
    id-LTEA2XServicesAuthorized,
    id-LTEA2XUEPC5AggregateMaximumBitRate,
    id-LTEUESidelinkAggregateMaximumBitRate,
    id-LTEV2XServicesAuthorized,
    id-MAC-I,
    id-MaskedIMEISV,
    id-MDT-Configuration,
    id-MDTPLMNList,
    id-MN-to-SN-Container,
    id-MobilityRestrictionList,
    id-M-NG-RANnodeUEXnAPID,
    id-new-NG-RAN-Cell-Identity,
    id-newNG-RANnodeUEXnAPID,
```

```
    id-NRA2XServicesAuthorized,
    id-NRA2XUEPC5AggregateMaximumBitRate,
    id-NRUESidelinkAggregateMaximumBitRate,
    id-NRV2XServicesAuthorized,
    id-oldNG-RANnodeUEXnAPID,
    id-OldtoNewNG-RANnodeResumeContainer,
    id-PagingCause,
    id-PagingDRX,
    id-EUTRAPagingeDRXInformation,
    id-PagingPriority,
    id-PartialListIndicator-EUTRA,
    id-PartialListIndicator-NR,
    id-PCellID,
    id-PDUSessionResourceSecondaryRATUsageList,
    id-PDUSessionResourcesActivityNotifyList,
    id-PDUSessionResourcesAdmitted-List,
    id-PDUSessionResourcesNotAdmitted-List,
    id-PDUSessionResourcesNotifyList,
    id-PDUSessionToBeAddedAddReq,
    id-PDUSessionToBeReleased-RelReqAck,
    id-procedureStage,
    id-RANPagingArea,
    id-requestedSplitSRB,
    id-RequiredNumberOfDRBIDs,
    id-ResetRequestTypeInfo,
    id-ResetResponseTypeInfo,
    id-RespondingNodeTypeConfigUpdateAck,
    id-RRCResumeCause,
    id-SCGreconfigNotification,
    id-selectedPLMN,
    id-ServedCellsToActivate,
    id-servedCellsToUpdate-E-UTRA,
    id-ServedCellsToUpdateInitiatingNodeChoice,
    id-servedCellsToUpdate-NR,
    id-sourceNG-RANnodeUEXnAPID,
    id-SpareDRBIDs,
    id-S-NG-RANnodeMaxIPDataRate-UL,
    id-S-NG-RANnodeMaxIPDataRate-DL,
    id-S-NG-RANnodeUEXnAPID,
    id-TAISupport-list,
    id-Target2SourceNG-RANnodeTranspContainer,
    id-targetCellGlobalID,
    id-targetNG-RANnodeUEXnAPID,
    id-TimeToWait,
    id-TNLA-To-Add-List,
    id-TNLA-To-Update-List,
    id-TNLA-To-Remove-List,
    id-TNLA-Setup-List,
    id-TNLA-Failed-To-Setup-List,
    id-TraceActivation,
    id-UEContextInfoHORequest,
    id-UEContextInfoRetrUECtxtResp,
    id-UEContextKeptIndicator,
    id-UEContextRefAtSN-HORequest,
```

```
    id-UEHistoryInformation,
    id-UEIdentityIndexValue,
    id-UERANPagingIdentity,
    id-UESecurityCapabilities,
    id-UserPlaneTrafficActivityReport,
    id-XnRemovalThreshold,
    id-PDUSessionAdmittedAddedAddReqAck,
    id-PDUSessionNotAdmittedAddReqAck,
    id-SN-to-MN-Container,
    id-RRCConfigIndication,
    id-SplitSRB-RRCTransfer,
    id-UEReportRRCTransfer,
    id-PDUSessionReleasedList-RelConf,
    id-BearersSubjectToCounterCheck,
    id-PDUSessionToBeReleasedList-RelRqd,
    id-ResponseInfo-ReconfCompl,
    id-initiatingNodeType-ResourceCoordRequest,
    id-respondingNodeType-ResourceCoordResponse,
    id-PDUSessionToBeReleased-RelReq,
    id-PDUSession-SNChangeRequired-List,
    id-PDUSession-SNChangeConfirm-List,
    id-PDCPChangeIndication,
    id-PC5QoSParameters,
    id-SCGConfigurationQuery,
    id-UEContextInfo-SNModRequest,
    id-requestedSplitSRBrelease,
    id-PDUSessionAdmitted-SNModResponse,
    id-PDUSessionNotAdmitted-SNModResponse,
    id-admittedSplitSRB,
    id-admittedSplitSRBrelease,
    id-PDUSessionAdmittedModSNModConfirm,
    id-PDUSessionReleasedSNModConfirm,
    id-s-ng-RANnode-SecurityKey,
    id-PDUSessionToBeModifiedSNModRequired,
    id-S-NG-RANnodeUE-AMBR,
    id-PDUSessionToBeReleasedSNModRequired,
    id-target-S-NG-RANnodeID,
    id-S-NSSAI,
    id-MR-DC-ResourceCoordinationInfo,
    id-RANPagingFailure,
    id-UERadioCapabilityForPaging,
    id-PDUSessionDataForwarding-SNModResponse,
    id-Secondary-MN-Xn-U-TNLInfoatM,
    id-NE-DC-TDM-Pattern,
    id-InterfaceInstanceIndication,
    id-S-NG-RANnode-Addition-Trigger-Ind,
    id-SNTriggered,
    id-DRBs-transferred-to-MN,
    id-TNLConfigurationInfo,
    id-MessageOversizeNotification,
    id-NG-RANTraceID,
    id-FastMCGRecoveryRRCTransfer-SN-to-MN,
    id-FastMCGRecoveryRRCTransfer-MN-to-SN,
    id-RequestedFastMCGRecoveryViaSRB3,
```

```
    id-AvailableFastMCGRecoveryViaSRB3,
    id-RequestedFastMCGRecoveryViaSRB3Release,
    id-ReleaseFastMCGRecoveryViaSRB3,
    id-CHOinformation-Req,
    id-CHOinformation-Ack,
    id-targetCellsToCancel,
    id-requestedTargetCellGlobalID,
    id-DAPSResponseInfo-List,
    id-CHO-MRDC-EarlyDataForwarding,
    id-CHO-MRDC-Indicator,
    id-MobilityInformation,
    id-InitiatingCondition-FailureIndication,
    id-UEHistoryInformationFromTheUE,
    id-HandoverReportType,
    id-HandoverCause,
    id-SourceCellCGI,
    id-TargetCellCGI,
    id-ReEstablishmentCellCGI,
    id-TargetCellinEUTRAN,
    id-SourceCellCRNTI,
    id-UERLFReportContainer,
    id-NGRAN-Node1-Measurement-ID,
    id-NGRAN-Node2-Measurement-ID,
    id-RegistrationRequest,
    id-ReportCharacteristics,
    id-CellToReport,
    id-ReportingPeriodicity,
    id-CellMeasurementResult,
    id-NG-RANnode1CellID,
    id-NG-RANnode2CellID,
    id-NG-RANnode1MobilityParameters,
    id-NG-RANnode2ProposedMobilityParameters,
    id-MobilityParametersModificationRange,
    id-RAReport,
    id-IABNodeIndication,
    id-UERadioCapabilityID,
    id-SCGIndicator,
    id-UESpecificDRX,
    id-PDUSessionExpectedUEActivityBehaviour,
    id-DirectForwardingPathAvailability,
    id-SourceNG-RAN-node-ID,
    id-TargetNodeID,
    id-ManagementBasedMDTPLMNList,
    id-PrivacyIndicator,
    id-TraceCollectionEntityIPAddress,
    id-TraceCollectionEntityURI,
    id-MBS-Session-ID,
    id-UEIdentityIndexList-MBSGroupPaging,
    id-MulticastRANPagingArea,
    id-MBS-SessionInformation-List,
    id-MBS-SessionInformationResponse-List,
    id-SuccessfulHOReportInformation,
    id-PSCellHistoryInformationRetrieve,
    id-SSBOffsets-List,
```

```
    id-NG-RANnode2SSBOffsetsModificationRange,
    id-Coverage-Modification-List,
    id-SourcePSCellCGI,
    id-FailedPSCellCGI,
    id-SCGFailureReportContainer,
    id-SNMobilityInformation,
    id-SourcePSCellID,
    id-SuitablePSCellCGI,
    id-PSCellChangeHistory,
    id-CHOConfiguration,
    id-SCGUEHistoryInformation,
    id-F1CTrafficContainer,
    id-NoPDUSessionIndication,
    id-F1-Terminating-IAB-DonorUEXnAPID,
    id-nonF1-Terminating-IAB-DonorUEXnAPID,
    id-IAB-TNL-Address-Request,
    id-IAB-TNL-Address-Response,
    id-TrafficToBeAddedList,
    id-TrafficToBeModifiedList,
    id-TrafficToBeReleaseInformation,
    id-TrafficAddedList,
    id-TrafficModifiedList,
    id-TrafficNotAddedList,
    id-TrafficNotModifiedList,
    id-TrafficRequiredToBeModifiedList,
    id-TrafficRequiredModifiedList,
    id-TrafficReleasedList,
    id-IABTNLAddressToBeAdded,
    id-IABTNLAddressToBeReleasedList,
    id-BoundaryNodeCellsList,
    id-ParentNodeCellsList,
    id-IABTNLAddressException,
    id-CHOinformation-AddReq,
    id-CHOinformation-AddReqAck,
    id-CHOinformation-ModReq,
    id-TimeSynchronizationAssistanceInformation,
    id-SCGActivationRequest,
    id-SCGActivationStatus,
    id-CPAInformationRequest,
    id-CPAInformationAck,
    id-CPCInformationRequired,
    id-CPCInformationConfirm,
    id-CPAInformationModReq,
    id-CPAInformationModReqAck,
    id-CPC-DataForwarding-Indicator,
    id-CPCInformationUpdate,
    id-CPACInformationModRequired,
    id-QMCConfigInfo,
    id-Local-NG-RAN-Node-Identifier,
    id-Neighbour-NG-RAN-Node-List,
    id-Local-NG-RAN-Node-Identifier-Removal,
    id-FiveGProSeAuthorized,
    id-FiveGProSePC5QoSParameters,
    id-FiveGProSeUEPC5AggregateMaximumBitRate,
```

```
    id-ServedCellSpecificInfoReq-NR,
    id-NRPagingeDRXInformation,
    id-NRPagingeDRXInformationforRRCINACTIVE,
    id-SDTSupportRequest,
    id-SDT-SRB-between-NewNode-OldNode,
    id-SDT-Termination-Request,
    id-SDTPartialUEContextInfo,
    id-SDTDataForwardingDRBList,
    id-PEIPSassistanceInformation,
    id-UESliceMaximumBitRateList,
    id-S-NG-RANnodeUE-Slice-MBR,
    id-ManagementBasedMDTPLMNModificationList,
    id-F1-terminatingIAB-donorIndicator,
    id-AdditionalListofPDUSessionResourceChangeConfirmInfo-SNterminated,
    id-HashedUEIdentityIndexValue,
    id-MBS-DataForwarding-Indicator,
    id-IABAuthorizationStatus,
    id-SelectedNID,
    id-MT-SDT-Information,
    id-PosPartialUEContextInfo,
    id-SRSConfiguration,
    id-RaReportIndicationList,
    id-SuccessfulPSCellChangeReportInformation,
    id-CPACConfiguration,
    id-TargetCellCRNTI,
    id-TimeSinceFailure,
    id-SPRAvailability,
    id-DLLBTFailureInformationRequest,
    id-DLLBTFailureInformationList,
    id-CellBasedUETrajectoryPrediction,
    id-DataCollectionID,
    id-RequestedPredictionTime,
    id-NodeMeasurementInitiationResult-List,
    id-CellMeasurementInitiationResult-List,
    id-UEAssociatedInfoResult-List,
    id-UETrajectoryCollectionConfiguration,
    id-UEPerformanceCollectionConfiguration,
    id-CellMeasurementResultForDataCollection-List,
    id-CellToReportForDataCollection-List,
    id-CandidateRelayUEInfoList,
    id-NRCellsAndSSBsList,
    id-ActivatedNRCellsAndSSBsList,
    id-NRPagingLongeDRXInformationforRRCINACTIVE,
    id-QMCCoordinationRequest,
    id-QMCCoordinationResponse,
    id-QoE-Measurement-Results,
    id-Src-SN-to-Tgt-SNQMCInfoInquiry,
    id-DirectForwardingPathAvailabilityWithSourceMN,
    id-accessed-PSCellID,
    id-conditional-Reconfig-ToCancel-List,
    id-PDUSetbasedHandlingIndicator,
    id-MobileIAB-AuthorizationStatus,
    id-MIAB-MT-BAP-Address,
    id-S-CPAC-Request,
```

```
    id-sk-Counter,
    id-Source-M-NG-RANnodeID,
    id-SourceSN-to-TargetSN-QMCInfo,
    id-RegistrationRequestForDataCollection,
    id-ReportCharacteristicsForDataCollection,
    id-ReportingPeriodicityForDataCollection,
    id-NodeAssociatedInfoResult,
    id-SLPositioning-Ranging-Services-Info,
    id-PDUSessionsListToBeReleased-UPError,
    id-UserPlaneFailureIndication,
    id-SRSPositioningConfigOrActivationRequest,
    id-NRPPaPositioningInformation,
    id-RequestType,
    id-NES-Cell-ID,
    id-Cell-A-ID,
    id-ProvisionStatus,
    id-LTMHandoverInformationRequest,
    id-EarlySyncInformationRequest,
    id-LTMHandoverInformationRequestAcknowledge,
    id-EarlySyncInformationResponse,
    id-LTMCellSwitchInformation,
    id-LTMUEAssociationInformation-List,
    id-CellSwitchTAInformation-List,
    id-TAInformation-List,
    id-LTMUpdatesToCandidateNodeInformation,
    id-LTMUpdatesToCandidateCellInformation-List,
    id-LTMUESecurityInformation,
    id-NGRAN-Node1-ID,
    id-NGRAN-Node2-ID,
    id-LTMUpdatesFromCandidateCellInformation-List,
    id-LTMCandidateCellsToBeCancelled-List,
    id-CSI-RSCoordinationRequest,
    id-CSI-RSCoordinationResponse,
    id-CLI-MeasurementResult-List,
    id-SRS-Resource-Indication,
    id-WAB-MT-ID,
    id-LPWUSPSassistanceInformation,
    id-FurtherExtended-UEIdentityIndexValue,
    id-Future-Coverage-Modification-List,
    id-GeographicalArea,
    id-TimeSCG-Failure,
    id-FailureType,
    id-LTMInformationSCG-AddReq,
    id-LTMInformationSCG-AddReqAck,
    id-LTMInformationSCG-ModReq,
    id-LTMInterSNExecutionNotification,
    id-LTMPSCellInformation-AddReq,
    id-LTMPSCellInformation-AddReqAck,
    id-LTMPSCellInformation-UpdateReq,
    id-LTMPSCellInformation-UpdateReqAck,
    id-LTMPSCellInformation-UpdateRequired,
    id-LTMPSCellInformation-UpdateConfirm,
    id-LTMPSCellInformation-ChangeRequired,
    id-LTMPSCellInformation-ChangeConfirm,
```

```
    id-LTM-DC-DataForwarding-Indicator,
    id-SemipersistentPositioningInformation,
    id-LP-WUS-Disable-Indication,
    id-ContinuousMDT,




    maxnoofCellsinNG-RANnode,
    maxnoofDRBs,
    maxnoofPDUSessions,
    maxnoofQoSFlows,
    maxnoofServedCellsIAB,
    maxnoofTrafficIndexEntries,
    maxnoofTLAsIAB,
    maxnoofBAPControlPDURLCCHs,
    maxnoofServingCells,
    maxnoofSSBAreas

FROM XnAP-Constants;

-- **************************************************************
--
-- HANDOVER REQUEST
--
-- **************************************************************

HandoverRequest ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container    {{HandoverRequest-IEs}},
    ...
}

HandoverRequest-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-sourceNG-RANnodeUEXnAPID                  CRITICALITY reject  TYPE NG-RANnodeUEXnAPID                          PRESENCE mandatory}|
    { ID id-Cause                                     CRITICALITY reject  TYPE Cause                                     PRESENCE mandatory}|
    { ID id-targetCellGlobalID                        CRITICALITY reject  TYPE Target-CGI                                PRESENCE mandatory}|
    { ID id-GUAMI                                     CRITICALITY reject  TYPE GUAMI                                     PRESENCE mandatory}|
    { ID id-UEContextInfoHORequest                    CRITICALITY reject  TYPE UEContextInfoHORequest                    PRESENCE mandatory}|
    { ID id-TraceActivation                           CRITICALITY ignore  TYPE TraceActivation                           PRESENCE optional }|
    { ID id-MaskedIMEISV                              CRITICALITY ignore  TYPE MaskedIMEISV                              PRESENCE optional }|
    { ID id-UEHistoryInformation                      CRITICALITY ignore  TYPE UEHistoryInformation                      PRESENCE mandatory}|
    { ID id-UEContextRefAtSN-HORequest                CRITICALITY ignore  TYPE UEContextRefAtSN-HORequest                PRESENCE optional }|
    { ID id-CHOinformation-Req                        CRITICALITY reject  TYPE CHOinformation-Req                        PRESENCE optional }|
    { ID id-NRV2XServicesAuthorized                   CRITICALITY ignore  TYPE NRV2XServicesAuthorized                   PRESENCE optional }|
    { ID id-LTEV2XServicesAuthorized                  CRITICALITY ignore  TYPE LTEV2XServicesAuthorized                  PRESENCE optional }|
    { ID id-PC5QoSParameters                          CRITICALITY ignore  TYPE PC5QoSParameters                          PRESENCE optional }|
    { ID id-MobilityInformation                       CRITICALITY ignore  TYPE MobilityInformation                       PRESENCE optional }|
    { ID id-UEHistoryInformationFromTheUE             CRITICALITY ignore  TYPE UEHistoryInformationFromTheUE             PRESENCE optional }|
    { ID id-IABNodeIndication                         CRITICALITY reject  TYPE IABNodeIndication                         PRESENCE optional }|
    { ID id-NoPDUSessionIndication                    CRITICALITY ignore  TYPE NoPDUSessionIndication                    PRESENCE optional }|
    { ID id-TimeSynchronizationAssistanceInformation  CRITICALITY ignore  TYPE TimeSynchronizationAssistanceInformation  PRESENCE optional }|
    { ID id-QMCConfigInfo                             CRITICALITY ignore  TYPE QMCConfigInfo                             PRESENCE optional }|
    { ID id-FiveGProSeAuthorized                      CRITICALITY ignore  TYPE FiveGProSeAuthorized                      PRESENCE optional }|
```

```
    { ID id-FiveGProSePC5QoSParameters                CRITICALITY ignore  TYPE FiveGProSePC5QoSParameters                PRESENCE optional }|
    { ID id-IABAuthorizationStatus                    CRITICALITY ignore  TYPE IABAuthorizationStatus                    PRESENCE optional }|
    { ID id-DLLBTFailureInformationRequest            CRITICALITY ignore  TYPE DLLBTFailureInformationRequest            PRESENCE optional }|
    { ID id-AerialUESubscriptionInformation           CRITICALITY ignore  TYPE AerialUESubscriptionInformation           PRESENCE optional }|
    { ID id-NRA2XServicesAuthorized                   CRITICALITY ignore  TYPE NRA2XServicesAuthorized                   PRESENCE optional }|
    { ID id-LTEA2XServicesAuthorized                  CRITICALITY ignore  TYPE LTEA2XServicesAuthorized                  PRESENCE optional }|
    { ID id-A2XPC5QoSParameters                       CRITICALITY ignore  TYPE A2XPC5QoSParameters                       PRESENCE optional }|
    { ID id-CellBasedUETrajectoryPrediction           CRITICALITY ignore  TYPE CellBasedUETrajectoryPrediction           PRESENCE optional }|
    { ID id-DataCollectionID                          CRITICALITY ignore  TYPE DataCollectionID                          PRESENCE optional }|
    { ID id-CandidateRelayUEInfoList                  CRITICALITY reject  TYPE CandidateRelayUEInfoList                  PRESENCE optional }|
    { ID id-SourceSN-to-TargetSN-QMCInfo              CRITICALITY ignore  TYPE QMCConfigInfo                             PRESENCE optional }|
    { ID id-MobileIAB-AuthorizationStatus             CRITICALITY reject  TYPE MobileIAB-AuthorizationStatus             PRESENCE optional }|
    { ID id-SLPositioning-Ranging-Services-Info       CRITICALITY ignore  TYPE SLPositioning-Ranging-Services-Info       PRESENCE optional }|
    { ID id-LTMHandoverInformationRequest             CRITICALITY reject  TYPE LTMHandoverInformationRequest             PRESENCE optional }|
    { ID id-EarlySyncInformationRequest               CRITICALITY ignore  TYPE EarlySyncInformationRequest               PRESENCE optional }|
    { ID id-ContinuousMDT                             CRITICALITY ignore  TYPE NG-RANTraceID                             PRESENCE optional },
    ...
}

UEContextInfoHORequest ::= SEQUENCE {
    ng-c-UE-reference                       AMF-UE-NGAP-ID,
    cp-TNL-info-source                      CPTransportLayerInformation,
    ueSecurityCapabilities                  UESecurityCapabilities,
    securityInformation                     AS-SecurityInformation,
    indexToRatFrequencySelectionPriority    RFSP-Index                                                  OPTIONAL,
    ue-AMBR                                 UEAggregateMaximumBitRate,
    pduSessionResourcesToBeSetup-List       PDUSessionResourcesToBeSetup-List,
    rrc-Context                             OCTET STRING,
    locationReportingInformation            LocationReportingInformation                                OPTIONAL,
    mrl                                     MobilityRestrictionList                                     OPTIONAL,
    iE-Extensions                           ProtocolExtensionContainer { {UEContextInfoHORequest-ExtIEs} } OPTIONAL,
    ...
}

UEContextInfoHORequest-ExtIEs XNAP-PROTOCOL-EXTENSION ::={
    { ID id-FiveGCMobilityRestrictionListContainer  CRITICALITY ignore  EXTENSION FiveGCMobilityRestrictionListContainer    PRESENCE optional }|
    { ID id-NRUESidelinkAggregateMaximumBitRate     CRITICALITY ignore  EXTENSION NRUESidelinkAggregateMaximumBitRate       PRESENCE optional }|
    { ID id-LTEUESidelinkAggregateMaximumBitRate    CRITICALITY ignore  EXTENSION LTEUESidelinkAggregateMaximumBitRate      PRESENCE optional }|
    { ID id-MDTPLMNList                             CRITICALITY ignore  EXTENSION MDTPLMNList                              PRESENCE optional }|
    { ID id-UERadioCapabilityID                     CRITICALITY reject  EXTENSION UERadioCapabilityID                      PRESENCE optional }|
    { ID id-MBS-SessionInformation-List             CRITICALITY ignore  EXTENSION MBS-SessionInformation-List              PRESENCE optional }|
    { ID id-FiveGProSeUEPC5AggregateMaximumBitRate  CRITICALITY ignore  EXTENSION NRUESidelinkAggregateMaximumBitRate      PRESENCE optional }|
    { ID id-UESliceMaximumBitRateList               CRITICALITY ignore  EXTENSION UESliceMaximumBitRateList                PRESENCE optional }|
    { ID id-NRA2XUEPC5AggregateMaximumBitRate       CRITICALITY ignore  EXTENSION NRUESidelinkAggregateMaximumBitRate       PRESENCE optional }|
    { ID id-LTEA2XUEPC5AggregateMaximumBitRate      CRITICALITY ignore  EXTENSION LTEUESidelinkAggregateMaximumBitRate      PRESENCE optional },
    ...
}

UEContextRefAtSN-HORequest ::= SEQUENCE {
    globalNG-RANNode-ID             GlobalNG-RANNode-ID,
    sN-NG-RANnodeUEXnAPID           NG-RANnodeUEXnAPID,
    iE-Extensions                   ProtocolExtensionContainer { {UEContextRefAtSN-HORequest-ExtIEs} }  OPTIONAL,
    ...
}
```

```
UEContextRefAtSN-HORequest-ExtIEs XNAP-PROTOCOL-EXTENSION ::={
    ...
}

-- **************************************************************
--
-- HANDOVER REQUEST ACKNOWLEDGE
--
-- **************************************************************

HandoverRequestAcknowledge ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container    {{HandoverRequestAcknowledge-IEs}},
    ...
}

HandoverRequestAcknowledge-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-sourceNG-RANnodeUEXnAPID                    CRITICALITY ignore  TYPE NG-RANnodeUEXnAPID                          PRESENCE mandatory}|
    { ID id-targetNG-RANnodeUEXnAPID                    CRITICALITY ignore  TYPE NG-RANnodeUEXnAPID                          PRESENCE mandatory}|
    { ID id-PDUSessionResourcesAdmitted-List            CRITICALITY ignore  TYPE PDUSessionResourcesAdmitted-List          PRESENCE mandatory}|
    { ID id-PDUSessionResourcesNotAdmitted-List         CRITICALITY ignore  TYPE PDUSessionResourcesNotAdmitted-List       PRESENCE optional }|
    { ID id-Target2SourceNG-RANnodeTranspContainer      CRITICALITY ignore  TYPE OCTET STRING                              PRESENCE mandatory}|
    { ID id-UEContextKeptIndicator                      CRITICALITY ignore  TYPE UEContextKeptIndicator                    PRESENCE optional }|
    { ID id-CriticalityDiagnostics                      CRITICALITY ignore  TYPE CriticalityDiagnostics                    PRESENCE optional }|
    { ID id-DRBs-transferred-to-MN                      CRITICALITY ignore  TYPE DRB-List                                  PRESENCE optional }|
    { ID id-DAPSResponseInfo-List                       CRITICALITY reject  TYPE DAPSResponseInfo-List                     PRESENCE optional }|
    { ID id-CHOinformation-Ack                          CRITICALITY reject  TYPE CHOinformation-Ack                        PRESENCE optional }|
    { ID id-MBS-SessionInformationResponse-List         CRITICALITY ignore  TYPE MBS-SessionInformationResponse-List       PRESENCE optional }|
    { ID id-RRCConfigIndication                         CRITICALITY ignore  TYPE RRCConfigIndication                       PRESENCE optional }|
    { ID id-PDUSetbasedHandlingIndicator                CRITICALITY ignore  TYPE PDUSetbasedHandlingIndicator              PRESENCE optional }|
    { ID id-LTMHandoverInformationRequestAcknowledge    CRITICALITY ignore  TYPE LTMHandoverInformationRequestAcknowledge  PRESENCE optional }|
    { ID id-EarlySyncInformationResponse                CRITICALITY ignore  TYPE EarlySyncInformation                      PRESENCE optional },
    ...
}

-- **************************************************************
--
-- HANDOVER PREPARATION FAILURE
--
-- **************************************************************

HandoverPreparationFailure ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container    {{HandoverPreparationFailure-IEs}},
    ...
}

HandoverPreparationFailure-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-sourceNG-RANnodeUEXnAPID                CRITICALITY ignore  TYPE NG-RANnodeUEXnAPID                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 Target-CGI                        PRESENCE optional },
    ...
}
```

```
-- **************************************************************
--
-- SN STATUS TRANSFER
--
-- **************************************************************

SNStatusTransfer ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container    {{SNStatusTransfer-IEs}},
    ...
}

SNStatusTransfer-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-sourceNG-RANnodeUEXnAPID                CRITICALITY reject      TYPE NG-RANnodeUEXnAPID                     PRESENCE mandatory}|
    { ID id-targetNG-RANnodeUEXnAPID                CRITICALITY reject      TYPE NG-RANnodeUEXnAPID                     PRESENCE mandatory}|
    { ID id-DRBsSubjectToStatusTransfer-List        CRITICALITY ignore      TYPE DRBsSubjectToStatusTransfer-List       PRESENCE mandatory}|
    { ID id-CHOConfiguration                        CRITICALITY ignore      TYPE CHOConfiguration                       PRESENCE optional }|
    { ID id-MobilityInformation                     CRITICALITY ignore      TYPE MobilityInformation                    PRESENCE optional },
    ...
}

-- **************************************************************
--
-- UE CONTEXT RELEASE
--
-- **************************************************************

UEContextRelease ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container    {{UEContextRelease-IEs}},
    ...
}

UEContextRelease-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-sourceNG-RANnodeUEXnAPID                    CRITICALITY reject      TYPE NG-RANnodeUEXnAPID                     PRESENCE mandatory}|
    { ID id-targetNG-RANnodeUEXnAPID                    CRITICALITY reject      TYPE NG-RANnodeUEXnAPID                     PRESENCE mandatory},
    ...
}

-- **************************************************************
--
-- HANDOVER CANCEL
--
-- **************************************************************

HandoverCancel ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container    {{HandoverCancel-IEs}},
    ...
}

HandoverCancel-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-sourceNG-RANnodeUEXnAPID                    CRITICALITY reject      TYPE NG-RANnodeUEXnAPID                     PRESENCE mandatory}|
    { ID id-targetNG-RANnodeUEXnAPID                    CRITICALITY ignore      TYPE NG-RANnodeUEXnAPID                     PRESENCE optional }|
    { ID id-Cause                                       CRITICALITY ignore      TYPE Cause                                  PRESENCE mandatory}|
    { ID id-targetCellsToCancel                         CRITICALITY reject      TYPE TargetCellList                         PRESENCE optional }|
    { ID id-LTMCandidateCellsToBeCancelled-List         CRITICALITY ignore      TYPE LTMCandidateCellsToBeCancelled-List    PRESENCE optional },
```

```
    ...
}

-- **************************************************************
--
-- HANDOVER SUCCESS
--
-- **************************************************************

HandoverSuccess ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container    {{HandoverSuccess-IEs}},
    ...
}

HandoverSuccess-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-sourceNG-RANnodeUEXnAPID                CRITICALITY reject      TYPE NG-RANnodeUEXnAPID                 PRESENCE mandatory}|
    { ID id-targetNG-RANnodeUEXnAPID                CRITICALITY reject      TYPE NG-RANnodeUEXnAPID                 PRESENCE mandatory}|
    { ID id-requestedTargetCellGlobalID             CRITICALITY reject      TYPE Target-CGI                         PRESENCE mandatory}|
    { ID id-accessed-PSCellID                       CRITICALITY ignore      TYPE NR-CGI                             PRESENCE optional },
    ...
}

-- **************************************************************
--
-- CONDITIONAL HANDOVER CANCEL
--
-- **************************************************************

ConditionalHandoverCancel ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container    {{ ConditionalHandoverCancel-IEs}},
    ...
}

ConditionalHandoverCancel-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-sourceNG-RANnodeUEXnAPID                CRITICALITY reject      TYPE NG-RANnodeUEXnAPID                 PRESENCE mandatory}|
    { ID id-targetNG-RANnodeUEXnAPID                CRITICALITY reject      TYPE NG-RANnodeUEXnAPID                 PRESENCE mandatory}|
    { ID id-Cause                                   CRITICALITY ignore      TYPE Cause                              PRESENCE mandatory}|
    { ID id-targetCellsToCancel                     CRITICALITY reject      TYPE TargetCellList                     PRESENCE optional }|
    { ID id-conditional-Reconfig-ToCancel-List      CRITICALITY reject      TYPE Conditional-Reconfig-List          PRESENCE optional },
    ...
}

-- **************************************************************
--
-- EARLY STATUS TRANSFER
--
-- **************************************************************

EarlyStatusTransfer ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container    {{ EarlyStatusTransfer-IEs}},
    ...
}

EarlyStatusTransfer-IEs XNAP-PROTOCOL-IES ::= {
```

```
    { ID id-sourceNG-RANnodeUEXnAPID                    CRITICALITY reject      TYPE NG-RANnodeUEXnAPID                 PRESENCE mandatory}|
    { ID id-targetNG-RANnodeUEXnAPID                    CRITICALITY reject      TYPE NG-RANnodeUEXnAPID                 PRESENCE mandatory}|
    { ID id-procedureStage                              CRITICALITY reject      TYPE ProcedureStageChoice               PRESENCE mandatory},
    ...
}

ProcedureStageChoice ::= CHOICE {
    first-dl-count                      FirstDLCount,
    dl-discarding                       DLDiscarding,
    choice-extension                    ProtocolIE-Single-Container { {ProcedureStageChoice-ExtIEs} }
}

ProcedureStageChoice-ExtIEs XNAP-PROTOCOL-IES ::= {
    ...
}

FirstDLCount ::= SEQUENCE {
    dRBsSubjectToEarlyStatusTransfer            DRBsSubjectToEarlyStatusTransfer-List,
    iE-Extension                                ProtocolExtensionContainer { {FirstDLCount-ExtIEs} } OPTIONAL,
    ...
}

FirstDLCount-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

DLDiscarding ::= SEQUENCE {
    dRBsSubjectToDLDiscarding                   DRBsSubjectToDLDiscarding-List,
    iE-Extension                                ProtocolExtensionContainer { {DLDiscarding-ExtIEs} } OPTIONAL,
    ...
}

DLDiscarding-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

-- **************************************************************
--
-- RAN PAGING
--
-- **************************************************************

RANPaging ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container    {{RANPaging-IEs}},
    ...
}

RANPaging-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-UEIdentityIndexValue                    CRITICALITY reject  TYPE UEIdentityIndexValue                   PRESENCE mandatory}|
    { ID id-UERANPagingIdentity                     CRITICALITY ignore  TYPE UERANPagingIdentity                    PRESENCE mandatory}|
    { ID id-PagingDRX                               CRITICALITY ignore  TYPE PagingDRX                              PRESENCE mandatory}|
    { ID id-RANPagingArea                           CRITICALITY reject  TYPE RANPagingArea                          PRESENCE mandatory}|
    { ID id-PagingPriority                          CRITICALITY ignore  TYPE PagingPriority                         PRESENCE optional }|
    { ID id-AssistanceDataForRANPaging              CRITICALITY ignore  TYPE AssistanceDataForRANPaging             PRESENCE optional }|
```

```
    { ID id-UERadioCapabilityForPaging                CRITICALITY ignore  TYPE UERadioCapabilityForPaging                PRESENCE optional }|
    { ID id-ExtendedUEIdentityIndexValue              CRITICALITY ignore  TYPE ExtendedUEIdentityIndexValue              PRESENCE optional }|
    { ID id-EUTRAPagingeDRXInformation                CRITICALITY ignore  TYPE EUTRAPagingeDRXInformation                PRESENCE optional }|
    { ID id-UESpecificDRX                             CRITICALITY ignore  TYPE UESpecificDRX                             PRESENCE optional }|
    { ID id-NRPagingeDRXInformation                   CRITICALITY ignore  TYPE NRPagingeDRXInformation                   PRESENCE optional }|
    { ID id-NRPagingeDRXInformationforRRCINACTIVE     CRITICALITY ignore  TYPE NRPagingeDRXInformationforRRCINACTIVE     PRESENCE optional }|
    { ID id-PagingCause                               CRITICALITY ignore  TYPE PagingCause                               PRESENCE optional }|
    { ID id-PEIPSassistanceInformation                CRITICALITY ignore  TYPE PEIPSassistanceInformation                PRESENCE optional }|
    { ID id-HashedUEIdentityIndexValue                CRITICALITY ignore  TYPE HashedUEIdentityIndexValue                PRESENCE optional }|
    { ID id-MT-SDT-Information                        CRITICALITY ignore  TYPE MT-SDT-Information                        PRESENCE optional }|
    { ID id-NRPagingLongeDRXInformationforRRCINACTIVE CRITICALITY ignore  TYPE NRPagingLongeDRXInformationforRRCINACTIVE PRESENCE optional }|
    { ID id-LPWUSPSassistanceInformation              CRITICALITY ignore  TYPE LPWUSPSassistanceInformation              PRESENCE optional }|
    { ID id-FurtherExtended-UEIdentityIndexValue      CRITICALITY ignore  TYPE FurtherExtended-UEIdentityIndexValue      PRESENCE optional }|
    { ID id-LP-WUS-Disable-Indication                 CRITICALITY ignore  TYPE LP-WUS-Disable-Indication                 PRESENCE optional },
    ...
}

-- **************************************************************
--
-- RETRIEVE UE CONTEXT REQUEST
--
-- **************************************************************

RetrieveUEContextRequest ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container    {{RetrieveUEContextRequest-IEs}},
    ...
}

RetrieveUEContextRequest-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-newNG-RANnodeUEXnAPID                   CRITICALITY reject      TYPE NG-RANnodeUEXnAPID                   PRESENCE mandatory}|
    { ID id-UEContextID                             CRITICALITY reject      TYPE UEContextID                          PRESENCE mandatory}|
    { ID id-MAC-I                                   CRITICALITY reject      TYPE MAC-I                                PRESENCE mandatory}|
    { ID id-new-NG-RAN-Cell-Identity                CRITICALITY reject      TYPE NG-RAN-Cell-Identity                 PRESENCE mandatory}|
    { ID id-RRCResumeCause                          CRITICALITY ignore      TYPE RRCResumeCause                       PRESENCE optional }|
    { ID id-SDTSupportRequest                       CRITICALITY ignore      TYPE SDTSupportRequest                    PRESENCE optional }|
    { ID id-SRSPositioningConfigOrActivationRequest CRITICALITY ignore  TYPE SRSPositioningConfigOrActivationRequest  PRESENCE optional },
    ...
}

-- **************************************************************
--
-- RETRIEVE UE CONTEXT RESPONSE
--
-- **************************************************************

RetrieveUEContextResponse ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container    {{ RetrieveUEContextResponse-IEs}},
    ...
}

RetrieveUEContextResponse-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-newNG-RANnodeUEXnAPID                   CRITICALITY ignore  TYPE NG-RANnodeUEXnAPID                     PRESENCE mandatory}|
    { ID id-oldNG-RANnodeUEXnAPID                   CRITICALITY ignore  TYPE NG-RANnodeUEXnAPID                     PRESENCE mandatory}|
    { ID id-GUAMI                                   CRITICALITY reject  TYPE GUAMI                                 PRESENCE mandatory}|
```

```
    { ID id-UEContextInfoRetrUECtxtResp                CRITICALITY reject  TYPE UEContextInfoRetrUECtxtResp                PRESENCE mandatory}|
    { ID id-TraceActivation                            CRITICALITY ignore  TYPE TraceActivation                        PRESENCE optional }|
    { ID id-MaskedIMEISV                               CRITICALITY ignore  TYPE MaskedIMEISV                           PRESENCE optional }|
    { ID id-LocationReportingInformation               CRITICALITY ignore  TYPE LocationReportingInformation           PRESENCE optional }|
    { ID id-CriticalityDiagnostics                     CRITICALITY ignore  TYPE CriticalityDiagnostics                 PRESENCE optional }|
    { ID id-NRV2XServicesAuthorized                    CRITICALITY ignore  TYPE NRV2XServicesAuthorized                PRESENCE optional }|
    { ID id-LTEV2XServicesAuthorized                   CRITICALITY ignore  TYPE LTEV2XServicesAuthorized               PRESENCE optional }|
    { ID id-PC5QoSParameters                           CRITICALITY ignore  TYPE PC5QoSParameters                       PRESENCE optional }|
    { ID id-UEHistoryInformation                       CRITICALITY ignore  TYPE UEHistoryInformation                   PRESENCE optional }|
    { ID id-UEHistoryInformationFromTheUE              CRITICALITY ignore  TYPE UEHistoryInformationFromTheUE          PRESENCE optional }|
    { ID id-MDTPLMNList                                CRITICALITY ignore  TYPE MDTPLMNList                            PRESENCE optional }|
    { ID id-IABNodeIndication                          CRITICALITY reject  TYPE IABNodeIndication                      PRESENCE optional }|
    { ID id-UEContextRefAtSN-HORequest                 CRITICALITY ignore  TYPE UEContextRefAtSN-HORequest             PRESENCE optional }|
    { ID id-TimeSynchronizationAssistanceInformation   CRITICALITY ignore  TYPE TimeSynchronizationAssistanceInformation PRESENCE optional }|
    { ID id-QMCConfigInfo                              CRITICALITY ignore  TYPE QMCConfigInfo                          PRESENCE optional }|
    { ID id-FiveGProSeAuthorized                       CRITICALITY ignore  TYPE FiveGProSeAuthorized                   PRESENCE optional }|
    { ID id-FiveGProSePC5QoSParameters                 CRITICALITY ignore  TYPE FiveGProSePC5QoSParameters             PRESENCE optional }|
    { ID id-AerialUESubscriptionInformation            CRITICALITY ignore  TYPE AerialUESubscriptionInformation        PRESENCE optional }|
    { ID id-NRA2XServicesAuthorized                    CRITICALITY ignore  TYPE NRA2XServicesAuthorized                PRESENCE optional }|
    { ID id-LTEA2XServicesAuthorized                   CRITICALITY ignore  TYPE LTEA2XServicesAuthorized               PRESENCE optional }|
    { ID id-A2XPC5QoSParameters                        CRITICALITY ignore  TYPE A2XPC5QoSParameters                    PRESENCE optional }|
    { ID id-MobileIAB-AuthorizationStatus              CRITICALITY reject  TYPE MobileIAB-AuthorizationStatus          PRESENCE optional }|
    { ID id-SLPositioning-Ranging-Services-Info        CRITICALITY ignore  TYPE SLPositioning-Ranging-Services-Info    PRESENCE optional }|
    { ID id-ContinuousMDT                              CRITICALITY ignore  TYPE NG-RANTraceID                          PRESENCE optional },
    ...
}

-- **************************************************************
--
-- RETRIEVE UE CONTEXT CONFIRM
--
-- **************************************************************

RetrieveUEContextConfirm ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container    {{RetrieveUEContextConfirm-IEs}},
    ...
}
RetrieveUEContextConfirm-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-oldNG-RANnodeUEXnAPID                  CRITICALITY ignore      TYPE NG-RANnodeUEXnAPID                 PRESENCE mandatory}|
    { ID id-newNG-RANnodeUEXnAPID                  CRITICALITY ignore      TYPE NG-RANnodeUEXnAPID                 PRESENCE mandatory}|
    { ID id-UEContextKeptIndicator                 CRITICALITY ignore      TYPE UEContextKeptIndicator             PRESENCE optional }|
    { ID id-SDT-Termination-Request                CRITICALITY ignore      TYPE SDT-Termination-Request            PRESENCE optional },
    ...
}



-- **************************************************************
--
-- RETRIEVE UE CONTEXT FAILURE
--
-- **************************************************************

RetrieveUEContextFailure ::= SEQUENCE {
```

```
    protocolIEs         ProtocolIE-Container    {{ RetrieveUEContextFailure-IEs}},
    ...
}

RetrieveUEContextFailure-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-newNG-RANnodeUEXnAPID                   CRITICALITY ignore      TYPE NG-RANnodeUEXnAPID                   PRESENCE mandatory}|
    { ID id-OldtoNewNG-RANnodeResumeContainer       CRITICALITY ignore      TYPE OCTET STRING                         PRESENCE optional }|
    { ID id-Cause                                   CRITICALITY ignore      TYPE Cause                                PRESENCE mandatory}|
    { ID id-CriticalityDiagnostics                  CRITICALITY ignore      TYPE CriticalityDiagnostics               PRESENCE optional }|
    { ID id-SemipersistentPositioningInformation    CRITICALITY ignore      TYPE SemipersistentPositioningInformation PRESENCE optional },
    ...
}

-- **************************************************************
--
-- XN-U ADDRESS INDICATION
--
-- **************************************************************

XnUAddressIndication ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container    {{ XnUAddressIndication-IEs}},
    ...
}

XnUAddressIndication-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-newNG-RANnodeUEXnAPID                   CRITICALITY ignore      TYPE NG-RANnodeUEXnAPID                     PRESENCE mandatory}|
    { ID id-oldNG-RANnodeUEXnAPID                   CRITICALITY ignore      TYPE NG-RANnodeUEXnAPID                     PRESENCE mandatory}|
    { ID id-XnUAddressInfoperPDUSession-List        CRITICALITY reject      TYPE XnUAddressInfoperPDUSession-List       PRESENCE mandatory}|
    { ID id-CHO-MRDC-Indicator                      CRITICALITY reject      TYPE CHO-MRDC-Indicator                     PRESENCE optional }|
    { ID id-CHO-MRDC-EarlyDataForwarding            CRITICALITY ignore      TYPE CHO-MRDC-EarlyDataForwarding           PRESENCE optional }|
    { ID id-CPC-DataForwarding-Indicator            CRITICALITY reject      TYPE CPC-DataForwarding-Indicator           PRESENCE optional }|
    { ID id-MBS-DataForwarding-Indicator            CRITICALITY ignore      TYPE MBS-DataForwarding-Indicator           PRESENCE optional }|
    { ID id-MBS-SessionInformationResponse-List     CRITICALITY ignore      TYPE MBS-SessionInformationResponse-List    PRESENCE optional }|
    { ID id-PDUSetbasedHandlingIndicator            CRITICALITY ignore      TYPE PDUSetbasedHandlingIndicator           PRESENCE optional }|
    { ID id-LTM-DC-DataForwarding-Indicator         CRITICALITY reject      TYPE LTM-DC-DataForwarding-Indicator        PRESENCE optional },
    ...
}

-- **************************************************************
--
-- S-NODE ADDITION REQUEST
--
-- **************************************************************

SNodeAdditionRequest ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container    {{ SNodeAdditionRequest-IEs}},
    ...
}

SNodeAdditionRequest-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-M-NG-RANnodeUEXnAPID                CRITICALITY reject      TYPE NG-RANnodeUEXnAPID                   PRESENCE mandatory}|
    { ID id-UESecurityCapabilities              CRITICALITY reject      TYPE UESecurityCapabilities               PRESENCE mandatory}|
    { ID id-s-ng-RANnode-SecurityKey            CRITICALITY reject      TYPE S-NG-RANnode-SecurityKey             PRESENCE mandatory}|
    { ID id-S-NG-RANnodeUE-AMBR                 CRITICALITY reject      TYPE UEAggregateMaximumBitRate            PRESENCE mandatory}|
```

```
    { ID id-selectedPLMN                        CRITICALITY ignore      TYPE PLMN-Identity                          PRESENCE optional }|
    { ID id-MobilityRestrictionList             CRITICALITY ignore      TYPE MobilityRestrictionList                PRESENCE optional }|
    { ID id-indexToRatFrequSelectionPriority    CRITICALITY reject      TYPE RFSP-Index                             PRESENCE optional }|
    { ID id-PDUSessionToBeAddedAddReq           CRITICALITY reject      TYPE PDUSessionToBeAddedAddReq              PRESENCE mandatory}|
    { ID id-MN-to-SN-Container                  CRITICALITY reject      TYPE OCTET STRING                           PRESENCE mandatory}|
    { ID id-S-NG-RANnodeUEXnAPID                CRITICALITY reject      TYPE NG-RANnodeUEXnAPID                     PRESENCE optional }|
    { ID id-ExpectedUEBehaviour                 CRITICALITY ignore      TYPE ExpectedUEBehaviour                    PRESENCE optional }|
    { ID id-requestedSplitSRB                   CRITICALITY reject      TYPE SplitSRBsTypes                         PRESENCE optional }|
    { ID id-PCellID                             CRITICALITY reject      TYPE GlobalNG-RANCell-ID                    PRESENCE optional }|
    { ID id-DesiredActNotificationLevel         CRITICALITY ignore      TYPE DesiredActNotificationLevel            PRESENCE optional }|
    { ID id-AvailableDRBIDs                     CRITICALITY reject      TYPE DRB-List                               PRESENCE conditional}
-- This IE shall be present if there is at least one PDU Session Resource Setup Info – SN terminated in the PDU Session Resources To Be Added List
IE. --|
    { ID id-S-NG-RANnodeMaxIPDataRate-UL        CRITICALITY reject      TYPE BitRate                                PRESENCE optional }|
    { ID id-S-NG-RANnodeMaxIPDataRate-DL        CRITICALITY reject      TYPE BitRate                                PRESENCE optional }|
    { ID id-LocationInformationSNReporting      CRITICALITY ignore      TYPE LocationInformationSNReporting         PRESENCE optional }|
    { ID id-MR-DC-ResourceCoordinationInfo      CRITICALITY ignore      TYPE MR-DC-ResourceCoordinationInfo         PRESENCE optional }|
    { ID id-MaskedIMEISV                        CRITICALITY ignore      TYPE MaskedIMEISV                           PRESENCE optional }|
    { ID id-NE-DC-TDM-Pattern                   CRITICALITY ignore      TYPE NE-DC-TDM-Pattern                      PRESENCE optional }|
    { ID id-S-NG-RANnode-Addition-Trigger-Ind   CRITICALITY reject      TYPE S-NG-RANnode-Addition-Trigger-Ind      PRESENCE optional }|
    { ID id-TraceActivation                     CRITICALITY ignore      TYPE TraceActivation                        PRESENCE optional }|
    { ID id-RequestedFastMCGRecoveryViaSRB3     CRITICALITY ignore      TYPE RequestedFastMCGRecoveryViaSRB3        PRESENCE optional }|
    { ID id-UERadioCapabilityID                 CRITICALITY reject      TYPE UERadioCapabilityID                    PRESENCE optional }|
    { ID id-SourceNG-RAN-node-ID                CRITICALITY ignore      TYPE GlobalNG-RANNode-ID                    PRESENCE optional }|
    { ID id-ManagementBasedMDTPLMNList          CRITICALITY ignore      TYPE MDTPLMNList                            PRESENCE optional }|
    { ID id-UEHistoryInformation                CRITICALITY ignore      TYPE UEHistoryInformation                   PRESENCE optional }|
    { ID id-UEHistoryInformationFromTheUE       CRITICALITY ignore      TYPE UEHistoryInformationFromTheUE          PRESENCE optional }|
    { ID id-PSCellChangeHistory                 CRITICALITY ignore      TYPE PSCellChangeHistory                    PRESENCE optional }|
    { ID id-IABNodeIndication                   CRITICALITY reject      TYPE IABNodeIndication                      PRESENCE optional }|
    { ID id-NoPDUSessionIndication              CRITICALITY ignore      TYPE NoPDUSessionIndication                 PRESENCE optional }|
    { ID id-CHOinformation-AddReq               CRITICALITY reject      TYPE CHOinformation-AddReq                  PRESENCE optional }|
    { ID id-SCGActivationRequest                CRITICALITY ignore      TYPE SCGActivationRequest                   PRESENCE optional }|
    { ID id-CPAInformationRequest               CRITICALITY reject      TYPE CPAInformationRequest                  PRESENCE optional }|
    { ID id-S-NG-RANnodeUE-Slice-MBR            CRITICALITY reject      TYPE UESliceMaximumBitRateList              PRESENCE optional }|
    { ID id-F1-terminatingIAB-donorIndicator    CRITICALITY reject      TYPE F1-terminatingIAB-donorIndicator       PRESENCE optional }|
    { ID id-SelectedNID                         CRITICALITY ignore      TYPE NID                                    PRESENCE optional }|
    { ID id-QMCCoordinationRequest              CRITICALITY ignore      TYPE QMCCoordinationRequest                 PRESENCE optional }|
    { ID id-SourceSN-to-TargetSN-QMCInfo        CRITICALITY ignore      TYPE QMCConfigInfo                          PRESENCE optional }|
    { ID id-IABAuthorizationStatus              CRITICALITY ignore      TYPE IABAuthorizationStatus                 PRESENCE optional }|
    { ID id-Source-M-NG-RANnodeID               CRITICALITY ignore      TYPE GlobalNG-RANNode-ID                    PRESENCE optional }|
    { ID id-DataCollectionID                    CRITICALITY ignore      TYPE DataCollectionID                       PRESENCE optional }|
    { ID id-LTMPSCellInformation-AddReq         CRITICALITY reject      TYPE LTMPSCellInformation-AddReq            PRESENCE optional }|
    { ID id-LTMInformationSCG-AddReq            CRITICALITY reject      TYPE LTMInformationSCG-AddReq               PRESENCE optional },
    ...
}

PDUSessionToBeAddedAddReq ::= SEQUENCE (SIZE(1..maxnoofPDUSessions)) OF PDUSessionToBeAddedAddReq-Item

PDUSessionToBeAddedAddReq-Item ::= SEQUENCE {
    pduSessionId            PDUSession-ID,
    s-NSSAI                 S-NSSAI,
    sN-PDUSessionAMBR       PDUSessionAggregateMaximumBitRate           OPTIONAL,
    sn-terminated           PDUSessionResourceSetupInfo-SNterminated    OPTIONAL,
    mn-terminated           PDUSessionResourceSetupInfo-MNterminated    OPTIONAL,
```

```
-- NOTE: If neither the PDU Session Resource Setup Info – SN terminated IE
-- nor the PDU Session Resource Setup Info – MN terminated IE is present,
-- abnormal conditions as specified in clause 8.3.1.4 apply.
    iE-Extension            ProtocolExtensionContainer { {PDUSessionToBeAddedAddReq-Item-ExtIEs} }   OPTIONAL,
    ...
}

PDUSessionToBeAddedAddReq-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

RequestedFastMCGRecoveryViaSRB3 ::= ENUMERATED {true, ...}

-- **************************************************************
--
-- S-NODE ADDITION REQUEST ACKNOWLEDGE
--
-- **************************************************************

SNodeAdditionRequestAcknowledge ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container    {{ SNodeAdditionRequestAcknowledge-IEs}},
    ...
}

SNodeAdditionRequestAcknowledge-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-M-NG-RANnodeUEXnAPID                CRITICALITY reject      TYPE NG-RANnodeUEXnAPID                 PRESENCE mandatory}|
    { ID id-S-NG-RANnodeUEXnAPID                CRITICALITY reject      TYPE NG-RANnodeUEXnAPID                 PRESENCE mandatory}|
    { ID id-PDUSessionAdmittedAddedAddReqAck    CRITICALITY ignore      TYPE PDUSessionAdmittedAddedAddReqAck   PRESENCE mandatory}|
    { ID id-PDUSessionNotAdmittedAddReqAck      CRITICALITY ignore      TYPE PDUSessionNotAdmittedAddReqAck     PRESENCE optional }|
    { ID id-SN-to-MN-Container                  CRITICALITY reject      TYPE OCTET STRING                       PRESENCE mandatory}|
    { ID id-admittedSplitSRB                    CRITICALITY reject      TYPE SplitSRBsTypes                     PRESENCE optional }|
    { ID id-RRCConfigIndication                 CRITICALITY reject      TYPE RRCConfigIndication                PRESENCE optional }|
    { ID id-CriticalityDiagnostics              CRITICALITY ignore      TYPE CriticalityDiagnostics             PRESENCE optional }|
    { ID id-LocationInformationSN               CRITICALITY ignore      TYPE Target-CGI                         PRESENCE optional }|
    { ID id-MR-DC-ResourceCoordinationInfo      CRITICALITY ignore      TYPE MR-DC-ResourceCoordinationInfo     PRESENCE optional }|
    { ID id-AvailableFastMCGRecoveryViaSRB3     CRITICALITY ignore      TYPE AvailableFastMCGRecoveryViaSRB3    PRESENCE optional }|
    { ID id-DirectForwardingPathAvailability    CRITICALITY ignore      TYPE DirectForwardingPathAvailability   PRESENCE optional }|
    { ID id-SCGActivationStatus                 CRITICALITY ignore      TYPE SCGActivationStatus                PRESENCE optional }|
    { ID id-CPAInformationAck                   CRITICALITY ignore      TYPE CPAInformationAck                  PRESENCE optional }|
    { ID id-SNMobilityInformation               CRITICALITY ignore      TYPE SNMobilityInformation              PRESENCE optional }|
    { ID id-QMCCoordinationResponse             CRITICALITY ignore      TYPE QMCCoordinationResponse            PRESENCE optional }|
    { ID id-CHOinformation-AddReqAck            CRITICALITY reject      TYPE CHOinformation-AddReqAck           PRESENCE optional }|
    { ID id-DirectForwardingPathAvailabilityWithSourceMN CRITICALITY ignore TYPE DirectForwardingPathAvailabilityWithSourceMN  PRESENCE optional }|
    { ID id-PDUSetbasedHandlingIndicator        CRITICALITY ignore      TYPE PDUSetbasedHandlingIndicator       PRESENCE optional }|
    { ID id-LTMPSCellInformation-AddReqAck      CRITICALITY reject      TYPE LTMPSCellInformation-AddReqAck     PRESENCE optional }|
    { ID id-LTMInformationSCG-AddReqAck         CRITICALITY ignore      TYPE LTMInformationSCG-AddReqAck        PRESENCE optional },
    ...
}

PDUSessionAdmittedAddedAddReqAck ::= SEQUENCE (SIZE(1..maxnoofPDUSessions)) OF PDUSessionAdmittedAddedAddReqAck-Item

PDUSessionAdmittedAddedAddReqAck-Item ::= SEQUENCE {
    pduSessionId            PDUSession-ID,
    sn-terminated           PDUSessionResourceSetupResponseInfo-SNterminated    OPTIONAL,
```

```
    mn-terminated           PDUSessionResourceSetupResponseInfo-MNterminated    OPTIONAL,
-- NOTE: If neither the PDU Session Resource Setup Response Info – SN terminated IE
-- nor the PDU Session Resource Setup Response Info – MN terminated IE is present,
-- abnormal conditions as specified in clause 8.3.1.4 apply.
    iE-Extension            ProtocolExtensionContainer { {PDUSessionAdmittedAddedAddReqAck-Item-ExtIEs} }  OPTIONAL,
    ...
}

PDUSessionAdmittedAddedAddReqAck-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

PDUSessionNotAdmittedAddReqAck ::= SEQUENCE {
    pduSessionResourcesNotAdmitted-SNterminated     PDUSessionResourcesNotAdmitted-List OPTIONAL,
    pduSessionResourcesNotAdmitted-MNterminated     PDUSessionResourcesNotAdmitted-List OPTIONAL,
    iE-Extension            ProtocolExtensionContainer { {PDUSessionNotAdmittedAddReqAck-ExtIEs} }   OPTIONAL,
    ...
}

PDUSessionNotAdmittedAddReqAck-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

AvailableFastMCGRecoveryViaSRB3 ::= ENUMERATED {true, ...}

-- ************************************************************
--
-- S-NODE ADDITION REQUEST REJECT
--
-- ************************************************************

SNodeAdditionRequestReject ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container    {{ SNodeAdditionRequestReject-IEs}},
    ...
}

SNodeAdditionRequestReject-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-M-NG-RANnodeUEXnAPID                    CRITICALITY reject      TYPE NG-RANnodeUEXnAPID                     PRESENCE mandatory}|
    { ID id-S-NG-RANnodeUEXnAPID                    CRITICALITY reject      TYPE NG-RANnodeUEXnAPID                     PRESENCE mandatory}|
    { ID id-Cause                                   CRITICALITY ignore      TYPE Cause                                  PRESENCE mandatory}|
    { ID id-CriticalityDiagnostics                  CRITICALITY ignore      TYPE CriticalityDiagnostics                 PRESENCE optional }|
    { ID id-PCellID                                 CRITICALITY reject      TYPE GlobalNG-RANCell-ID                    PRESENCE optional },
    ...
}

-- ************************************************************
--
-- S-NODE RECONFIGURATION COMPLETE
--
-- ************************************************************

SNodeReconfigurationComplete ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container    {{ SNodeReconfigurationComplete-IEs}},
    ...
```

```
}

SNodeReconfigurationComplete-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-M-NG-RANnodeUEXnAPID                    CRITICALITY reject      TYPE NG-RANnodeUEXnAPID                    PRESENCE mandatory}|
    { ID id-S-NG-RANnodeUEXnAPID                    CRITICALITY reject      TYPE NG-RANnodeUEXnAPID                    PRESENCE mandatory}|
    { ID id-ResponseInfo-ReconfCompl                CRITICALITY ignore      TYPE ResponseInfo-ReconfCompl              PRESENCE mandatory},
    ...
}

ResponseInfo-ReconfCompl ::= SEQUENCE {
    responseType-ReconfComplete     ResponseType-ReconfComplete,
    iE-Extensions                       ProtocolExtensionContainer { {ResponseInfo-ReconfCompl-ExtIEs} } OPTIONAL,
    ...
}

ResponseInfo-ReconfCompl-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

ResponseType-ReconfComplete ::= CHOICE {
    configuration-successfully-applied          Configuration-successfully-applied,
    configuration-rejected-by-M-NG-RANNode      Configuration-rejected-by-M-NG-RANNode,
    choice-extension                    ProtocolIE-Single-Container { {ResponseType-ReconfComplete-ExtIEs} }
}

ResponseType-ReconfComplete-ExtIEs XNAP-PROTOCOL-IES ::= {
    ...
}

Configuration-successfully-applied ::= SEQUENCE {
    m-NG-RANNode-to-S-NG-RANNode-Container      OCTET STRING        OPTIONAL,
    iE-Extensions                       ProtocolExtensionContainer { {Configuration-successfully-applied-ExtIEs} } OPTIONAL,
    ...
}

Configuration-successfully-applied-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    { ID id-sk-Counter  CRITICALITY ignore  EXTENSION SK-COUNTER        PRESENCE optional},
    ...
}

Configuration-rejected-by-M-NG-RANNode ::= SEQUENCE {
    cause                                       Cause,
    m-NG-RANNode-to-S-NG-RANNode-Container      OCTET STRING        OPTIONAL,
    iE-Extensions                       ProtocolExtensionContainer { {Configuration-rejected-by-M-NG-RANNode-ExtIEs} } OPTIONAL,
    ...
}

Configuration-rejected-by-M-NG-RANNode-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


-- **************************************************************
--
```

```
-- S-NODE MODIFICATION REQUEST
--
-- **************************************************************

SNodeModificationRequest ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container    {{ SNodeModificationRequest-IEs}},
    ...
}

SNodeModificationRequest-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-M-NG-RANnodeUEXnAPID                    CRITICALITY reject      TYPE NG-RANnodeUEXnAPID                     PRESENCE mandatory}|
    { ID id-S-NG-RANnodeUEXnAPID                    CRITICALITY reject      TYPE NG-RANnodeUEXnAPID                     PRESENCE mandatory}|
    { ID id-Cause                                   CRITICALITY ignore      TYPE Cause                                  PRESENCE mandatory}|
    { ID id-PDCPChangeIndication                    CRITICALITY ignore      TYPE PDCPChangeIndication                   PRESENCE optional }|
    { ID id-selectedPLMN                            CRITICALITY ignore      TYPE PLMN-Identity                          PRESENCE optional }|
    { ID id-MobilityRestrictionList                 CRITICALITY ignore      TYPE MobilityRestrictionList                PRESENCE optional }|
    { ID id-SCGConfigurationQuery                   CRITICALITY ignore      TYPE SCGConfigurationQuery                  PRESENCE optional }|
    { ID id-UEContextInfo-SNModRequest              CRITICALITY reject      TYPE UEContextInfo-SNModRequest             PRESENCE optional }|
    { ID id-MN-to-SN-Container                      CRITICALITY ignore      TYPE OCTET STRING                           PRESENCE optional }|
    { ID id-requestedSplitSRB                       CRITICALITY ignore      TYPE SplitSRBsTypes                         PRESENCE optional }|
    { ID id-requestedSplitSRBrelease                CRITICALITY ignore      TYPE SplitSRBsTypes                         PRESENCE optional }|
    { ID id-DesiredActNotificationLevel             CRITICALITY ignore      TYPE DesiredActNotificationLevel            PRESENCE optional }|
    { ID id-AdditionalDRBIDs                        CRITICALITY reject      TYPE DRB-List                               PRESENCE optional }|
    { ID id-S-NG-RANnodeMaxIPDataRate-UL            CRITICALITY reject      TYPE BitRate                                PRESENCE optional }|
    { ID id-S-NG-RANnodeMaxIPDataRate-DL            CRITICALITY reject      TYPE BitRate                                PRESENCE optional }|
    { ID id-LocationInformationSNReporting          CRITICALITY ignore      TYPE LocationInformationSNReporting         PRESENCE optional }|
    { ID id-MR-DC-ResourceCoordinationInfo          CRITICALITY ignore      TYPE MR-DC-ResourceCoordinationInfo         PRESENCE optional }|
    { ID id-PCellID                                 CRITICALITY reject      TYPE GlobalNG-RANCell-ID                    PRESENCE optional }|
    { ID id-NE-DC-TDM-Pattern                       CRITICALITY ignore      TYPE NE-DC-TDM-Pattern                      PRESENCE optional }|
    { ID id-RequestedFastMCGRecoveryViaSRB3         CRITICALITY ignore      TYPE RequestedFastMCGRecoveryViaSRB3        PRESENCE optional }|
    { ID id-RequestedFastMCGRecoveryViaSRB3Release  CRITICALITY ignore      TYPE RequestedFastMCGRecoveryViaSRB3Release PRESENCE optional }|
    { ID id-SNTriggered                             CRITICALITY ignore      TYPE SNTriggered                            PRESENCE optional }|
    { ID id-TargetNodeID                            CRITICALITY ignore      TYPE GlobalNG-RANNode-ID                    PRESENCE optional }|
    { ID id-PSCellHistoryInformationRetrieve        CRITICALITY ignore      TYPE PSCellHistoryInformationRetrieve       PRESENCE optional }|
    { ID id-UEHistoryInformationFromTheUE           CRITICALITY ignore      TYPE UEHistoryInformationFromTheUE          PRESENCE optional }|
    { ID id-CHOinformation-ModReq                   CRITICALITY ignore      TYPE CHOinformation-ModReq                  PRESENCE optional }|
    { ID id-SCGActivationRequest                    CRITICALITY ignore      TYPE SCGActivationRequest                   PRESENCE optional }|
    { ID id-CPAInformationModReq                    CRITICALITY ignore      TYPE CPAInformationModReq                   PRESENCE optional }|
    { ID id-CPCInformationUpdate                    CRITICALITY ignore      TYPE CPCInformationUpdate                   PRESENCE optional }|
    { ID id-S-NG-RANnodeUE-Slice-MBR                CRITICALITY ignore      TYPE UESliceMaximumBitRateList              PRESENCE optional }|
    { ID id-ManagementBasedMDTPLMNModificationList  CRITICALITY ignore      TYPE MDTPLMNModificationList                PRESENCE optional }|
    { ID id-SelectedNID                             CRITICALITY ignore      TYPE NID                                    PRESENCE optional }|
    { ID id-QMCCoordinationRequest                  CRITICALITY ignore      TYPE QMCCoordinationRequest                 PRESENCE optional }|
    { ID id-Src-SN-to-Tgt-SNQMCInfoInquiry          CRITICALITY ignore      TYPE Src-SN-to-Tgt-SNQMCInfoInquiry         PRESENCE optional }|
    { ID id-IABAuthorizationStatus                  CRITICALITY ignore      TYPE IABAuthorizationStatus                 PRESENCE optional }|
    { ID id-LTMPSCellInformation-UpdateReq          CRITICALITY ignore      TYPE LTMPSCellInformation-UpdateReq         PRESENCE optional }|
    { ID id-LTMInformationSCG-ModReq                CRITICALITY ignore      TYPE LTMInformationSCG-ModReq               PRESENCE optional }|
    { ID id-LTMInterSNExecutionNotification             CRITICALITY reject  TYPE LTMInterSNExecutionNotification        PRESENCE optional },
    ...
}

UEContextInfo-SNModRequest ::= SEQUENCE {
    ueSecurityCapabilities                      UESecurityCapabilities                      OPTIONAL,
    s-ng-RANnode-SecurityKey                    S-NG-RANnode-SecurityKey                    OPTIONAL,
```

```
    s-ng-RANnodeUE-AMBR                         UEAggregateMaximumBitRate                       OPTIONAL,
    indexToRatFrequencySelectionPriority        RFSP-Index                                      OPTIONAL,
    lowerLayerPresenceStatusChange              LowerLayerPresenceStatusChange                  OPTIONAL,
    pduSessionResourceToBeAdded                 PDUSessionsToBeAdded-SNModRequest-List          OPTIONAL,
    pduSessionResourceToBeModified              PDUSessionsToBeModified-SNModRequest-List       OPTIONAL,
    pduSessionResourceToBeReleased              PDUSessionsToBeReleased-SNModRequest-List       OPTIONAL,
    iE-Extension            ProtocolExtensionContainer { {UEContextInfo-SNModRequest-ExtIEs} }  OPTIONAL,
    ...
}

UEContextInfo-SNModRequest-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

PDUSessionsToBeAdded-SNModRequest-List ::= SEQUENCE (SIZE(1..maxnoofPDUSessions)) OF PDUSessionsToBeAdded-SNModRequest-Item

PDUSessionsToBeAdded-SNModRequest-Item ::= SEQUENCE {
    pduSessionId            PDUSession-ID,
    s-NSSAI                 S-NSSAI,
    sN-PDUSessionAMBR       PDUSessionAggregateMaximumBitRate           OPTIONAL,
    sn-terminated           PDUSessionResourceSetupInfo-SNterminated    OPTIONAL,
    mn-terminated           PDUSessionResourceSetupInfo-MNterminated    OPTIONAL,
-- NOTE: If neither the PDU Session Resource Setup Info – SN terminated IE
-- nor the PDU Session Resource Setup Info – MN terminated IE is present,
-- abnormal conditions as specified in clause 8.3.3.4 apply.
    iE-Extension            ProtocolExtensionContainer { {PDUSessionsToBeAdded-SNModRequest-Item-ExtIEs} } OPTIONAL,
    ...
}

PDUSessionsToBeAdded-SNModRequest-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    {ID id-PDUSessionExpectedUEActivityBehaviour        CRITICALITY ignore  EXTENSION ExpectedUEActivityBehaviour     PRESENCE optional},
    ...
}

PDUSessionsToBeModified-SNModRequest-List ::= SEQUENCE (SIZE(1..maxnoofPDUSessions)) OF PDUSessionsToBeModified-SNModRequest-Item

PDUSessionsToBeModified-SNModRequest-Item ::= SEQUENCE {
    pduSessionId            PDUSession-ID,
    sN-PDUSessionAMBR       PDUSessionAggregateMaximumBitRate              OPTIONAL,
    sn-terminated           PDUSessionResourceModificationInfo-SNterminated OPTIONAL,
    mn-terminated           PDUSessionResourceModificationInfo-MNterminated OPTIONAL,
-- NOTE: If neither the PDU Session Resource Modification Info – SN terminated IE
-- nor the PDU Session Resource Modification Info – MN terminated IE is present,
-- abnormal conditions as specified in clause 8.3.3.4 apply.
    iE-Extension            ProtocolExtensionContainer { {PDUSessionsToBeModified-SNModRequest-Item-ExtIEs} } OPTIONAL,
    ...
}

PDUSessionsToBeModified-SNModRequest-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    { ID id-S-NSSAI                                 CRITICALITY reject  EXTENSION S-NSSAI                       PRESENCE optional }|
    { ID id-PDUSessionExpectedUEActivityBehaviour   CRITICALITY ignore  EXTENSION ExpectedUEActivityBehaviour   PRESENCE optional }|
    { ID id-UserPlaneFailureIndication              CRITICALITY ignore  EXTENSION UserPlaneFailureIndication    PRESENCE optional },
    ...
}
```

```
PDUSessionsToBeReleased-SNModRequest-List ::= SEQUENCE {
    pdu-session-list        PDUSession-List-withCause               OPTIONAL,
    iE-Extension            ProtocolExtensionContainer { {PDUSessionsToBeReleased-SNModRequest-List-ExtIEs} } OPTIONAL,
    ...
}

PDUSessionsToBeReleased-SNModRequest-List-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

RequestedFastMCGRecoveryViaSRB3Release ::= ENUMERATED {true, ...}

Src-SN-to-Tgt-SNQMCInfoInquiry  ::= ENUMERATED {true, ...}

-- ************************************************************
--
-- S-NODE MODIFICATION REQUEST ACKNOWLEDGE
--
-- ************************************************************

SNodeModificationRequestAcknowledge ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container    {{ SNodeModificationRequestAcknowledge-IEs}},
    ...
}

SNodeModificationRequestAcknowledge-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-M-NG-RANnodeUEXnAPID                    CRITICALITY ignore      TYPE NG-RANnodeUEXnAPID                         PRESENCE mandatory}|
    { ID id-S-NG-RANnodeUEXnAPID                    CRITICALITY ignore      TYPE NG-RANnodeUEXnAPID                         PRESENCE mandatory}|
    { ID id-PDUSessionAdmitted-SNModResponse        CRITICALITY ignore      TYPE PDUSessionAdmitted-SNModResponse           PRESENCE optional }|
    { ID id-PDUSessionNotAdmitted-SNModResponse     CRITICALITY ignore      TYPE PDUSessionNotAdmitted-SNModResponse        PRESENCE optional }|
    { ID id-SN-to-MN-Container                      CRITICALITY ignore      TYPE OCTET STRING                               PRESENCE optional }|
    { ID id-admittedSplitSRB                        CRITICALITY ignore      TYPE SplitSRBsTypes                             PRESENCE optional }|
    { ID id-admittedSplitSRBrelease                 CRITICALITY ignore      TYPE SplitSRBsTypes                             PRESENCE optional }|
    { ID id-CriticalityDiagnostics                  CRITICALITY ignore      TYPE CriticalityDiagnostics                     PRESENCE optional }|
    { ID id-LocationInformationSN                   CRITICALITY ignore      TYPE Target-CGI                                 PRESENCE optional }|
    { ID id-MR-DC-ResourceCoordinationInfo          CRITICALITY ignore      TYPE MR-DC-ResourceCoordinationInfo             PRESENCE optional }|
    { ID id-PDUSessionDataForwarding-SNModResponse  CRITICALITY ignore      TYPE PDUSessionDataForwarding-SNModResponse     PRESENCE optional }|
    { ID id-RRCConfigIndication                     CRITICALITY reject      TYPE RRCConfigIndication                        PRESENCE optional }|
    { ID id-AvailableFastMCGRecoveryViaSRB3         CRITICALITY ignore      TYPE AvailableFastMCGRecoveryViaSRB3            PRESENCE optional }|
    { ID id-ReleaseFastMCGRecoveryViaSRB3           CRITICALITY ignore      TYPE ReleaseFastMCGRecoveryViaSRB3              PRESENCE optional }|
    { ID id-DirectForwardingPathAvailability        CRITICALITY ignore      TYPE DirectForwardingPathAvailability           PRESENCE optional }|
    { ID id-SCGUEHistoryInformation                 CRITICALITY ignore      TYPE SCGUEHistoryInformation                    PRESENCE optional }|
    { ID id-SCGActivationStatus                     CRITICALITY ignore      TYPE SCGActivationStatus                        PRESENCE optional }|
    { ID id-CPAInformationModReqAck                 CRITICALITY ignore      TYPE CPAInformationModReqAck                    PRESENCE optional }|
    { ID id-QMCCoordinationResponse                 CRITICALITY ignore      TYPE QMCCoordinationResponse                    PRESENCE optional }|
    { ID id-SourceSN-to-TargetSN-QMCInfo            CRITICALITY ignore      TYPE QMCConfigInfo                              PRESENCE optional }|
    { ID id-PDUSetbasedHandlingIndicator            CRITICALITY ignore      TYPE PDUSetbasedHandlingIndicator               PRESENCE optional }|
    { ID id-LTMPSCellInformation-UpdateReqAck       CRITICALITY ignore      TYPE LTMPSCellInformation-UpdateReqAck          PRESENCE optional },
    ...
}
PDUSessionAdmitted-SNModResponse ::= SEQUENCE {
    pduSessionResourcesAdmittedToBeAdded            PDUSessionAdmittedToBeAddedSNModResponse        OPTIONAL,
    pduSessionResourcesAdmittedToBeModified         PDUSessionAdmittedToBeModifiedSNModResponse   OPTIONAL,
```

```
    pduSessionResourcesAdmittedToBeReleased         PDUSessionAdmittedToBeReleasedSNModResponse     OPTIONAL,
    iE-Extension            ProtocolExtensionContainer { {PDUSessionAdmitted-SNModResponse-ExtIEs} } OPTIONAL,
    ...
}

PDUSessionAdmitted-SNModResponse-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

PDUSessionAdmittedToBeAddedSNModResponse ::= SEQUENCE (SIZE(1..maxnoofPDUSessions)) OF PDUSessionAdmittedToBeAddedSNModResponse-Item
PDUSessionAdmittedToBeAddedSNModResponse-Item ::= SEQUENCE {
    pduSessionId            PDUSession-ID,
    sn-terminated           PDUSessionResourceSetupResponseInfo-SNterminated    OPTIONAL,
    mn-terminated           PDUSessionResourceSetupResponseInfo-MNterminated    OPTIONAL,
-- NOTE: If neither the PDU Session Resource Setup Response Info – SN terminated IE
-- nor the PDU Session Resource Setup Response Info – MN terminated IE is present,
-- abnormal conditions as specified in clause 8.3.3.4 apply.
    iE-Extension            ProtocolExtensionContainer { {PDUSessionAdmittedToBeAddedSNModResponse-Item-ExtIEs} }   OPTIONAL,
    ...
}

PDUSessionAdmittedToBeAddedSNModResponse-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

PDUSessionAdmittedToBeModifiedSNModResponse::= SEQUENCE (SIZE(1..maxnoofPDUSessions)) OF PDUSessionAdmittedToBeModifiedSNModResponse-Item
PDUSessionAdmittedToBeModifiedSNModResponse-Item ::= SEQUENCE {
    pduSessionId            PDUSession-ID,
    sn-terminated           PDUSessionResourceModificationResponseInfo-SNterminated OPTIONAL,
    mn-terminated           PDUSessionResourceModificationResponseInfo-MNterminated OPTIONAL,
-- NOTE: If neither the PDU Session Resource Modification Response Info – SN terminated IE
-- nor the PDU Session Resource Modification Response Info – MN terminated IE is present,
-- abnormal conditions as specified in clause 8.3.3.4 apply.
    iE-Extension            ProtocolExtensionContainer { {PDUSessionAdmittedToBeModifiedSNModResponse-Item-ExtIEs} }   OPTIONAL,
    ...
}

PDUSessionAdmittedToBeModifiedSNModResponse-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

PDUSessionAdmittedToBeReleasedSNModResponse ::= SEQUENCE {
    sn-terminated           PDUSession-List-withDataForwardingRequest       OPTIONAL,
    mn-terminated           PDUSession-List-withCause                       OPTIONAL,
    iE-Extension            ProtocolExtensionContainer { {PDUSessionAdmittedToBeReleasedSNModResponse-ExtIEs} }  OPTIONAL,
    ...
}

PDUSessionAdmittedToBeReleasedSNModResponse-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

PDUSessionNotAdmitted-SNModResponse ::= SEQUENCE {
    pdu-Session-List        PDUSession-List OPTIONAL,
```

```
    iE-Extension            ProtocolExtensionContainer { {PDUSessionNotAdmitted-SNModResponse-ExtIEs} } OPTIONAL,
    ...
}

PDUSessionNotAdmitted-SNModResponse-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    { ID id-PDUSessionResourcesNotAdmitted-List     CRITICALITY ignore      EXTENSION PDUSessionResourcesNotAdmitted-List PRESENCE optional },
    ...
}


PDUSessionDataForwarding-SNModResponse ::= SEQUENCE {
    sn-terminated       PDUSession-List-withDataForwardingRequest,
    iE-Extensions       ProtocolExtensionContainer { {PDUSessionDataForwarding-SNModResponse-ExtIEs} }  OPTIONAL,
    ...
}

PDUSessionDataForwarding-SNModResponse-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

ReleaseFastMCGRecoveryViaSRB3 ::= ENUMERATED {true, ...}



-- **************************************************************
--
-- S-NODE MODIFICATION REQUEST REJECT
--
-- **************************************************************

SNodeModificationRequestReject ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container    {{ SNodeModificationRequestReject-IEs}},
    ...
}

SNodeModificationRequestReject-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-M-NG-RANnodeUEXnAPID                    CRITICALITY ignore      TYPE NG-RANnodeUEXnAPID                     PRESENCE mandatory}|
    { ID id-S-NG-RANnodeUEXnAPID                    CRITICALITY ignore      TYPE NG-RANnodeUEXnAPID                     PRESENCE mandatory}|
    { ID id-Cause                                   CRITICALITY ignore      TYPE Cause                                  PRESENCE mandatory}|
    { ID id-CriticalityDiagnostics                  CRITICALITY ignore      TYPE CriticalityDiagnostics                 PRESENCE optional },
    ...
}

-- **************************************************************
--
-- S-NODE MODIFICATION REQUIRED
--
-- **************************************************************

SNodeModificationRequired ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container    {{ SNodeModificationRequired-IEs}},
    ...
}
```

```
SNodeModificationRequired-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-M-NG-RANnodeUEXnAPID                  CRITICALITY reject      TYPE NG-RANnodeUEXnAPID                   PRESENCE mandatory}|
    { ID id-S-NG-RANnodeUEXnAPID                  CRITICALITY reject      TYPE NG-RANnodeUEXnAPID                   PRESENCE mandatory}|
    { ID id-Cause                                 CRITICALITY ignore      TYPE Cause                                PRESENCE mandatory}|
    { ID id-PDCPChangeIndication                  CRITICALITY ignore      TYPE PDCPChangeIndication                 PRESENCE optional }|
    { ID id-PDUSessionToBeModifiedSNModRequired   CRITICALITY ignore      TYPE PDUSessionToBeModifiedSNModRequired  PRESENCE optional }|
    { ID id-PDUSessionToBeReleasedSNModRequired   CRITICALITY ignore      TYPE PDUSessionToBeReleasedSNModRequired  PRESENCE optional }|
    { ID id-SN-to-MN-Container                    CRITICALITY ignore      TYPE OCTET STRING                         PRESENCE optional }|
    { ID id-SpareDRBIDs                           CRITICALITY ignore      TYPE DRB-List                             PRESENCE optional }|
    { ID id-RequiredNumberOfDRBIDs                CRITICALITY ignore      TYPE DRB-Number                           PRESENCE optional }|
    { ID id-LocationInformationSN                 CRITICALITY ignore      TYPE Target-CGI                           PRESENCE optional }|
    { ID id-MR-DC-ResourceCoordinationInfo        CRITICALITY ignore      TYPE MR-DC-ResourceCoordinationInfo       PRESENCE optional }|
    { ID id-RRCConfigIndication                   CRITICALITY reject      TYPE RRCConfigIndication                  PRESENCE optional }|
    { ID id-AvailableFastMCGRecoveryViaSRB3       CRITICALITY ignore      TYPE AvailableFastMCGRecoveryViaSRB3      PRESENCE optional }|
    { ID id-ReleaseFastMCGRecoveryViaSRB3         CRITICALITY ignore      TYPE ReleaseFastMCGRecoveryViaSRB3        PRESENCE optional }|
    { ID id-SCGIndicator                          CRITICALITY ignore      TYPE SCGIndicator                         PRESENCE optional }|
    { ID id-SCGUEHistoryInformation               CRITICALITY ignore      TYPE SCGUEHistoryInformation              PRESENCE optional }|
    { ID id-SCGActivationRequest                  CRITICALITY ignore      TYPE SCGActivationRequest                 PRESENCE optional }|
    { ID id-CPACInformationModRequired            CRITICALITY ignore      TYPE CPACInformationModRequired           PRESENCE optional }|
    { ID id-SCGreconfigNotification               CRITICALITY ignore      TYPE SCGreconfigNotification              PRESENCE optional }|
    { ID id-SPRAvailability                       CRITICALITY ignore      TYPE SPRAvailability                      PRESENCE optional }|
    { ID id-QMCCoordinationRequest                CRITICALITY ignore      TYPE QMCCoordinationRequest               PRESENCE optional }|
    { ID id-S-CPAC-Request                        CRITICALITY reject      TYPE S-CPAC-Request                       PRESENCE optional }|
    { ID id-PDUSessionsListToBeReleased-UPError   CRITICALITY ignore      TYPE PDUSessionsListToBeReleased-UPError  PRESENCE optional }|
    { ID id-LTMPSCellInformation-UpdateRequired   CRITICALITY ignore      TYPE LTMPSCellInformation-UpdateRequired  PRESENCE optional },
    ...
}
PDUSessionToBeModifiedSNModRequired::= SEQUENCE (SIZE (1.. maxnoofPDUSessions)) OF  PDUSessionToBeModifiedSNModRequired-Item

PDUSessionToBeModifiedSNModRequired-Item ::= SEQUENCE {
    pduSessionId                        PDUSession-ID,
    sn-terminated           PDUSessionResourceModRqdInfo-SNterminated   OPTIONAL,
    mn-terminated           PDUSessionResourceModRqdInfo-MNterminated   OPTIONAL,
-- NOTE: If neither the PDU Session Resource Modification Required Info – SN terminated IE
-- nor the PDU Session Resource Modification Required Info – MN terminated IE is present,
-- abnormal conditions as specified in clause 8.3.4.4 apply.
    iE-Extension        ProtocolExtensionContainer { {PDUSessionToBeModifiedSNModRequired-Item-ExtIEs} }   OPTIONAL,
    ...
}

PDUSessionToBeModifiedSNModRequired-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

PDUSessionToBeReleasedSNModRequired ::= SEQUENCE {
    sn-terminated           PDUSession-List-withDataForwardingRequest       OPTIONAL,
    mn-terminated           PDUSession-List-withCause                       OPTIONAL,
    iE-Extension            ProtocolExtensionContainer { {PDUSessionToBeReleasedSNModRequired-ExtIEs} } OPTIONAL,
    ...
}

PDUSessionToBeReleasedSNModRequired-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}
```

```
-- **************************************************************
--
-- S-NODE MODIFICATION CONFIRM
--
-- **************************************************************

SNodeModificationConfirm ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container    {{ SNodeModificationConfirm-IEs}},
    ...
}

SNodeModificationConfirm-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-M-NG-RANnodeUEXnAPID                    CRITICALITY ignore      TYPE NG-RANnodeUEXnAPID                     PRESENCE mandatory}|
    { ID id-S-NG-RANnodeUEXnAPID                    CRITICALITY ignore      TYPE NG-RANnodeUEXnAPID                     PRESENCE mandatory}|
    { ID id-PDUSessionAdmittedModSNModConfirm       CRITICALITY ignore      TYPE PDUSessionAdmittedModSNModConfirm      PRESENCE optional }|
    { ID id-PDUSessionReleasedSNModConfirm          CRITICALITY ignore      TYPE PDUSessionReleasedSNModConfirm         PRESENCE optional }|
    { ID id-MN-to-SN-Container                      CRITICALITY ignore      TYPE OCTET STRING                           PRESENCE optional }|
    { ID id-AdditionalDRBIDs                        CRITICALITY reject      TYPE DRB-List                               PRESENCE optional }|
    { ID id-CriticalityDiagnostics                  CRITICALITY ignore      TYPE CriticalityDiagnostics                 PRESENCE optional }|
    { ID id-MR-DC-ResourceCoordinationInfo          CRITICALITY ignore      TYPE MR-DC-ResourceCoordinationInfo         PRESENCE optional }|
    { ID id-QMCCoordinationResponse                 CRITICALITY ignore      TYPE QMCCoordinationResponse                PRESENCE optional }|
    { ID id-LTMPSCellInformation-UpdateConfirm      CRITICALITY ignore      TYPE LTMPSCellInformation-UpdateConfirm     PRESENCE optional },
    ...
}

PDUSessionAdmittedModSNModConfirm ::= SEQUENCE (SIZE(1..maxnoofPDUSessions)) OF PDUSessionAdmittedModSNModConfirm-Item

PDUSessionAdmittedModSNModConfirm-Item ::= SEQUENCE {
    pduSessionId                PDUSession-ID,
    sn-terminated           PDUSessionResourceModConfirmInfo-SNterminated   OPTIONAL,
    mn-terminated           PDUSessionResourceModConfirmInfo-MNterminated   OPTIONAL,
-- NOTE: If neither the PDU Session Resource Modification Confirm Info – SN terminated IE
-- nor the PDU Session Resource Modification Confirm Info – MN terminated IE is present,
-- abnormal conditions as specified in clause 8.3.4.4 apply.
    iE-Extension            ProtocolExtensionContainer { {PDUSessionAdmittedModSNModConfirm-Item-ExtIEs} } OPTIONAL,
    ...
}

PDUSessionAdmittedModSNModConfirm-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


PDUSessionReleasedSNModConfirm ::= SEQUENCE {
    sn-terminated           PDUSession-List-withDataForwardingFromTarget                        OPTIONAL,
    mn-terminated           PDUSession-List                                                     OPTIONAL,
    iE-Extension            ProtocolExtensionContainer { {PDUSessionAdmittedToBeReleasedSNModConfirm-ExtIEs} }   OPTIONAL,
    ...
}

PDUSessionAdmittedToBeReleasedSNModConfirm-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}
```

```
-- **************************************************************
--
-- S-NODE MODIFICATION REFUSE
--
-- **************************************************************

SNodeModificationRefuse ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container    {{ SNodeModificationRefuse-IEs}},
    ...
}

SNodeModificationRefuse-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-M-NG-RANnodeUEXnAPID                    CRITICALITY ignore      TYPE NG-RANnodeUEXnAPID                 PRESENCE mandatory}|
    { ID id-S-NG-RANnodeUEXnAPID                    CRITICALITY ignore      TYPE NG-RANnodeUEXnAPID                 PRESENCE mandatory}|
    { ID id-Cause                                   CRITICALITY ignore      TYPE Cause                              PRESENCE mandatory}|
    { ID id-MN-to-SN-Container                      CRITICALITY ignore      TYPE OCTET STRING                       PRESENCE optional }|
    { ID id-CriticalityDiagnostics                  CRITICALITY ignore      TYPE CriticalityDiagnostics             PRESENCE optional },
    ...
}

-- **************************************************************
--
-- S-NODE RELEASE REQUEST
--
-- **************************************************************

SNodeReleaseRequest ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container    {{ SNodeReleaseRequest-IEs}},
    ...
}

SNodeReleaseRequest-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-M-NG-RANnodeUEXnAPID                    CRITICALITY reject      TYPE NG-RANnodeUEXnAPID                 PRESENCE mandatory}|
    { ID id-S-NG-RANnodeUEXnAPID                    CRITICALITY reject      TYPE NG-RANnodeUEXnAPID                 PRESENCE optional }|
    { ID id-Cause                                   CRITICALITY ignore      TYPE Cause                              PRESENCE mandatory}|
    { ID id-PDUSessionToBeReleased-RelReq           CRITICALITY ignore      TYPE PDUSession-List-withCause          PRESENCE optional }|
    { ID id-UEContextKeptIndicator                  CRITICALITY ignore      TYPE UEContextKeptIndicator             PRESENCE optional }|
    { ID id-MN-to-SN-Container                      CRITICALITY ignore      TYPE OCTET STRING                       PRESENCE optional }|
    { ID id-DRBs-transferred-to-MN                  CRITICALITY ignore      TYPE DRB-List                           PRESENCE optional }|
    { ID id-SCGUEHistoryInformation                 CRITICALITY ignore      TYPE SCGUEHistoryInformation            PRESENCE optional },
    ...
}

-- **************************************************************
--
-- S-NODE RELEASE REQUEST ACKNOWLEDGE
--
-- **************************************************************

SNodeReleaseRequestAcknowledge ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container    {{ SNodeReleaseRequestAcknowledge-IEs}},
    ...
```

```
}

SNodeReleaseRequestAcknowledge-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-M-NG-RANnodeUEXnAPID                    CRITICALITY reject      TYPE NG-RANnodeUEXnAPID                      PRESENCE mandatory}|
    { ID id-S-NG-RANnodeUEXnAPID                    CRITICALITY reject      TYPE NG-RANnodeUEXnAPID                      PRESENCE optional }|
    { ID id-PDUSessionToBeReleased-RelReqAck        CRITICALITY ignore      TYPE PDUSessionToBeReleasedList-RelReqAck    PRESENCE optional }|
    { ID id-CriticalityDiagnostics                  CRITICALITY ignore      TYPE CriticalityDiagnostics                  PRESENCE optional }|
    { ID id-SCGUEHistoryInformation                 CRITICALITY ignore      TYPE SCGUEHistoryInformation                 PRESENCE optional }|
    { ID id-SNMobilityInformation                   CRITICALITY ignore      TYPE SNMobilityInformation                   PRESENCE optional },
    ...
}

PDUSessionToBeReleasedList-RelReqAck ::= SEQUENCE {
    pduSessionsToBeReleasedList-SNterminated        PDUSession-List-withDataForwardingRequest                                 OPTIONAL,
    iE-Extensions                                   ProtocolExtensionContainer { {PDUSessionToBeReleasedList-RelReqAck-ExtIEs} }  OPTIONAL,
    ...
}

PDUSessionToBeReleasedList-RelReqAck-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

-- **************************************************************
--
-- S-NODE RELEASE REJECT
--
-- **************************************************************

SNodeReleaseReject ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container    {{ SNodeReleaseReject-IEs}},
    ...
}

SNodeReleaseReject-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-M-NG-RANnodeUEXnAPID                    CRITICALITY reject      TYPE NG-RANnodeUEXnAPID                  PRESENCE mandatory}|
    { ID id-S-NG-RANnodeUEXnAPID                    CRITICALITY reject      TYPE NG-RANnodeUEXnAPID                  PRESENCE optional }|
    { ID id-Cause                                   CRITICALITY ignore      TYPE Cause                               PRESENCE mandatory}|
    { ID id-CriticalityDiagnostics                  CRITICALITY ignore      TYPE CriticalityDiagnostics              PRESENCE optional },
    ...
}

-- **************************************************************
--
-- S-NODE RELEASE REQUIRED
--
-- **************************************************************

SNodeReleaseRequired ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container    {{ SNodeReleaseRequired-IEs}},
    ...
}

SNodeReleaseRequired-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-M-NG-RANnodeUEXnAPID                    CRITICALITY reject      TYPE NG-RANnodeUEXnAPID                  PRESENCE mandatory}|
```

```
    { ID id-S-NG-RANnodeUEXnAPID                    CRITICALITY reject      TYPE NG-RANnodeUEXnAPID                    PRESENCE mandatory}|
    { ID id-PDUSessionToBeReleasedList-RelRqd       CRITICALITY ignore      TYPE PDUSessionToBeReleasedList-RelRqd     PRESENCE optional }|
    { ID id-Cause                                   CRITICALITY ignore      TYPE Cause                                 PRESENCE mandatory}|
    { ID id-SN-to-MN-Container                      CRITICALITY ignore      TYPE OCTET STRING                          PRESENCE optional }|
    { ID id-SCGUEHistoryInformation                 CRITICALITY ignore      TYPE SCGUEHistoryInformation               PRESENCE optional }|
    { ID id-PDUSessionsListToBeReleased-UPError     CRITICALITY ignore      TYPE PDUSessionsListToBeReleased-UPError   PRESENCE optional },
    ...
}

PDUSessionToBeReleasedList-RelRqd ::= SEQUENCE {
    pduSessionsToBeReleasedList-SNterminated        PDUSession-List-withDataForwardingRequest                OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { {PDUSessionToBeReleasedList-RelRqd-ExtIEs} } OPTIONAL,
    ...
}

PDUSessionToBeReleasedList-RelRqd-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


-- **************************************************************
--
-- S-NODE RELEASE CONFIRM
--
-- **************************************************************

SNodeReleaseConfirm ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container    {{ SNodeReleaseConfirm-IEs}},
    ...
}

SNodeReleaseConfirm-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-M-NG-RANnodeUEXnAPID                    CRITICALITY ignore      TYPE NG-RANnodeUEXnAPID                    PRESENCE mandatory}|
    { ID id-S-NG-RANnodeUEXnAPID                    CRITICALITY ignore      TYPE NG-RANnodeUEXnAPID                    PRESENCE mandatory}|
    { ID id-PDUSessionReleasedList-RelConf          CRITICALITY ignore      TYPE PDUSessionReleasedList-RelConf        PRESENCE optional }|
    { ID id-CriticalityDiagnostics                  CRITICALITY ignore      TYPE CriticalityDiagnostics                PRESENCE optional }|
    { ID id-SCGUEHistoryInformation                 CRITICALITY ignore      TYPE SCGUEHistoryInformation               PRESENCE optional },
    ...
}

PDUSessionReleasedList-RelConf ::= SEQUENCE {
    pduSessionsReleasedList-SNterminated        PDUSession-List-withDataForwardingFromTarget              OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { {PDUSessionReleasedList-RelConf-ExtIEs} } OPTIONAL,
    ...
}

PDUSessionReleasedList-RelConf-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


-- **************************************************************
--
-- S-NODE COUNTER CHECK REQUEST
```

```
--
-- **************************************************************

SNodeCounterCheckRequest ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container    {{ SNodeCounterCheckRequest-IEs}},
    ...
}

SNodeCounterCheckRequest-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-M-NG-RANnodeUEXnAPID                    CRITICALITY ignore      TYPE NG-RANnodeUEXnAPID                     PRESENCE mandatory}|
    { ID id-S-NG-RANnodeUEXnAPID                    CRITICALITY ignore      TYPE NG-RANnodeUEXnAPID                     PRESENCE mandatory}|
    { ID id-BearersSubjectToCounterCheck            CRITICALITY ignore      TYPE BearersSubjectToCounterCheck-List      PRESENCE mandatory},
    ...
}

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

BearersSubjectToCounterCheck-Item ::= SEQUENCE {
    drb-ID                          DRB-ID,
    ul-count                        INTEGER (0.. 4294967295),
    dl-count                        INTEGER (0.. 4294967295),
    iE-Extensions                   ProtocolExtensionContainer { {BearersSubjectToCounterCheck-Item-ExtIEs} } OPTIONAL,
    ...
}

BearersSubjectToCounterCheck-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


-- **************************************************************
--
-- S-NODE CHANGE REQUIRED
--
-- **************************************************************

SNodeChangeRequired ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container    {{ SNodeChangeRequired-IEs}},
    ...
}

SNodeChangeRequired-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-M-NG-RANnodeUEXnAPID                    CRITICALITY reject      TYPE NG-RANnodeUEXnAPID                     PRESENCE mandatory}|
    { ID id-S-NG-RANnodeUEXnAPID                    CRITICALITY reject      TYPE NG-RANnodeUEXnAPID                     PRESENCE mandatory}|
    { ID id-target-S-NG-RANnodeID                   CRITICALITY reject      TYPE GlobalNG-RANNode-ID                    PRESENCE mandatory}|
    { ID id-Cause                                   CRITICALITY ignore      TYPE Cause                                  PRESENCE mandatory}|
    { ID id-PDUSession-SNChangeRequired-List        CRITICALITY ignore      TYPE PDUSession-SNChangeRequired-List       PRESENCE optional }|
    { ID id-SN-to-MN-Container                      CRITICALITY reject      TYPE OCTET STRING                           PRESENCE mandatory}|
    { ID id-SCGUEHistoryInformation                 CRITICALITY ignore      TYPE SCGUEHistoryInformation                PRESENCE optional }|
    { ID id-SNMobilityInformation                   CRITICALITY ignore      TYPE SNMobilityInformation                  PRESENCE optional }|
    { ID id-SourcePSCellID                          CRITICALITY ignore      TYPE GlobalNG-RANCell-ID                    PRESENCE optional }|
    { ID id-CPCInformationRequired                  CRITICALITY ignore      TYPE CPCInformationRequired                 PRESENCE optional }|
    { ID id-SourceSN-to-TargetSN-QMCInfo            CRITICALITY ignore      TYPE QMCConfigInfo                          PRESENCE optional }|
    { ID id-LTMPSCellInformation-ChangeRequired     CRITICALITY reject      TYPE LTMPSCellInformation-ChangeRequired    PRESENCE optional },
```

```
    ...
}

PDUSession-SNChangeRequired-List ::= SEQUENCE (SIZE(1..maxnoofPDUSessions)) OF PDUSession-SNChangeRequired-Item

PDUSession-SNChangeRequired-Item ::= SEQUENCE {
    pduSessionId                PDUSession-ID,
    sn-terminated           PDUSessionResourceChangeRequiredInfo-SNterminated   OPTIONAL,
    mn-terminated           PDUSessionResourceChangeRequiredInfo-MNterminated   OPTIONAL,
-- NOTE: If the PDU Session Resource Change Required Info – SN terminated IE is not present,
-- abnormal conditions as specified in clause 8.3.5.4 apply.
    iE-Extension            ProtocolExtensionContainer { {PDUSession-SNChangeRequired-Item-ExtIEs} } OPTIONAL,
    ...
}

PDUSession-SNChangeRequired-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


-- **************************************************************
--
-- S-NODE CHANGE CONFIRM
--
-- **************************************************************

SNodeChangeConfirm ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container    {{ SNodeChangeConfirm-IEs}},
    ...
}

SNodeChangeConfirm-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-M-NG-RANnodeUEXnAPID                    CRITICALITY ignore      TYPE NG-RANnodeUEXnAPID                     PRESENCE mandatory}|
    { ID id-S-NG-RANnodeUEXnAPID                    CRITICALITY ignore      TYPE NG-RANnodeUEXnAPID                     PRESENCE mandatory}|
    { ID id-PDUSession-SNChangeConfirm-List         CRITICALITY ignore      TYPE PDUSession-SNChangeConfirm-List        PRESENCE optional }|
    { ID id-CriticalityDiagnostics                  CRITICALITY ignore      TYPE CriticalityDiagnostics                 PRESENCE optional }|
    { ID id-CPCInformationConfirm                   CRITICALITY ignore      TYPE CPCInformationConfirm                  PRESENCE optional }|
    { ID id-MN-to-SN-Container                      CRITICALITY ignore      TYPE OCTET STRING                           PRESENCE optional }|
    { ID id-LTMPSCellInformation-ChangeConfirm      CRITICALITY ignore      TYPE LTMPSCellInformation-ChangeConfirm     PRESENCE optional },
    ...
}
PDUSession-SNChangeConfirm-List ::= SEQUENCE (SIZE(1..maxnoofPDUSessions)) OF PDUSession-SNChangeConfirm-Item

PDUSession-SNChangeConfirm-Item ::= SEQUENCE {
    pduSessionId            PDUSession-ID,
    sn-terminated           PDUSessionResourceChangeConfirmInfo-SNterminated    OPTIONAL,
    mn-terminated           PDUSessionResourceChangeConfirmInfo-MNterminated    OPTIONAL,
-- NOTE: If the PDU Session Resource Change Confirm Info – SN terminated IE is not present,
-- abnormal conditions as specified in clause 8.3.5.4 apply.
    iE-Extension            ProtocolExtensionContainer { {PDUSession-SNChangeConfirm-Item-ExtIEs} }  OPTIONAL,
    ...
}

PDUSession-SNChangeConfirm-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
```

```
    { ID id-AdditionalListofPDUSessionResourceChangeConfirmInfo-SNterminated       CRITICALITY ignore  EXTENSION
    AdditionalListofPDUSessionResourceChangeConfirmInfo-SNterminated               PRESENCE optional},
    ...
}


-- **************************************************************
--
-- S-NODE CHANGE REFUSE
--
-- **************************************************************

SNodeChangeRefuse ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container    {{ SNodeChangeRefuse-IEs}},
    ...
}

SNodeChangeRefuse-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-M-NG-RANnodeUEXnAPID                  CRITICALITY ignore      TYPE NG-RANnodeUEXnAPID                  PRESENCE mandatory}|
    { ID id-S-NG-RANnodeUEXnAPID                  CRITICALITY ignore      TYPE NG-RANnodeUEXnAPID                  PRESENCE mandatory}|
    { ID id-Cause                                 CRITICALITY ignore      TYPE Cause                               PRESENCE mandatory}|
    { ID id-CriticalityDiagnostics                CRITICALITY ignore      TYPE CriticalityDiagnostics              PRESENCE optional },
    ...
}

-- **************************************************************
--
-- RRC TRANSFER
--
-- **************************************************************

RRCTransfer ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container    {{ RRCTransfer-IEs}},
    ...
}

RRCTransfer-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-M-NG-RANnodeUEXnAPID                  CRITICALITY reject      TYPE NG-RANnodeUEXnAPID                  PRESENCE mandatory}|
    { ID id-S-NG-RANnodeUEXnAPID                  CRITICALITY reject      TYPE NG-RANnodeUEXnAPID                  PRESENCE mandatory}|
    { ID id-SplitSRB-RRCTransfer                  CRITICALITY reject      TYPE SplitSRB-RRCTransfer                PRESENCE optional }|
    { ID id-UEReportRRCTransfer                   CRITICALITY reject      TYPE UEReportRRCTransfer                 PRESENCE optional }|
    { ID id-FastMCGRecoveryRRCTransfer-SN-to-MN   CRITICALITY ignore      TYPE FastMCGRecoveryRRCTransfer          PRESENCE optional }|
    { ID id-FastMCGRecoveryRRCTransfer-MN-to-SN   CRITICALITY ignore      TYPE FastMCGRecoveryRRCTransfer          PRESENCE optional }|
    { ID id-SDT-SRB-between-NewNode-OldNode       CRITICALITY ignore      TYPE SDT-SRB-between-NewNode-OldNode     PRESENCE optional }|
    { ID id-QoE-Measurement-Results               CRITICALITY ignore      TYPE QoE-Measurement-Results             PRESENCE optional },
    ...
}

SplitSRB-RRCTransfer ::= SEQUENCE {
    rrcContainer                    OCTET STRING                        OPTIONAL,
    srbType                         ENUMERATED {srb1, srb2, ...},
    deliveryStatus                  DeliveryStatus                      OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { {SplitSRB-RRCTransfer-ExtIEs} } OPTIONAL,
    ...
```

```
}

SplitSRB-RRCTransfer-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

UEReportRRCTransfer::= SEQUENCE {
    rrcContainer                    OCTET STRING,
    iE-Extensions                   ProtocolExtensionContainer { {UEReportRRCTransfer-ExtIEs} } OPTIONAL,
    ...
}

UEReportRRCTransfer-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

FastMCGRecoveryRRCTransfer::= SEQUENCE {
    rrcContainer                    OCTET STRING,
    iE-Extensions                   ProtocolExtensionContainer { { FastMCGRecoveryRRCTransfer-ExtIEs} } OPTIONAL,
    ...
}

FastMCGRecoveryRRCTransfer-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

SDT-SRB-between-NewNode-OldNode::= SEQUENCE {
    rrcContainer                    OCTET STRING,
    srb-ID                          SRB-ID,
    iE-Extensions                   ProtocolExtensionContainer { { SDT-SRB-between-NewNode-OldNode-ExtIEs} } OPTIONAL,
    ...
}

SDT-SRB-between-NewNode-OldNode-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

QoE-Measurement-Results ::= SEQUENCE {
    qOEReference                                OCTET STRING (SIZE(6)),
    rrcContainerForRVQoEReport                  OCTET STRING                                    OPTIONAL,
    rrcContainerForQoEReport                    OCTET STRING                                    OPTIONAL,
    appLayerSessionStatus                       ENUMERATED {started, stopped, ...}              OPTIONAL,
    iE-Extensions                       ProtocolExtensionContainer { {QoE-Measurement-Results-ExtIEs} } OPTIONAL,
    ...
}

QoE-Measurement-Results-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


-- **************************************************************
--
-- NOTIFICATION CONTROL INDICATION
```

```
--
-- ************************************************************

NotificationControlIndication ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container    {{NotificationControlIndication-IEs}},
    ...
}

NotificationControlIndication-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-M-NG-RANnodeUEXnAPID               CRITICALITY reject      TYPE NG-RANnodeUEXnAPID                 PRESENCE mandatory}|
    { ID id-S-NG-RANnodeUEXnAPID               CRITICALITY reject      TYPE NG-RANnodeUEXnAPID                 PRESENCE mandatory}|
    { ID id-PDUSessionResourcesNotifyList      CRITICALITY reject      TYPE PDUSessionResourcesNotifyList      PRESENCE optional },
    ...
}

PDUSessionResourcesNotifyList ::= SEQUENCE (SIZE(1..maxnoofPDUSessions)) OF PDUSessionResourcesNotify-Item

PDUSessionResourcesNotify-Item ::= SEQUENCE {
    pduSessionId                        PDUSession-ID,
    qosFlowsNotificationContrIndInfo    QoSFlowNotificationControlIndicationInfo,
    iE-Extensions                       ProtocolExtensionContainer { {PDUSessionResourcesNotify-Item-ExtIEs} } OPTIONAL,
    ...
}

PDUSessionResourcesNotify-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

-- ************************************************************
--
-- ACTIVITY NOTIFICATION
--
-- ************************************************************

ActivityNotification ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container    {{ActivityNotification-IEs}},
    ...
}

ActivityNotification-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-M-NG-RANnodeUEXnAPID                    CRITICALITY ignore      TYPE NG-RANnodeUEXnAPID                     PRESENCE mandatory}|
    { ID id-S-NG-RANnodeUEXnAPID                    CRITICALITY ignore      TYPE NG-RANnodeUEXnAPID                     PRESENCE mandatory}|
    { ID id-UserPlaneTrafficActivityReport          CRITICALITY ignore      TYPE UserPlaneTrafficActivityReport         PRESENCE optional }|
    { ID id-PDUSessionResourcesActivityNotifyList   CRITICALITY ignore      TYPE PDUSessionResourcesActivityNotifyList  PRESENCE optional }|
    { ID id-RANPagingFailure                        CRITICALITY ignore      TYPE RANPagingFailure                       PRESENCE optional },
    ...
}

PDUSessionResourcesActivityNotifyList ::= SEQUENCE (SIZE(1..maxnoofPDUSessions)) OF PDUSessionResourcesActivityNotify-Item

PDUSessionResourcesActivityNotify-Item ::= SEQUENCE {
    pduSessionId                        PDUSession-ID,
    pduSessionLevelUPactivityreport     UserPlaneTrafficActivityReport                                  OPTIONAL,
    qosFlowsActivityNotifyList          QoSFlowsActivityNotifyList                                      OPTIONAL,
```

```
    iE-Extensions                       ProtocolExtensionContainer { {PDUSessionResourcesActivityNotify-Item-ExtIEs} } OPTIONAL,
    ...
}

PDUSessionResourcesActivityNotify-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

QoSFlowsActivityNotifyList ::= SEQUENCE (SIZE(1..maxnoofQoSFlows)) OF QoSFlowsActivityNotifyItem

QoSFlowsActivityNotifyItem ::= SEQUENCE {
    qosFlowIdentifier                   QoSFlowIdentifier,
    pduSessionLevelUPactivityreport     UserPlaneTrafficActivityReport,
    iE-Extensions                       ProtocolExtensionContainer { {QoSFlowsActivityNotifyItem-ExtIEs} } OPTIONAL,
    ...
}

QoSFlowsActivityNotifyItem-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

-- **************************************************************
--
-- XN SETUP REQUEST
--
-- **************************************************************

XnSetupRequest ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container    {{ XnSetupRequest-IEs}},
    ...
}

XnSetupRequest-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-GlobalNG-RAN-node-ID                CRITICALITY reject  TYPE GlobalNG-RANNode-ID                 PRESENCE mandatory}|
    { ID id-TAISupport-list                     CRITICALITY reject  TYPE TAISupport-List                     PRESENCE mandatory}|
    { ID id-AMF-Region-Information              CRITICALITY reject  TYPE AMF-Region-Information              PRESENCE mandatory}|
    { ID id-List-of-served-cells-NR             CRITICALITY reject  TYPE ServedCells-NR                      PRESENCE optional }|
    { ID id-List-of-served-cells-E-UTRA         CRITICALITY reject  TYPE ServedCells-E-UTRA                  PRESENCE optional }|
    { ID id-InterfaceInstanceIndication         CRITICALITY reject  TYPE InterfaceInstanceIndication         PRESENCE optional }|
    { ID id-TNLConfigurationInfo                CRITICALITY ignore  TYPE TNLConfigurationInfo                PRESENCE optional }|
    { ID id-PartialListIndicator-NR             CRITICALITY ignore  TYPE PartialListIndicator                PRESENCE optional }|
    { ID id-CellAndCapacityAssistanceInfo-NR    CRITICALITY ignore  TYPE CellAndCapacityAssistanceInfo-NR    PRESENCE optional }|
    { ID id-PartialListIndicator-EUTRA          CRITICALITY ignore  TYPE PartialListIndicator                PRESENCE optional }|
    { ID id-CellAndCapacityAssistanceInfo-EUTRA CRITICALITY ignore  TYPE CellAndCapacityAssistanceInfo-EUTRA PRESENCE optional }|
    { ID id-Local-NG-RAN-Node-Identifier        CRITICALITY ignore  TYPE Local-NG-RAN-Node-Identifier        PRESENCE optional }|
    { ID id-Neighbour-NG-RAN-Node-List          CRITICALITY ignore  TYPE Neighbour-NG-RAN-Node-List          PRESENCE optional }|
    { ID id-WAB-MT-ID                           CRITICALITY ignore  TYPE WAB-MT-ID                           PRESENCE optional },
    ...
}

-- **************************************************************
--
-- XN SETUP RESPONSE
--
```

```
-- **************************************************************

XnSetupResponse ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container    {{ XnSetupResponse-IEs}},
    ...
}

XnSetupResponse-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-GlobalNG-RAN-node-ID               CRITICALITY reject  TYPE GlobalNG-RANNode-ID                 PRESENCE mandatory}|
    { ID id-TAISupport-list                    CRITICALITY reject  TYPE TAISupport-List                    PRESENCE mandatory}|
    { ID id-List-of-served-cells-NR            CRITICALITY reject  TYPE ServedCells-NR                     PRESENCE optional }|
    { ID id-List-of-served-cells-E-UTRA        CRITICALITY reject  TYPE ServedCells-E-UTRA                 PRESENCE optional }|
    { ID id-CriticalityDiagnostics             CRITICALITY ignore  TYPE CriticalityDiagnostics             PRESENCE optional }|
    { ID id-AMF-Region-Information             CRITICALITY reject  TYPE AMF-Region-Information             PRESENCE optional }|
    { ID id-InterfaceInstanceIndication        CRITICALITY reject  TYPE InterfaceInstanceIndication        PRESENCE optional }|
    { ID id-TNLConfigurationInfo               CRITICALITY ignore  TYPE TNLConfigurationInfo               PRESENCE optional }|
    { ID id-PartialListIndicator-NR            CRITICALITY ignore  TYPE PartialListIndicator               PRESENCE optional }|
    { ID id-CellAndCapacityAssistanceInfo-NR   CRITICALITY ignore  TYPE CellAndCapacityAssistanceInfo-NR   PRESENCE optional }|
    { ID id-PartialListIndicator-EUTRA         CRITICALITY ignore  TYPE PartialListIndicator               PRESENCE optional }|
    { ID id-CellAndCapacityAssistanceInfo-EUTRA CRITICALITY ignore TYPE CellAndCapacityAssistanceInfo-EUTRA PRESENCE optional }|
    { ID id-Local-NG-RAN-Node-Identifier       CRITICALITY ignore  TYPE Local-NG-RAN-Node-Identifier       PRESENCE optional }|
    { ID id-Neighbour-NG-RAN-Node-List         CRITICALITY ignore  TYPE Neighbour-NG-RAN-Node-List         PRESENCE optional }|
    { ID id-WAB-MT-ID                          CRITICALITY ignore  TYPE WAB-MT-ID                          PRESENCE optional },
    ...
}

-- **************************************************************
--
-- XN SETUP FAILURE
--
-- **************************************************************

XnSetupFailure ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container    {{ XnSetupFailure-IEs}},
    ...
}

XnSetupFailure-IEs XNAP-PROTOCOL-IES ::= {
    { 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 }|
    { ID id-InterfaceInstanceIndication CRITICALITY reject  TYPE InterfaceInstanceIndication    PRESENCE optional }|
    { ID id-MessageOversizeNotification CRITICALITY ignore  TYPE MessageOversizeNotification    PRESENCE optional },
    ...
}

-- **************************************************************
--
-- NG-RAN NODE CONFIGURATION UPDATE
--
-- **************************************************************

NGRANNodeConfigurationUpdate ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container    {{ NGRANNodeConfigurationUpdate-IEs}},
```

```
    ...
}

NGRANNodeConfigurationUpdate-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-TAISupport-list                          CRITICALITY reject  TYPE TAISupport-List                          PRESENCE optional }|
    { ID id-ConfigurationUpdateInitiatingNodeChoice CRITICALITY ignore  TYPE ConfigurationUpdateInitiatingNodeChoice  PRESENCE mandatory}|
    { ID id-TNLA-To-Add-List                         CRITICALITY ignore  TYPE TNLA-To-Add-List                         PRESENCE optional }|
    { ID id-TNLA-To-Remove-List                      CRITICALITY ignore  TYPE TNLA-To-Remove-List                      PRESENCE optional }|
    { ID id-TNLA-To-Update-List                      CRITICALITY ignore  TYPE TNLA-To-Update-List                      PRESENCE optional }|
    { ID id-GlobalNG-RAN-node-ID                     CRITICALITY reject  TYPE GlobalNG-RANNode-ID                      PRESENCE optional }|
    { ID id-AMF-Region-Information-To-Add            CRITICALITY reject  TYPE AMF-Region-Information                   PRESENCE optional }|
    { ID id-AMF-Region-Information-To-Delete         CRITICALITY reject  TYPE AMF-Region-Information                   PRESENCE optional }|
    { ID id-InterfaceInstanceIndication              CRITICALITY reject  TYPE InterfaceInstanceIndication             PRESENCE optional }|
    { ID id-TNLConfigurationInfo                     CRITICALITY ignore  TYPE TNLConfigurationInfo                     PRESENCE optional }|
    { ID id-Coverage-Modification-List               CRITICALITY reject  TYPE Coverage-Modification-List               PRESENCE optional }|
    { ID id-Local-NG-RAN-Node-Identifier             CRITICALITY ignore  TYPE Local-NG-RAN-Node-Identifier             PRESENCE optional }|
    { ID id-Neighbour-NG-RAN-Node-List               CRITICALITY ignore  TYPE Neighbour-NG-RAN-Node-List               PRESENCE optional }|
    { ID id-Local-NG-RAN-Node-Identifier-Removal     CRITICALITY ignore  TYPE Local-NG-RAN-Node-Identifier             PRESENCE optional }|
    { ID id-WAB-MT-ID                                CRITICALITY ignore  TYPE WAB-MT-ID                                PRESENCE optional }|
    { ID id-Future-Coverage-Modification-List        CRITICALITY ignore  TYPE Future-Coverage-Modification-List        PRESENCE optional },
    ...
}

ConfigurationUpdateInitiatingNodeChoice ::= CHOICE {
    gNB                                ProtocolIE-Container    { {ConfigurationUpdate-gNB} },
    ng-eNB                             ProtocolIE-Container    { {ConfigurationUpdate-ng-eNB} },
    choice-extension                   ProtocolIE-Single-Container { {ServedCellsToUpdateInitiatingNodeChoice-ExtIEs} }
}

ServedCellsToUpdateInitiatingNodeChoice-ExtIEs XNAP-PROTOCOL-IES ::= {
    ...
}

ConfigurationUpdate-gNB XNAP-PROTOCOL-IES ::= {
    { ID id-servedCellsToUpdate-NR          CRITICALITY ignore TYPE ServedCellsToUpdate-NR                  PRESENCE optional }|
    { ID id-cellAssistanceInfo-NR           CRITICALITY ignore TYPE CellAssistanceInfo-NR                   PRESENCE optional }|
    { ID id-cellAssistanceInfo-EUTRA        CRITICALITY ignore TYPE CellAssistanceInfo-EUTRA                PRESENCE optional }|
    { ID id-ServedCellSpecificInfoReq-NR    CRITICALITY ignore TYPE ServedCellSpecificInfoReq-NR            PRESENCE optional },
    ...
}


ConfigurationUpdate-ng-eNB XNAP-PROTOCOL-IES ::= {
    { ID id-servedCellsToUpdate-E-UTRA          CRITICALITY ignore TYPE ServedCellsToUpdate-E-UTRA          PRESENCE optional }|
    { ID id-cellAssistanceInfo-NR               CRITICALITY ignore TYPE CellAssistanceInfo-NR               PRESENCE optional }|
    { ID id-cellAssistanceInfo-EUTRA            CRITICALITY ignore TYPE CellAssistanceInfo-EUTRA            PRESENCE optional },
    ...
}



-- **************************************************************
--
-- NG-RAN NODE CONFIGURATION UPDATE ACKNOWLEDGE
```

```
--
-- **************************************************************

NGRANNodeConfigurationUpdateAcknowledge ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container    {{ NGRANNodeConfigurationUpdateAcknowledge-IEs}},
    ...
}

NGRANNodeConfigurationUpdateAcknowledge-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-RespondingNodeTypeConfigUpdateAck          CRITICALITY ignore  TYPE RespondingNodeTypeConfigUpdateAck    PRESENCE mandatory}|
    { ID id-TNLA-Setup-List                            CRITICALITY ignore  TYPE TNLA-Setup-List                      PRESENCE optional }|
    { ID id-TNLA-Failed-To-Setup-List                  CRITICALITY ignore  TYPE TNLA-Failed-To-Setup-List            PRESENCE optional }|
    { ID id-CriticalityDiagnostics                     CRITICALITY ignore  TYPE CriticalityDiagnostics               PRESENCE optional }|
    { ID id-InterfaceInstanceIndication                CRITICALITY reject  TYPE InterfaceInstanceIndication          PRESENCE optional }|
    { ID id-TNLConfigurationInfo                       CRITICALITY ignore  TYPE TNLConfigurationInfo                 PRESENCE optional }|
    { ID id-Local-NG-RAN-Node-Identifier               CRITICALITY ignore  TYPE Local-NG-RAN-Node-Identifier         PRESENCE optional }|
    { ID id-Neighbour-NG-RAN-Node-List                 CRITICALITY ignore  TYPE Neighbour-NG-RAN-Node-List           PRESENCE optional }|
    { ID id-Local-NG-RAN-Node-Identifier-Removal       CRITICALITY ignore  TYPE Local-NG-RAN-Node-Identifier         PRESENCE optional }|
    { ID id-WAB-MT-ID                                  CRITICALITY ignore  TYPE WAB-MT-ID                            PRESENCE optional },
    ...
}
RespondingNodeTypeConfigUpdateAck ::= CHOICE {
    ng-eNB                  RespondingNodeTypeConfigUpdateAck-ng-eNB,
    gNB                     RespondingNodeTypeConfigUpdateAck-gNB,
    choice-extension        ProtocolIE-Single-Container { {RespondingNodeTypeConfigUpdateAck-ExtIEs} }
}

RespondingNodeTypeConfigUpdateAck-ExtIEs XNAP-PROTOCOL-IES ::= {
    ...
}

RespondingNodeTypeConfigUpdateAck-ng-eNB ::= SEQUENCE {
    iE-Extension        ProtocolExtensionContainer { {RespondingNodeTypeConfigUpdateAck-ng-eNB-ExtIEs} }   OPTIONAL,
    ...
}

RespondingNodeTypeConfigUpdateAck-ng-eNB-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    { ID id-List-of-served-cells-E-UTRA             CRITICALITY ignore  EXTENSION ServedCells-E-UTRA                  PRESENCE optional }|
    { ID id-PartialListIndicator-EUTRA              CRITICALITY ignore  EXTENSION PartialListIndicator                PRESENCE optional }|
    { ID id-CellAndCapacityAssistanceInfo-EUTRA     CRITICALITY ignore  EXTENSION CellAndCapacityAssistanceInfo-EUTRA PRESENCE optional },
    ...
}


RespondingNodeTypeConfigUpdateAck-gNB ::= SEQUENCE {
    served-NR-Cells     ServedCells-NR                                                      OPTIONAL,
    iE-Extension        ProtocolExtensionContainer { {RespondingNodeTypeConfigUpdateAck-gNB-ExtIEs} }   OPTIONAL,
    ...
}

RespondingNodeTypeConfigUpdateAck-gNB-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    { ID id-PartialListIndicator-NR             CRITICALITY ignore  EXTENSION PartialListIndicator                PRESENCE optional }|
    { ID id-CellAndCapacityAssistanceInfo-NR    CRITICALITY ignore  EXTENSION CellAndCapacityAssistanceInfo-NR     PRESENCE optional },
    ...
```

```
}


-- **************************************************************
--
-- NG-RAN NODE CONFIGURATION UPDATE FAILURE
--
-- **************************************************************

NGRANNodeConfigurationUpdateFailure ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container    {{NGRANNodeConfigurationUpdateFailure-IEs}},
    ...
}

NGRANNodeConfigurationUpdateFailure-IEs XNAP-PROTOCOL-IES ::= {
    { 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 }|
    { ID id-InterfaceInstanceIndication CRITICALITY reject  TYPE InterfaceInstanceIndication    PRESENCE optional },
    ...
}


-- **************************************************************
--
-- E-UTRA - NR CELL RESOURCE COORDINATION REQUEST
--
-- **************************************************************

E-UTRA-NR-CellResourceCoordinationRequest ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container    {{E-UTRA-NR-CellResourceCoordinationRequest-IEs}},
    ...
}

E-UTRA-NR-CellResourceCoordinationRequest-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-initiatingNodeType-ResourceCoordRequest CRITICALITY reject  TYPE InitiatingNodeType-ResourceCoordRequest     PRESENCE mandatory}|
    { ID id-InterfaceInstanceIndication             CRITICALITY reject  TYPE InterfaceInstanceIndication                 PRESENCE optional },
    ...
}

InitiatingNodeType-ResourceCoordRequest ::= CHOICE {
    ng-eNB                          ResourceCoordRequest-ng-eNB-initiated,
    gNB                             ResourceCoordRequest-gNB-initiated,
    choice-extension                ProtocolIE-Single-Container { {InitiatingNodeType-ResourceCoordRequest-ExtIEs} }
}

InitiatingNodeType-ResourceCoordRequest-ExtIEs XNAP-PROTOCOL-IES ::= {
    ...
}

ResourceCoordRequest-ng-eNB-initiated ::= SEQUENCE {
    dataTrafficResourceIndication       DataTrafficResourceIndication,
    spectrumSharingGroupID              SpectrumSharingGroupID,
    listofE-UTRACells                   SEQUENCE (SIZE(1.. maxnoofCellsinNG-RANnode)) OF E-UTRA-CGI                  OPTIONAL,
```

```
    iE-Extensions                       ProtocolExtensionContainer { {ResourceCoordRequest-ng-eNB-initiated-ExtIEs} } OPTIONAL,
    ...
}

ResourceCoordRequest-ng-eNB-initiated-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


ResourceCoordRequest-gNB-initiated ::= SEQUENCE {
    dataTrafficResourceIndication       DataTrafficResourceIndication,
    listofE-UTRACells                   SEQUENCE (SIZE(1.. maxnoofCellsinNG-RANnode)) OF E-UTRA-CGI                OPTIONAL,
    spectrumSharingGroupID              SpectrumSharingGroupID,
    listofNRCells                       SEQUENCE (SIZE(1.. maxnoofCellsinNG-RANnode)) OF NR-CGI                    OPTIONAL,
    iE-Extensions                       ProtocolExtensionContainer { {ResourceCoordRequest-gNB-initiated-ExtIEs} } OPTIONAL,
    ...
}

ResourceCoordRequest-gNB-initiated-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


-- **************************************************************
--
-- E-UTRA - NR CELL RESOURCE COORDINATION RESPONSE
--
-- **************************************************************

E-UTRA-NR-CellResourceCoordinationResponse::= SEQUENCE {
    protocolIEs         ProtocolIE-Container    {{E-UTRA-NR-CellResourceCoordinationResponse-IEs}},
    ...
}

E-UTRA-NR-CellResourceCoordinationResponse-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-respondingNodeType-ResourceCoordResponse    CRITICALITY reject  TYPE RespondingNodeType-ResourceCoordResponse   PRESENCE mandatory}|
    { ID id-InterfaceInstanceIndication                 CRITICALITY reject  TYPE InterfaceInstanceIndication                PRESENCE optional },
    ...
}

RespondingNodeType-ResourceCoordResponse ::= CHOICE {
    ng-eNB                              ResourceCoordResponse-ng-eNB-initiated,
    gNB                                 ResourceCoordResponse-gNB-initiated,
    choice-extension                    ProtocolIE-Single-Container { {RespondingNodeType-ResourceCoordResponse-ExtIEs} }
}

RespondingNodeType-ResourceCoordResponse-ExtIEs XNAP-PROTOCOL-IES ::= {
    ...
}

ResourceCoordResponse-ng-eNB-initiated ::= SEQUENCE {
    dataTrafficResourceIndication       DataTrafficResourceIndication,
    spectrumSharingGroupID              SpectrumSharingGroupID,
    listofE-UTRACells                   SEQUENCE (SIZE(1.. maxnoofCellsinNG-RANnode)) OF E-UTRA-CGI                    OPTIONAL,
```

```
    iE-Extensions                       ProtocolExtensionContainer { {ResourceCoordResponse-ng-eNB-initiated-ExtIEs} }   OPTIONAL,
    ...
}

ResourceCoordResponse-ng-eNB-initiated-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


ResourceCoordResponse-gNB-initiated ::= SEQUENCE {
    dataTrafficResourceIndication       DataTrafficResourceIndication,
    spectrumSharingGroupID              SpectrumSharingGroupID,
    listofNRCells                       SEQUENCE (SIZE(1.. maxnoofCellsinNG-RANnode)) OF NR-CGI                       OPTIONAL,
    iE-Extensions                       ProtocolExtensionContainer { {ResourceCoordResponse-gNB-initiated-ExtIEs} }   OPTIONAL,
    ...
}

ResourceCoordResponse-gNB-initiated-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

-- **************************************************************
--
-- SECONDARY RAT DATA USAGE REPORT
--
-- **************************************************************

SecondaryRATDataUsageReport ::= SEQUENCE {
    protocolIEs     ProtocolIE-Container        {{SecondaryRATDataUsageReport-IEs}},
    ...
}

SecondaryRATDataUsageReport-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-M-NG-RANnodeUEXnAPID                    CRITICALITY reject      TYPE NG-RANnodeUEXnAPID                       PRESENCE mandatory}|
    { ID id-S-NG-RANnodeUEXnAPID                    CRITICALITY reject      TYPE NG-RANnodeUEXnAPID                       PRESENCE mandatory}|
    { ID id-PDUSessionResourceSecondaryRATUsageList CRITICALITY reject      TYPE PDUSessionResourceSecondaryRATUsageList  PRESENCE mandatory},
    ...
}


-- **************************************************************
--
-- XN REMOVAL REQUEST
--
-- **************************************************************

XnRemovalRequest ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container    {{ XnRemovalRequest-IEs}},
    ...
}

XnRemovalRequest-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-GlobalNG-RAN-node-ID        CRITICALITY reject  TYPE GlobalNG-RANNode-ID           PRESENCE mandatory}|
    { ID id-XnRemovalThreshold          CRITICALITY reject  TYPE XnBenefitValue                PRESENCE optional }|
```

```
    { ID id-InterfaceInstanceIndication CRITICALITY reject  TYPE InterfaceInstanceIndication    PRESENCE optional },
    ...
}

-- **************************************************************
--
-- XN REMOVAL RESPONSE
--
-- **************************************************************

XnRemovalResponse ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container    {{ XnRemovalResponse-IEs}},
    ...
}

XnRemovalResponse-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-GlobalNG-RAN-node-ID        CRITICALITY reject  TYPE GlobalNG-RANNode-ID            PRESENCE mandatory}|
    { ID id-CriticalityDiagnostics      CRITICALITY ignore  TYPE CriticalityDiagnostics         PRESENCE optional }|
    { ID id-InterfaceInstanceIndication CRITICALITY reject  TYPE InterfaceInstanceIndication    PRESENCE optional },
    ...
}

-- **************************************************************
--
-- XN REMOVAL FAILURE
--
-- **************************************************************

XnRemovalFailure ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container    {{ XnRemovalFailure-IEs}},
    ...
}

XnRemovalFailure-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-Cause                       CRITICALITY ignore  TYPE Cause                          PRESENCE mandatory}|
    { ID id-CriticalityDiagnostics      CRITICALITY ignore  TYPE CriticalityDiagnostics         PRESENCE optional }|
    { ID id-InterfaceInstanceIndication CRITICALITY reject  TYPE InterfaceInstanceIndication    PRESENCE optional },
    ...
}

-- **************************************************************
--
-- CELL ACTIVATION REQUEST
--
-- **************************************************************

CellActivationRequest ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container    {{ CellActivationRequest-IEs}},
    ...
}

CellActivationRequest-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-ServedCellsToActivate                   CRITICALITY reject      TYPE ServedCellsToActivate              PRESENCE mandatory}|
    { ID id-ActivationIDforCellActivation           CRITICALITY reject      TYPE ActivationIDforCellActivation      PRESENCE mandatory}|
```

```
    { ID id-InterfaceInstanceIndication            CRITICALITY reject      TYPE InterfaceInstanceIndication          PRESENCE optional },
    ...
}

ServedCellsToActivate ::= CHOICE {
    nr-cells                          SEQUENCE (SIZE(1..maxnoofCellsinNG-RANnode)) OF NR-CGI,
    e-utra-cells                      SEQUENCE (SIZE(1..maxnoofCellsinNG-RANnode)) OF E-UTRA-CGI,
    choice-extension                  ProtocolIE-Single-Container { {ServedCellsToActivate-ExtIEs} }
}

ServedCellsToActivate-ExtIEs XNAP-PROTOCOL-IES ::= {
    { ID id-NRCellsAndSSBsList          CRITICALITY ignore      TYPE ToBeActivatedNRCellsAndSSBsList         PRESENCE mandatory},
    ...
}

ToBeActivatedNRCellsAndSSBsList ::= SEQUENCE (SIZE(1..maxnoofCellsinNG-RANnode)) OF ToBeActivatedNRCellsAndSSBs-Item

ToBeActivatedNRCellsAndSSBs-Item ::= SEQUENCE {
    nrCGI                       NR-CGI,
    sSBstobeActivatedList       SEQUENCE (SIZE(1.. maxnoofSSBAreas)) OF SSBsToBeActivated-Item  OPTIONAL,
    iE-Extensions       ProtocolExtensionContainer { { ToBeActivatedNRCellsAndSSBs-Item-ExtIEs} } OPTIONAL,
    ...
}

ToBeActivatedNRCellsAndSSBs-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

SSBsToBeActivated-Item ::= SEQUENCE {
    ssbIndex            INTEGER(0..63),
    iE-Extensions       ProtocolExtensionContainer { { SSBsToBeActivated-Item-ExtIEs} } OPTIONAL,
    ...
}

SSBsToBeActivated-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


-- **************************************************************
--
-- CELL ACTIVATION RESPONSE
--
-- **************************************************************

CellActivationResponse ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container    {{CellActivationResponse-IEs}},
    ...
}

CellActivationResponse-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-ActivatedServedCells                CRITICALITY reject      TYPE ActivatedServedCells               PRESENCE mandatory}|
    { ID id-ActivationIDforCellActivation       CRITICALITY reject      TYPE ActivationIDforCellActivation      PRESENCE mandatory}|
    { ID id-CriticalityDiagnostics              CRITICALITY ignore      TYPE CriticalityDiagnostics             PRESENCE optional }|
```

```
    { ID id-InterfaceInstanceIndication            CRITICALITY reject      TYPE InterfaceInstanceIndication          PRESENCE optional },
    ...
}

ActivatedServedCells ::= CHOICE {
    nr-cells                          SEQUENCE (SIZE(1..maxnoofCellsinNG-RANnode)) OF NR-CGI,
    e-utra-cells                      SEQUENCE (SIZE(1..maxnoofCellsinNG-RANnode)) OF E-UTRA-CGI,
    choice-extension                  ProtocolIE-Single-Container { {ActivatedServedCells-ExtIEs} }
}

ActivatedServedCells-ExtIEs XNAP-PROTOCOL-IES ::= {
    { ID id-ActivatedNRCellsAndSSBsList            CRITICALITY ignore      TYPE ActivatedNRCellsAndSSBsList       PRESENCE mandatory},
    ...
}

ActivatedNRCellsAndSSBsList ::= SEQUENCE (SIZE(1..maxnoofCellsinNG-RANnode)) OF ActivatedNRCellsAndSSBs-Item

ActivatedNRCellsAndSSBs-Item ::= SEQUENCE {
    nrCGI                   NR-CGI,
    sSBsActivatedList   SEQUENCE (SIZE(1..maxnoofSSBAreas)) OF SSBsActivated-Item       OPTIONAL,
    iE-Extensions   ProtocolExtensionContainer { {ActivatedNRCellsAndSSBs-Item-ExtIEs} }    OPTIONAL,
    ...
}

ActivatedNRCellsAndSSBs-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

SSBsActivated-Item ::= SEQUENCE {
    ssbIndex        INTEGER(0..63),
    iE-Extensions   ProtocolExtensionContainer { {SSBsActivated-Item-ExtIEs} }  OPTIONAL,
    ...
}

SSBsActivated-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


-- **************************************************************
--
-- CELL ACTIVATION FAILURE
--
-- **************************************************************

CellActivationFailure ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container    {{CellActivationFailure-IEs}},
    ...
}

CellActivationFailure-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-ActivationIDforCellActivation          CRITICALITY reject      TYPE ActivationIDforCellActivation        PRESENCE mandatory}|
    { ID id-Cause                                  CRITICALITY ignore      TYPE Cause                                PRESENCE mandatory}|
    { ID id-CriticalityDiagnostics                 CRITICALITY ignore      TYPE CriticalityDiagnostics               PRESENCE optional }|
```

```
    { ID id-InterfaceInstanceIndication            CRITICALITY reject      TYPE InterfaceInstanceIndication          PRESENCE optional },
    ...
}

-- **************************************************************
--
-- RESET REQUEST
--
-- **************************************************************

ResetRequest ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container    {{ResetRequest-IEs}},
    ...
}

ResetRequest-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-ResetRequestTypeInfo                   CRITICALITY reject      TYPE ResetRequestTypeInfo               PRESENCE mandatory}|
    { ID id-Cause                                  CRITICALITY ignore      TYPE Cause                              PRESENCE mandatory}|
    { ID id-InterfaceInstanceIndication            CRITICALITY reject      TYPE InterfaceInstanceIndication        PRESENCE optional },
    ...
}

-- **************************************************************
--
-- RESET RESPONSE
--
-- **************************************************************

ResetResponse ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container    {{ResetResponse-IEs}},
    ...
}

ResetResponse-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-ResetResponseTypeInfo                  CRITICALITY reject      TYPE ResetResponseTypeInfo              PRESENCE mandatory}|
    { ID id-CriticalityDiagnostics                 CRITICALITY ignore      TYPE CriticalityDiagnostics             PRESENCE optional }|
    { ID id-InterfaceInstanceIndication            CRITICALITY reject      TYPE InterfaceInstanceIndication        PRESENCE optional },
    ...
}

-- **************************************************************
--
-- ERROR INDICATION
--
-- **************************************************************

ErrorIndication ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container    {{ErrorIndication-IEs}},
    ...
}

ErrorIndication-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-oldNG-RANnodeUEXnAPID                  CRITICALITY ignore      TYPE NG-RANnodeUEXnAPID                 PRESENCE optional }|
    { ID id-newNG-RANnodeUEXnAPID                  CRITICALITY ignore      TYPE NG-RANnodeUEXnAPID                 PRESENCE optional }|
```

```
    { ID id-Cause                                   CRITICALITY ignore      TYPE Cause                                  PRESENCE optional }|
    { ID id-CriticalityDiagnostics                  CRITICALITY ignore      TYPE CriticalityDiagnostics                 PRESENCE optional }|
    { ID id-InterfaceInstanceIndication             CRITICALITY reject      TYPE InterfaceInstanceIndication            PRESENCE optional },
    ...
}

-- **************************************************************
--
-- PRIVATE MESSAGE
--
-- **************************************************************

PrivateMessage ::= SEQUENCE {
    privateIEs      PrivateIE-Container {{PrivateMessage-IEs}},
    ...
}

PrivateMessage-IEs XNAP-PRIVATE-IES ::= {
    ...
}


-- **************************************************************
--
-- TRACE START
--
-- **************************************************************

TraceStart ::= SEQUENCE {
    protocolIEs     ProtocolIE-Container        { {TraceStartIEs} },
    ...
}

TraceStartIEs XNAP-PROTOCOL-IES ::= {
    { ID id-M-NG-RANnodeUEXnAPID                    CRITICALITY reject  TYPE NG-RANnodeUEXnAPID                 PRESENCE mandatory}|
    { ID id-S-NG-RANnodeUEXnAPID                    CRITICALITY reject  TYPE NG-RANnodeUEXnAPID                 PRESENCE mandatory}|
    { ID id-TraceActivation                         CRITICALITY ignore  TYPE TraceActivation                    PRESENCE optional },
    ...
}

-- **************************************************************
--
-- DEACTIVATE TRACE
--
-- **************************************************************

DeactivateTrace ::= SEQUENCE {
    protocolIEs     ProtocolIE-Container        { {DeactivateTraceIEs} },
    ...
}

DeactivateTraceIEs XNAP-PROTOCOL-IES ::= {
    { ID id-M-NG-RANnodeUEXnAPID                    CRITICALITY reject  TYPE NG-RANnodeUEXnAPID                 PRESENCE mandatory}|
    { ID id-S-NG-RANnodeUEXnAPID                    CRITICALITY reject  TYPE NG-RANnodeUEXnAPID                 PRESENCE mandatory}|
```

```
    { ID id-NG-RANTraceID                          CRITICALITY ignore  TYPE NG-RANTraceID                      PRESENCE mandatory},
    ...
}

-- **************************************************************
--
-- FAILURE INDICATION
--
-- **************************************************************

FailureIndication ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container    {{FailureIndication-IEs}},
    ...
}

FailureIndication-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-InitiatingCondition-FailureIndication              CRITICALITY reject      TYPE InitiatingCondition-FailureIndication
    PRESENCE mandatory},
    ...
}

-- **************************************************************
--
-- HANDOVER REPORT
--
-- **************************************************************

HandoverReport ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container    {{ HandoverReport-IEs}},
    ...
}

HandoverReport-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-HandoverReportType          CRITICALITY ignore      TYPE HandoverReportType          PRESENCE mandatory}|
    { ID id-HandoverCause               CRITICALITY ignore      TYPE Cause                       PRESENCE mandatory}|
    { ID id-SourceCellCGI               CRITICALITY ignore      TYPE GlobalNG-RANCell-ID         PRESENCE mandatory }|
    { ID id-TargetCellCGI               CRITICALITY ignore      TYPE GlobalNG-RANCell-ID         PRESENCE mandatory }|
    { ID id-ReEstablishmentCellCGI      CRITICALITY ignore      TYPE GlobalCell-ID               PRESENCE conditional }|
-- This IE shall be present if the Handover Report Type IE is set to the value "HO to wrong cell"
    { ID id-TargetCellinEUTRAN          CRITICALITY ignore      TYPE TargetCellinEUTRAN          PRESENCE conditional }|
-- This IE shall be present if the Handover Report Type IE is set to the value "Inter-system ping-pong"
    { ID id-SourceCellCRNTI             CRITICALITY ignore      TYPE C-RNTI                      PRESENCE optional }|
    { ID id-MobilityInformation         CRITICALITY ignore      TYPE MobilityInformation         PRESENCE optional }|
    { ID id-UERLFReportContainer        CRITICALITY ignore      TYPE UERLFReportContainer        PRESENCE optional }|
    { ID id-CHOConfiguration            CRITICALITY ignore      TYPE CHOConfiguration            PRESENCE optional }|
    { ID id-TargetCellCRNTI             CRITICALITY ignore      TYPE C-RNTI                      PRESENCE optional }|
    { ID id-TimeSinceFailure            CRITICALITY ignore      TYPE TimeSinceFailure            PRESENCE optional },
    ...
}

-- **************************************************************
--
-- SCG FAILURE INDICATION
--
```

```
-- **************************************************************

SCGFailureIndication ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container    {{ SCGFailureIndication-IEs}},
    ...
}

SCGFailureIndication-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-targetNG-RANnodeUEXnAPID    CRITICALITY ignore      TYPE NG-RANnodeUEXnAPID          PRESENCE mandatory}|
    { ID id-SCGFailureReportContainer   CRITICALITY ignore      TYPE SCGFailureReportContainer   PRESENCE mandatory}|
    { ID id-FailureType                 CRITICALITY ignore      TYPE FailureType                 PRESENCE optional },
    ...
}

-- **************************************************************
--
-- RESOURCE STATUS REQUEST
--
-- **************************************************************

ResourceStatusRequest ::= SEQUENCE {
    protocolIEs     ProtocolIE-Container    {{ResourceStatusRequest-IEs}},
    ...
}

ResourceStatusRequest-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-NGRAN-Node1-Measurement-ID          CRITICALITY reject  TYPE Measurement-ID            PRESENCE mandatory}|
    { ID id-NGRAN-Node2-Measurement-ID         CRITICALITY ignore   TYPE Measurement-ID            PRESENCE conditional}|
-- This IE shall be present if the Registration Request IE is set to the value "stop" or "add".
    { ID id-RegistrationRequest                 CRITICALITY reject  TYPE RegistrationRequest        PRESENCE mandatory}|
    { ID id-ReportCharacteristics              CRITICALITY reject   TYPE ReportCharacteristics      PRESENCE conditional}|
-- This IE shall be present if the Registration Request IE is set to the value "start".
    { ID id-CellToReport                        CRITICALITY ignore  TYPE CellToReport               PRESENCE optional }|
    { ID id-ReportingPeriodicity               CRITICALITY ignore   TYPE ReportingPeriodicity       PRESENCE optional },
    ...
}


-- **************************************************************
--
-- RESOURCE STATUS RESPONSE
--
-- **************************************************************

ResourceStatusResponse ::= SEQUENCE {
    protocolIEs     ProtocolIE-Container    {{ResourceStatusResponse-IEs}},
    ...
}

ResourceStatusResponse-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-NGRAN-Node1-Measurement-ID          CRITICALITY reject  TYPE Measurement-ID                 PRESENCE mandatory}|
    { ID id-NGRAN-Node2-Measurement-ID          CRITICALITY reject  TYPE Measurement-ID                 PRESENCE mandatory}|
    { ID id-CriticalityDiagnostics              CRITICALITY ignore  TYPE CriticalityDiagnostics         PRESENCE optional },
    ...
```

```
}


-- **************************************************************
--
-- RESOURCE STATUS FAILURE
--
-- **************************************************************

ResourceStatusFailure ::= SEQUENCE {
    protocolIEs     ProtocolIE-Container    {{ResourceStatusFailure-IEs}},
    ...
}

ResourceStatusFailure-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-NGRAN-Node1-Measurement-ID              CRITICALITY reject  TYPE Measurement-ID                      PRESENCE mandatory}|
    { ID id-NGRAN-Node2-Measurement-ID              CRITICALITY reject  TYPE Measurement-ID                      PRESENCE mandatory}|
    { ID id-Cause                                   CRITICALITY ignore  TYPE Cause                               PRESENCE mandatory}|
    { ID id-CriticalityDiagnostics                  CRITICALITY ignore  TYPE CriticalityDiagnostics              PRESENCE optional },
    ...
}


-- **************************************************************
--
-- RESOURCE STATUS UPDATE
--
-- **************************************************************

ResourceStatusUpdate ::= SEQUENCE {
    protocolIEs     ProtocolIE-Container    {{ResourceStatusUpdate-IEs}},
    ...
}

ResourceStatusUpdate-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-NGRAN-Node1-Measurement-ID      CRITICALITY reject  TYPE Measurement-ID             PRESENCE mandatory}|
    { ID id-NGRAN-Node2-Measurement-ID      CRITICALITY reject  TYPE Measurement-ID             PRESENCE mandatory}|
    { ID id-CellMeasurementResult           CRITICALITY ignore  TYPE CellMeasurementResult      PRESENCE mandatory},
    ...
}

-- **************************************************************
--
-- MOBILITY CHANGE REQUEST
--
-- **************************************************************

MobilityChangeRequest ::= SEQUENCE {
    protocolIEs     ProtocolIE-Container    {{MobilityChangeRequest-IEs}},
    ...
}

MobilityChangeRequest-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-NG-RANnode1CellID                       CRITICALITY reject  TYPE GlobalNG-RANCell-ID              PRESENCE mandatory}|
```

```
    { ID id-NG-RANnode2CellID                          CRITICALITY reject  TYPE GlobalNG-RANCell-ID                PRESENCE mandatory}|
    { ID id-NG-RANnode1MobilityParameters              CRITICALITY ignore  TYPE MobilityParametersInformation       PRESENCE optional }|
    { ID id-NG-RANnode2ProposedMobilityParameters      CRITICALITY reject  TYPE MobilityParametersInformation       PRESENCE mandatory}|
    { ID id-Cause                                      CRITICALITY ignore  TYPE Cause                              PRESENCE mandatory}|
    { ID id-SSBOffsets-List                            CRITICALITY ignore  TYPE SSBOffsets-List                    PRESENCE optional },
    ...
}


-- **************************************************************
--
-- MOBILITY CHANGE ACKNOWLEDGE
--
-- **************************************************************

MobilityChangeAcknowledge ::= SEQUENCE {
    protocolIEs     ProtocolIE-Container    {{MobilityChangeAcknowledge-IEs}},
    ...
}

MobilityChangeAcknowledge-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-NG-RANnode1CellID                  CRITICALITY reject  TYPE GlobalNG-RANCell-ID                  PRESENCE mandatory}|
    { ID id-NG-RANnode2CellID                  CRITICALITY reject  TYPE GlobalNG-RANCell-ID                  PRESENCE mandatory}|
    { ID id-CriticalityDiagnostics             CRITICALITY ignore  TYPE CriticalityDiagnostics               PRESENCE optional },
    ...
}


-- **************************************************************
--
-- MOBILITY CHANGE FAILURE
--
-- **************************************************************

MobilityChangeFailure ::= SEQUENCE {
    protocolIEs     ProtocolIE-Container    {{MobilityChangeFailure-IEs}},
    ...
}

MobilityChangeFailure-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-NG-RANnode1CellID                       CRITICALITY reject  TYPE GlobalNG-RANCell-ID                      PRESENCE mandatory}|
    { ID id-NG-RANnode2CellID                       CRITICALITY reject  TYPE GlobalNG-RANCell-ID                      PRESENCE mandatory}|
    { ID id-Cause                                   CRITICALITY ignore  TYPE Cause                                   PRESENCE mandatory}|
    { ID id-MobilityParametersModificationRange     CRITICALITY ignore  TYPE MobilityParametersModificationRange     PRESENCE optional }|
    { ID id-CriticalityDiagnostics                  CRITICALITY ignore  TYPE CriticalityDiagnostics                  PRESENCE optional }|
    { ID id-NG-RANnode2SSBOffsetsModificationRange  CRITICALITY ignore  TYPE NG-RANnode2SSBOffsetsModificationRange  PRESENCE optional },
    ...
}


-- **************************************************************
--
-- ACCESS AND MOBILITY INDICATION
--
```

```
-- **************************************************************

AccessAndMobilityIndication ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container    {{ AccessAndMobilityIndication-IEs}},
    ...
}
AccessAndMobilityIndication-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-RAReport                                CRITICALITY ignore  TYPE RAReport                                PRESENCE optional}|
    { ID id-SuccessfulHOReportInformation           CRITICALITY ignore  TYPE SuccessfulHOReportInformation           PRESENCE optional}|
    { ID id-SuccessfulPSCellChangeReportInformation CRITICALITY ignore  TYPE SuccessfulPSCellChangeReportInformation PRESENCE optional}|
    { ID id-DLLBTFailureInformationList             CRITICALITY ignore  TYPE DLLBTFailureInformationList             PRESENCE optional},
    ...
}

-- **************************************************************
--
-- CELL TRAFFIC TRACE
--
-- **************************************************************

CellTrafficTrace ::= SEQUENCE {
    protocolIEs     ProtocolIE-Container        { {CellTrafficTraceIEs} },
    ...
}

CellTrafficTraceIEs XNAP-PROTOCOL-IES ::= {
    { ID id-M-NG-RANnodeUEXnAPID           CRITICALITY reject  TYPE NG-RANnodeUEXnAPID          PRESENCE mandatory}|
    { ID id-S-NG-RANnodeUEXnAPID           CRITICALITY reject  TYPE NG-RANnodeUEXnAPID          PRESENCE mandatory}|
    { ID id-NG-RANTraceID                  CRITICALITY ignore  TYPE NG-RANTraceID               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 URIaddress                  PRESENCE optional },
    ...
}

-- **************************************************************
--
-- RAN MULTICAST GROUP PAGING
--
-- **************************************************************

RANMulticastGroupPaging ::= SEQUENCE {
    protocolIEs     ProtocolIE-Container    {{RANMulticastGroupPaging-IEs}},
    ...
}

RANMulticastGroupPaging-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-MBS-Session-ID                      CRITICALITY reject  TYPE MBS-Session-ID                      PRESENCE mandatory}|
    { ID id-UEIdentityIndexList-MBSGroupPaging  CRITICALITY reject  TYPE UEIdentityIndexList-MBSGroupPaging  PRESENCE mandatory}|
    { ID id-MulticastRANPagingArea              CRITICALITY reject  TYPE RANPagingArea                      PRESENCE mandatory},
    ...
}

-- **************************************************************
```

```
--
-- SCG FAILURE INFORMATION REPORT
--
-- **************************************************************

ScgFailureInformationReport ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container    {{ ScgFailureInformationReport-IEs}},
    ...
}

ScgFailureInformationReport-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-M-NG-RANnodeUEXnAPID                    CRITICALITY ignore      TYPE NG-RANnodeUEXnAPID                 PRESENCE mandatory}|
    { ID id-S-NG-RANnodeUEXnAPID                    CRITICALITY ignore      TYPE NG-RANnodeUEXnAPID                 PRESENCE mandatory}|
    { ID id-SourcePSCellCGI                         CRITICALITY ignore      TYPE GlobalNG-RANCell-ID                PRESENCE optional }|
    { ID id-FailedPSCellCGI                         CRITICALITY ignore      TYPE GlobalNG-RANCell-ID                PRESENCE optional }|
    { ID id-SCGFailureReportContainer               CRITICALITY ignore      TYPE SCGFailureReportContainer          PRESENCE mandatory}|
    { ID id-SNMobilityInformation                   CRITICALITY ignore      TYPE SNMobilityInformation              PRESENCE optional }|
    { ID id-CPACConfiguration                       CRITICALITY ignore      TYPE CPACConfiguration                  PRESENCE optional }|
    { ID id-TimeSCG-Failure                         CRITICALITY ignore      TYPE TimeSCG-Failure                    PRESENCE optional },
    ...
}

-- **************************************************************
--
-- SCG FAILURE TRANSFER
--
-- **************************************************************

ScgFailureTransfer ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container    {{ ScgFailureTransfer-IEs}},
    ...
}
ScgFailureTransfer-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-M-NG-RANnodeUEXnAPID                    CRITICALITY ignore      TYPE NG-RANnodeUEXnAPID                 PRESENCE mandatory}|
    { ID id-S-NG-RANnodeUEXnAPID                    CRITICALITY ignore      TYPE NG-RANnodeUEXnAPID                 PRESENCE mandatory},
    ...
}


-- **************************************************************
--
-- F1-C TRAFFIC TRANSFER

--
-- **************************************************************

F1CTrafficTransfer ::= SEQUENCE {
    protocolIEs     ProtocolIE-Container        {{ F1CTrafficTransfer-IEs}},
    ...
}

F1CTrafficTransfer-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-M-NG-RANnodeUEXnAPID                        CRITICALITY reject  TYPE NG-RANnodeUEXnAPID         PRESENCE mandatory}|
    { ID id-S-NG-RANnodeUEXnAPID                        CRITICALITY reject  TYPE NG-RANnodeUEXnAPID         PRESENCE mandatory}|
```

```
    { ID id-F1CTrafficContainer                     CRITICALITY reject  TYPE F1CTrafficContainer      PRESENCE mandatory},
    ...
}


-- **************************************************************
--
-- IAB TRANSPORT MIGRATION MANAGEMENT REQUEST
--
-- **************************************************************

IABTransportMigrationManagementRequest ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container    {{ IABTransportMigrationManagementRequest-IEs}},
    ...
}

IABTransportMigrationManagementRequest-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-F1-Terminating-IAB-DonorUEXnAPID        CRITICALITY reject      TYPE NG-RANnodeUEXnAPID                 PRESENCE mandatory}|
    { ID id-nonF1-Terminating-IAB-DonorUEXnAPID     CRITICALITY reject      TYPE NG-RANnodeUEXnAPID                 PRESENCE mandatory}|
    { ID id-TrafficToBeAddedList                    CRITICALITY reject      TYPE TrafficToBeAddedList               PRESENCE optional }|
    { ID id-TrafficToBeModifiedList                 CRITICALITY reject      TYPE TrafficToBeModifiedList            PRESENCE optional }|
    { ID id-TrafficToBeReleaseInformation           CRITICALITY reject      TYPE TrafficToBeReleaseInformation      PRESENCE optional }|
    { ID id-IAB-TNL-Address-Request                 CRITICALITY reject      TYPE IAB-TNL-Address-Request            PRESENCE optional }|
    { ID id-IABTNLAddressException                  CRITICALITY reject      TYPE IABTNLAddressException             PRESENCE optional }|
    { ID id-MIAB-MT-BAP-Address                     CRITICALITY reject      TYPE BAPAddress                         PRESENCE optional },
    ...
}

TrafficToBeAddedList ::= SEQUENCE (SIZE(1..maxnoofTrafficIndexEntries)) OF TrafficToBeAdded-Item

TrafficToBeAdded-Item ::= SEQUENCE {
    trafficIndex            TrafficIndex,
    trafficProfile          TrafficProfile,
    f1-TerminatingTopologyBHInformation     F1-TerminatingTopologyBHInformation     OPTIONAL,
    iE-Extensions           ProtocolExtensionContainer { {TrafficToBeAdded-Item-ExtIEs} }   OPTIONAL,
    ...
}

TrafficToBeAdded-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

TrafficToBeModifiedList ::= SEQUENCE (SIZE(1..maxnoofTrafficIndexEntries)) OF TrafficToBeModified-Item

TrafficToBeModified-Item ::= SEQUENCE {
    trafficIndex            TrafficIndex,
    trafficProfile          TrafficProfile      OPTIONAL,
    f1-TerminatingTopologyBHInformation     F1-TerminatingTopologyBHInformation     OPTIONAL,
    iE-Extension            ProtocolExtensionContainer { {TrafficToBeModified-Item-ExtIEs} }    OPTIONAL,
    ...
}

TrafficToBeModified-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
```

```
}

-- **************************************************************
--
-- IAB TRANSPORT MIGRATION MANAGEMENT RESPONSE
--
-- **************************************************************

IABTransportMigrationManagementResponse ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container    {{ IABTransportMigrationManagementResponse-IEs}},
    ...
}

IABTransportMigrationManagementResponse-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-F1-Terminating-IAB-DonorUEXnAPID        CRITICALITY reject      TYPE NG-RANnodeUEXnAPID               PRESENCE mandatory}|
    { ID id-nonF1-Terminating-IAB-DonorUEXnAPID     CRITICALITY reject      TYPE NG-RANnodeUEXnAPID               PRESENCE mandatory}|
    { ID id-TrafficAddedList                        CRITICALITY reject      TYPE TrafficAddedList                 PRESENCE optional }|
    { ID id-TrafficModifiedList                     CRITICALITY reject      TYPE TrafficModifiedList              PRESENCE optional }|
    { ID id-TrafficNotAddedList                     CRITICALITY reject      TYPE TrafficNotAddedList              PRESENCE optional }|
    { ID id-TrafficNotModifiedList                  CRITICALITY reject      TYPE TrafficNotModifiedList           PRESENCE optional }|
    { ID id-IAB-TNL-Address-Response                CRITICALITY reject      TYPE IAB-TNL-Address-Response         PRESENCE optional }|
    { ID id-TrafficReleasedList                     CRITICALITY reject      TYPE TrafficReleasedList              PRESENCE optional },
    ...
}

TrafficAddedList ::= SEQUENCE (SIZE(1..maxnoofTrafficIndexEntries)) OF TrafficAdded-Item

TrafficAdded-Item ::= SEQUENCE {
    trafficIndex            TrafficIndex,
    non-F1-TerminatingTopologyBHInformation     Non-F1-TerminatingTopologyBHInformation,
    iE-Extensions           ProtocolExtensionContainer { {TrafficAdded-Item-ExtIEs} }   OPTIONAL,
    ...
}

TrafficAdded-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

TrafficModifiedList ::= SEQUENCE (SIZE(1..maxnoofTrafficIndexEntries)) OF TrafficModified-Item

TrafficModified-Item ::= SEQUENCE {
    trafficIndex            TrafficIndex,
    non-F1-TerminatingTopologyBHInformation     Non-F1-TerminatingTopologyBHInformation,
    iE-Extensions           ProtocolExtensionContainer { {TrafficModified-Item-ExtIEs} }    OPTIONAL,
    ...
}

TrafficModified-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

TrafficNotAddedList ::= SEQUENCE (SIZE(1..maxnoofTrafficIndexEntries)) OF TrafficNotAdded-Item

TrafficNotAdded-Item ::= SEQUENCE {
```

```
    trafficIndex            TrafficIndex,
    casue                   Cause           OPTIONAL,
    iE-Extensions           ProtocolExtensionContainer { {TrafficNotAdded-Item-ExtIEs} }    OPTIONAL,
    ...
}

TrafficNotAdded-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

TrafficNotModifiedList ::= SEQUENCE (SIZE(1..maxnoofTrafficIndexEntries)) OF TrafficNotModified-Item

TrafficNotModified-Item ::= SEQUENCE {
    trafficIndex            TrafficIndex,
    cause                   Cause       OPTIONAL,
    iE-Extensions           ProtocolExtensionContainer { {TrafficNotModified-Item-ExtIEs} } OPTIONAL,
    ...
}

TrafficNotModified-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


TrafficReleasedList ::= SEQUENCE (SIZE(1..maxnoofTrafficIndexEntries)) OF TrafficReleased-Item

TrafficReleased-Item ::= SEQUENCE {
    trafficIndex            TrafficIndex,
    bHInfoList              BHInfoList      OPTIONAL,
    iE-Extensions           ProtocolExtensionContainer { { TrafficReleased-Item-ExtIEs} }   OPTIONAL,
    ...
}

TrafficReleased-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


-- **************************************************************
--
-- IAB TRANSPORT MIGRATION MANAGEMENT REJECT
--
-- **************************************************************

IABTransportMigrationManagementReject ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container    {{ IABTransportMigrationManagementReject-IEs}},
    ...
}

IABTransportMigrationManagementReject-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-F1-Terminating-IAB-DonorUEXnAPID        CRITICALITY reject      TYPE NG-RANnodeUEXnAPID             PRESENCE mandatory}|
    { ID id-nonF1-Terminating-IAB-DonorUEXnAPID     CRITICALITY reject      TYPE NG-RANnodeUEXnAPID             PRESENCE mandatory}|
    { ID id-Cause                                   CRITICALITY ignore      TYPE Cause                          PRESENCE mandatory}|
    { ID id-CriticalityDiagnostics                  CRITICALITY ignore      TYPE CriticalityDiagnostics         PRESENCE optional },
```

```
    ...
}


-- **************************************************************
--
-- IAB TRANSPORT MIGRATION MODIFICATION REQUEST
--
-- **************************************************************

IABTransportMigrationModificationRequest ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container    {{ IABTransportMigrationModificationRequest-IEs}},
    ...
}

IABTransportMigrationModificationRequest-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-F1-Terminating-IAB-DonorUEXnAPID            CRITICALITY reject  TYPE NG-RANnodeUEXnAPID                  PRESENCE mandatory}|
    { ID id-nonF1-Terminating-IAB-DonorUEXnAPID         CRITICALITY reject  TYPE NG-RANnodeUEXnAPID                  PRESENCE mandatory}|
    { ID id-TrafficRequiredToBeModifiedList             CRITICALITY reject  TYPE TrafficRequiredToBeModifiedList     PRESENCE optional }|
    { ID id-TrafficToBeReleaseInformation               CRITICALITY reject  TYPE TrafficToBeReleaseInformation       PRESENCE optional }|
    { ID id-IABTNLAddressToBeAdded                      CRITICALITY reject  TYPE IAB-TNL-Address-Response            PRESENCE optional }|
    { ID id-IABTNLAddressToBeReleasedList               CRITICALITY reject  TYPE IABTNLAddressToBeReleasedList       PRESENCE optional }|
    { ID id-IABAuthorizationStatus                      CRITICALITY ignore  TYPE IABAuthorizationStatus              PRESENCE optional }|
    { ID id-MobileIAB-AuthorizationStatus               CRITICALITY ignore  TYPE MobileIAB-AuthorizationStatus       PRESENCE optional },
    ...
}

TrafficRequiredToBeModifiedList ::= SEQUENCE (SIZE(1..maxnoofTrafficIndexEntries)) OF TrafficRequiredToBeModified-Item

TrafficRequiredToBeModified-Item ::= SEQUENCE {
    trafficIndex            TrafficIndex,
    non-f1-TerminatingTopologyBHInformation     Non-F1-TerminatingTopologyBHInformation,
    iE-Extensions           ProtocolExtensionContainer{ { TrafficRequiredToBeModified-Item-ExtIEs} }    OPTIONAL,
    ...
}

TrafficRequiredToBeModified-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

IABTNLAddressToBeReleasedList ::= SEQUENCE (SIZE(1..maxnoofTLAsIAB)) OF IABTNLAddressToBeReleased-Item

IABTNLAddressToBeReleased-Item ::= SEQUENCE {
    iabTNLAddress           IABTNLAddress,
    iE-Extensions           ProtocolExtensionContainer{ { IABTNLAddressToBeReleased-Item-ExtIEs} }   OPTIONAL,
    ...
}

IABTNLAddressToBeReleased-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}
```

```
-- **************************************************************
--
-- IAB TRANSPORT MIGRATION MODIFICATION RESPONSE
--
-- **************************************************************

IABTransportMigrationModificationResponse ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container    {{ IABTransportMigrationModificationResponse-IEs}},
    ...
}

IABTransportMigrationModificationResponse-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-F1-Terminating-IAB-DonorUEXnAPID            CRITICALITY reject  TYPE NG-RANnodeUEXnAPID                PRESENCE mandatory}|
    { ID id-nonF1-Terminating-IAB-DonorUEXnAPID         CRITICALITY reject  TYPE NG-RANnodeUEXnAPID                PRESENCE mandatory}|
    { ID id-TrafficRequiredModifiedList                 CRITICALITY reject  TYPE TrafficRequiredModifiedList       PRESENCE optional }|
    { ID id-TrafficReleasedList                         CRITICALITY reject  TYPE TrafficReleasedList               PRESENCE optional },
    ...
}



TrafficRequiredModifiedList ::= SEQUENCE (SIZE(1..maxnoofTrafficIndexEntries)) OF TrafficRequiredModified-Item

TrafficRequiredModified-Item ::= SEQUENCE {
    trafficIndex            TrafficIndex,
    iE-Extensions           ProtocolExtensionContainer { { TrafficRequiredModified-Item-ExtIEs} } OPTIONAL,
    ...
}

TrafficRequiredModified-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


-- **************************************************************
--
-- IAB RESOURCE COORDINATION REQUEST
--
-- **************************************************************

IABResourceCoordinationRequest ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container    {{ IABResourceCoordinationRequest-IEs}},
    ...
}

IABResourceCoordinationRequest-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-F1-Terminating-IAB-DonorUEXnAPID    CRITICALITY reject      TYPE NG-RANnodeUEXnAPID           PRESENCE mandatory}|
    { ID id-nonF1-Terminating-IAB-DonorUEXnAPID CRITICALITY reject      TYPE NG-RANnodeUEXnAPID           PRESENCE mandatory}|
    { ID id-BoundaryNodeCellsList               CRITICALITY reject      TYPE BoundaryNodeCellsList        PRESENCE optional }|
    { ID id-ParentNodeCellsList                 CRITICALITY reject      TYPE ParentNodeCellsList          PRESENCE optional },
    ...
}
```

```
BoundaryNodeCellsList ::= SEQUENCE (SIZE(1..maxnoofServedCellsIAB)) OF BoundaryNodeCellsList-Item

BoundaryNodeCellsList-Item ::= SEQUENCE {
    boundaryNodeCellInformation         IABCellInformation,
    iE-Extensions                       ProtocolExtensionContainer { {BoundaryNodeCellsList-Item-ExtIEs} }    OPTIONAL,
    ...
}

BoundaryNodeCellsList-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

ParentNodeCellsList ::= SEQUENCE (SIZE(1..maxnoofServingCells)) OF ParentNodeCellsList-Item

ParentNodeCellsList-Item ::= SEQUENCE {
    parentNodeCellInformation           IABCellInformation,
    iE-Extensions                       ProtocolExtensionContainer { {ParentNodeCellsList-Item-ExtIEs} }   OPTIONAL,
    ...
}

ParentNodeCellsList-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


-- **************************************************************
--
-- IAB RESOURCE COORDINATION RESPONSE
--
-- **************************************************************

IABResourceCoordinationResponse ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container    {{ IABResourceCoordinationResponse-IEs}},
    ...
}

IABResourceCoordinationResponse-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-F1-Terminating-IAB-DonorUEXnAPID        CRITICALITY reject      TYPE NG-RANnodeUEXnAPID             PRESENCE mandatory}|
    { ID id-nonF1-Terminating-IAB-DonorUEXnAPID     CRITICALITY reject      TYPE NG-RANnodeUEXnAPID             PRESENCE mandatory}|
    { ID id-BoundaryNodeCellsList                   CRITICALITY reject      TYPE BoundaryNodeCellsList          PRESENCE optional }|
    { ID id-ParentNodeCellsList                     CRITICALITY reject      TYPE ParentNodeCellsList            PRESENCE optional },
    ...
}

-- **************************************************************
--
-- CONDITIONAL PSCELL CHANGE CANCEL
--
-- **************************************************************

CPCCancel ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container    {{ CPCCancel-IEs}},
    ...
}
```

```
CPCCancel-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-M-NG-RANnodeUEXnAPID               CRITICALITY reject      TYPE NG-RANnodeUEXnAPID               PRESENCE mandatory}|
    { ID id-S-NG-RANnodeUEXnAPID               CRITICALITY reject      TYPE NG-RANnodeUEXnAPID               PRESENCE mandatory}|
    { ID id-Cause                              CRITICALITY ignore      TYPE Cause                            PRESENCE optional }|
    { ID id-target-S-NG-RANnodeID              CRITICALITY reject      TYPE GlobalNG-RANNode-ID              PRESENCE mandatory},
    ...
}

-- **************************************************************
--
-- PARTIAL UE CONTEXT TRANSFER
--
-- **************************************************************
PartialUEContextTransfer ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container    {{ PartialUEContextTransfer-IEs}},
    ...
}

PartialUEContextTransfer-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-newNG-RANnodeUEXnAPID                  CRITICALITY reject      TYPE NG-RANnodeUEXnAPID                  PRESENCE mandatory}|
    { ID id-oldNG-RANnodeUEXnAPID                  CRITICALITY ignore      TYPE NG-RANnodeUEXnAPID                  PRESENCE mandatory}|
    { ID id-SDTPartialUEContextInfo                CRITICALITY ignore      TYPE SDTPartialUEContextInfo             PRESENCE mandatory}|
    { ID id-PosPartialUEContextInfo                CRITICALITY ignore      TYPE PosPartialUEContextInfo             PRESENCE optional },
    ...
}

-- **************************************************************
--
-- PARTIAL UE CONTEXT TRANSFER ACKNOWLEDGE
--
-- **************************************************************
PartialUEContextTransferAcknowledge ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container    {{ PartialUEContextTransferAcknowledge-IEs}},
    ...
}

PartialUEContextTransferAcknowledge-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-newNG-RANnodeUEXnAPID                  CRITICALITY ignore      TYPE NG-RANnodeUEXnAPID                  PRESENCE mandatory}|
    { ID id-oldNG-RANnodeUEXnAPID                  CRITICALITY ignore      TYPE NG-RANnodeUEXnAPID                  PRESENCE mandatory}|
    { ID id-SDTDataForwardingDRBList               CRITICALITY ignore      TYPE SDTDataForwardingDRBList            PRESENCE optional }|
    { ID id-CriticalityDiagnostics                 CRITICALITY ignore      TYPE CriticalityDiagnostics              PRESENCE optional }|
    { ID id-SRSConfiguration                       CRITICALITY ignore      TYPE SRSConfiguration                    PRESENCE optional },
    ...
}

-- **************************************************************
--
-- PARTIAL UE CONTEXT TRANSFER FAILURE
--
-- **************************************************************

PartialUEContextTransferFailure::= SEQUENCE {
    protocolIEs         ProtocolIE-Container    {{ PartialUEContextTransferFailure-IEs}},
    ...
```

```
}

PartialUEContextTransferFailure-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-newNG-RANnodeUEXnAPID                  CRITICALITY ignore      TYPE NG-RANnodeUEXnAPID                  PRESENCE mandatory}|
    { ID id-oldNG-RANnodeUEXnAPID                  CRITICALITY ignore      TYPE NG-RANnodeUEXnAPID                  PRESENCE mandatory}|
    { ID id-Cause                                  CRITICALITY ignore      TYPE Cause                               PRESENCE mandatory}|
    { ID id-CriticalityDiagnostics                 CRITICALITY ignore      TYPE CriticalityDiagnostics              PRESENCE optional },
    ...
}


-- **************************************************************
--
-- RACH INDICATION
--
-- **************************************************************

RachIndication ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container    {{ RachIndication-IEs}},
    ...
}

RachIndication-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-RaReportIndicationList                 CRITICALITY reject      TYPE RaReportIndicationList              PRESENCE mandatory },
    ...
}

-- **************************************************************
--
-- DATA COLLECTION REQUEST
--
-- **************************************************************

DataCollectionRequest ::= SEQUENCE {
    protocolIEs     ProtocolIE-Container    {{DataCollectionRequest-IEs}},
    ...
}

DataCollectionRequest-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-NGRAN-Node1-Measurement-ID                 CRITICALITY reject  TYPE Measurement-ID                        PRESENCE mandatory}|
    { ID id-NGRAN-Node2-Measurement-ID                 CRITICALITY ignore  TYPE Measurement-ID                        PRESENCE conditional}|
-- This IE shall be present if the Registration Request for Data Collection IE is set to the value "stop".
    { ID id-RegistrationRequestForDataCollection       CRITICALITY reject  TYPE RegistrationRequestForDataCollection  PRESENCE mandatory}|
    { ID id-ReportCharacteristicsForDataCollection     CRITICALITY reject  TYPE ReportCharacteristicsForDataCollection PRESENCE conditional}|
-- This IE shall be present if the Registration Request for Data Collection IE is set to the value "start".
    { ID id-CellToReportForDataCollection-List         CRITICALITY ignore  TYPE CellToReportForDataCollection-List    PRESENCE optional }|
    { ID id-ReportingPeriodicityForDataCollection      CRITICALITY ignore  TYPE ReportingPeriodicityForDataCollection PRESENCE optional }|
    { ID id-RequestedPredictionTime                    CRITICALITY ignore  TYPE RequestedPredictionTime               PRESENCE optional }|
    { ID id-UETrajectoryCollectionConfiguration        CRITICALITY ignore  TYPE UETrajectoryCollectionConfiguration   PRESENCE optional }|
    { ID id-UEPerformanceCollectionConfiguration       CRITICALITY ignore  TYPE UEPerformanceCollectionConfiguration  PRESENCE optional },
    ...
}
```

```
-- **************************************************************
--
-- DATA COLLECTION RESPONSE
--
-- **************************************************************

DataCollectionResponse ::= SEQUENCE {
    protocolIEs     ProtocolIE-Container    {{DataCollectionResponse-IEs}},
    ...
}

DataCollectionResponse-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-NGRAN-Node1-Measurement-ID                CRITICALITY reject  TYPE Measurement-ID                        PRESENCE mandatory}|
    { ID id-NGRAN-Node2-Measurement-ID                CRITICALITY reject  TYPE Measurement-ID                        PRESENCE mandatory}|
    { ID id-NodeMeasurementInitiationResult-List      CRITICALITY reject  TYPE NodeMeasurementInitiationResult-List  PRESENCE optional }|
    { ID id-CellMeasurementInitiationResult-List      CRITICALITY reject  TYPE CellMeasurementInitiationResult-List  PRESENCE optional }|
    { ID id-CriticalityDiagnostics                    CRITICALITY ignore  TYPE CriticalityDiagnostics                PRESENCE optional },
    ...
}


-- **************************************************************
--
-- DATA COLLECTION FAILURE
--
-- **************************************************************

DataCollectionFailure ::= SEQUENCE {
    protocolIEs     ProtocolIE-Container    {{DataCollectionFailure-IEs}},
    ...
}

DataCollectionFailure-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-NGRAN-Node1-Measurement-ID            CRITICALITY reject  TYPE Measurement-ID                    PRESENCE mandatory}|
    { ID id-NGRAN-Node2-Measurement-ID            CRITICALITY reject  TYPE Measurement-ID                    PRESENCE mandatory}|
    { ID id-Cause                                 CRITICALITY ignore  TYPE Cause                             PRESENCE mandatory}|
    { ID id-CriticalityDiagnostics                CRITICALITY ignore  TYPE CriticalityDiagnostics            PRESENCE optional },
    ...
}


-- **************************************************************
--
-- DATA COLLECTION UPDATE
--
-- **************************************************************

DataCollectionUpdate ::= SEQUENCE {
    protocolIEs     ProtocolIE-Container    {{DataCollectionUpdate-IEs}},
    ...
}

DataCollectionUpdate-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-NGRAN-Node1-Measurement-ID                CRITICALITY reject  TYPE Measurement-ID                        PRESENCE mandatory}|
```

```
    { ID id-NGRAN-Node2-Measurement-ID                CRITICALITY reject  TYPE Measurement-ID                                PRESENCE mandatory}|
    { ID id-CellMeasurementResultForDataCollection-List CRITICALITY ignore  TYPE CellMeasurementResultForDataCollection-List   PRESENCE optional }|
    { ID id-UEAssociatedInfoResult-List               CRITICALITY ignore  TYPE UEAssociatedInfoResult-List                PRESENCE optional }|
    { ID id-NodeAssociatedInfoResult                  CRITICALITY ignore  TYPE NodeAssociatedInfoResult                   PRESENCE optional },
    ...
}


-- **************************************************************
--
-- OD-SIB1 CONFIGURATION PROVISION REQUEST
--
-- **************************************************************

ODSIB1ConfigurationProvisionRequest ::= SEQUENCE {
    protocolIEs     ProtocolIE-Container    {{ODSIB1ConfigurationProvisionRequest-IEs}},
    ...
}

ODSIB1ConfigurationProvisionRequest-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-RequestType                         CRITICALITY reject  TYPE RequestTypeChoice                  PRESENCE mandatory}|
    { ID id-InterfaceInstanceIndication         CRITICALITY reject  TYPE InterfaceInstanceIndication        PRESENCE optional },
    ...
}

RequestTypeChoice ::= CHOICE {
    start                           ODSIB1ConfigurationInformation,
    stop                            NR-CGI,
    choice-extension                ProtocolIE-Single-Container { {RequestTypeChoice-ExtIEs} }
}

RequestTypeChoice-ExtIEs XNAP-PROTOCOL-IES ::= {
    ...
}

ODSIB1ConfigurationInformation ::= SEQUENCE {
    oDSIB1Configuration                 OCTET STRING,
    nES-Cell-ID                         NR-CGI,
    cEll-A-ID                           NR-CGI                      OPTIONAL,
    iE-Extensions                       ProtocolExtensionContainer { {ODSIB1ConfigurationInformation-ExtIEs} }   OPTIONAL,
    ...
}

ODSIB1ConfigurationInformation-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


-- **************************************************************
--
-- OD-SIB1 CONFIGURATION PROVISION RESPONSE
--
-- **************************************************************
```

```
ODSIB1ConfigurationProvisionResponse ::= SEQUENCE {
    protocolIEs     ProtocolIE-Container    {{ODSIB1ConfigurationProvisionResponse-IEs}},
    ...
}

ODSIB1ConfigurationProvisionResponse-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-NES-Cell-ID                         CRITICALITY reject  TYPE NR-CGI                          PRESENCE mandatory}|
    { ID id-Cell-A-ID                           CRITICALITY ignore  TYPE NR-CGI                          PRESENCE optional }|
    { ID id-InterfaceInstanceIndication         CRITICALITY reject  TYPE InterfaceInstanceIndication     PRESENCE optional },
    ...
}



-- **************************************************************
--
-- OD-SIB1 CONFIGURATION PROVISION FAILURE
--
-- **************************************************************

ODSIB1ConfigurationProvisionFailure ::= SEQUENCE {
    protocolIEs     ProtocolIE-Container    {{ ODSIB1ConfigurationProvisionFailure-IEs}},
    ...
}

ODSIB1ConfigurationProvisionFailure-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-Cause                               CRITICALITY ignore  TYPE Cause                           PRESENCE mandatory}|
    { ID id-NES-Cell-ID                         CRITICALITY reject  TYPE NR-CGI                          PRESENCE mandatory}|
    { ID id-Cell-A-ID                           CRITICALITY ignore  TYPE NR-CGI                          PRESENCE optional }|
    { ID id-CriticalityDiagnostics              CRITICALITY ignore  TYPE CriticalityDiagnostics          PRESENCE optional }|
    { ID id-InterfaceInstanceIndication         CRITICALITY reject  TYPE InterfaceInstanceIndication     PRESENCE optional },
    ...
}


-- **************************************************************
--
-- OD-SIB1 CONFIGURATION PROVISION STATUS UPDATE
--
-- **************************************************************

ODSIB1ConfigurationProvisionStatusUpdate ::= SEQUENCE {
    protocolIEs     ProtocolIE-Container    {{ODSIB1ConfigurationProvisionStatusUpdate-IEs}},
    ...
}

ODSIB1ConfigurationProvisionStatusUpdate-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-NES-Cell-ID                         CRITICALITY reject  TYPE NR-CGI                          PRESENCE mandatory}|
    { ID id-Cell-A-ID                           CRITICALITY ignore  TYPE NR-CGI                    PRESENCE optional }|
    { ID id-ProvisionStatus                     CRITICALITY reject  TYPE ProvisionStatus                 PRESENCE mandatory}|
    { ID id-InterfaceInstanceIndication         CRITICALITY reject  TYPE InterfaceInstanceIndication     PRESENCE optional },
    ...
}
```

```
ProvisionStatus ::= ENUMERATED {stopped, ...}


-- **************************************************************
--
-- CELL SWITCH NOTIFICATION
--
-- **************************************************************

CellSwitchNotification ::= SEQUENCE {
    protocolIEs     ProtocolIE-Container    {{CellSwitchNotification-IEs}},
    ...
}

CellSwitchNotification-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-sourceNG-RANnodeUEXnAPID                    CRITICALITY reject  TYPE NG-RANnodeUEXnAPID                  PRESENCE mandatory}|
    { ID id-targetNG-RANnodeUEXnAPID                    CRITICALITY reject  TYPE NG-RANnodeUEXnAPID                  PRESENCE mandatory}|
    { ID id-targetCellGlobalID                          CRITICALITY reject  TYPE Target-CGI                          PRESENCE mandatory}|
    { ID id-LTMCellSwitchInformation                    CRITICALITY ignore  TYPE LTMCellSwitchInformation            PRESENCE optional }|
    { ID id-LTMUEAssociationInformation-List            CRITICALITY ignore  TYPE LTMUEAssociationInformation-List    PRESENCE optional }|
    { ID id-CellSwitchTAInformation-List                CRITICALITY ignore  TYPE CellSwitchTAInformation-List        PRESENCE optional },
    ...
}



-- **************************************************************
--
-- TA INFORMATION TRANSFER
--
-- **************************************************************

TAInformationTransfer ::= SEQUENCE {
    protocolIEs     ProtocolIE-Container    {{TAInformationTransfer-IEs}},
    ...
}

TAInformationTransfer-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-TAInformation-List  CRITICALITY reject  TYPE TAInformation-List     PRESENCE mandatory},
    ...
}

-- **************************************************************
--
-- LTM CONFIGURATION UPDATE
--
-- **************************************************************

LTMConfigurationUpdate ::= SEQUENCE {
    protocolIEs     ProtocolIE-Container    {{LTMConfigurationUpdate-IEs}},
    ...
}
```

```
LTMConfigurationUpdate-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-NGRAN-Node1-ID                              CRITICALITY reject  TYPE NG-RANnodeUEXnAPID                              PRESENCE mandatory}|
    { ID id-NGRAN-Node2-ID                              CRITICALITY reject  TYPE NG-RANnodeUEXnAPID                              PRESENCE optional }|
    { ID id-LTMUpdatesToCandidateNodeInformation        CRITICALITY ignore  TYPE LTMUpdatesToCandidateNodeInformation        PRESENCE optional }|
    { ID id-LTMUpdatesToCandidateCellInformation-List   CRITICALITY ignore  TYPE LTMUpdatesToCandidateCellInformation-List   PRESENCE optional }|
    { ID id-LTMUESecurityInformation                    CRITICALITY ignore  TYPE LTMUESecurityInformation                    PRESENCE optional },
    ...
}


-- **************************************************************
--
-- LTM CONFIGURATION UPDATE ACKNOWLEDGE
--
-- **************************************************************

LTMConfigurationUpdateAcknowledge ::= SEQUENCE {
    protocolIEs     ProtocolIE-Container    {{LTMConfigurationUpdateAcknowledge-IEs}},
    ...
}

LTMConfigurationUpdateAcknowledge-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-NGRAN-Node1-ID                              CRITICALITY reject  TYPE NG-RANnodeUEXnAPID                              PRESENCE mandatory}|
    { ID id-NGRAN-Node2-ID                              CRITICALITY reject  TYPE NG-RANnodeUEXnAPID                              PRESENCE mandatory}|
    { ID id-LTMUpdatesFromCandidateCellInformation-List CRITICALITY ignore  TYPE LTMUpdatesFromCandidateCellInformation-List   PRESENCE optional }|
    { ID id-CriticalityDiagnostics                      CRITICALITY ignore  TYPE CriticalityDiagnostics                      PRESENCE optional },
    ...
}


-- **************************************************************
--
-- LTM CONFIGURATION UPDATE FAILURE
--
-- **************************************************************

LTMConfigurationUpdateFailure ::= SEQUENCE {
    protocolIEs     ProtocolIE-Container    {{LTMConfigurationUpdateFailure-IEs}},
    ...
}

LTMConfigurationUpdateFailure-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-NGRAN-Node1-ID                  CRITICALITY reject  TYPE NG-RANnodeUEXnAPID             PRESENCE mandatory}|
    { ID id-NGRAN-Node2-ID                  CRITICALITY reject  TYPE NG-RANnodeUEXnAPID             PRESENCE optional }|
    { ID id-Cause                           CRITICALITY ignore  TYPE Cause                          PRESENCE mandatory}|
    { ID id-CriticalityDiagnostics          CRITICALITY ignore  TYPE CriticalityDiagnostics         PRESENCE optional },
    ...
}




-- **************************************************************
--
```

```
-- LTM CANCEL
--
-- **************************************************************

LTMCancel ::= SEQUENCE {
    protocolIEs     ProtocolIE-Container    {{LTMCancel-IEs}},
    ...
}

LTMCancel-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-sourceNG-RANnodeUEXnAPID            CRITICALITY reject  TYPE NG-RANnodeUEXnAPID                    PRESENCE mandatory}|
    { ID id-targetNG-RANnodeUEXnAPID            CRITICALITY reject  TYPE NG-RANnodeUEXnAPID                    PRESENCE mandatory}|
    { ID id-Cause                               CRITICALITY ignore  TYPE Cause                              PRESENCE optional }|
    { ID id-LTMCandidateCellsToBeCancelled-List CRITICALITY ignore  TYPE LTMCandidateCellsToBeCancelled-List  PRESENCE optional },
    ...
}



-- **************************************************************
--
-- CSI-RS COORDINATION REQUEST
--
-- **************************************************************

CSIRSCoordinationRequest ::= SEQUENCE {

    protocolIEs     ProtocolIE-Container    {{CSIRSCoordinationRequest-IEs}},
    ...
}

CSIRSCoordinationRequest-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-NGRAN-Node1-ID              CRITICALITY reject  TYPE NG-RANnodeUEXnAPID                PRESENCE mandatory}|
    { ID id-NGRAN-Node2-ID              CRITICALITY reject  TYPE NG-RANnodeUEXnAPID                PRESENCE mandatory}|
    { ID id-CSI-RSCoordinationRequest   CRITICALITY reject  TYPE CSI-RSCoordinationRequestList     PRESENCE mandatory},
    ...
}




-- **************************************************************
--
-- CSI-RS COORDINATION RESPONSE
--
-- **************************************************************

CSIRSCoordinationResponse ::= SEQUENCE {
    protocolIEs     ProtocolIE-Container    {{CSIRSCoordinationResponse-IEs}},
    ...
}

CSIRSCoordinationResponse-IEs XNAP-PROTOCOL-IES ::= {
```

```
    { ID id-NGRAN-Node1-ID              CRITICALITY reject  TYPE NG-RANnodeUEXnAPID                PRESENCE mandatory}|
    { ID id-NGRAN-Node2-ID              CRITICALITY reject  TYPE NG-RANnodeUEXnAPID                PRESENCE mandatory}|
    { ID id-CSI-RSCoordinationResponse  CRITICALITY reject  TYPE CSI-RSCoordinationResultList      PRESENCE mandatory},
    ...
}

-- **************************************************************
--
-- CLI INDICATION
--
-- **************************************************************

CLI-Indication ::= SEQUENCE {
    protocolIEs     ProtocolIE-Container    {{CLI-Indication-IEs}},
    ...
}

CLI-Indication-IEs XNAP-PROTOCOL-IES ::= {
    { ID id-CLI-MeasurementResult-List                CRITICALITY ignore  TYPE CLI-MeasurementResult-List                  PRESENCE optional }|
    { ID id-SRS-Resource-Indication                   CRITICALITY ignore  TYPE SRS-Resource-Indication                     PRESENCE optional },
    ...
}


END
-- ASN1STOP
```

9.3.5 Information Element definitions

```
-- ASN1START
-- **************************************************************
--
-- Information Element Definitions
--
-- **************************************************************

XnAP-IEs {
itu-t (0) identified-organization (4) etsi (0) mobileDomain (0)
ngran-access (22) modules (3) xnap (2) version1 (1) xnap-IEs (2) }

DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

IMPORTS


    id-CNTypeRestrictionsForEquivalent,
    id-CNTypeRestrictionsForServing,
    id-Additional-UL-NG-U-TNLatUPF-List,
    id-ConfiguredTACIndication,
    id-AlternativeQoSParaSetList,
    id-CurrentQoSParaSetIndex,
```

```
    id-DefaultDRB-Allowed,
    id-DLCarrierList,
    id-EndpointIPAddressAndPort,
    id-ExtendedReportIntervalMDT,
    id-ExtendedTAISliceSupportList,
    id-FiveGCMobilityRestrictionListContainer,
    id-SecondarydataForwardingInfoFromTarget-List,
    id-LastE-UTRANPLMNIdentity,
    id-LTEA2XUEPC5AggregateMaximumBitRate,
    id-IntendedTDD-DL-ULConfiguration-NR,
    id-MaxIPrate-DL,
    id-SecurityResult,
    id-OldQoSFlowMap-ULendmarkerexpected,
    id-PDUSessionCommonNetworkInstance,
    id-PDUSession-PairID,
    id-BPLMN-ID-Info-EUTRA,
    id-BPLMN-ID-Info-NR,
    id-DRBsNotAdmittedSetupModifyList,
    id-Secondary-MN-Xn-U-TNLInfoatM,
    id-ULForwardingProposal,
    id-DRB-IDs-takenintouse,
    id-SplitSessionIndicator,
    id-NonGBRResources-Offered,
    id-MDT-Configuration,
    id-TraceCollectionEntityURI,
    id-NPN-Broadcast-Information,
    id-NPNPagingAssistanceInformation,
    id-NPNMobilityInformation,
    id-NPN-Support,
    id-LTEUESidelinkAggregateMaximumBitRate,
    id-NRA2XUEPC5AggregateMaximumBitRate,
    id-NRUESidelinkAggregateMaximumBitRate,
    id-ExtendedRATRestrictionInformation,
    id-QoSMonitoringRequest,
    id-QoSMonitoringDisabled,
    id-QosMonitoringReportingFrequency,
    id-DAPSRequestInfo,
    id-OffsetOfNbiotChannelNumberToDL-EARFCN,
    id-OffsetOfNbiotChannelNumberToUL-EARFCN,
    id-NBIoT-UL-DL-AlignmentOffset,
    id-TDDULDLConfigurationCommonNR,
    id-CarrierList,
    id-ULCarrierList,
    id-FrequencyShift7p5khz,
    id-SSB-PositionsInBurst,
    id-NRCellPRACHConfig,
    id-Redundant-UL-NG-U-TNLatUPF,
    id-Redundant-DL-NG-U-TNLatNG-RAN,
    id-CNPacketDelayBudgetDownlink,
    id-CNPacketDelayBudgetUplink,
    id-ExtendedPacketDelayBudget,
    id-Additional-Redundant-UL-NG-U-TNLatUPF-List,
    id-RedundantCommonNetworkInstance,
    id-TSCTrafficCharacteristics,
```

```
    id-RedundantQoSFlowIndicator,
    id-Additional-PDCP-Duplication-TNL-List,
    id-RedundantPDUSessionInformation,
    id-UsedRSNInformation,
    id-RLCDuplicationInformation,
    id-CSI-RSTransmissionIndication,
    id-UERadioCapabilityID,
    id-secondary-SN-UL-PDCP-UP-TNLInfo,
    id-pdcpDuplicationConfiguration,
    id-duplicationActivation,
    id-NPRACHConfiguration,
    id-QoSFlowsMappedtoDRB-SetupResponse-MNterminated,
    id-DL-scheduling-PDCCH-CCE-usage,
    id-UL-scheduling-PDCCH-CCE-usage,
    id-SFN-Offset,
    id-QoS-Mapping-Information,
    id-AdditionLocationInformation,
    id-dataForwardingInfoFromTargetE-UTRANnode,
    id-Cause,
    id-SecurityIndication,
    id-RRCConnReestab-Indicator,
    id-SourceDLForwardingIPAddress,
    id-SourceNodeDLForwardingIPAddress,
    id-M4ReportAmount,
    id-M5ReportAmount,
    id-M6ReportAmount,
    id-M7ReportAmount,
    id-BeamMeasurementIndicationM1,
    id-Supported-MBS-FSA-ID-List,
    id-MBS-AssistanceInformation,
    id-MBS-SessionAssociatedInformation,
    id-MBS-SessionInformation-List,
    id-SliceRadioResourceStatus-List,
    id-CompositeAvailableCapacitySupplementaryUplink,
    id-SSBOffsets-List,
    id-NG-RANnode2SSBOffsetsModificationRange,
    id-NR-U-Channel-List,
    id-NR-U-ChannelInfo-List,
    id-MIMOPRBusageInformation,
    id-UEAssistantIdentifier,
    id-IAB-MT-Cell-List,
    id-NoPDUSessionIndication,
    id-permutation,
    id-UL-GNB-DU-Cell-Resource-Configuration,
    id-DL-GNB-DU-Cell-Resource-Configuration,
    id-tdd-GNB-DU-Cell-Resource-Configuration,
    id-Additional-Measurement-Timing-Configuration-List,
    id-SurvivalTime,
    id-Local-NG-RAN-Node-Identifier,
    id-Neighbour-NG-RAN-Node-List,
    id-FiveGProSeUEPC5AggregateMaximumBitRate,
    id-Redcap-Bcast-Information,
    id-UESliceMaximumBitRateList,
    id-PositioningInformation,
```

```
    id-ServedCellSpecificInfoReq-NR,
    id-TAINSAGSupportList,
    id-earlyMeasurement,
    id-BeamMeasurementsReportConfiguration,
    id-CoverageModificationCause,
    id-UERLFReportContainerLTEExtension,
    id-ExcessPacketDelayThresholdConfiguration,
    id-Full-and-Short-I-RNTI-Profile-List,
    id-QosFlowMappingIndication,
    id-EquivalentSNPNs,
    id-CHOTimeBasedInformation,
    id-ChannelOccupancyTimePercentageUL,
    id-EnergyDetectionThresholdUL,
    id-PSCellListContainer,
    id-RadioResourceStatusNR-U,
    id-FiveGProSeLayer2Multipath,
    id-FiveGProSeLayer2UEtoUERelay,
    id-FiveGProSeLayer2UEtoUERemote,
    id-ClockQualityReportingControlInfo,
    id-CapabilityForBATAdaptation,
    id-PNI-NPNBasedMDT,
    id-PNI-NPN-AreaScopeofMDT,
    id-SNPN-CellBasedMDT,
    id-SNPN-TAIBasedMDT,
    id-SNPN-BasedMDT,
    id-S-CPAC-Request,
    id-S-CPAC-Request-Info,
    id-S-CPAC-ReferenceConfigRequest,
    id-S-CPAC-InterSN-ExecutionNotify,
    id-S-CPAC-dataforwardinginfofromSource,
    id-CPACcandidatePSCells-wotherInfo-list,
    id-eRedcap-Bcast-Information,
    id-NRPagingLongeDRXInformationforRRCINACTIVE,
    id-MBSCommServiceType,
    id-AssistanceInformationQoE-Meas,
    id-QoERVQoEReportingPaths,
    id-DirectForwardingPathAvailability,
    id-CHO-CPAC-Info,
    id-CHO-Maxnoof-CondReconfig,
    id-PDUSetQoSParameters,
    id-N6JitterInformation,
    id-ECNMarkingorCongestionInformationReportingRequest,
    id-TAISliceUnavailableCellList,
    id-MobileIABCell,
    id-XR-Bcast-Information,
    id-MaximumDataBurstVolume,
    id-CPAC-Preparation-Type,
    id-MN-only-MDT-collection,
    id-BarringExemptionforEmerCallInfo,
    id-Transmission-Bandwidth-asymmetric,
    id-NRPPaPositioningInformation,
    id-AerialUEFlightInformationReportingControl-List,
    id-PDCPSNGapTransfer-UL,
    id-ECNMarkingorCongestionInformationReportingStatus,
```

```
    id-AdditionalDRBSetupInfoList,
    id-PSIbasedSDUdiscardUL,
    id-PSIbasedSDUdiscardDL,
    id-DLPDUSetInformationMarkingSupportIndication,
    id-PduSetDelayBudgetDownlink,
    id-PduSetDelayBudgetUplink,
    id-PduSetErrorRateDownlink,
    id-PduSetErrorRateUplink,
    id-MonitoringRequestonAvailableBitrate,
    id-MMSID,
    id-Indication-of-bitrate-adaptation,
    id-GeographyBasedMDT,
    id-NetworkSliceAreaScopeofMDT,
    id-SBFD-Frequency-Configuration,
    id-NZP-CSI-RS-Resources-Config,
    id-SRS-Resource-Configuration,
    id-SliceToReportForDataCollection-List,
    id-PredictedSliceAvailableCapacity,
    id-SliceMeasurementInitiationResult,
    id-SliceUEPerformance,
    id-FiveGProSeLayer3MHUEtoNetworkRelay,
    id-FiveGProSeLayer2MHUEtoNetworkRelay,
    id-FiveGProSeLayer2MHIntermediateUEtoNetworkRelay,
    id-FiveGProSeLayer2MHRemote,
    id-UEAveragePacketLossUL,
    id-SemipersistentPositioningInformation,
    id-ProposedLTM-UEBasedTAMeasurementID-List,
    id-UEBasedTAMeasurementConfiguration,
    id-ServingGNB-ID,
    id-requestedTargetCellGlobalID,
    maxEARFCN,
    maxnoofAllowedAreas,
    maxnoofAMFRegions,
    maxnoofAoIs,
    maxnoofFlightInfoReportControl,
    maxnoofBPLMNs,
    maxnoofCAGs,
    maxnoofCAGsperPLMN,
    maxnoofCellsinAoI,
    maxnoofCellsinNG-RANnode,
    maxnoofCellsinRNA,
    maxnoofCellsinUEHistoryInfo,
    maxnoofCellsUEMovingTrajectory,
    maxnoofDRBs,
    maxnoofEPLMNs,
    maxnoofEPLMNsplus1,
    maxnoofEUTRABands,
    maxnoofEUTRABPLMNs,
    maxnoofForbiddenTACs,
    maxnoofMBSFNEUTRA,
    maxnoofMultiConnectivityMinusOne,
    maxnoofNeighbours,
    maxnoofNIDs,
    maxnoofNRCellBands,
```

```
    maxnoofPDUSessions,
    maxnoofPLMNs,
    maxnoofProtectedResourcePatterns,
    maxnoofQoSFlows,
    maxnoofQoSParaSets,
    maxnoofRANAreaCodes,
    maxnoofRANAreasinRNA,
    maxnoofSCellGroups,
    maxnoofSCellGroupsplus1,
    maxnoofSliceItems,
    maxnoofExtSliceItems,
    maxnoofSNPNIDs,
    maxnoofsupportedTACs,
    maxnoofsupportedPLMNs,
    maxnoofTAI,
    maxnoofTAIsinAoI,
    maxnoofTNLAssociations,
    maxnoofUEContexts,
    maxNRARFCN,
    maxNrOfErrors,
    maxnoofRANNodesinAoI,
    maxnooftimeperiods,
    maxnoofslots,
    maxnoofExtTLAs,
    maxnoofGTPTLAs,
    maxnoofCHOcells,
    maxnoofPC5QoSFlows,
    maxnoofSSBAreas,
    maxnoofNRSCSs,
    maxnoofPhysicalResourceBlocks,
    maxnoofRAReports,
    maxnoofAdditionalPDCPDuplicationTNL,
    maxnoofRLCDuplicationstate,
    maxnoofBluetoothName,
    maxnoofCellIDforMDT,
    maxnoofMDTPLMNs,
    maxnoofTAforMDT,
    maxnoofWLANName,
    maxnoofSensorName,
    maxnoofNeighPCIforMDT,
    maxnoofFreqforMDT,
    maxnoofNonAnchorCarrierFreqConfig,
    maxnoofDataForwardingTunneltoE-UTRAN,
    maxnoofUEIDIndicesforMBSPaging,
    maxnoofMBSFSAs,
    maxnoofMBSQoSFlows,
    maxnoofMRBs,
    maxnoofCellsforMBS,
    maxnoofMBSServiceAreaInformation,
    maxnoofTAIforMBS,
    maxnoofAssociatedMBSSessions,
    maxnoofMBSSessions,
    maxnoofSuccessfulHOReports,
    maxnoofPSCellsPerSN,
```

```
    maxnoofNR-UChannelIDs,
    maxnoofCellsinCHO,
    maxnoofCHOexecutioncond,
    maxnoofServingCells,
    maxnoofBHInfo,
    maxnoofTLAsIAB,
    maxnoofTrafficIndexEntries,
    maxnoofBAPControlPDURLCCHs,
    maxnoofServedCellsIAB,
    maxnoofDUFSlots,
    maxnoofSymbols,
    maxnoofHSNASlots,
    maxnoofRBsetsPerCell,
    maxnoofChildIABNodes,
    maxnoofIABSTCInfo,
    maxnoofPSCellCandidates,
    maxnoofTargetSNs,
    maxnoofUEAppLayerMeas,
    maxnoofSNSSAIforQMC,
    maxnoofCellIDforQMC,
    maxnoofPLMNforQMC,
    maxnoofTAforQMC,
    maxnoofMTCItems,
    maxnoofCSIRSconfigurations,
    maxnoofCSIRSneighbourCells,
    maxnoofCSIRSneighbourCellsInMTC,
    maxnoofNeighbour-NG-RAN-Nodes,
    maxnoofSRBs,
    maxnoofSMBR,
    maxnoofNSAGs,
    maxnoofRBsetsPerCell1,
    maxnoofTargetSNsMinusOne,
    maxnoofThresholdsForExcessPacketDelay,
    maxnoofESNPNs,
    maxnoofSuccessfulPSCellChangeReports,
    maxnoofUEsforRAReportIndications,
    maxnoofPSCellsinCPAC,
    maxnoofCPACexecutioncond,
    maxnoofLBTFailureInformation,
    maxnoofCellsTrajectoryPredict,
    maxnoofCellsTrajectory,
    maxFailedCellMeasObjects,
    maxFailedMeasPerNode,
    maxnoofUEReports,
    maxnoofCandidateRelayUEs,
    maxnoofCAGforMDT,
    maxnoofMDTSNPNs,
    maxnoofSecurityConfigurations,
    maxnoofRSPPQoSFlows,
    maxnoofThresholds,
    maxnoofEarlyRACHResourcesID,
    maxnoofLTMCells,
    maxNoSSBs,
    maxnoofTAList,
```

```
    maxnoofPreambleIndexes,
    maxnoofCSIResourceConfigurations,
    maxnoofNZP-CSI-RS-ResourcesPerSet,
    maxnoofSRS-Resource,
    maxnoofFailedSliceMeasObjects,
    maxnoofSliceItemsforMDT,
    maxnoofAreaNTNforMDT,
    maxnoofLTMCellsPlusOne,
    maxnoofSCGSecurityConfigurations,
    maxnoofLTM-CSI-ResourcesPerSet



FROM XnAP-Constants

    Criticality,
    ProcedureCode,
    ProtocolIE-ID,
    TriggeringMessage
FROM XnAP-CommonDataTypes

    ProtocolExtensionContainer{},
    ProtocolIE-Single-Container{},

    XNAP-PROTOCOL-EXTENSION,
    XNAP-PROTOCOL-IES
FROM XnAP-Containers;


-- A

AerialUEFlightInformationReportingControl ::= SEQUENCE {
    higherAltitudeThreshold                 Altitude,
    lowerAltitudeThreshold                  Altitude,
    aerialUEReportingPeriodicity            AerialUEReportingPeriodicity                                OPTIONAL,
    areaScope                               AreaScope,
    iE-Extensions       ProtocolExtensionContainer { { AerialUEFlightInformationReportingControl-ExtIEs} }    OPTIONAL,
    ...
}

AerialUEFlightInformationReportingControl-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

AerialUEReportingPeriodicity ::= ENUMERATED {ms120, ms240, ms480, ms640, ms1024, ms2048, ms5120, ms10240, ms20480, ms40960, min1, min6, min12,
min30, ...}
AreaScope ::= CHOICE {
    tai                     TAIinAreaScope,
    ran-node                GlobalNG-RANNode-ID,
    globalNG-RANCell-ID     GlobalNG-RANCell-ID,
    ...,
    choice-extension        ProtocolIE-Single-Container { {AreaScope-ExtIEs} }
```

```
}

AreaScope-ExtIEs XNAP-PROTOCOL-IES ::= {
    ...
}


TAIinAreaScope ::= SEQUENCE {
    pLMN-Identity       PLMN-Identity,
    tAC                 TAC,
    iE-Extensions       ProtocolExtensionContainer { {TAIinAreaScope-ExtIEs} } OPTIONAL,
    ...
}

TAIinAreaScope-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


Altitude ::= INTEGER (-420..10000, ...)


A2XPC5QoSParameters ::= SEQUENCE {
    a2XPC5QoSFlowList                   A2XPC5QoSFlowList,
    aA2XPC5LinkAggregateBitRates            BitRate                                         OPTIONAL,
    iE-Extensions       ProtocolExtensionContainer { { A2XPC5QoSParameters-ExtIEs} }        OPTIONAL,
    ...
}

A2XPC5QoSParameters-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

A2XPC5QoSFlowList ::= SEQUENCE (SIZE(1..maxnoofPC5QoSFlows)) OF A2XPC5QoSFlowItem

A2XPC5QoSFlowItem ::= SEQUENCE {
    a2XpQI              FiveQI,
    a2Xpc5FlowBitRates  A2XPC5FlowBitRates                                          OPTIONAL,
    a2Xrange            Range                                                       OPTIONAL,
    iE-Extensions       ProtocolExtensionContainer { { A2XPC5QoSFlowItem-ExtIEs} }      OPTIONAL,
    ...
}

A2XPC5QoSFlowItem-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

A2XPC5FlowBitRates ::= SEQUENCE {
    a2XguaranteedFlowBitRate        BitRate,
    a2XmaximumFlowBitRate           BitRate,
    iE-Extensions       ProtocolExtensionContainer { { A2XPC5FlowBitRates-ExtIEs} }     OPTIONAL,
    ...
}
```

```
A2XPC5FlowBitRates-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

AvailableBitrateReportThresholdList ::= SEQUENCE (SIZE(1..maxnoofThresholds)) OF AvailableBitrateReportThresholdItem

AvailableBitrateReportThresholdItem ::= SEQUENCE {
    reportingThreshold              ReportingThreshold,
    iE-Extensions                   ProtocolExtensionContainer { { AvailableBitrateReportThresholdItem-ExtIEs} } OPTIONAL,
    ...
}

AvailableBitrateReportThresholdItem-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

AdditionalListofPDUSessionResourceChangeConfirmInfo-SNterminated ::= SEQUENCE (SIZE(1..maxnoofTargetSNsMinusOne)) OF
AdditionalListofPDUSessionResourceChangeConfirmInfo-SNterminated-Item

AdditionalListofPDUSessionResourceChangeConfirmInfo-SNterminated-Item ::= SEQUENCE {
    pDUSessionResourceChangeConfirmInfo-SNterminated                PDUSessionResourceChangeConfirmInfo-SNterminated,
    iE-Extensions       ProtocolExtensionContainer { { AdditionalListofPDUSessionResourceChangeConfirmInfo-SNterminated-Item-ExtIEs} } OPTIONAL,
    ...
}

AdditionalListofPDUSessionResourceChangeConfirmInfo-SNterminated-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

AveragePacketDelay ::= SEQUENCE {
    uL-AveragePacketDelay       AveragePacketDelayValue,
    dL-AveragePacketDelay       AveragePacketDelayValue,
    iE-Extensions       ProtocolExtensionContainer { {AveragePacketDelay-ExtIEs} }  OPTIONAL,
    ...
}

AveragePacketDelay-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

AveragePacketDelayValue ::= INTEGER (0..10000)


AdditionLocationInformation ::= ENUMERATED {
    includePSCell,
    ...
}

Additional-PDCP-Duplication-TNL-List ::= SEQUENCE (SIZE(1..maxnoofAdditionalPDCPDuplicationTNL)) OF Additional-PDCP-Duplication-TNL-Item
Additional-PDCP-Duplication-TNL-Item ::= SEQUENCE {
    additional-PDCP-Duplication-UP-TNL-Information  UPTransportLayerInformation,
    iE-Extensions       ProtocolExtensionContainer { { Additional-PDCP-Duplication-TNL-ExtIEs} }  OPTIONAL,
    ...
}
```

```
Additional-PDCP-Duplication-TNL-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

Additional-UL-NG-U-TNLatUPF-Item ::= SEQUENCE {
    additional-UL-NG-U-TNLatUPF             UPTransportLayerInformation,
    iE-Extensions       ProtocolExtensionContainer { { Additional-UL-NG-U-TNLatUPF-Item-ExtIEs} } OPTIONAL,
    ...
}

Additional-UL-NG-U-TNLatUPF-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
{ ID id-PDUSessionCommonNetworkInstance     CRITICALITY ignore  EXTENSION PDUSessionCommonNetworkInstance    PRESENCE optional},
    ...
}

Additional-UL-NG-U-TNLatUPF-List ::= SEQUENCE (SIZE(1..maxnoofMultiConnectivityMinusOne)) OF Additional-UL-NG-U-TNLatUPF-Item

Additional-Measurement-Timing-Configuration-List ::= SEQUENCE (SIZE(1.. maxnoofMTCItems)) OF Additional-Measurement-Timing-Configuration-Item

Additional-Measurement-Timing-Configuration-Item ::= SEQUENCE {
    additionalMeasurementTimingConfigurationIndex       INTEGER (0..16),
    csi-RS-MTC-Configuration-List                       CSI-RS-MTC-Configuration-List,
    iE-Extensions                       ProtocolExtensionContainer { { Additional-Measurement-Timing-Configuration-Item-ExtIEs} } OPTIONAL,
    ...
}

Additional-Measurement-Timing-Configuration-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

ActivationIDforCellActivation   ::= INTEGER (0..255)

Active-MBS-SessionInformation ::= SEQUENCE {
    mBS-QoSFlowsToAdd-List                              MBS-QoSFlowsToAdd-List,
    mBS-ServiceArea                                     MBS-ServiceArea                                         OPTIONAL,
    mBS-MappingandDataForwardingRequestInfofromSource   MBS-MappingandDataForwardingRequestInfofromSource     OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { { Active-MBS-SessionInformation-ExtIEs} }   OPTIONAL,
    ...
}

Active-MBS-SessionInformation-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

DataCollectionID ::= SEQUENCE {
    nGRAN-Node1-Measurement-ID                  Measurement-ID,
    nGRAN-Node2-Measurement-ID                  Measurement-ID,
    iE-Extensions                           ProtocolExtensionContainer { { DataCollectionID-ExtIEs} } OPTIONAL,
    ...
}

DataCollectionID-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}
```

```
AdditionalDRBSetupInfoList ::= SEQUENCE (SIZE(1..maxnoofDRBs)) OF AdditionalDRBsToBeSetupInfo-Item

AdditionalDRBsToBeSetupInfo-Item ::= SEQUENCE {
    drb-ID                                                  DRB-ID,
    additionalQoSFlowMappedtoDRBSetupInfoList               AdditionalQoSFlowMappedtoDRBSetupInfoList,
    eCNMarkingorCongestionInformationReportingStatus        ECNMarkingorCongestionInformationReportingStatus,
    iE-Extensions                   ProtocolExtensionContainer { { AdditionalDRBsToBeSetupInfo-Item-ExtIEs} }    OPTIONAL,
    ...
}

AdditionalDRBsToBeSetupInfo-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
        ...
}

AdditionalQoSFlowMappedtoDRBSetupInfoList ::= SEQUENCE (SIZE(1..maxnoofQoSFlows)) OF AdditionalQoSFlowMappedtoDRBSetupInfoList-Item

AdditionalQoSFlowMappedtoDRBSetupInfoList-Item ::= SEQUENCE {
    qoSFlowIdentifier               QoSFlowIdentifier,
    iE-Extensions                   ProtocolExtensionContainer { { AdditionalQoSFlowMappedtoDRBSetupInfoList-Item-ExtIEs} } OPTIONAL,
    ...
}

AdditionalQoSFlowMappedtoDRBSetupInfoList-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
        ...
}


AerialControllerUE ::= ENUMERATED {
    authorized,
    not-authorized,
    ...
}

AerialUE ::= ENUMERATED {
    authorized,
    not-authorized,
    ...
}

AerialUESubscriptionInformation ::= ENUMERATED {
    allowed,
    not-allowed,
    ...
}



AllocationandRetentionPriority ::= SEQUENCE {
    priorityLevel                   INTEGER (0..15,...),
    pre-emption-capability          ENUMERATED {shall-not-trigger-preemption, may-trigger-preemption, ...},
    pre-emption-vulnerability       ENUMERATED {not-preemptable, preemptable, ...},
    iE-Extensions                   ProtocolExtensionContainer { {AllocationandRetentionPriority-ExtIEs} } OPTIONAL,
    ...
```

```
}

AllocationandRetentionPriority-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


ActivationSFN ::= INTEGER (0..1023)

AllowedCAG-ID-List-perPLMN ::= SEQUENCE (SIZE(1..maxnoofCAGsperPLMN)) OF CAG-Identifier

AllowedPNI-NPN-ID-List ::= SEQUENCE (SIZE(1..maxnoofEPLMNsplus1)) OF AllowedPNI-NPN-ID-Item

AllowedPNI-NPN-ID-Item ::= SEQUENCE {
    plmn-id                          PLMN-Identity,
    pni-npn-restricted-information   PNI-NPN-Restricted-Information,
    allowed-CAG-id-list-per-plmn     AllowedCAG-ID-List-perPLMN,
    iE-Extensions                    ProtocolExtensionContainer { {AllowedPNI-NPN-ID-Item-ExtIEs} } OPTIONAL,
    ...
}

AllowedPNI-NPN-ID-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

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


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 XNAP-PROTOCOL-EXTENSION ::= {
        { ID id-MaximumDataBurstVolume  CRITICALITY ignore  EXTENSION MaximumDataBurstVolume           PRESENCE optional }|
        { ID id-PduSetDelayBudgetDownlink   CRITICALITY ignore  EXTENSION ExtendedPacketDelayBudget    PRESENCE optional }|
        { ID id-PduSetDelayBudgetUplink     CRITICALITY ignore  EXTENSION ExtendedPacketDelayBudget    PRESENCE optional }|
        { ID id-PduSetErrorRateDownlink     CRITICALITY ignore  EXTENSION PacketErrorRate              PRESENCE optional }|
        { ID id-PduSetErrorRateUplink       CRITICALITY ignore  EXTENSION PacketErrorRate              PRESENCE optional },
...
}


AMF-Region-Information ::= SEQUENCE (SIZE (1..maxnoofAMFRegions)) OF GlobalAMF-Region-Information

GlobalAMF-Region-Information ::= SEQUENCE {
    plmn-ID             PLMN-Identity,
```

```
    amf-region-id       BIT STRING (SIZE (8)),
    iE-Extensions                   ProtocolExtensionContainer { {GlobalAMF-Region-Information-ExtIEs} } OPTIONAL,
    ...
}

GlobalAMF-Region-Information-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


AMF-UE-NGAP-ID ::= INTEGER (0..1099511627775)


AreaOfInterestInformation ::= SEQUENCE (SIZE(1..maxnoofAoIs)) OF AreaOfInterest-Item

AreaOfInterest-Item ::= SEQUENCE {
    listOfTAIsinAoI                 ListOfTAIsinAoI                                         OPTIONAL,
    listOfCellsinAoI                ListOfCells                                             OPTIONAL,
    listOfRANNodesinAoI             ListOfRANNodesinAoI                                     OPTIONAL,
    requestReferenceID  RequestReferenceID,
    iE-Extensions                   ProtocolExtensionContainer { {AreaOfInterest-Item-ExtIEs} } OPTIONAL,
    ...
}

AreaOfInterest-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


AreaScopeOfMDT-NR ::= CHOICE {
    cellBased                   CellBasedMDT-NR,
    tABased                     TABasedMDT,
    tAIBased                    TAIBasedMDT,
    ...,
    choice-extension        ProtocolIE-Single-Container { {AreaScopeOfMDT-NR-ExtIEs} }
}

AreaScopeOfMDT-NR-ExtIEs XNAP-PROTOCOL-IES ::= {
    { ID id-PNI-NPNBasedMDT         CRITICALITY ignore  TYPE PNI-NPNBasedMDT            PRESENCE mandatory}|
    { ID id-SNPN-CellBasedMDT       CRITICALITY ignore  TYPE SNPN-CellBasedMDT          PRESENCE mandatory}|
    { ID id-SNPN-TAIBasedMDT        CRITICALITY ignore  TYPE SNPN-TAIBasedMDT           PRESENCE mandatory}|
    { ID id-SNPN-BasedMDT           CRITICALITY ignore  TYPE SNPN-BasedMDT              PRESENCE mandatory}|
    { ID id-GeographyBasedMDT       CRITICALITY ignore  TYPE GeographyBasedMDT          PRESENCE mandatory},
    ...
}
AreaScopeOfMDT-EUTRA ::= CHOICE {
    cellBased                   CellBasedMDT-EUTRA,
    tABased                     TABasedMDT,
    tAIBased                    TAIBasedMDT,
    ...,
    choice-extension        ProtocolIE-Single-Container { {AreaScopeOfMDT-EUTRA-ExtIEs} }

}
```

```
AreaScopeOfMDT-EUTRA-ExtIEs XNAP-PROTOCOL-IES ::= {
    ...
}



AreaScopeOfNeighCellsList ::= SEQUENCE (SIZE(1..maxnoofFreqforMDT)) OF AreaScopeOfNeighCellsItem
AreaScopeOfNeighCellsItem ::= SEQUENCE {
    nrFrequencyInfo             NRFrequencyInfo,
    pciListForMDT               PCIListForMDT       OPTIONAL,
    iE-Extensions       ProtocolExtensionContainer { { AreaScopeOfNeighCellsItem-ExtIEs} }  OPTIONAL,
    ...
}

AreaScopeOfNeighCellsItem-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

AreaScopeOfQMC ::= CHOICE {
    cellBased                   CellBasedQMC,
    tABased                     TABasedQMC,
    tAIBased                    TAIBasedQMC,
    pLMNAreaBased               PLMNAreaBasedQMC,
    choice-extension            ProtocolIE-Single-Container { {AreaScopeOfQMC-ExtIEs} }
}

AreaScopeOfQMC-ExtIEs XNAP-PROTOCOL-IES ::= {
    ...
}

AS-SecurityInformation ::= SEQUENCE {
    key-NG-RAN-Star                 BIT STRING (SIZE(256)),
    ncc                             INTEGER (0..7),
    iE-Extensions                   ProtocolExtensionContainer { {AS-SecurityInformation-ExtIEs} } OPTIONAL,
    ...
}

AS-SecurityInformation-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


AssistanceDataForRANPaging ::= SEQUENCE {
    ran-paging-attempt-info         RANPagingAttemptInfo    OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { {AssistanceDataForRANPaging-ExtIEs} } OPTIONAL,
    ...
}

AssistanceDataForRANPaging-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    { ID id-NPNPagingAssistanceInformation  CRITICALITY ignore  EXTENSION NPNPagingAssistanceInformation   PRESENCE optional },
    ...
}

AssistanceInformationQoE-Meas ::= INTEGER (1..16, ...)
```

```
Associated-QoSFlowInfo-List ::= SEQUENCE (SIZE(1..maxnoofMBSQoSFlows)) OF Associated-QoSFlowInfo-Item

Associated-QoSFlowInfo-Item ::= SEQUENCE {
    mBS-QoSFlowIdentifier               QoSFlowIdentifier,
    associatedUnicastQoSFlowIdentifier  QoSFlowIdentifier,
    iE-Extensions                       ProtocolExtensionContainer { { Associated-QoSFlowInfo-Item-ExtIEs} }  OPTIONAL,
    ...
}

Associated-QoSFlowInfo-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


AvailableCapacity ::= INTEGER (1.. 100,...)


AvailableRRCConnectionCapacityValue ::= INTEGER (0..100)


AvailableRVQoEMetrics ::= SEQUENCE {
    applicationLayerBufferLevelList                     ENUMERATED {true, ...}  OPTIONAL,
    playoutDelayForMediaStartup     ENUMERATED {true, ...}      OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { {AvailableRVQoEMetrics-ExtIEs} } OPTIONAL,
    ...
}

AvailableRVQoEMetrics-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


AveragingWindow ::= INTEGER (0..4095, ...)


-- B

BAPAddress ::= BIT STRING (SIZE(10))

BAPPathID ::= BIT STRING (SIZE(10))

BAPRoutingID ::= SEQUENCE {
    bAPAddress      BAPAddress,
    bAPPathID       BAPPathID,
    iE-Extensions   ProtocolExtensionContainer { {BAPRoutingID-ExtIEs} }    OPTIONAL,
    ...
}

BAPRoutingID-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}
```

```
BeamMeasurementIndicationM1 ::= ENUMERATED {true, ...}

BeamMeasurementsReportConfiguration ::= SEQUENCE {
    beamMeasurementsReportQuantity          BeamMeasurementsReportQuantity          OPTIONAL,
    maxNrofRS-IndexesToReport               MaxNrofRS-IndexesToReport       OPTIONAL,
    iE-Extensions                           ProtocolExtensionContainer { { BeamMeasurementsReportConfiguration-ExtIEs} } OPTIONAL,
    ...
}

BeamMeasurementsReportConfiguration-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


BeamMeasurementsReportQuantity ::= SEQUENCE {
    rSRP                        ENUMERATED {true, ..., false},
    rSRQ                        ENUMERATED {true, ..., false},
    sINR                        ENUMERATED {true, ..., false},
    iE-Extensions           ProtocolExtensionContainer { { BeamMeasurementsReportQuantity-ExtIEs} } OPTIONAL,
    ...
}

BeamMeasurementsReportQuantity-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


BHInfoIndex ::= INTEGER (1.. maxnoofBHInfo)

BHInfoList ::= SEQUENCE (SIZE(1.. maxnoofBHInfo)) OF BHInfo-Item

BHInfo-Item ::= SEQUENCE {
    bHInfoIndex         BHInfoIndex,
    iE-Extensions           ProtocolExtensionContainer { { BHInfo-Item-ExtIEs} }    OPTIONAL,
    ...
}

BHInfo-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


BHRLCChannelID ::= BIT STRING (SIZE(16))

BAPControlPDURLCCH-List ::= SEQUENCE (SIZE(1.. maxnoofBAPControlPDURLCCHs)) OF BAPControlPDURLCCH-Item


BAPControlPDURLCCH-Item ::= SEQUENCE {
    bHRLCCHID           BHRLCChannelID,
    nexthopBAPAddress   BAPAddress,
    iE-Extensions           ProtocolExtensionContainer { { BAPControlPDURLCCH-Item-ExtIEs} }    OPTIONAL,
    ...
}
```

```
BAPControlPDURLCCH-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}
BarringExemptionforEmerCallInfo::= ENUMERATED {true,...}


BluetoothMeasurementConfiguration ::= SEQUENCE {
    bluetoothMeasConfig             BluetoothMeasConfig,
    bluetoothMeasConfigNameList     BluetoothMeasConfigNameList     OPTIONAL,
    bt-rssi                         ENUMERATED {true, ...}          OPTIONAL,
    iE-Extensions       ProtocolExtensionContainer { { BluetoothMeasurementConfiguration-ExtIEs } } OPTIONAL,
    ...
}

BluetoothMeasurementConfiguration-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

BluetoothMeasConfigNameList ::= SEQUENCE (SIZE(1..maxnoofBluetoothName)) OF BluetoothName

BluetoothMeasConfig::= ENUMERATED {setup,...}

BluetoothName ::= OCTET STRING (SIZE (1..248))


BPLMN-ID-Info-EUTRA ::= SEQUENCE (SIZE(1..maxnoofEUTRABPLMNs)) OF BPLMN-ID-Info-EUTRA-Item

BPLMN-ID-Info-EUTRA-Item ::= SEQUENCE {
    broadcastPLMNs                  BroadcastEUTRAPLMNs,
    tac                             TAC,
    e-utraCI                        E-UTRA-Cell-Identity,
    ranac                           RANAC OPTIONAL,
    iE-Extension                    ProtocolExtensionContainer { {BPLMN-ID-Info-EUTRA-Item-ExtIEs} } OPTIONAL,
    ...
}

BPLMN-ID-Info-EUTRA-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

BPLMN-ID-Info-NR ::= SEQUENCE (SIZE(1..maxnoofBPLMNs)) OF BPLMN-ID-Info-NR-Item

BPLMN-ID-Info-NR-Item ::= SEQUENCE {
    broadcastPLMNs                  BroadcastPLMNs,
    tac                             TAC,
    nr-CI                           NR-Cell-Identity,
    ranac                           RANAC OPTIONAL,
    iE-Extension                    ProtocolExtensionContainer { {BPLMN-ID-Info-NR-Item-ExtIEs} } OPTIONAL,
    ...
}

BPLMN-ID-Info-NR-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    { ID id-ConfiguredTACIndication     CRITICALITY ignore  EXTENSION ConfiguredTACIndication    PRESENCE optional }|
    { ID id-NPN-Broadcast-Information   CRITICALITY reject  EXTENSION NPN-Broadcast-Information   PRESENCE optional },
```

```
    ...
}

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



BroadcastCAG-Identifier-List ::= SEQUENCE (SIZE(1..maxnoofCAGs)) OF BroadcastCAG-Identifier-Item

BroadcastCAG-Identifier-Item ::= SEQUENCE {
    cag-Identifier                  CAG-Identifier,
    iE-Extension                    ProtocolExtensionContainer { {BroadcastCAG-Identifier-Item-ExtIEs} } OPTIONAL,
    ...
}

BroadcastCAG-Identifier-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


BroadcastNID-List ::= SEQUENCE (SIZE(1..maxnoofNIDs)) OF BroadcastNID-Item

BroadcastNID-Item ::= SEQUENCE {
    nid                          NID,
    iE-Extension                 ProtocolExtensionContainer { {BroadcastNID-Item-ExtIEs} } OPTIONAL,
    ...
}

BroadcastNID-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

BroadcastPLMNs ::= SEQUENCE (SIZE(1..maxnoofBPLMNs)) OF PLMN-Identity

BroadcastEUTRAPLMNs ::= SEQUENCE (SIZE(1..maxnoofEUTRABPLMNs)) OF PLMN-Identity


BroadcastPLMNinTAISupport-Item ::= SEQUENCE {
    plmn-id                         PLMN-Identity,
    tAISliceSupport-List            SliceSupport-List,
    iE-Extension                    ProtocolExtensionContainer { {BroadcastPLMNinTAISupport-Item-ExtIEs} } OPTIONAL,
    ...
}

BroadcastPLMNinTAISupport-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    { ID id-NPN-Support                     CRITICALITY reject  EXTENSION NPN-Support                  PRESENCE optional}|
    { ID id-ExtendedTAISliceSupportList     CRITICALITY reject  EXTENSION ExtendedSliceSupportList     PRESENCE optional}|
    { ID id-TAINSAGSupportList              CRITICALITY ignore  EXTENSION TAINSAGSupportList           PRESENCE optional}|
    { ID id-TAISliceUnavailableCellList     CRITICALITY ignore  EXTENSION TAISliceUnavailableCellList  PRESENCE optional},
    ...
}


BroadcastPNI-NPN-ID-Information ::= SEQUENCE (SIZE(1..maxnoofBPLMNs)) OF BroadcastPNI-NPN-ID-Information-Item
```

```
BroadcastPNI-NPN-ID-Information-Item ::= SEQUENCE {
    plmn-id                         PLMN-Identity,
    broadcastCAG-Identifier-List    BroadcastCAG-Identifier-List,
    iE-Extension                    ProtocolExtensionContainer { {BroadcastPNI-NPN-ID-Information-Item-ExtIEs} } OPTIONAL,
    ...
}


BroadcastPNI-NPN-ID-Information-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


BroadcastSNPNID-List ::= SEQUENCE (SIZE(1..maxnoofSNPNIDs)) OF BroadcastSNPNID


BroadcastSNPNID ::= SEQUENCE {
    plmn-id                         PLMN-Identity,
    broadcastNID-List                               BroadcastNID-List,
    iE-Extension                    ProtocolExtensionContainer { {BroadcastSNPNID-ExtIEs} } OPTIONAL,
    ...
}

BroadcastSNPNID-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


-- C


CAG-Identifier  ::= BIT STRING (SIZE (32))

CandidateRelayUEInfoList ::= SEQUENCE (SIZE(1..maxnoofCandidateRelayUEs)) OF CandidateRelayUEInfoItem

CandidateRelayUEInfoItem ::= SEQUENCE {
    candidateRelayUEID      BIT STRING(SIZE(24)),
    iE-Extensions           ProtocolExtensionContainer { { CandidateRelayUEInfoItem-ExtIEs } }    OPTIONAL,
    ...
}

CandidateRelayUEInfoItem-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


CapacityValue ::= INTEGER (0..100)



CapacityValueInfo ::= SEQUENCE {
    capacityValue               CapacityValue,
    ssbAreaCapacityValueList    SSBAreaCapacityValue-List   OPTIONAL,
```

```
    iE-Extension               ProtocolExtensionContainer { {CapacityValueInfo-ExtIEs} } OPTIONAL,
    ...
}

CapacityValueInfo-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


Cause ::= CHOICE {
    radioNetwork        CauseRadioNetworkLayer,
    transport           CauseTransportLayer,
    protocol            CauseProtocol,
    misc                CauseMisc,
    choice-extension    ProtocolIE-Single-Container { {Cause-ExtIEs} }
}

Cause-ExtIEs XNAP-PROTOCOL-IES ::= {
    ...
}

CauseRadioNetworkLayer ::= ENUMERATED {
    cell-not-available,
    handover-desirable-for-radio-reasons,
    handover-target-not-allowed,
    invalid-AMF-Set-ID,
    no-radio-resources-available-in-target-cell,
    partial-handover,
    reduce-load-in-serving-cell,
    resource-optimisation-handover,
    time-critical-handover,
    tXnRELOCoverall-expiry,
    tXnRELOCprep-expiry,
    unknown-GUAMI-ID,
    unknown-local-NG-RAN-node-UE-XnAP-ID,
    inconsistent-remote-NG-RAN-node-UE-XnAP-ID,
    encryption-and-or-integrity-protection-algorithms-not-supported,
    not-used-causes-value-1,
    multiple-PDU-session-ID-instances,
    unknown-PDU-session-ID,
    unknown-QoS-Flow-ID,
    multiple-QoS-Flow-ID-instances,
    switch-off-ongoing,
    not-supported-5QI-value,
    tXnDCoverall-expiry,
    tXnDCprep-expiry,
    action-desirable-for-radio-reasons,
    reduce-load,
    resource-optimisation,
    time-critical-action,
    target-not-allowed,
    no-radio-resources-available,
    invalid-QoS-combination,
    encryption-algorithms-not-supported,
```

```
    procedure-cancelled,
    rRM-purpose,
    improve-user-bit-rate,
    user-inactivity,
    radio-connection-with-UE-lost,
    failure-in-the-radio-interface-procedure,
    bearer-option-not-supported,
    up-integrity-protection-not-possible,
    up-confidentiality-protection-not-possible,
    resources-not-available-for-the-slice-s,
    ue-max-IP-data-rate-reason,
    cP-integrity-protection-failure,
    uP-integrity-protection-failure,
    slice-not-supported-by-NG-RAN,
    mN-Mobility,
    sN-Mobility,
    count-reaches-max-value,
    unknown-old-NG-RAN-node-UE-XnAP-ID,
    pDCP-Overload,
    drb-id-not-available,
    unspecified,
    ...,
    ue-context-id-not-known,
    non-relocation-of-context,
    cho-cpc-resources-tobechanged,
    rSN-not-available-for-the-UP,
    npn-access-denied,
    report-characteristics-empty,
    existing-measurement-ID,
    measurement-temporarily-not-available,
    measurement-not-supported-for-the-object,
    ue-power-saving,
    not-existing-NG-RAN-node2-Measurement-ID,
    insufficient-ue-capabilities,
    normal-release,
    value-out-of-allowed-range,
    scg-activation-deactivation-failure,
    scg-deactivation-failure-due-to-data-transmission,
    ssb-not-available,
    lTM-triggered,
    no-Backhaul-Resource,
    mIAB-node-not-authorized,
    iAB-not-authorized
}

CauseTransportLayer ::= ENUMERATED {
    transport-resource-unavailable,
    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,
    ...
}

CauseMisc ::= ENUMERATED {
    control-processing-overload,
    hardware-failure,
    o-and-M-intervention,
    not-enough-user-plane-processing-resources,
    unspecified,
    ...
}

CellAssistanceInfo-NR   ::= CHOICE {
    limitedNR-List              SEQUENCE (SIZE(1..maxnoofCellsinNG-RANnode)) OF NR-CGI,
    full-List                   ENUMERATED {all-served-cells-NR, ...},
    choice-extension            ProtocolIE-Single-Container { {CellAssistanceInfo-NR-ExtIEs} }
}

CellAssistanceInfo-NR-ExtIEs XNAP-PROTOCOL-IES ::= {
    ...
}

CellAndCapacityAssistanceInfo-NR    ::= SEQUENCE {
    maximumCellListSize                 MaximumCellListSize                             OPTIONAL,
    cellAssistanceInfo-NR       CellAssistanceInfo-NR               OPTIONAL,
    iE-Extensions                       ProtocolExtensionContainer { { CellAndCapacityAssistanceInfo-NR-ExtIEs} }   OPTIONAL,
    ...
}


CellAndCapacityAssistanceInfo-NR-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

CellAndCapacityAssistanceInfo-EUTRA ::= SEQUENCE {
    maximumCellListSize                 MaximumCellListSize                             OPTIONAL,
    cellAssistanceInfo-EUTRA            CellAssistanceInfo-EUTRA                OPTIONAL,
    iE-Extensions                       ProtocolExtensionContainer { { CellAndCapacityAssistanceInfo-EUTRA-ExtIEs} }   OPTIONAL,
    ...
}


CellAndCapacityAssistanceInfo-EUTRA-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


CellAssistanceInfo-EUTRA    ::= CHOICE {
    limitedEUTRA-List           SEQUENCE (SIZE(1..maxnoofCellsinNG-RANnode)) OF E-UTRA-CGI,
```

```
    full-List                   ENUMERATED {all-served-cells-E-UTRA, ...},
    choice-extension            ProtocolIE-Single-Container { {CellAssistanceInfo-EUTRA-ExtIEs} }
}

CellAssistanceInfo-EUTRA-ExtIEs XNAP-PROTOCOL-IES ::= {
    ...
}

CellBasedMDT-NR::= SEQUENCE {
    cellIdListforMDT-NR CellIdListforMDT-NR,
    iE-Extensions       ProtocolExtensionContainer { {CellBasedMDT-NR-ExtIEs} } OPTIONAL,
    ...
}

CellBasedMDT-NR-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

CellIdListforMDT-NR ::= SEQUENCE (SIZE(1..maxnoofCellIDforMDT)) OF NR-CGI

CellBasedQMC::= SEQUENCE {
    cellIdListforQMC        CellIdListforQMC,
    iE-Extensions       ProtocolExtensionContainer { {CellBasedQMC-ExtIEs} } OPTIONAL,
    ...
}

CellBasedQMC-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

CellIdListforQMC ::= SEQUENCE (SIZE(1..maxnoofCellIDforQMC)) OF GlobalNG-RANCell-ID


CellBasedMDT-EUTRA::= SEQUENCE {
    cellIdListforMDT-EUTRA  CellIdListforMDT-EUTRA,
    iE-Extensions       ProtocolExtensionContainer { {CellBasedMDT-EUTRA-ExtIEs} } OPTIONAL,
    ...
}

CellBasedMDT-EUTRA-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}
CellIdListforMDT-EUTRA ::= SEQUENCE (SIZE(1..maxnoofCellIDforMDT)) OF E-UTRA-CGI


CellCapacityClassValue ::= INTEGER (1..100,...)

CellDeploymentStatusIndicator ::= ENUMERATED {pre-change-notification, ...}

CellGroupID ::= INTEGER (0..maxnoofSCellGroups)


CellMeasurementResult ::= SEQUENCE (SIZE(1..maxnoofCellsinNG-RANnode)) OF CellMeasurementResult-Item
```

```
CellMeasurementResult-Item  ::= SEQUENCE {
    cell-ID                             GlobalNG-RANCell-ID,
    radioResourceStatus                 RadioResourceStatus             OPTIONAL,
    tNLCapacityIndicator                TNLCapacityIndicator            OPTIONAL,
    compositeAvailableCapacityGroup     CompositeAvailableCapacityGroup OPTIONAL,
    sliceAvailableCapacity              SliceAvailableCapacity          OPTIONAL,
    numberofActiveUEs                   NumberofActiveUEs               OPTIONAL,
    rRCConnections                      RRCConnections                  OPTIONAL,
    iE-Extensions                       ProtocolExtensionContainer { { CellMeasurementResult-Item-ExtIEs} }   OPTIONAL,
    ...
}


CellMeasurementResult-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    { ID id-NR-U-Channel-List   CRITICALITY ignore  EXTENSION NR-U-Channel-List PRESENCE optional },
    ...
}


CellReplacingInfo ::= SEQUENCE {
    replacingCells                  ReplacingCells,
    iE-Extensions                   ProtocolExtensionContainer { {CellReplacingInfo-ExtIEs}}    OPTIONAL,
    ...
}

CellReplacingInfo-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


CellToReport ::= SEQUENCE (SIZE(1..maxnoofCellsinNG-RANnode)) OF CellToReport-Item

CellToReport-Item   ::= SEQUENCE {
    cell-ID                             GlobalNG-RANCell-ID,
    sSBToReport-List                    SSBToReport-List            OPTIONAL,
    sliceToReport-List                  SliceToReport-List          OPTIONAL,
    iE-Extensions                       ProtocolExtensionContainer { { CellToReport-Item-ExtIEs} }   OPTIONAL,
    ...
}


CellToReport-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

CellToReportForDataCollection-List ::= SEQUENCE (SIZE(1..maxnoofCellsinNG-RANnode)) OF CellToReportForDataCollection-Item

CellToReportForDataCollection-Item  ::= SEQUENCE {
    cell-ID                             GlobalNG-RANCell-ID,
    iE-Extensions                       ProtocolExtensionContainer { { CellToReportForDataCollection-Item-ExtIEs} } OPTIONAL,
    ...
}

CellToReportForDataCollection-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
```

```
    { ID id-SliceToReportForDataCollection-List     CRITICALITY ignore  EXTENSION SliceToReportForDataCollection-List  PRESENCE optional },
    ...
}
CellBasedUETrajectoryPrediction ::= SEQUENCE (SIZE(1..maxnoofCellsTrajectoryPredict)) OF PredictedUETrajectory-Item



CellMeasurementInitiationResult-List ::= SEQUENCE (SIZE(1..maxnoofCellsinNG-RANnode)) OF CellMeasurementInitiationResult-Item

CellMeasurementInitiationResult-Item ::= SEQUENCE {
    cellID                                      GlobalNG-RANCell-ID,
    cellMeasurementFailureCause-List            CellMeasurementFailureCause-List OPTIONAL,
    iE-Extensions                               ProtocolExtensionContainer { { CellMeasurementInitiationResult-Item-ExtIEs} } OPTIONAL,
    ...
}
CellMeasurementInitiationResult-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    { ID id-SliceMeasurementInitiationResult        CRITICALITY reject  EXTENSION SliceMeasurementInitiationResult  PRESENCE optional},
    ...
}

CLI-MeasurementResult-List ::= SEQUENCE (SIZE(1..maxnoofCellsinNG-RANnode)) OF CLI-MeasurementResult-Item

CLI-MeasurementResult-Item ::= SEQUENCE {
    cellID                                      GlobalNG-RANCell-ID,
    ssbIndex                                    INTEGER(0..63,...)                  OPTIONAL,
    nZP-CSI-RS-ResourceIndication               INTEGER(1..64,...)                  OPTIONAL,
    cLI-MitigationIndication                    CLI-MitigationIndication            OPTIONAL,
    iE-Extensions                               ProtocolExtensionContainer { {CLI-MeasurementResult-Item-ExtIEs} }OPTIONAL,
    ...
}

CLI-MeasurementResult-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

CLI-MitigationIndication ::= ENUMERATED {true,...}

CellMeasurementResultForDataCollection-List ::= SEQUENCE (SIZE(1..maxnoofCellsinNG-RANnode)) OF CellInfoResultForDataCollection-Item

CellInfoResultForDataCollection-Item ::= SEQUENCE {
    cellID                                      GlobalNG-RANCell-ID,
    predictedRadioResourceStatus                RadioResourceStatus                 OPTIONAL,
    predictedNumberofActiveUEs                  NumberofActiveUEs                   OPTIONAL,
    predictedRRCConnections                     RRCConnections                      OPTIONAL,
    iE-Extensions                               ProtocolExtensionContainer { {CellInfoResultForDataCollection-Item-ExtIEs} }  OPTIONAL,
    ...
}
CellInfoResultForDataCollection-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    { ID id-PredictedSliceAvailableCapacity     CRITICALITY ignore  EXTENSION PredictedSliceAvailableCapacityGroup  PRESENCE optional},
    ...
}


Cell-Type-Choice ::= CHOICE {
```

```
    ng-ran-e-utra           E-UTRA-Cell-Identity,
    ng-ran-nr               NR-Cell-Identity,
    e-utran                 E-UTRA-Cell-Identity,
    choice-extension        ProtocolIE-Single-Container { { Cell-Type-Choice-ExtIEs} }
}

Cell-Type-Choice-ExtIEs XNAP-PROTOCOL-IES ::= {
    ...
}

CellMeasurementFailureCause-List ::= SEQUENCE (SIZE(1..maxFailedCellMeasObjects)) OF CellMeasurementFailureCause-Item

CellMeasurementFailureCause-Item ::= SEQUENCE {
    cellmeasurementFailedReportCharacteristics      BIT STRING(SIZE(32)),
    cause                                   Cause,
    iE-Extensions                           ProtocolExtensionContainer { { CellMeasurementFailureCause-Item-ExtIEs} } OPTIONAL,
    ...
}

CellMeasurementFailureCause-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

CHOConfiguration ::= SEQUENCE {
    choCandidateCell-List               CHOCandidateCell-List,
    iE-Extensions                       ProtocolExtensionContainer { { CHOConfiguration-ExtIEs} } OPTIONAL,
    ...
}

CHOConfiguration-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


CHOCandidateCell-List ::= SEQUENCE (SIZE(1..maxnoofCellsinCHO)) OF CHOCandidateCell-Item

CHOCandidateCell-Item ::= SEQUENCE {
    choCandidateCellID                  GlobalNG-RANCell-ID,
    choExecutionCondition-List          CHOExecutionCondition-List,
    iE-Extensions                       ProtocolExtensionContainer { { CHOCandidateCell-Item-ExtIEs} }  OPTIONAL,
    ...
}

CHOCandidateCell-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


CHOExecutionCondition-List ::= SEQUENCE (SIZE(1..maxnoofCHOexecutioncond)) OF CHOExecutionCondition-Item

CHOExecutionCondition-Item ::= SEQUENCE {   measObjectContainer                 MeasObjectContainer,
    reportConfigContainer               ReportConfigContainer,
    iE-Extensions                       ProtocolExtensionContainer { { CHOExecutionCondition-Item-ExtIEs} }   OPTIONAL,
    ...
```

```
}

CHOExecutionCondition-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


ClockQualityAcceptanceCriteria ::= SEQUENCE {
    synchronisationState            BIT STRING (SIZE(8, ...))                   OPTIONAL,
    traceabletoUTC                  ENUMERATED {true, ...}                      OPTIONAL,
    traceabletoGNSS                 ENUMERATED {true, ...}                      OPTIONAL,
    clockFrequencyStability         BIT STRING (SIZE(16))                       OPTIONAL,
    clockAccuracy                   INTEGER (1..40000000, ...)                  OPTIONAL,
    parentTimeSource                BIT STRING (SIZE(16, ...))                  OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { { ClockQualityAcceptanceCriteria-ExtIEs} }   OPTIONAL,
    ...
}

ClockQualityAcceptanceCriteria-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


ClockQualityReportingControlInfo ::= SEQUENCE {
    clockQualityDetailLevel     ClockQualityDetailLevel,
    iE-Extensions               ProtocolExtensionContainer { {ClockQualityReportingControlInfo-ExtIEs} } OPTIONAL,
    ...
}

ClockQualityReportingControlInfo-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


ClockQualityDetailLevel ::= CHOICE {
    clockQualityMetrics         NULL,
    acceptanceIndication        ClockQualityAcceptanceCriteria,
    choice-extension            ProtocolIE-Single-Container { {ClockQualityDetailLevel-ExtIEs} }
}

ClockQualityDetailLevel-ExtIEs XNAP-PROTOCOL-IES ::= {
    ...
}


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

CompositeAvailableCapacityGroup ::= SEQUENCE {
    compositeAvailableCapacityDownlink      CompositeAvailableCapacity,
    compositeAvailableCapacityUplink        CompositeAvailableCapacity,
    iE-Extensions               ProtocolExtensionContainer { { CompositeAvailableCapacityGroup-ExtIEs} }   OPTIONAL,
    ...
}
```

```
CompositeAvailableCapacityGroup-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    { ID id-CompositeAvailableCapacitySupplementaryUplink   CRITICALITY ignore  EXTENSION CompositeAvailableCapacity  PRESENCE optional },
    ...
}

CompositeAvailableCapacity ::= SEQUENCE {
    cellCapacityClassValue      CellCapacityClassValue              OPTIONAL,
    capacityValueInfo           CapacityValueInfo, -- this IE represents the IE "CapacityValue" in 9.2.2.52, it’s used to distinguish the
"CapacityValue" in 9.2.2.54
    iE-Extensions               ProtocolExtensionContainer { { CompositeAvailableCapacity-ExtIEs} }OPTIONAL,
    ...
}

CompositeAvailableCapacity-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

ControlPlaneTrafficType ::= INTEGER (1..3, ...)

CHO-MRDC-EarlyDataForwarding ::= ENUMERATED {stop, ...}

CHO-MRDC-Indicator ::= ENUMERATED {true, ..., coordination-only }



CHOtrigger ::= ENUMERATED {
    cho-initiation,
    cho-replace,
    ...
}

CHOinformation-Req ::= SEQUENCE {
    cho-trigger                     CHOtrigger,
    targetNG-RANnodeUEXnAPID        NG-RANnodeUEXnAPID                                      OPTIONAL
        -- This IE shall be present if the CHO Trigger IE is present and set to "CHO-replace" --,
    cHO-EstimatedArrivalProbability CHO-Probability                                         OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { { CHOinformation-Req-ExtIEs} } OPTIONAL,
    ...
}

CHOinformation-Req-ExtIEs XNAP-PROTOCOL-EXTENSION ::={
    { ID id-CHOTimeBasedInformation     CRITICALITY reject  EXTENSION CHOTimeBasedInformation    PRESENCE optional }|
    { ID id-CHO-Maxnoof-CondReconfig    CRITICALITY reject  EXTENSION CHO-Maxnoof-CondReconfig   PRESENCE optional },
    ...
}

CHOTimeBasedInformation ::= SEQUENCE {
    cHO-HOWindowStart           CHO-HandoverWindowStart,
    cHO-HOWindowDuration        CHO-HandoverWindowDuration,
    iE-Extensions               ProtocolExtensionContainer { {CHOTimeBasedInformation-ExtIEs} } OPTIONAL,
    ...
}

CHOTimeBasedInformation-ExtIEs  XNAP-PROTOCOL-EXTENSION ::= {
```

```
    ...
}

CHOinformation-Ack ::= SEQUENCE {
    requestedTargetCellGlobalID     Target-CGI,
    maxCHOoperations                MaxCHOpreparations                                      OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { { CHOinformation-Ack-ExtIEs} } OPTIONAL,
    ...
}

CHOinformation-Ack-ExtIEs XNAP-PROTOCOL-EXTENSION ::={
    { ID id-CHO-CPAC-Info               CRITICALITY reject      EXTENSION CHO-CPAC-Information  PRESENCE optional },
    ...
}


CHOinformation-AddReq ::= SEQUENCE {
    source-M-NGRAN-node-ID              GlobalNG-RANNode-ID,
    source-M-NGRAN-node-UE-XnAP-ID      NG-RANnodeUEXnAPID,
    cHO-EstimatedArrivalProbability     CHO-Probability                                         OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { { CHOinformation-AddReq-ExtIEs} }   OPTIONAL,
    ...
}

CHOinformation-AddReq-ExtIEs XNAP-PROTOCOL-EXTENSION ::={
    ...
}

CHOinformation-AddReqAck ::= SEQUENCE {
    pCell-ID                        GlobalNG-RANCell-ID         OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { { CHOinformation-AddReqAck-ExtIEs} }   OPTIONAL,
    ...
}

CHOinformation-AddReqAck-ExtIEs XNAP-PROTOCOL-EXTENSION ::={
    ...
}

CHOinformation-ModReq ::= SEQUENCE {
    conditionalReconfig                 ENUMERATED {intra-mn-cho, ...},
    cHO-EstimatedArrivalProbability     CHO-Probability                                         OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { { CHOinformation-ModReq-ExtIEs} }   OPTIONAL,
    ...
}

CHOinformation-ModReq-ExtIEs XNAP-PROTOCOL-EXTENSION ::={
    ...
}

CHO-Maxnoof-CondReconfig ::= INTEGER (1..8,...)

CHO-CPAC-Information ::= SEQUENCE {
    cHO-CPAC-config-indicator       CHO-CPAC-Config-Indicator       OPTIONAL,
    cHO-target-SN-node-list         CHO-target-SN-node-list,
```

```
    iE-Extensions                   ProtocolExtensionContainer { {CHO-CPAC-Information-ExtIEs}} OPTIONAL,
    ...
}

CHO-CPAC-Information-ExtIEs XNAP-PROTOCOL-EXTENSION ::={
    ...
}

CHO-CPAC-Config-Indicator ::= ENUMERATED {
    cho-only-not-prepared,
    ...
}


CHO-Probability ::= INTEGER (1..100)

CHO-HandoverWindowStart ::= INTEGER (0.. 549755813887)

CHO-HandoverWindowDuration ::= INTEGER (1..6000)

CHO-target-SN-node-list ::= SEQUENCE (SIZE(1.. maxnoofTargetSNs)) OF CHO-target-SN-node-Item

CHO-target-SN-node-Item ::= SEQUENCE {
    target-S-NG-RANnodeID               GlobalNG-RANNode-ID,
    pduSessionResourcesAdmittedList     PDUSessionResourcesAdmitted-List,
    cho-Candidate-PSCells-list          CHO-Candidate-PSCells-list,
    iE-Extensions                   ProtocolExtensionContainer { {CHO-target-SN-node-Item-ExtIEs}}   OPTIONAL,
    ...
}

CHO-target-SN-node-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::={
    ...
}


CHO-Candidate-PSCells-list ::= SEQUENCE (SIZE(1..maxnoofPSCellCandidates)) OF CHO-Candidate-PSCells-Item

CHO-Candidate-PSCells-Item ::= SEQUENCE {
    pscell-id                               NR-CGI,
    target2source-NG-RANNode-Container      OCTET STRING,
    iE-Extensions                   ProtocolExtensionContainer { {CHO-Candidate-PSCells-Item-ExtIEs}}   OPTIONAL,
    ...
}

CHO-Candidate-PSCells-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::={
    ...
}

Circle ::= SEQUENCE {
    referenceLocation           OCTET STRING,
    distanceRadius              INTEGER(1..65535, ...),
    iE-Extensions               ProtocolExtensionContainer { { Circle-ExtIEs} } OPTIONAL,
    ...
}
```

```
Circle-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

CNsubgroupID ::= INTEGER (0..7, ...)

CompleteCandidateConfig-Indicator ::= ENUMERATED {complete-candidate-config, ...}

Conditional-Reconfig-List ::= SEQUENCE (SIZE(1..maxnoofPSCellCandidates)) OF Conditional-Reconfig-Item

Conditional-Reconfig-Item ::= SEQUENCE {
    pCell-ID            Target-CGI,
    pSCell-ID           NR-CGI              OPTIONAL,
    iE-Extensions       ProtocolExtensionContainer { {Conditional-Reconfig-Item-ExtIEs} }   OPTIONAL,
    ...

}

Conditional-Reconfig-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

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


Connectivity-Support        ::= SEQUENCE {
    eNDC-Support            ENUMERATED {supported, not-supported, ...},
    iE-Extensions           ProtocolExtensionContainer { {Connectivity-Support-ExtIEs} }    OPTIONAL,
    ...
}

Connectivity-Support-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


ContainerAppLayerMeasConfig ::= OCTET STRING (SIZE (1..8000))

COUNT-PDCP-SN12 ::= SEQUENCE {
    pdcp-SN12                       INTEGER (0..4095),
    hfn-PDCP-SN12                   INTEGER (0..1048575),
    iE-Extensions                   ProtocolExtensionContainer { {COUNT-PDCP-SN12-ExtIEs} } OPTIONAL,
    ...
}

COUNT-PDCP-SN12-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


COUNT-PDCP-SN18 ::= SEQUENCE {
```

```
    pdcp-SN18                       INTEGER (0..262143),
    hfn-PDCP-SN18                   INTEGER (0..16383),
    iE-Extensions                   ProtocolExtensionContainer { {COUNT-PDCP-SN18-ExtIEs} } OPTIONAL,
    ...
}

COUNT-PDCP-SN18-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

CoverageModificationCause ::=   ENUMERATED {
    coverage,
    cell-edge-capacity,
    ...,
    network-energy-saving}

Coverage-Modification-List ::= SEQUENCE (SIZE (0..maxnoofCellsinNG-RANnode)) OF Coverage-Modification-List-Item

Coverage-Modification-List-Item ::= SEQUENCE {
    globalNG-RANCell-ID             GlobalCell-ID,
    cellCoverageState               INTEGER (0..63, ...),
    cellDeploymentStatusIndicator   CellDeploymentStatusIndicator           OPTIONAL,
    cellReplacingInfo               CellReplacingInfo                       OPTIONAL,
-- This IE shall be present if the Cell Deployment Status Indicator IE is present.
    sSB-Coverage-Modification-List  SSB-Coverage-Modification-List,
    iE-Extension            ProtocolExtensionContainer { { Coverage-Modification-List-Item-ExtIEs} } OPTIONAL,
    ...
}
Coverage-Modification-List-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
{ ID id-CoverageModificationCause       CRITICALITY ignore  EXTENSION CoverageModificationCause     PRESENCE optional},
    ...
}


CPTransportLayerInformation ::= CHOICE {
    endpointIPAddress           TransportLayerAddress,
    choice-extension            ProtocolIE-Single-Container { {CPTransportLayerInformation-ExtIEs} }
}

CPTransportLayerInformation-ExtIEs XNAP-PROTOCOL-IES ::= {
    { ID id-EndpointIPAddressAndPort        CRITICALITY reject  TYPE EndpointIPAddressAndPort    PRESENCE mandatory},
    ...
}

CPACcandidatePSCells-list ::= SEQUENCE (SIZE(1..maxnoofPSCellCandidates)) OF CPACcandidatePSCells-item

CPACcandidatePSCells-item ::= SEQUENCE {
    pscell-id                       NR-CGI,
    iE-Extensions                   ProtocolExtensionContainer { {CPACcandidatePSCells-item-ExtIEs}} OPTIONAL,
    ...
}

CPACcandidatePSCells-item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
```

```
}

CPACcandidatePSCells-wotherInfo-list ::= SEQUENCE (SIZE(1..maxnoofPSCellCandidates)) OF CPACcandidatePSCells-wotherInfo-item

CPACcandidatePSCells-wotherInfo-item ::= SEQUENCE {
    pscell-id                           NR-CGI,
    s-CPAC-CompleteCandidateConfig-Indicator        CompleteCandidateConfig-Indicator       OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { {CPACcandidatePSCells-wotherInfo-item-ExtIEs}}  OPTIONAL,
    ...
}

CPACcandidatePSCells-wotherInfo-item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


CPACConfiguration ::= SEQUENCE {
    cpacCandidateCell-List              CPACCandidateCell-List,
    iE-Extensions                       ProtocolExtensionContainer { { CPACConfiguration-ExtIEs} }   OPTIONAL,
    ...
}

CPACConfiguration-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


CPACCandidateCell-List ::= SEQUENCE (SIZE(1..maxnoofPSCellsinCPAC)) OF CPACCandidateCell-Item

CPACCandidateCell-Item ::= SEQUENCE {
    cpacCandidateCellID                 GlobalNG-RANCell-ID,
    cpacExecutionCondition-List         CPACExecutionCondition-List,
    iE-Extensions                       ProtocolExtensionContainer { { CPACCandidateCell-Item-ExtIEs} } OPTIONAL,
    ...
}

CPACCandidateCell-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


CPACExecutionCondition-List ::= SEQUENCE (SIZE(1..maxnoofCPACexecutioncond)) OF CPACExecutionCondition-Item

CPACExecutionCondition-Item ::= SEQUENCE {
    measObjectContainer                 MeasObjectContainer,
    reportConfigContainer               ReportConfigContainer,
    iE-Extensions                       ProtocolExtensionContainer { { CPACExecutionCondition-Item-ExtIEs} }  OPTIONAL,
    ...
}

CPACExecutionCondition-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}
```

```
CPCindicator ::= ENUMERATED {cpc-initiation, cpc-modification, cpc-cancellation, ...}

CPAInformationRequest ::= SEQUENCE {
    max-no-of-pscells                   INTEGER (1..maxnoofPSCellCandidates, ...),
    cpac-EstimatedArrivalProbability    CHO-Probability     OPTIONAL,
    iE-Extensions                       ProtocolExtensionContainer { { CPAInformationRequest-ExtIEs} } OPTIONAL,
    ...
}

CPAInformationRequest-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    { ID id-S-CPAC-Request-Info             CRITICALITY reject      EXTENSION   S-CPAC-Request-Info                PRESENCE    optional}|
    { ID id-S-CPAC-ReferenceConfigRequest   CRITICALITY ignore      EXTENSION   S-CPAC-ReferenceConfig-Request     PRESENCE    optional},
    ...
}

CPAInformationAck ::= SEQUENCE {
    candidate-pscells                   CPACcandidatePSCells-list,
    iE-Extensions       ProtocolExtensionContainer { { CPAInformationAck-ExtIEs} } OPTIONAL,
    ...
}

CPAInformationAck-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    { ID id-CPACcandidatePSCells-wotherInfo-list    CRITICALITY reject      EXTENSION CPACcandidatePSCells-wotherInfo-list     PRESENCE optional},
    ...
}

CPCInformationRequired::= SEQUENCE {
    cpc-target-sn-required-list     CPC-target-SN-required-list,
    iE-Extensions                   ProtocolExtensionContainer { {CPCInformationRequired-ExtIEs} } OPTIONAL,
    ...
}

CPCInformationRequired-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    { ID id-S-CPAC-Request              CRITICALITY reject      EXTENSION   S-CPAC-Request              PRESENCE    optional},
    ...
}

CPC-target-SN-required-list ::= SEQUENCE (SIZE(1..maxnoofTargetSNs)) OF CPC-target-SN-required-list-Item

CPC-target-SN-required-list-Item    ::= SEQUENCE {
    target-S-NG-RANnodeID               GlobalNG-RANNode-ID,
    cpc-indicator                       CPCindicator,
    max-no-of-pscells                   INTEGER (1..maxnoofPSCellCandidates, ...),
    cpac-EstimatedArrivalProbability    CHO-Probability                                                 OPTIONAL,
    sN-to-MN-Container                  OCTET STRING,
    iE-Extensions                       ProtocolExtensionContainer { { CPC-target-SN-required-list-Item-ExtIEs} }  OPTIONAL,
    ...
}

CPC-target-SN-required-list-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}
```

```
CPCInformationConfirm ::= SEQUENCE {
    cpc-target-sn-confirm-list CPC-target-SN-confirm-list,
    iE-Extensions       ProtocolExtensionContainer { { CPCInformationConfirm-ExtIEs} } OPTIONAL,
    ...
}

CPCInformationConfirm-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

CPC-target-SN-confirm-list ::= SEQUENCE (SIZE(1..maxnoofTargetSNs)) OF CPC-target-SN-confirm-list-Item

CPC-target-SN-confirm-list-Item ::= SEQUENCE {
    target-S-NG-RANnodeID           GlobalNG-RANNode-ID,
    candidate-pscells               CPACcandidatePSCells-list,
    iE-Extensions                   ProtocolExtensionContainer { { CPC-target-SN-confirm-list-Item-ExtIEs} } OPTIONAL,
    ...
}

CPC-target-SN-confirm-list-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    { ID id-CPAC-Preparation-Type       CRITICALITY ignore      EXTENSION CPAC-Preparation-Type   PRESENCE optional},
    ...
}

CPAInformationModReq ::= SEQUENCE {
    max-no-of-pscells                   INTEGER (1..8, ...) OPTIONAL,
    cpac-EstimatedArrivalProbability    CHO-Probability     OPTIONAL,
    iE-Extensions                       ProtocolExtensionContainer { { CPAInformationModReq-ExtIEs} } OPTIONAL,
    ...
}

CPAInformationModReq-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    { ID id-S-CPAC-Request-Info                 CRITICALITY reject      EXTENSION   S-CPAC-Request-Info            PRESENCE    optional}|
    { ID id-S-CPAC-ReferenceConfigRequest       CRITICALITY ignore      EXTENSION   S-CPAC-ReferenceConfig-Request PRESENCE    optional}|
    { ID id-S-CPAC-InterSN-ExecutionNotify      CRITICALITY reject      EXTENSION   S-CPAC-InterSN-ExecutionNotify PRESENCE    optional},
    ...
}

CPAInformationModReqAck ::= SEQUENCE {
    candidate-pscells                   CPACcandidatePSCells-list,
    iE-Extensions                       ProtocolExtensionContainer { { CPAInformationModReqAck-ExtIEs} } OPTIONAL,
    ...
}

CPAInformationModReqAck-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    { ID id-CPACcandidatePSCells-wotherInfo-list    CRITICALITY reject      EXTENSION CPACcandidatePSCells-wotherInfo-list  PRESENCE optional},
    ...
}

CPC-DataForwarding-Indicator ::= ENUMERATED {triggered, early-data-transmission-stop, ..., coordination-only}

CPAC-Preparation-Type ::= ENUMERATED {s-cpac, ...}
```

```
CPACInformationModRequired ::= SEQUENCE {
    candidate-pscells   CPACcandidatePSCells-list,
    iE-Extensions       ProtocolExtensionContainer { { CPACInformationModRequired-ExtIEs} } OPTIONAL,
    ...
}

CPACInformationModRequired-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    { ID id-CPACcandidatePSCells-wotherInfo-list    CRITICALITY reject      EXTENSION CPACcandidatePSCells-wotherInfo-list     PRESENCE optional},
    ...
}

CPCInformationUpdate::= SEQUENCE {
    cpc-target-sn-list                  CPC-target-SN-mod-list,
    iE-Extensions       ProtocolExtensionContainer { { CPCInformationUpdate-ExtIEs} } OPTIONAL,
    ...
}

CPCInformationUpdate-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


CPC-target-SN-mod-list ::= SEQUENCE (SIZE(1..maxnoofTargetSNs)) OF CPC-target-SN-mod-item

CPC-target-SN-mod-item ::= SEQUENCE {
    target-S-NG-RANnodeID               GlobalNG-RANNode-ID,
    candidate-pscells                   CPCInformationUpdatePSCells-list,
    iE-Extensions       ProtocolExtensionContainer { {CPC-target-SN-mod-item-ExtIEs} } OPTIONAL,
    ...
}

CPC-target-SN-mod-item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

CPCInformationUpdatePSCells-list ::= SEQUENCE (SIZE(1..maxnoofPSCellCandidates)) OF CPCInformationUpdatePSCells-item

CPCInformationUpdatePSCells-item ::= SEQUENCE {
    pscell-id                       NR-CGI,
    iE-Extensions                   ProtocolExtensionContainer { {CPCInformationUpdatePSCells-item-ExtIEs}}   OPTIONAL,
    ...
}

CPCInformationUpdatePSCells-item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


CriticalityDiagnostics ::= SEQUENCE {
    procedureCode                   ProcedureCode                   OPTIONAL,
    triggeringMessage               TriggeringMessage               OPTIONAL,
    procedureCriticality            Criticality                     OPTIONAL,
    iEsCriticalityDiagnostics       CriticalityDiagnostics-IE-List  OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { {CriticalityDiagnostics-ExtIEs} }   OPTIONAL,
```

```
    ...
}

CriticalityDiagnostics-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

CriticalityDiagnostics-IE-List ::= SEQUENCE (SIZE (1..maxNrOfErrors)) OF
    SEQUENCE {
        iECriticality           Criticality,
        iE-ID                   ProtocolIE-ID,
        typeOfError             TypeOfError,
        iE-Extensions           ProtocolExtensionContainer { {CriticalityDiagnostics-IE-List-ExtIEs} } OPTIONAL,
        ...
}

CriticalityDiagnostics-IE-List-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


C-RNTI ::= BIT STRING (SIZE(16))

CSI-RS-MTC-Configuration-List ::= SEQUENCE (SIZE(1.. maxnoofCSIRSconfigurations)) OF CSI-RS-MTC-Configuration-Item

CSI-RS-MTC-Configuration-Item ::= SEQUENCE {
    csi-RS-Index            INTEGER(0..95),
    csi-RS-Status           ENUMERATED {activated, deactivated, ...},
    csi-RS-Neighbour-List   CSI-RS-Neighbour-List OPTIONAL,
    iE-Extensions           ProtocolExtensionContainer { { CSI-RS-MTC-Configuration-Item-ExtIEs} }   OPTIONAL,
    ...
}

CSI-RS-MTC-Configuration-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

CSI-RS-Neighbour-List ::= SEQUENCE (SIZE(1.. maxnoofCSIRSneighbourCells)) OF CSI-RS-Neighbour-Item

CSI-RS-Neighbour-Item ::= SEQUENCE {
    nr-cgi                          NR-CGI,
    csi-RS-MTC-Neighbour-List   CSI-RS-MTC-Neighbour-List OPTIONAL,
    iE-Extensions           ProtocolExtensionContainer { { CSI-RS-Neighbour-Item-ExtIEs} }  OPTIONAL,
    ...
}

CSI-RS-Neighbour-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


CSI-RS-MTC-Neighbour-List ::= SEQUENCE (SIZE(1.. maxnoofCSIRSneighbourCellsInMTC)) OF CSI-RS-MTC-Neighbour-Item

CSI-RS-MTC-Neighbour-Item ::= SEQUENCE {
```

```
    csi-RS-Index        INTEGER(0..95),
    iE-Extensions       ProtocolExtensionContainer { { CSI-RS-MTC-Neighbour-Item-ExtIEs} }  OPTIONAL,
    ...
}


CSI-RS-MTC-Neighbour-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}



CyclicPrefix-E-UTRA-DL ::= ENUMERATED {
    normal,
    extended,
    ...
}


CyclicPrefix-E-UTRA-UL ::= ENUMERATED {
    normal,
    extended,
    ...
}

CSI-RSTransmissionIndication ::= ENUMERATED {
    activated,
    deactivated,
    ...
}

CAGListforMDT ::= SEQUENCE (SIZE(1.. maxnoofCAGforMDT))OF CAGListforMDTItem

CAGListforMDTItem ::= SEQUENCE {
    plmnID              PLMN-Identity,
    cAGID               CAG-Identifier,
    iE-Extensions       ProtocolExtensionContainer { {CAGListforMDTItem-ExtIEs} }   OPTIONAL,
    ...
}

CAGListforMDTItem-ExtIEs XNAP-PROTOCOL-EXTENSION ::={
    ...
}

CSIResourceConfiguration ::= SEQUENCE {
    cSIResourceConfigurationToAddModList            OCTET STRING OPTIONAL,
    cSIResourceConfigurationToReleaseList           OCTET STRING OPTIONAL,
    iE-Extensions                                   ProtocolExtensionContainer { { CSIResourceConfiguration-ExtIEs} } OPTIONAL,
    ...
}


CSIResourceConfiguration-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
```

```
}

CompleteCandidateConfigurationIndicator ::= ENUMERATED {complete, ...}

CSI-RSResourceConfiguration ::= SEQUENCE {
    periodicNZP-CSI-RS-ResourceConfiguration            NZP-CSI-RS-ResourceConfiguration    OPTIONAL,
    semiPersistentNZP-CSI-RS-ResourceConfiguration      NZP-CSI-RS-ResourceConfiguration    OPTIONAL,
    periodicNZP-CSI-RS-ResourceSetConfiguration         NZP-CSI-RS-ResourceSetConfiguration OPTIONAL,
    semiPersistentNZP-CSI-RS-ResourceSetConfiguration   NZP-CSI-RS-ResourceSetConfiguration OPTIONAL,
    periodicCSI-IM-ResourceConfiguration                CSI-IM-ResourceConfiguration        OPTIONAL,
    semiPersistentCSI-IM-ResourceConfiguration          CSI-IM-ResourceConfiguration        OPTIONAL,
    iE-Extensions                                       ProtocolExtensionContainer { { CSI-RSResourceConfiguration-ExtIEs} } OPTIONAL,
    ...
}


CSI-RSResourceConfiguration-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

NZP-CSI-RS-ResourceConfiguration ::= SEQUENCE { cSI-RSResourceToAddModList          OCTET STRING OPTIONAL,
    cSI-RSResourceToReleaseList         OCTET STRING OPTIONAL,
    iE-Extensions                       ProtocolExtensionContainer { { NZP-CSI-RS-ResourceConfiguration-ExtIEs} } OPTIONAL,
    ...
}


NZP-CSI-RS-ResourceConfiguration-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


NZP-CSI-RS-ResourceSetConfiguration ::= SEQUENCE {
    cSI-RSResourceSetToAddModList               OCTET STRING OPTIONAL,
    cSI-RSResourceSetToReleaseList              OCTET STRING OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { { NZP-CSI-RS-ResourceSetConfiguration-ExtIEs} } OPTIONAL,
...
}


NZP-CSI-RS-ResourceSetConfiguration-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
...
}


CSI-IM-ResourceConfiguration ::= SEQUENCE {
    cSI-IMResourceToAddModList                  OCTET STRING OPTIONAL,
    cSI-IMResourceToReleaseList                 OCTET STRING OPTIONAL,
    cSI-IMResourceSetToAddModList               OCTET STRING OPTIONAL,
    cSI-IMResourceSetToReleaseList              OCTET STRING OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { { CSI-IM-ResourceConfiguration-ExtIEs} } OPTIONAL,
...
}
```

```
CSI-IM-ResourceConfiguration-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


CellSwitchTAInformation-List ::= SEQUENCE (SIZE (1.. maxnoofTAList)) OF CellSwitchTAInformation-Item


CellSwitchTAInformation-Item ::= SEQUENCE {
    candidateCellID                 NR-CGI,
    tAValue                         TAValue,
    tagIDPointer                    TagIDPointer OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { { CellSwitchTAInformation-List-ExtIEs } } OPTIONAL,
    ...
}

CellSwitchTAInformation-List-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}



CSI-RSCoordinationRequestList ::= SEQUENCE (SIZE(1.. maxnoofCSIResourceConfigurations)) OF CSI-RSCoordinationRequest-Item

CSI-RSCoordinationRequest-Item  ::= SEQUENCE {
    transmissionRequest                 ENUMERATED{activate, deactivate},
    cSIResourceConfigurationID          INTEGER (0..111),
    tci-State-InformationList           Tci-State-InformationList   OPTIONAL,
    iE-Extensions                       ProtocolExtensionContainer { { CSI-RSCoordinationRequest-Item-ExtIEs} }  OPTIONAL,
    ...
}



CSI-RSCoordinationRequest-Item-ExtIEs   XNAP-PROTOCOL-EXTENSION ::= {
    ...
}




CSI-RSCoordinationResultList ::= SEQUENCE (SIZE(1.. maxnoofCSIResourceConfigurations)) OF CSI-RSCoordinationResult-Item


CSI-RSCoordinationResult-Item   ::= SEQUENCE {
    transmissionStatus                  ENUMERATED{activated, deactivated},
    cSIResourceConfigurationID          INTEGER (0..111),
    iE-Extensions                       ProtocolExtensionContainer { { CSI-RSCoordinationResult-Item-ExtIEs} }   OPTIONAL,
    ...
}

CSI-RSCoordinationResult-Item-ExtIEs    XNAP-PROTOCOL-EXTENSION ::= {
    ...
```

```
}



CSIResourceConfigurationID ::= INTEGER (0..111, ...)


-- D


XnUAddressInfoperPDUSession-List ::= SEQUENCE (SIZE(1..maxnoofPDUSessions)) OF XnUAddressInfoperPDUSession-Item

XnUAddressInfoperPDUSession-Item ::= SEQUENCE {
    pduSession-ID           PDUSession-ID,
    dataForwardingInfoFromTargetNGRANnode       DataForwardingInfoFromTargetNGRANnode                               OPTIONAL,
    pduSessionResourceSetupCompleteInfo-SNterm          PDUSessionResourceBearerSetupCompleteInfo-SNterminated     OPTIONAL,
    iE-Extension            ProtocolExtensionContainer { { XnUAddressInfoperPDUSession-Item-ExtIEs} }              OPTIONAL,
    ...
}

XnUAddressInfoperPDUSession-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
{ ID id-SecondarydataForwardingInfoFromTarget-List  CRITICALITY ignore  EXTENSION SecondarydataForwardingInfoFromTarget-List PRESENCE optional}|
{ ID id-DRB-IDs-takenintouse                        CRITICALITY reject  EXTENSION DRB-List                                  PRESENCE optional}|
{ ID id-dataForwardingInfoFromTargetE-UTRANnode     CRITICALITY ignore  EXTENSION DataForwardingInfoFromTargetE-UTRANnode   PRESENCE optional},
    ...
}

DataForwardingInfoFromTargetE-UTRANnode ::= SEQUENCE {
    dataForwardingInfoFromTargetE-UTRANnode-List            DataForwardingInfoFromTargetE-UTRANnode-List,
    iE-Extension        ProtocolExtensionContainer { { DataForwardingInfoFromTargetE-UTRANnode-ExtIEs} }   OPTIONAL,
    ...
}

DataForwardingInfoFromTargetE-UTRANnode-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

DataForwardingInfoFromTargetE-UTRANnode-List ::= SEQUENCE (SIZE(1.. maxnoofDataForwardingTunneltoE-UTRAN)) OF DataForwardingInfoFromTargetE-
UTRANnode-Item

DataForwardingInfoFromTargetE-UTRANnode-Item ::= SEQUENCE {
    dlForwardingUPTNLInformation    UPTransportLayerInformation,
    qosFlowsToBeForwarded-List  QoSFlowsToBeForwarded-List,
    iE-Extension        ProtocolExtensionContainer { { DataForwardingInfoFromTargetE-UTRANnode-Item-ExtIEs} } OPTIONAL,
    ...
}

DataForwardingInfoFromTargetE-UTRANnode-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

QoSFlowsToBeForwarded-List ::= SEQUENCE (SIZE(1..maxnoofQoSFlows)) OF QoSFlowsToBeForwarded-Item
QoSFlowsToBeForwarded-Item ::= SEQUENCE {
```

```
    qosFlowIdentifier           QoSFlowIdentifier,
    iE-Extension        ProtocolExtensionContainer { { QoSFlowsToBeForwarded-Item-ExtIEs} } OPTIONAL,
    ...
}

QoSFlowsToBeForwarded-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


DataForwardingInfoFromTargetNGRANnode ::= SEQUENCE {
    qosFlowsAcceptedForDataForwarding-List          QoSFLowsAcceptedToBeForwarded-List,
    pduSessionLevelDLDataForwardingInfo             UPTransportLayerInformation                         OPTIONAL,
    pduSessionLevelULDataForwardingInfo             UPTransportLayerInformation                         OPTIONAL,
    dataForwardingResponseDRBItemList               DataForwardingResponseDRBItemList                   OPTIONAL,
    iE-Extension        ProtocolExtensionContainer { {DataForwardingInfoFromTargetNGRANnode-ExtIEs} }   OPTIONAL,
    ...
}

DataForwardingInfoFromTargetNGRANnode-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    { ID id-DirectForwardingPathAvailability    CRITICALITY ignore      EXTENSION DirectForwardingPathAvailability    PRESENCE optional },
    ...
}


QoSFLowsAcceptedToBeForwarded-List ::= SEQUENCE (SIZE(1.. maxnoofQoSFlows)) OF QoSFLowsAcceptedToBeForwarded-Item

QoSFLowsAcceptedToBeForwarded-Item ::= SEQUENCE {
    qosFlowIdentifier           QoSFlowIdentifier,
    iE-Extension                ProtocolExtensionContainer { {QoSFLowsAcceptedToBeForwarded-Item-ExtIEs} } OPTIONAL,
    ...
}

QoSFLowsAcceptedToBeForwarded-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


DataforwardingandOffloadingInfofromSource ::= SEQUENCE {
    qosFlowsToBeForwarded           QoSFLowsToBeForwarded-List,
    sourceDRBtoQoSFlowMapping       DRBToQoSFlowMapping-List                                            OPTIONAL,
    iE-Extension        ProtocolExtensionContainer { {DataforwardingandOffloadingInfofromSource-ExtIEs} }  OPTIONAL,
    ...
}

DataforwardingandOffloadingInfofromSource-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

QoSFLowsToBeForwarded-List ::= SEQUENCE (SIZE(1.. maxnoofQoSFlows)) OF QoSFLowsToBeForwarded-Item

QoSFLowsToBeForwarded-Item ::= SEQUENCE {
    qosFlowIdentifier           QoSFlowIdentifier,
    dl-dataforwarding           DLForwarding,
```

```
    ul-dataforwarding           ULForwarding,
    iE-Extension        ProtocolExtensionContainer { {QoSFLowsToBeForwarded-Item-ExtIEs} }  OPTIONAL,
    ...
}

QoSFLowsToBeForwarded-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
{ ID id-ULForwardingProposal                    CRITICALITY ignore  EXTENSION ULForwardingProposal     PRESENCE optional }|
{ ID id-SourceDLForwardingIPAddress             CRITICALITY ignore  EXTENSION TransportLayerAddress    PRESENCE optional }|
{ ID id-SourceNodeDLForwardingIPAddress         CRITICALITY ignore  EXTENSION TransportLayerAddress    PRESENCE optional },
    ...
}



DataForwardingResponseDRBItemList ::= SEQUENCE (SIZE(1..maxnoofDRBs)) OF DataForwardingResponseDRBItem

DataForwardingResponseDRBItem ::= SEQUENCE {
    drb-ID              DRB-ID,
    dlForwardingUPTNL   UPTransportLayerInformation                                         OPTIONAL,
    ulForwardingUPTNL   UPTransportLayerInformation                                         OPTIONAL,
    iE-Extension        ProtocolExtensionContainer { {DataForwardingResponseDRBItem-ExtIEs} }   OPTIONAL,
    ...
}

DataForwardingResponseDRBItem-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


DataTrafficResources ::= BIT STRING (SIZE(6..17600))


DataTrafficResourceIndication ::= SEQUENCE {
    activationSFN                   ActivationSFN,
    sharedResourceType              SharedResourceType,
    reservedSubframePattern         ReservedSubframePattern                                 OPTIONAL,
    iE-Extension        ProtocolExtensionContainer { {DataTrafficResourceIndication-ExtIEs} }   OPTIONAL,
    ...
}

DataTrafficResourceIndication-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


DAPSRequestInfo ::= SEQUENCE {
    dapsIndicator               ENUMERATED {daps-HO-required, ...},
    iE-Extensions               ProtocolExtensionContainer { {DAPSRequestInfo-ExtIEs} } OPTIONAL,
    ...
}

DAPSRequestInfo-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}
```

```
DAPSResponseInfo-List ::= SEQUENCE (SIZE (1..maxnoofDRBs)) OF DAPSResponseInfo-Item

DAPSResponseInfo-Item ::= SEQUENCE {
    drbID                       DRB-ID,
    dapsResponseIndicator       ENUMERATED {daps-HO-accepted, daps-HO-not-accepted, ...},
    iE-Extensions               ProtocolExtensionContainer { {DAPSResponseInfo-Item-ExtIEs} } OPTIONAL,
    ...
}

DAPSResponseInfo-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


DeliveryStatus  ::= INTEGER (0..4095, ...)


DesiredActNotificationLevel ::= ENUMERATED {none, qos-flow, pdu-session, ue-level, ...}

DefaultDRB-Allowed ::= ENUMERATED {true, false, ...}

DirectForwardingPathAvailability ::= ENUMERATED {direct-path-available, ...}

DirectForwardingPathAvailabilityWithSourceMN ::= ENUMERATED {direct-path-available, ...}

DLCountChoice ::= CHOICE {
    count12bits             COUNT-PDCP-SN12,
    count18bits             COUNT-PDCP-SN18,
    choice-extension        ProtocolIE-Single-Container { {DLCountChoice-ExtIEs} }
}

DLCountChoice-ExtIEs XNAP-PROTOCOL-IES ::= {
    ...
}


DLForwarding    ::= ENUMERATED {dl-forwarding-proposed, ...}


DL-GBR-PRB-usage::= INTEGER (0..100)

DL-GBR-PRB-usage-for-MIMO::= INTEGER (0..100)

DL-non-GBR-PRB-usage::= INTEGER (0..100)

DL-non-GBR-PRB-usage-for-MIMO::= INTEGER (0..100)

DLF1Terminating-BHInfo ::= SEQUENCE {
    egressBAPRoutingID      BAPRoutingID,
    egressBHRLCCHID         BHRLCChannelID,
    iE-Extensions           ProtocolExtensionContainer { { DLF1Terminating-BHInfo-ExtIEs} } OPTIONAL,
    ...
```

```
}

DLF1Terminating-BHInfo-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

DLLBTFailureInformationRequest ::= ENUMERATED {inquiry, ...}
DLLBTFailureInformationList ::= SEQUENCE (SIZE(1.. maxnoofLBTFailureInformation)) OF DLLBTFailureInformationList-Item

DLLBTFailureInformationList-Item::= SEQUENCE {
    uEAssistantIdentifier       NG-RANnodeUEXnAPID,
    numberOfDLLBTFailures       INTEGER (1..1000,...)                           OPTIONAL,
    iE-Extensions               ProtocolExtensionContainer { { DLLBTFailureInformationList-Item-ExtIEs} }  OPTIONAL,
    ...
}

DLLBTFailureInformationList-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


DLNonF1Terminating-BHInfo ::= SEQUENCE {
    ingressBAPRoutingID         BAPRoutingID,
    ingressBHRLCCHID            BHRLCChannelID,
    priorhopBAPAddress          BAPAddress,
    iabqosMappingInformation    IAB-QoS-Mapping-Information,
    iE-Extensions       ProtocolExtensionContainer { { DLNonF1Terminating-BHInfo-ExtIEs} } OPTIONAL,
    ...
}

DLNonF1Terminating-BHInfo-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


DL-Total-PRB-usage::= INTEGER (0..100)

DL-Total-PRB-usage-for-MIMO::= INTEGER (0..100)

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


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


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

DRB-List-withCause-Item ::= SEQUENCE {
    drb-id      DRB-ID,
    cause       Cause,
    rLC-Mode    RLCMode                             OPTIONAL,
    iE-Extension        ProtocolExtensionContainer { {DRB-List-withCause-Item-ExtIEs} } OPTIONAL,
    ...
}
```

```
DRB-List-withCause-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


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


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

DRBsSubjectToDLDiscarding-Item ::= SEQUENCE {
    drbID               DRB-ID,
    dlCount             DLCountChoice,
    iE-Extension        ProtocolExtensionContainer { { DRBsSubjectToDLDiscarding-Item-ExtIEs} } OPTIONAL,
    ...
}

DRBsSubjectToDLDiscarding-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


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

DRBsSubjectToEarlyStatusTransfer-Item ::= SEQUENCE {
    drbID               DRB-ID,
    dlCount             DLCountChoice,
    iE-Extension        ProtocolExtensionContainer { { DRBsSubjectToEarlyStatusTransfer-Item-ExtIEs} }  OPTIONAL,
    ...
}

DRBsSubjectToEarlyStatusTransfer-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


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

DRBsSubjectToStatusTransfer-Item ::= SEQUENCE {
    drbID               DRB-ID,
    pdcpStatusTransfer-UL   DRBBStatusTransferChoice,
    pdcpStatusTransfer-DL   DRBBStatusTransferChoice,
    iE-Extension        ProtocolExtensionContainer { {DRBsSubjectToStatusTransfer-Item-ExtIEs} }  OPTIONAL,
    ...
}

DRBsSubjectToStatusTransfer-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    { ID id-OldQoSFlowMap-ULendmarkerexpected   CRITICALITY reject      EXTENSION QoSFlows-List           PRESENCE optional }|
    { ID id-PDCPSNGapTransfer-UL                CRITICALITY ignore      EXTENSION PDCPSNGapTransfer-UL    PRESENCE optional },
    ...
}
```

```
DRBBStatusTransferChoice ::= CHOICE {
    pdcp-sn-12bits      DRBBStatusTransfer12bitsSN,
    pdcp-sn-18bits      DRBBStatusTransfer18bitsSN,
    choice-extension        ProtocolIE-Single-Container { {DRBBStatusTransferChoice-ExtIEs} }
}

DRBBStatusTransferChoice-ExtIEs XNAP-PROTOCOL-IES ::= {
    ...
}


DRBBStatusTransfer12bitsSN ::= SEQUENCE {
    receiveStatusofPDCPSDU  BIT STRING (SIZE(1..2048))                                      OPTIONAL,
    cOUNTValue              COUNT-PDCP-SN12,
    iE-Extension            ProtocolExtensionContainer { {DRBBStatusTransfer12bitsSN-ExtIEs} }  OPTIONAL,
    ...
}

DRBBStatusTransfer12bitsSN-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


DRBBStatusTransfer18bitsSN ::= SEQUENCE {
    receiveStatusofPDCPSDU  BIT STRING (SIZE(1..131072))                                    OPTIONAL,
    cOUNTValue              COUNT-PDCP-SN18,
    iE-Extension            ProtocolExtensionContainer { {DRBBStatusTransfer18bitsSN-ExtIEs} }  OPTIONAL,
    ...
}

DRBBStatusTransfer18bitsSN-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

PDCPSNGapTransfer-UL ::= CHOICE {
    pdcp-sn-12bits          DRBStatusTransfer12bitsSN-ULGap,
    pdcp-sn-18bits          DRBStatusTransfer18bitsSN-ULGap,
    choice-extension        ProtocolIE-Single-Container { { PDCPSNGapTransfer-UL-ExtIEs} }
}

PDCPSNGapTransfer-UL-ExtIEs XNAP-PROTOCOL-IES ::= {
    ...
}

DRBStatusTransfer12bitsSN-ULGap ::= SEQUENCE {
    discardBitmap           BIT STRING (SIZE(1..2048)),
    iE-Extension            ProtocolExtensionContainer { { DRBStatusTransfer12bitsSN-ULGap-ExtIEs} } OPTIONAL,
    ...
}

DRBStatusTransfer12bitsSN-ULGap-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}
```

```
DRBStatusTransfer18bitsSN-ULGap ::= SEQUENCE {
    discardBitmap           BIT STRING (SIZE(1..131072)),
    iE-Extension            ProtocolExtensionContainer { {DRBStatusTransfer18bitsSN-ULGap-ExtIEs} }  OPTIONAL,
    ...
}

DRBStatusTransfer18bitsSN-ULGap-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}




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

DRBToQoSFlowMapping-Item ::= SEQUENCE {
    drb-ID                          DRB-ID,
    qosFlows-List                   QoSFlows-List,
    rLC-Mode                        RLCMode                                 OPTIONAL,
    iE-Extension        ProtocolExtensionContainer { {DRBToQoSFlowMapping-Item-ExtIEs} }    OPTIONAL,
    ...
}

DRBToQoSFlowMapping-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    { ID id-DAPSRequestInfo     CRITICALITY ignore      EXTENSION DAPSRequestInfo       PRESENCE optional },
    ...
}


DUF-Slot-Config-List    ::= SEQUENCE (SIZE(1..maxnoofDUFSlots)) OF DUF-Slot-Config-Item


DUF-Slot-Config-Item    ::= CHOICE {
    explicitFormat              ExplicitFormat,
    implicitFormat              ImplicitFormat,
    choice-extension                ProtocolIE-Single-Container { { DUF-Slot-Config-Item-ExtIEs} }
}

DUF-Slot-Config-Item-ExtIEs XNAP-PROTOCOL-IES ::= {
    ...
}


DUFSlotformatIndex ::= INTEGER(0..254)

DUFTransmissionPeriodicity ::= ENUMERATED { ms0p5, ms0p625, ms1, ms1p25, ms2, ms2p5, ms5, ms10, ...}


DU-RX-MT-RX ::= ENUMERATED {supported, not-supported, supported-FDM-required, ...}

DU-TX-MT-TX ::= ENUMERATED {supported, not-supported, supported-FDM-required, ...}
```

```
DU-RX-MT-TX ::= ENUMERATED {supported, not-supported, supported-FDM-required, ...}

DU-TX-MT-RX ::= ENUMERATED {supported, not-supported, supported-FDM-required, ...}



DuplicationActivation ::= ENUMERATED {active, inactive, ...}


Dynamic5QIDescriptor ::= SEQUENCE {
    priorityLevelQoS            PriorityLevelQoS,
    packetDelayBudget           PacketDelayBudget,
    packetErrorRate             PacketErrorRate,
    fiveQI                      FiveQI                                          OPTIONAL,
    delayCritical               ENUMERATED {delay-critical, non-delay-critical, ...}    OPTIONAL,
-- 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,
-- This IE shall be present if the GBR QoS Flow Information IE is present in the QoS Flow Level QoS Parameters IE.
    maximumDataBurstVolume      MaximumDataBurstVolume                          OPTIONAL,
    iE-Extension        ProtocolExtensionContainer { {Dynamic5QIDescriptor-ExtIEs } }   OPTIONAL,
    ...
}

Dynamic5QIDescriptor-ExtIEs XNAP-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},
    ...
}

DataForwardingInfoForLTM-List ::=  SEQUENCE (SIZE(1..maxnoofPDUSessions)) OF DataForwardingInfoForLTM-Item

DataForwardingInfoForLTM-Item ::= SEQUENCE {
    pDUSessionID                            PDUSession-ID,
    dataForwardingInfoFromTargetNGRANnode   DataForwardingInfoFromTargetNGRANnode,
    iE-Extension                            ProtocolExtensionContainer { { DataForwardingInfoForLTM-Item-ExtIEs} } OPTIONAL,
    ...
}

DataForwardingInfoForLTM-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


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

-- E

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

ECNMarkingorCongestionInformationReportingRequest ::= CHOICE {
    eCNMarkingAtRANRequest              ECNMarkingAtRANRequest,
    eCNMarkingAtUPFRequest              ECNMarkingAtUPFRequest,
    congestionInformationRequest        CongestionInformationRequest,
```

```
    choice-Extensions               ProtocolIE-Single-Container { {ECNMarkingorCongestionInformationReportingRequest-ExtIEs} }
}

ECNMarkingorCongestionInformationReportingRequest-ExtIEs XNAP-PROTOCOL-IES ::= {
    ...

}

ECNMarkingAtRANRequest ::= ENUMERATED {ul, dl, both, stop,...}

ECNMarkingAtUPFRequest ::= ENUMERATED {ul, dl, both, stop,...}


CongestionInformationRequest    ::= ENUMERATED {ul, dl, both, stop, ...}

ECNMarkingorCongestionInformationReportingStatus ::= ENUMERATED {active, not-active, ...}

EnergyCost ::= INTEGER (0..10000, ...)


EquivalentSNPNs ::= SEQUENCE (SIZE(1..maxnoofESNPNs)) OF SNPNIdentity


E-RAB-ID        ::= INTEGER (0..15, ...)


E-UTRAARFCN ::= INTEGER (0..maxEARFCN)


E-UTRA-Cell-Identity            ::= BIT STRING (SIZE(28))

ERedcap-Bcast-Information ::= BIT STRING(SIZE(8))

E-UTRA-CGI ::= SEQUENCE {
    plmn-id             PLMN-Identity,
    e-utra-CI           E-UTRA-Cell-Identity,
    iE-Extension        ProtocolExtensionContainer { {E-UTRA-CGI-ExtIEs} }  OPTIONAL,
    ...
}

E-UTRA-CGI-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


E-UTRAFrequencyBandIndicator ::= INTEGER (1..256, ...)


E-UTRAMultibandInfoList ::= SEQUENCE (SIZE(1..maxnoofEUTRABands)) OF E-UTRAFrequencyBandIndicator


EUTRAPagingeDRXInformation ::= SEQUENCE {
    eutrapaging-eDRX-Cycle      EUTRAPaging-eDRX-Cycle,
    eutrapaging-Time-Window     EUTRAPaging-Time-Window                                     OPTIONAL,
```

```
    iE-Extensions           ProtocolExtensionContainer { {EUTRAPagingeDRXInformation-ExtIEs} }  OPTIONAL,
    ...
}

EUTRAPagingeDRXInformation-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

EUTRAPaging-eDRX-Cycle ::= ENUMERATED {
    hfhalf, hf1, hf2, hf4, hf6,
    hf8, hf10, hf12, hf14, hf16,
    hf32, hf64, hf128, hf256,
    ...
}


EUTRAPaging-Time-Window ::= ENUMERATED {
    s1, s2, s3, s4, s5,
    s6, s7, s8, s9, s10,
    s11, s12, s13, s14, s15, s16,
    ...
}

E-UTRAPCI ::= INTEGER (0..503, ...)


E-UTRAPRACHConfiguration ::= SEQUENCE {
    rootSequenceIndex                   INTEGER (0..837),
    zeroCorrelationIndex                INTEGER (0..15),
    highSpeedFlag                       ENUMERATED {true, false, ...},
    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 Served Cell Information E-UTRA IE is set to the value "TDD" --
    iE-Extensions                       ProtocolExtensionContainer { {E-UTRAPRACHConfiguration-ExtIEs} }  OPTIONAL,
    ...
}

E-UTRAPRACHConfiguration-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


E-UTRATransmissionBandwidth ::= ENUMERATED {bw6, bw15, bw25, bw50, bw75, bw100, ..., bw1}

EndpointIPAddressAndPort ::=SEQUENCE {
    endpointIPAddress               TransportLayerAddress,
    portNumber                      PortNumber,
    iE-Extensions                   ProtocolExtensionContainer { { EndpointIPAddressAndPort-ExtIEs} } OPTIONAL
}

EndpointIPAddressAndPort-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}
```

```
EventTriggered ::= SEQUENCE {
    loggedEventTriggeredConfig          LoggedEventTriggeredConfig,
    iE-Extensions       ProtocolExtensionContainer { { EventTriggered-ExtIEs} } OPTIONAL,
    ...
}

EventTriggered-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

EventType ::= ENUMERATED {
    report-upon-change-of-serving-cell,
    report-UE-moving-presence-into-or-out-of-the-Area-of-Interest,
    ...,
    report-upon-change-of-serving-cell-and-Area-of-Interest,
    report-aerial-UE-flight-information
}


EventTypeTrigger ::= CHOICE {
    outOfCoverage                   ENUMERATED {true, ...},
    eventL1     EventL1,
    choice-Extensions       ProtocolIE-Single-Container { {EventTypeTrigger-ExtIEs} }
}

EventTypeTrigger-ExtIEs XNAP-PROTOCOL-IES ::= {
    ...
}

EventL1 ::= SEQUENCE {
    l1Threshold                 MeasurementThresholdL1LoggedMDT,
    hysteresis                  Hysteresis,
    timeToTrigger               TimeToTrigger,
    iE-Extensions       ProtocolExtensionContainer { { EventL1-ExtIEs} } OPTIONAL,
    ...
}

EventL1-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

MeasurementThresholdL1LoggedMDT ::= CHOICE {
    threshold-RSRP              Threshold-RSRP,
    threshold-RSRQ              Threshold-RSRQ,
    ...,
    choice-extension        ProtocolIE-Single-Container { {MeasurementThresholdL1LoggedMDT-ExtIEs} }
}

MeasurementThresholdL1LoggedMDT-ExtIEs XNAP-PROTOCOL-IES ::= {
    ...
}

ExcessPacketDelayThresholdConfiguration ::= SEQUENCE (SIZE(1..maxnoofThresholdsForExcessPacketDelay)) OF ExcessPacketDelayThresholdItem
```

```
ExcessPacketDelayThresholdItem ::= SEQUENCE {
    fiveQI                              FiveQI,
    excessPacketDelayThresholdValue     ExcessPacketDelayThresholdValue,
    iE-Extensions       ProtocolExtensionContainer { { ExcessPacketDelayThresholdItem-ExtIEs } }  OPTIONAL,
    ...
}

ExcessPacketDelayThresholdItem-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

ExcessPacketDelayThresholdValue ::= ENUMERATED {
    ms0dot25, ms0dot5, ms1, ms2, ms4, ms5, ms10, ms20, ms30, ms40, ms50, ms60, ms70, ms80, ms90, ms100, ms150, ms300, ms500,
    ...
}

ExpectedActivityPeriod ::= INTEGER (1..30|40|50|60|80|100|120|150|180|181, ...)

ExpectedHOInterval ::= ENUMERATED {
    sec15, sec30, sec60, sec90, sec120, sec180, long-time,
    ...
}

ExpectedIdlePeriod ::= INTEGER (1..30|40|50|60|80|100|120|150|180|181, ...)

ExpectedUEActivityBehaviour ::= SEQUENCE {
    expectedActivityPeriod                  ExpectedActivityPeriod                  OPTIONAL,
    expectedIdlePeriod                      ExpectedIdlePeriod                      OPTIONAL,
    sourceOfUEActivityBehaviourInformation  SourceOfUEActivityBehaviourInformation  OPTIONAL,
    iE-Extensions       ProtocolExtensionContainer { {ExpectedUEActivityBehaviour-ExtIEs} } OPTIONAL,
    ...
}

ExpectedUEActivityBehaviour-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

ExpectedUEBehaviour ::= SEQUENCE {
    expectedUEActivityBehaviour     ExpectedUEActivityBehaviour                     OPTIONAL,
    expectedHOInterval              ExpectedHOInterval                          OPTIONAL,
    expectedUEMobility              ExpectedUEMobility                          OPTIONAL,
    expectedUEMovingTrajectory      ExpectedUEMovingTrajectory                  OPTIONAL,
    iE-Extensions       ProtocolExtensionContainer { {ExpectedUEBehaviour-ExtIEs} } OPTIONAL,
    ...
}

ExpectedUEBehaviour-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

ExpectedUEMobility ::= ENUMERATED {
    stationary,
    mobile,
```

```
    ...
}

ExpectedUEMovingTrajectory ::= SEQUENCE (SIZE(1..maxnoofCellsUEMovingTrajectory)) OF ExpectedUEMovingTrajectoryItem

ExpectedUEMovingTrajectoryItem ::= SEQUENCE {
    nGRAN-CGI               GlobalNG-RANCell-ID,
    timeStayedInCell        INTEGER (0..4095)                                                   OPTIONAL,
    iE-Extensions       ProtocolExtensionContainer { {ExpectedUEMovingTrajectoryItem-ExtIEs} }  OPTIONAL,
    ...
}

ExpectedUEMovingTrajectoryItem-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

SourceOfUEActivityBehaviourInformation ::= ENUMERATED {
    subscription-information,
    statistics,
    ...
}

ExplicitFormat ::=  SEQUENCE {
    permutation         Permutation,
    noofDownlinkSymbols INTEGER(0..14)      OPTIONAL,
    noofUplinkSymbols   INTEGER(0..14)      OPTIONAL,
    iE-Extensions       ProtocolExtensionContainer { { ExplicitFormat-ExtIEs} } OPTIONAL,
    ...
}

ExplicitFormat-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


ExtendedRATRestrictionInformation ::= SEQUENCE {
    primaryRATRestriction       BIT STRING (SIZE(8, ..., 16)),
    secondaryRATRestriction     BIT STRING (SIZE(8, ...)),
    iE-Extensions       ProtocolExtensionContainer { {ExtendedRATRestrictionInformation-ExtIEs} } OPTIONAL,
    ...
}

ExtendedRATRestrictionInformation-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


ExtendedPacketDelayBudget ::= INTEGER (0..65535, ..., 65536..109999)

ExtendedSliceSupportList    ::= SEQUENCE (SIZE(1..maxnoofExtSliceItems)) OF S-NSSAI

ExtendedUEIdentityIndexValue ::= BIT STRING (SIZE(16))

ExtTLAs ::= SEQUENCE (SIZE(1..maxnoofExtTLAs)) OF ExtTLA-Item
```

```
ExtTLA-Item ::= SEQUENCE {
    iPsecTLA                        TransportLayerAddress              OPTIONAL,
    gTPTransportLayerAddresses      GTPTLAs                            OPTIONAL,
    iE-Extensions       ProtocolExtensionContainer { {ExtTLA-Item-ExtIEs} } OPTIONAL,
    ...
}

ExtTLA-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


GTPTLAs ::= SEQUENCE (SIZE(1.. maxnoofGTPTLAs)) OF  GTPTLA-Item


GTPTLA-Item ::= SEQUENCE {
    gTPTransportLayerAddresses             TransportLayerAddress,
    iE-Extensions   ProtocolExtensionContainer { { GTPTLA-Item-ExtIEs } }       OPTIONAL,
    ...
}

GTPTLA-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

EarlySyncInformationRequest ::= SEQUENCE {
    earlySyncConfigurationRequest           ENUMERATED {true, ...},
    earlyRACHResourcesProviders-List        EarlyRACHResourcesProviders-List OPTIONAL,
    iE-Extensions                           ProtocolExtensionContainer { { EarlySyncInformationRequest-ExtIEs} } OPTIONAL,
    ...
}

EarlySyncInformationRequest-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


EarlySyncInformation ::= SEQUENCE {
    earlyULSyncConfig                       EarlyULSyncConfig OPTIONAL,
    earlyULSyncConfigSUL                    EarlyULSyncConfig OPTIONAL,
    iE-Extensions                           ProtocolExtensionContainer { { EarlySyncInformation-ExtIEs} }  OPTIONAL,
    ...
}

EarlySyncInformation-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}



EarlyRACHResourcesProviders-List ::= SEQUENCE (SIZE(1..maxnoofEarlyRACHResourcesID)) OF EarlyRACHResourcesProviders-Item

EarlyRACHResourcesProviders-Item ::= SEQUENCE {
```

```
    globalgNBID                             GlobalgNB-ID,
    earlyRACHResourcesRequesterID           EarlyRACHResourcesRequesterID,
    iE-Extensions                           ProtocolExtensionContainer { { EarlyRACHResourcesProviders-Item-ExtIEs} }  OPTIONAL,
    ...
}

EarlyRACHResourcesProviders-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}



EarlyULSyncConfig ::= SEQUENCE {
    rACHConfiguration                   OCTET STRING,
    earlyRACHResources-List             EarlyRACHResources-List OPTIONAL,
    iE-Extensions                       ProtocolExtensionContainer { { EarlyULSyncConfig-ExtIEs} } OPTIONAL,
    ...
}

EarlyULSyncConfig-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

EarlyRACHResources-List ::= SEQUENCE (SIZE(1..maxnoofEarlyRACHResourcesID)) OF EarlyRACHResources-Item

EarlyRACHResources-Item ::= SEQUENCE {
    globalgNBID                             GlobalgNB-ID  ,
    earlyRACHResourcesRequesterID           EarlyRACHResourcesRequesterID,
    preambleIndexList                       PreambleIndexList       OPTIONAL,
    iE-Extensions                           ProtocolExtensionContainer { { EarlyRACHResources-Item-ExtIEs} }  OPTIONAL,
    ...
}

EarlyRACHResources-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

EarlyRACHResourcesRequesterID ::= INTEGER (0..68719476735)



-- F
FailureType ::= ENUMERATED {
    toolateCPCExecution,
    cPCorCPA-ExecutiontowrongPSCell,
    ...
}

F1CTrafficContainer ::= OCTET STRING

F1-terminatingIAB-donorIndicator ::= ENUMERATED {true, ...}

F1-TerminatingTopologyBHInformation ::= SEQUENCE {
    f1TerminatingBHInformation-List         F1TerminatingBHInformation-List,
```

```
    iE-Extensions                          ProtocolExtensionContainer { {F1-TerminatingTopologyBHInformation-ExtIEs} }  OPTIONAL,
    ...
}

F1-TerminatingTopologyBHInformation-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

F1TerminatingBHInformation-List ::= SEQUENCE (SIZE(1..maxnoofBHInfo)) OF F1TerminatingBHInformation-Item

F1TerminatingBHInformation-Item ::= SEQUENCE {
    bHInfoIndex                BHInfoIndex,
    dLTNLAddress               IABTNLAddress,
    dlF1TerminatingBHInfo      DLF1Terminating-BHInfo      OPTIONAL,
    ulF1TerminatingBHInfo      ULF1Terminating-BHInfo      OPTIONAL,
    iE-Extension        ProtocolExtensionContainer { { F1TerminatingBHInformation-Item-ExtIEs} }  OPTIONAL,
    ...
}

F1TerminatingBHInformation-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


FiveGCMobilityRestrictionListContainer ::= OCTET STRING
-- This octets of the OCTET STRING contain the Mobility Restriction List IE as specified in TS 38.413 [5]. --

FiveGProSeAuthorized ::= SEQUENCE {
    fiveGproSeDirectDiscovery                  FiveGProSeDirectDiscovery                              OPTIONAL,
    fiveGproSeDirectCommunication              FiveGProSeDirectCommunication                          OPTIONAL,
    fiveGnrProSeLayer2UEtoNetworkRelay      FiveGProSeLayer2UEtoNetworkRelay                          OPTIONAL,
    fiveGnrProSeLayer3UEtoNetworkRelay         FiveGProSeLayer3UEtoNetworkRelay                       OPTIONAL,
    fiveGnrProSeLayer2RemoteUE                 FiveGProSeLayer2RemoteUE                               OPTIONAL,
    iE-Extensions                              ProtocolExtensionContainer { {FiveGProSeAuthorized-ExtIEs} } OPTIONAL,
    ...
}

FiveGProSeAuthorized-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    { ID id-FiveGProSeLayer2Multipath                      CRITICALITY ignore  EXTENSION FiveGProSeLayer2Multipath            PRESENCE optional }|
    { ID id-FiveGProSeLayer2UEtoUERelay                    CRITICALITY ignore  EXTENSION FiveGProSeLayer2UEtoUERelay          PRESENCE optional }|
    { ID id-FiveGProSeLayer2UEtoUERemote                   CRITICALITY ignore  EXTENSION FiveGProSeLayer2UEtoUERemote         PRESENCE optional }|
    { ID id-FiveGProSeLayer3MHUEtoNetworkRelay             CRITICALITY ignore  EXTENSION FiveGProSeLayer3MHUEtoNetworkRelay   PRESENCE optional }|
    { ID id-FiveGProSeLayer2MHUEtoNetworkRelay             CRITICALITY ignore  EXTENSION FiveGProSeLayer2MHUEtoNetworkRelay   PRESENCE optional }|
    { ID id-FiveGProSeLayer2MHIntermediateUEtoNetworkRelay CRITICALITY ignore  EXTENSION FiveGProSeLayer2MHIntermediateUEtoNetworkRelay   PRESENCE
optional }|
    { ID id-FiveGProSeLayer2MHRemote                       CRITICALITY ignore  EXTENSION FiveGProSeLayer2MHRemote            PRESENCE optional },
    ...
}

FiveGProSeDirectDiscovery ::= ENUMERATED {
    authorized,
    not-authorized,
    ...
}
```

```
FiveGProSeDirectCommunication ::= ENUMERATED {
    authorized,
    not-authorized,
    ...
}

FiveGProSeLayer2UEtoNetworkRelay ::= ENUMERATED {
    authorized,
    not-authorized,
    ...
}

FiveGProSeLayer3UEtoNetworkRelay ::= ENUMERATED {
    authorized,
    not-authorized,
    ...
}

FiveGProSeLayer2RemoteUE ::= ENUMERATED {
    authorized,
    not-authorized,
    ...
}

FiveGProSeLayer2Multipath ::= ENUMERATED {
    authorized,
    not-authorized,
    ...
}

FiveGProSeLayer2UEtoUERelay ::= ENUMERATED {
    authorized,
    not-authorized,
    ...
}

FiveGProSeLayer2UEtoUERemote ::= ENUMERATED {
    authorized,
    not-authorized,
    ...
}

FiveGProSeLayer3MHUEtoNetworkRelay  ::= ENUMERATED {
    authorized,
    not-authorized,
    ...
}

FiveGProSeLayer2MHUEtoNetworkRelay  ::= ENUMERATED {
    authorized,
    not-authorized,
    ...
}
```

```
FiveGProSeLayer2MHIntermediateUEtoNetworkRelay  ::= ENUMERATED {
    authorized,
    not-authorized,
    ...
}

FiveGProSeLayer2MHRemote    ::= ENUMERATED {
    authorized,
    not-authorized,
    ...
}


FiveGProSePC5QoSParameters ::= SEQUENCE {
    fiveGProSepc5QoSFlowList                    FiveGProSePC5QoSFlowList,
    fiveGproSepc5LinkAggregateBitRates          BitRate             OPTIONAL,
    iE-Extensions                    ProtocolExtensionContainer { { FiveGProSePC5QoSParameters-ExtIEs} }   OPTIONAL,
    ...
}

FiveGProSePC5QoSParameters-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

FiveGProSePC5QoSFlowList::= SEQUENCE (SIZE(1..maxnoofPC5QoSFlows)) OF FiveGProSePC5QoSFlowItem

FiveGProSePC5QoSFlowItem::= SEQUENCE {
    fiveGproSepQI               FiveQI,
    fiveGproSepc5FlowBitRates   FiveGProSePC5FlowBitRates               OPTIONAL,
    fiveGproSerange             Range                       OPTIONAL,
    iE-Extensions       ProtocolExtensionContainer { { FiveGProSePC5QoSFlowItem-ExtIEs} }   OPTIONAL,
    ...
}

FiveGProSePC5QoSFlowItem-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

FiveGProSePC5FlowBitRates ::= SEQUENCE {
    fiveGproSeguaranteedFlowBitRate     BitRate,
    fiveGproSemaximumFlowBitRate        BitRate,
    iE-Extensions       ProtocolExtensionContainer { { FiveGProSePC5FlowBitRates-ExtIEs} }  OPTIONAL,
    ...
}

FiveGProSePC5FlowBitRates-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

FiveQI ::= INTEGER (0..255, ...)

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,
    qoSFlowMappingIndication                QoSFlowMappingIndication                                        OPTIONAL,
    iE-Extensions                           ProtocolExtensionContainer { { Flows-Mapped-To-DRB-Item-ExtIEs} }   OPTIONAL
}

Flows-Mapped-To-DRB-Item-ExtIEs     XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

FreqDomainHSNAconfiguration-List ::= SEQUENCE (SIZE(1.. maxnoofHSNASlots)) OF FreqDomainHSNAconfiguration-List-Item

FreqDomainHSNAconfiguration-List-Item ::= SEQUENCE {
    rBsetIndex                                  INTEGER(0.. maxnoofRBsetsPerCell1, ...),
    freqDomainSlotHSNAconfiguration-List        FreqDomainSlotHSNAconfiguration-List,
    iE-Extensions       ProtocolExtensionContainer { { FreqDomainHSNAconfiguration-List-Item-ExtIEs} }  OPTIONAL,
    ...
}

FreqDomainHSNAconfiguration-List-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


FreqDomainSlotHSNAconfiguration-List ::= SEQUENCE (SIZE(1.. maxnoofHSNASlots)) OF FreqDomainSlotHSNAconfiguration-List-Item

FreqDomainSlotHSNAconfiguration-List-Item ::=   SEQUENCE {
    slotIndex       INTEGER(1..maxnoofHSNASlots),
    hSNADownlink    HSNADownlink        OPTIONAL,
    hSNAUplink      HSNAUplink          OPTIONAL,
    hSNAFlexible    HSNAFlexible        OPTIONAL,
    iE-Extensions       ProtocolExtensionContainer { { FreqDomainSlotHSNAconfiguration-List-Item-ExtIEs} } OPTIONAL,
    ...
}

FreqDomainSlotHSNAconfiguration-List-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

FrequencyShift7p5khz ::= ENUMERATED {false, true, ...}

FurtherExtended-UEIdentityIndexValue ::= BIT STRING (SIZE(20))

Future-Coverage-Modification-List ::= SEQUENCE (SIZE (1..maxnoofCellsinNG-RANnode)) OF Future-Coverage-Modification-Item

Future-Coverage-Modification-Item ::= SEQUENCE {
    nR-CGI                      NR-CGI,
    future-cellCoverageState                INTEGER (0..63, ...),
    future-SSB-Coverage-Modification-List   Future-SSB-Coverage-Modification-List       OPTIONAL,
    predicted-Coverage-Modification-Cause   Predicted-CoverageModificationCause         OPTIONAL,
    timeForFutureCoverageState              INTEGER (1..60, ...)                        OPTIONAL,
    iE-Extension            ProtocolExtensionContainer { { Future-Coverage-Modification-Item-ExtIEs} }  OPTIONAL,
    ...
```

```
}

Future-Coverage-Modification-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

Future-SSB-Coverage-Modification-List ::= SEQUENCE (SIZE (1..maxnoofSSBAreas)) OF Future-SSB-Coverage-Modification-Item

Future-SSB-Coverage-Modification-Item ::= SEQUENCE {
    sSBIndex                        INTEGER(0..63),
    future-SSBCoverageState         INTEGER (0..15, ...),
    iE-Extension                    ProtocolExtensionContainer { { Future-SSB-Coverage-Modification-Item-ExtIEs} } OPTIONAL,

    ...
}

Future-SSB-Coverage-Modification-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

-- G


GBRQoSFlowInfo ::= SEQUENCE {
    maxFlowBitRateDL            BitRate,
    maxFlowBitRateUL            BitRate,
    guaranteedFlowBitRateDL     BitRate,
    guaranteedFlowBitRateUL     BitRate,
    notificationControl         ENUMERATED {notification-requested, ...}                OPTIONAL,
    maxPacketLossRateDL         PacketLossRate                                          OPTIONAL,
    maxPacketLossRateUL         PacketLossRate                                          OPTIONAL,
    iE-Extensions               ProtocolExtensionContainer { {GBRQoSFlowInfo-ExtIEs} }  OPTIONAL,
    ...
}

GBRQoSFlowInfo-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
{ ID id-AlternativeQoSParaSetList               CRITICALITY ignore  EXTENSION AlternativeQoSParaSetList               PRESENCE optional }|
{ ID id-MonitoringRequestonAvailableBitrate     CRITICALITY ignore  EXTENSION MonitoringRequestonAvailableBitrate     PRESENCE optional },
    ...
}

GeographyBasedMDT::= SEQUENCE {
    geographicalArea        GeographicalArea,
    iE-Extensions       ProtocolExtensionContainer { {GeographyBasedMDT-ExtIEs} } OPTIONAL,
    ...
}

GeographyBasedMDT-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

GeographicalArea ::= SEQUENCE {
    nTNGeographicalArea     NTNGeographicalArea,
    nTNPLMNList             MDTPLMNList                                     OPTIONAL,
```

```
    iE-Extensions           ProtocolExtensionContainer { {GeographicalArea-ExtIEs} }    OPTIONAL,
    ...
}

GeographicalArea-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

GlobalgNB-ID    ::= SEQUENCE {
    plmn-id         PLMN-Identity,
    gnb-id          GNB-ID-Choice,
    iE-Extensions       ProtocolExtensionContainer { {GlobalgNB-ID-ExtIEs} } OPTIONAL,
    ...
}

GlobalgNB-ID-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

GNB-DU-Cell-Resource-Configuration  ::= SEQUENCE {
    subcarrierSpacing               SubcarrierSpacing,
    dUFTransmissionPeriodicity      DUFTransmissionPeriodicity      OPTIONAL,
    dUF-Slot-Config-List            DUF-Slot-Config-List            OPTIONAL,
    hSNATransmissionPeriodicity     HSNATransmissionPeriodicity,
    hNSASlotConfigList              HSNASlotConfigList              OPTIONAL,
    rBsetConfiguration                      RBsetConfiguration      OPTIONAL,
    freqDomainHSNAconfiguration-List        FreqDomainHSNAconfiguration-List    OPTIONAL,
    nACellResourceConfigurationList         NACellResourceConfigurationList         OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { { GNB-DU-Cell-Resource-Configuration-ExtIEs } } OPTIONAL,
    ...
}

GNB-DU-Cell-Resource-Configuration-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}



GNB-ID-Choice ::= CHOICE {
    gnb-ID                  BIT STRING (SIZE(22..32)),
    choice-extension        ProtocolIE-Single-Container { {GNB-ID-Choice-ExtIEs} }
}

GNB-ID-Choice-ExtIEs XNAP-PROTOCOL-IES ::= {
    ...
}


GNB-RadioResourceStatus ::= SEQUENCE {
    ssbAreaRadioResourceStatus-List           SSBAreaRadioResourceStatus-List,
    iE-Extensions                           ProtocolExtensionContainer { { GNB-RadioResourceStatus-ExtIEs} }  OPTIONAL,
    ...
}
```

```
GNB-RadioResourceStatus-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    { ID id-SliceRadioResourceStatus-List   CRITICALITY ignore  EXTENSION SliceRadioResourceStatus-List PRESENCE optional }|
    { ID id-MIMOPRBusageInformation         CRITICALITY ignore  EXTENSION MIMOPRBusageInformation      PRESENCE optional },
    ...
}


GlobalCell-ID   ::= SEQUENCE {
    plmn-id             PLMN-Identity,
    cell-type           Cell-Type-Choice,
    iE-Extensions       ProtocolExtensionContainer { { GlobalCell-ID-ExtIEs} } OPTIONAL,
    ...
}

GlobalCell-ID-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


GlobalngeNB-ID  ::= SEQUENCE {
    plmn-id         PLMN-Identity,
    enb-id          ENB-ID-Choice,
    iE-Extensions       ProtocolExtensionContainer { {GlobaleNB-ID-ExtIEs} } OPTIONAL,
    ...
}

GlobaleNB-ID-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


ENB-ID-Choice ::= CHOICE {
    enb-ID-macro            BIT STRING (SIZE(20)),
    enb-ID-shortmacro       BIT STRING (SIZE(18)),
    enb-ID-longmacro        BIT STRING (SIZE(21)),
    choice-extension        ProtocolIE-Single-Container { {ENB-ID-Choice-ExtIEs} }
}

ENB-ID-Choice-ExtIEs XNAP-PROTOCOL-IES ::= {
    ...
}


GlobalNG-RANCell-ID ::= SEQUENCE {
    plmn-id                 PLMN-Identity,
    ng-RAN-Cell-id          NG-RAN-Cell-Identity,
    iE-Extensions       ProtocolExtensionContainer { {GlobalNG-RANCell-ID-ExtIEs} } OPTIONAL,
    ...
}

GlobalNG-RANCell-ID-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}
```

```
GlobalNG-RANNode-ID ::= CHOICE {
    gNB                     GlobalgNB-ID,
    ng-eNB                  GlobalngeNB-ID,
    choice-extension        ProtocolIE-Single-Container { {GlobalNG-RANNode-ID-ExtIEs} }
}

GlobalNG-RANNode-ID-ExtIEs XNAP-PROTOCOL-IES ::= {
    ...
}


GTP-TEID    ::= OCTET STRING (SIZE(4))


GTPtunnelTransportLayerInformation ::= SEQUENCE {
    tnl-address         TransportLayerAddress,
    gtp-teid            GTP-TEID,
    iE-Extensions       ProtocolExtensionContainer { {GTPtunnelTransportLayerInformation-ExtIEs} } OPTIONAL,
    ...
}

GTPtunnelTransportLayerInformation-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    {ID id-QoS-Mapping-Information  CRITICALITY reject  EXTENSION QoS-Mapping-Information   PRESENCE optional },
    ...
}


GUAMI ::= SEQUENCE {
    plmn-ID             PLMN-Identity,
    amf-region-id       BIT STRING (SIZE (8)),
    amf-set-id          BIT STRING (SIZE (10)),
    amf-pointer         BIT STRING (SIZE (6)),
    iE-Extensions       ProtocolExtensionContainer { {GUAMI-ExtIEs} } OPTIONAL,
    ...
}

GUAMI-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

-- H


HandoverReportType ::= ENUMERATED {
    hoTooEarly,
    hoToWrongCell,
    intersystempingpong,
    ...,
    tooLateCHOwithcandidateSCG
}

HashedUEIdentityIndexValue ::= BIT STRING (SIZE(13, ...))
```

```
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 XNAP-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, ...}


Hysteresis ::=      INTEGER (0..30)


-- I

IABCellInformation::=   SEQUENCE{
    nRCGI                               NR-CGI,
    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 { { IABCellInformation-ExtIEs} } OPTIONAL,
    ...
}


IABCellInformation-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}



IAB-DU-Cell-Resource-Configuration-Mode-Info    ::= CHOICE {
    tDD     IAB-DU-Cell-Resource-Configuration-TDD-Info,
    fDD     IAB-DU-Cell-Resource-Configuration-FDD-Info,
    choice-extension            ProtocolIE-Single-Container { { IAB-DU-Cell-Resource-Configuration-Mode-Info-ExtIEs} }
```

```
}

IAB-DU-Cell-Resource-Configuration-Mode-Info-ExtIEs XNAP-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,
    uLFrequencyInfo                     NRFrequencyInfo         OPTIONAL,
    dLFrequencyInfo                     NRFrequencyInfo         OPTIONAL,
    uLTransmissionBandwidth             NRTransmissionBandwidth OPTIONAL,
    dlTransmissionBandwidth             NRTransmissionBandwidth OPTIONAL,
    uLCarrierList                   NRCarrierList           OPTIONAL,
    dlCarrierList                   NRCarrierList           OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { {IAB-DU-Cell-Resource-Configuration-FDD-Info-ExtIEs} } OPTIONAL,
    ...
}

IAB-DU-Cell-Resource-Configuration-FDD-Info-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

IAB-DU-Cell-Resource-Configuration-TDD-Info ::= SEQUENCE {
    gNB-DU-Cell-Resource-Configuration-TDD             GNB-DU-Cell-Resource-Configuration,
    frequencyInfo                   NRFrequencyInfo         OPTIONAL,
    transmissionBandwidth           NRTransmissionBandwidth OPTIONAL,
    carrierList                     NRCarrierList           OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { {IAB-DU-Cell-Resource-Configuration-TDD-Info-ExtIEs} } OPTIONAL,
    ...
}

IAB-DU-Cell-Resource-Configuration-TDD-Info-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

IAB-MT-Cell-List ::= SEQUENCE (SIZE(1..maxnoofServingCells)) OF IAB-MT-Cell-List-Item

IAB-MT-Cell-List-Item ::=   SEQUENCE {
    nRCellIdentity              NR-Cell-Identity,
    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 XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

IABNodeIndication ::= ENUMERATED {true,...}
```

```
IAB-QoS-Mapping-Information ::= SEQUENCE {
    dscp                        BIT STRING (SIZE(6))           OPTIONAL,
    flow-label                  BIT STRING (SIZE(20))       OPTIONAL,
    iE-Extensions               ProtocolExtensionContainer { {IAB-QoS-Mapping-Information-ExtIEs} } OPTIONAL,
    ...
}

IAB-QoS-Mapping-Information-ExtIEs XNAP-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 XNAP-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 XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

IAB-TNL-Address-Request ::= SEQUENCE {
    iABIPv4AddressesRequested           IABTNLAddressesRequested,
    iABIPv6RequestType                  IABIPv6RequestType,
    iABTNLAddressToRemove-List          IABTNLAddressToRemove-List,
    iE-Extensions                       ProtocolExtensionContainer { {IAB-TNL-Address-Request-ExtIEs} }   OPTIONAL,
    ...
}

IAB-TNL-Address-Request-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

IABIPv6RequestType  ::= CHOICE {
    iPv6Address                 IABTNLAddressesRequested,
    iPv6Prefix                  IABTNLAddressesRequested,
    choice-extension            ProtocolIE-Single-Container { {IABIPv6RequestType-ExtIEs} }
}
```

```
IABIPv6RequestType-ExtIEs XNAP-PROTOCOL-IES ::= {
    ...
}


IAB-TNL-Address-Response ::= SEQUENCE {
    iABAllocatedTNLAddress-List     IABAllocatedTNLAddress-List,
    iE-Extensions                   ProtocolExtensionContainer { {IAB-TNL-Address-Response-ExtIEs} } OPTIONAL,
    ...
}

IAB-TNL-Address-Response-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

IABAllocatedTNLAddress-List ::= SEQUENCE (SIZE(1..maxnoofTLAsIAB))  OF IABAllocatedTNLAddress-Item

IABAllocatedTNLAddress-Item ::= SEQUENCE {
    iABTNLAddress               IABTNLAddress,
    iABTNLAddressUsage          IABTNLAddressUsage      OPTIONAL,
    associatedDonorDUAddress    BAPAddress              OPTIONAL,
    iE-Extensions               ProtocolExtensionContainer { {IABAllocatedTNLAddress-Item-ExtIEs} }  OPTIONAL,
    ...
}

IABAllocatedTNLAddress-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

IABTNLAddress ::= CHOICE {
    iPv4Address                     BIT STRING (SIZE(32)),
    iPv6Address                     BIT STRING (SIZE(128)),
    iPv6Prefix                      BIT STRING (SIZE(64)),
    choice-extension                ProtocolIE-Single-Container { {IABTNLAddress-ExtIEs} }
}

IABTNLAddress-ExtIEs XNAP-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 XNAP-PROTOCOL-EXTENSION ::= {
    ...
}
```

```
IABTNLAddressToRemove-List  ::= SEQUENCE (SIZE(1..maxnoofTLAsIAB))  OF IABTNLAddressToRemove-Item

IABTNLAddressToRemove-Item ::=  SEQUENCE {
    iABTNLAddress           IABTNLAddress,
    iE-Extension            ProtocolExtensionContainer { {IABTNLAddressToRemove-Item-ExtIEs} }  OPTIONAL,
    ...
}

IABTNLAddressToRemove-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

IABTNLAddressUsage ::= ENUMERATED {
    f1-c,
    f1-u,
    non-f1,
    ...,
    all
}

IABTNLAddressException ::= SEQUENCE (SIZE(1..maxnoofTLAsIAB)) OF IABTNLAddress-Item


IABTNLAddress-Item ::= SEQUENCE {
    iABTNLAddress                   IABTNLAddress,
    iE-Extensions                   ProtocolExtensionContainer { { IABTNLAddress-ItemExtIEs } } OPTIONAL,
    ...}

IABTNLAddress-ItemExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


ImmediateMDT-NR ::= SEQUENCE {
    measurementsToActivate      MeasurementsToActivate,
    m1Configuration             M1Configuration             OPTIONAL,
-- This IE shall be present if the Measurements to Activate IE has the first bit set to "1".--
    m4Configuration             M4Configuration             OPTIONAL,
-- This IE shall be present if the Measurements to Activate IE has the fourth bit set to "1".--
    m5Configuration             M5Configuration             OPTIONAL,
-- This IE shall be present if the Measurements to Activate IE has the fifth bit set to "1".--
    mDT-Location-Info           MDT-Location-Info           OPTIONAL,
    m6Configuration             M6Configuration             OPTIONAL,
-- This IE shall be present if the Measurements to Activate IE has the seventh bit set to "1".--
    m7Configuration             M7Configuration             OPTIONAL,
-- This IE shall be present if the Measurements to Activate IE has the eighth bit set to "1".--
    bluetoothMeasurementConfiguration           BluetoothMeasurementConfiguration           OPTIONAL,
    wLANMeasurementConfiguration                WLANMeasurementConfiguration                OPTIONAL,
    sensorMeasurementConfiguration              SensorMeasurementConfiguration              OPTIONAL,
    iE-Extensions               ProtocolExtensionContainer { { ImmediateMDT-NR-ExtIEs} }    OPTIONAL,
    ...
}

ImmediateMDT-NR-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
```

```
    ...
}

ImplicitFormat  ::= SEQUENCE    {
    dUFSlotformatIndex          DUFSlotformatIndex,
    iE-Extensions       ProtocolExtensionContainer { { ImplicitFormat-ExtIEs } } OPTIONAL,
    ...
}

ImplicitFormat-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

Indication-of-bitrate-adaptation ::= ENUMERATED {uplink, ...}

InitiatingCondition-FailureIndication ::= CHOICE {
    rRCReestab                  RRCReestab-initiated,
    rRCSetup                    RRCSetup-initiated,
    choice-extension               ProtocolIE-Single-Container { {InitiatingCondition-FailureIndication-ExtIEs} }
}

InitiatingCondition-FailureIndication-ExtIEs XNAP-PROTOCOL-IES ::= {
    ...
}

IntendedTDD-DL-ULConfiguration-NR ::= SEQUENCE {
    nrscs                           NRSCS,
    nrCyclicPrefix                  NRCyclicPrefix,
    nrDL-ULTransmissionPeriodicity  NRDL-ULTransmissionPeriodicity,
    slotConfiguration-List          SlotConfiguration-List,
    iE-Extensions                   ProtocolExtensionContainer { {IntendedTDD-DL-ULConfiguration-NR-ExtIEs} } OPTIONAL,
    ...
}

IntendedTDD-DL-ULConfiguration-NR-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

InterfaceInstanceIndication ::= INTEGER (0..255, ...)


I-RNTI ::= CHOICE {
    i-RNTI-full         BIT STRING (SIZE(40)),
    i-RNTI-short        BIT STRING (SIZE(24)),
    choice-extension    ProtocolIE-Single-Container { {I-RNTI-ExtIEs} }
}

I-RNTI-ExtIEs XNAP-PROTOCOL-IES ::= {
    ...
}

IABAuthorizationStatus ::= ENUMERATED {
    authorized,
    not-authorized,
```

```
    ...
}


-- J

JointorDLTCIStateID  ::= OCTET STRING



-- K


-- L


Local-NG-RAN-Node-Identifier ::= CHOICE {
    full-I-RNTI-Profile-List                    Full-I-RNTI-Profile-List,
    short-I-RNTI-Profile-List                   Short-I-RNTI-Profile-List,
    choice-extension                            ProtocolIE-Single-Container { { Local-NG-RAN-Node-Identifier-ExtIEs} }
}

Local-NG-RAN-Node-Identifier-ExtIEs XNAP-PROTOCOL-IES ::= {
    { ID id-Full-and-Short-I-RNTI-Profile-List      CRITICALITY ignore  TYPE Full-and-Short-I-RNTI-Profile-List  PRESENCE mandatory},
    ...
}

Full-and-Short-I-RNTI-Profile-List::= SEQUENCE {

    full-I-RNTI-Profile-List                    Full-I-RNTI-Profile-List,
    short-I-RNTI-Profile-List                   Short-I-RNTI-Profile-List,
    iE-Extensions                               ProtocolExtensionContainer { { Full-and-Short-I-RNTI-Profile-List-ExtIEs} } OPTIONAL,
    ...
}

Full-and-Short-I-RNTI-Profile-List-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


Full-I-RNTI-Profile-List ::= CHOICE {
    full-I-RNTI-Profile-0   BIT STRING (SIZE (21)),
    full-I-RNTI-Profile-1   BIT STRING (SIZE (18)),
    full-I-RNTI-Profile-2   BIT STRING (SIZE (15)),
    full-I-RNTI-Profile-3   BIT STRING (SIZE (12)),
    choice-extension        ProtocolIE-Single-Container { { Full-I-RNTI-Profile-List-ExtIEs} }
}

Full-I-RNTI-Profile-List-ExtIEs XNAP-PROTOCOL-IES ::= {
    ...
}

Short-I-RNTI-Profile-List ::= CHOICE {
    short-I-RNTI-Profile-0  BIT STRING (SIZE (8)),
```

```
    short-I-RNTI-Profile-1  BIT STRING (SIZE (6)),
    choice-extension        ProtocolIE-Single-Container { { Short-I-RNTI-Profile-List-ExtIEs} }
}

Short-I-RNTI-Profile-List-ExtIEs XNAP-PROTOCOL-IES ::= {
    ...
}


LastVisitedCell-Item ::= CHOICE {
    nG-RAN-Cell                     LastVisitedNGRANCellInformation,
    e-UTRAN-Cell                    LastVisitedEUTRANCellInformation,
    uTRAN-Cell                      LastVisitedUTRANCellInformation,
    gERAN-Cell                      LastVisitedGERANCellInformation,
    choice-extension                ProtocolIE-Single-Container { { LastVisitedCell-Item-ExtIEs} }
}

LastVisitedCell-Item-ExtIEs XNAP-PROTOCOL-IES ::= {
    ...
}

LastVisitedEUTRANCellInformation ::= OCTET STRING

LastVisitedGERANCellInformation ::= OCTET STRING

LastVisitedNGRANCellInformation ::= OCTET STRING

LastVisitedUTRANCellInformation ::= OCTET STRING

LastVisitedPSCellInformation    ::= OCTET STRING

LastVisitedPSCellList   ::= SEQUENCE (SIZE(1..maxnoofPSCellsPerSN)) OF LastVisitedPSCellList-Item

LastVisitedPSCellList-Item  ::= SEQUENCE {
    lastVisitedPSCellInformation        LastVisitedPSCellInformation,
    iE-Extensions       ProtocolExtensionContainer { { LastVisitedPSCellList-Item-ExtIEs} } OPTIONAL,
    ...
}

LastVisitedPSCellList-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


SCGUEHistoryInformation ::= SEQUENCE {
    lastVisitedPSCellList           LastVisitedPSCellList       OPTIONAL,
    iE-Extensions       ProtocolExtensionContainer { { SCGUEHistoryInformation-ExtIEs} } OPTIONAL,
    ...
}

SCGUEHistoryInformation-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}
```

```
LCID ::= INTEGER (1..32, ...)

Links-to-log ::= ENUMERATED {uplink, downlink, both-uplink-and-downlink, ...}


ListOfCells ::= SEQUENCE (SIZE(1..maxnoofCellsinAoI)) OF CellsinAoI-Item

CellsinAoI-Item ::= SEQUENCE {
    pLMN-Identity           PLMN-Identity,
    ng-ran-cell-id          NG-RAN-Cell-Identity,
    iE-Extensions           ProtocolExtensionContainer { {CellsinAoI-Item-ExtIEs} } OPTIONAL,
    ...
}

CellsinAoI-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


ListOfRANNodesinAoI ::= SEQUENCE (SIZE(1.. maxnoofRANNodesinAoI)) OF GlobalNG-RANNodesinAoI-Item

GlobalNG-RANNodesinAoI-Item ::= SEQUENCE {
    global-NG-RAN-Node-ID       GlobalNG-RANNode-ID,
    iE-Extensions       ProtocolExtensionContainer { {GlobalNG-RANNodesinAoI-Item-ExtIEs} } OPTIONAL,
    ...
}

GlobalNG-RANNodesinAoI-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


ListOfTAIsinAoI ::= SEQUENCE (SIZE(1..maxnoofTAIsinAoI)) OF TAIsinAoI-Item

TAIsinAoI-Item ::= SEQUENCE {
    pLMN-Identity       PLMN-Identity,
    tAC                 TAC,
    iE-Extensions       ProtocolExtensionContainer { {TAIsinAoI-Item-ExtIEs} } OPTIONAL,
    ...
}

TAIsinAoI-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

LocationInformationSNReporting ::= ENUMERATED {
    pSCell,
    ...
}

LocationReportingInformation ::= SEQUENCE {
    eventType           EventType,
    reportArea          ReportArea,
```

```
    areaOfInterest      AreaOfInterestInformation           OPTIONAL,
    iE-Extensions       ProtocolExtensionContainer { {LocationReportingInformation-ExtIEs} } OPTIONAL,
    ...
}

LocationReportingInformation-ExtIEs XNAP-PROTOCOL-EXTENSION ::={
    { ID id-AdditionLocationInformation                 CRITICALITY ignore  EXTENSION AdditionLocationInformation              PRESENCE optional }|
    { ID id-AerialUEFlightInformationReportingControl-List  CRITICALITY ignore  EXTENSION AerialUEFlightInformationReportingControl-List   PRESENCE
optional },
    ...
}

LoggedEventTriggeredConfig ::= SEQUENCE {
    eventTypeTrigger                    EventTypeTrigger,
    iE-Extensions       ProtocolExtensionContainer { { LoggedEventTriggeredConfig-ExtIEs} } OPTIONAL,
    ...
}

AerialUEFlightInformationReportingControl-List ::= SEQUENCE (SIZE(1.. maxnoofFlightInfoReportControl)) OF
AerialUEFlightInformationReportingControl-Item

AerialUEFlightInformationReportingControl-Item ::= SEQUENCE {
    aerialUEFlightInformationReportingControl                                               AerialUEFlightInformationReportingControl,
    iE-Extensions       ProtocolExtensionContainer { { AerialUEFlightInformationReportingControl-Item-ExtIEs} }                OPTIONAL,
    ...
}

AerialUEFlightInformationReportingControl-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

LoggedEventTriggeredConfig-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

LoggedMDT-NR ::= SEQUENCE {
    loggingInterval                     LoggingInterval,
    loggingDuration                     LoggingDuration,
    reportType                          ReportType,
    bluetoothMeasurementConfiguration   BluetoothMeasurementConfiguration          OPTIONAL,
    wLANMeasurementConfiguration            WLANMeasurementConfiguration            OPTIONAL,
    sensorMeasurementConfiguration      SensorMeasurementConfiguration              OPTIONAL,
    areaScopeOfNeighCellsList           AreaScopeOfNeighCellsList                   OPTIONAL,
    iE-Extensions                       ProtocolExtensionContainer { {LoggedMDT-NR-ExtIEs} } OPTIONAL,
    ...
}

LoggedMDT-NR-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    {ID id-earlyMeasurement     CRITICALITY ignore  EXTENSION EarlyMeasurement      PRESENCE optional     },
...
}

LoggingInterval ::= ENUMERATED { ms320, ms640, ms1280, ms2560, ms5120, ms10240, ms20480, ms30720, ms40960, ms61440, infinity,...}
```

```
LoggingDuration ::= ENUMERATED {m10, m20, m40, m60, m90, m120}

LowerLayerPresenceStatusChange ::= ENUMERATED {
    release-lower-layers,
    re-establish-lower-layers,
    ...,
    suspend-lower-layers,
    resume-lower-layers
}

LPWUSPSassistanceInformation ::= SEQUENCE {
    lPWUScNsubgroupID           LPWUSCNsubgroupID,
    iE-Extensions               ProtocolExtensionContainer { { LPWUSPSassistanceInformation-ExtIEs} } OPTIONAL,
    ...
}

LPWUSPSassistanceInformation-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

LPWUSCNsubgroupID ::= INTEGER (0..30, ...)

LP-WUS-Disable-Indication ::= ENUMERATED {true, ...}


LTEA2XServicesAuthorized ::= SEQUENCE {
    aerialUE                AerialUE                                                OPTIONAL,
    aerialControllerUE      AerialControllerUE                                      OPTIONAL,
    iE-Extensions           ProtocolExtensionContainer { {LTEA2XServicesAuthorized-ExtIEs} }    OPTIONAL,
    ...
}

LTEA2XServicesAuthorized-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

LTEV2XServicesAuthorized ::= SEQUENCE {
    vehicleUE           VehicleUE                                           OPTIONAL,
    pedestrianUE        PedestrianUE                                        OPTIONAL,
    iE-Extensions       ProtocolExtensionContainer { {LTEV2XServicesAuthorized-ExtIEs} }    OPTIONAL,
    ...
}

LTEV2XServicesAuthorized-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


LTEUESidelinkAggregateMaximumBitRate ::= SEQUENCE {
    uESidelinkAggregateMaximumBitRate       BitRate,
    iE-Extensions                   ProtocolExtensionContainer { {LTEUESidelinkAggregateMaximumBitRate-ExtIEs} } OPTIONAL,
    ...
}
```

```
LTEUESidelinkAggregateMaximumBitRate-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

LTMHandoverInformationRequest ::= SEQUENCE {
    lTMIndicator                            LTMIndicator,
    proposedLTM-NoSecurityChangeID-List     LTM-NoSecurityChangeID-List     OPTIONAL,            -- This IE may need to be refined.
    targetNG-RANnodeUEXnAPID                NG-RANnodeUEXnAPID              OPTIONAL,
    referenceConfiguration                  ReferenceConfiguration          OPTIONAL,
    lTMConfigurationIDMappingList           LTMConfigurationIDMappingList   OPTIONAL,
    cSIResourceConfiguration                CSIResourceConfiguration        OPTIONAL,
    requestForCSI-RSResourceConfigForLayer1Measurements     RequestForCSI-RSResourceConfigForLayer1Measurements    OPTIONAL,
    proposedLTML2ResetConfig-List           LTML2ResetConfig-List           OPTIONAL,
    iE-Extensions                           ProtocolExtensionContainer { { LTMHandoverInformationRequest-ExtIEs} } OPTIONAL,
    ...
}

LTMHandoverInformationRequest-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    { ID id-ProposedLTM-UEBasedTAMeasurementID-List          CRITICALITY ignore EXTENSION LTM-UEBasedTAMeasurementID-List   PRESENCE optional },
...
}


LTMConfigurationIDMappingList ::= SEQUENCE (SIZE(1..maxnoofLTMCells)) OF LTMConfigurationIDMapping-Item

LTMConfigurationIDMapping-Item::= SEQUENCE{
    lTMCellID           NR-CGI,
    lTMConfigurationID  LTMConfigurationID,
    iE-Extensions       ProtocolExtensionContainer {{ LTMConfigurationIDMapping-Item-ExtIEs}}    OPTIONAL
}

LTMConfigurationIDMapping-Item-ExtIEs   XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

LTMConfigurationID ::=  INTEGER (1..8)


LTM-NoSecurityChangeID-List ::= SEQUENCE (SIZE (1.. maxnoofLTMCells)) OF LTM-NoSecurityChangeID

LTML2ResetConfig-List ::= SEQUENCE (SIZE (1.. maxnoofLTMCells)) OF LTML2ResetConfig

LTM-NoSecurityChangeID ::= INTEGER (1..9,...)

LTML2ResetConfig    ::= INTEGER (1..9,...)

LTMHandoverInformationRequestAcknowledge ::= SEQUENCE {
    sSBInformation                              SSBInformation,
    tCIStateConfigurationList                   OCTET STRING,
    lTMCandidateConfiguration                   OCTET STRING,
    lTM-NoSecurityChangeID                      LTM-NoSecurityChangeID,
    completeCandidateConfigurationIndicator     CompleteCandidateConfigurationIndicator     OPTIONAL,
    cSI-RSResourceConfigurationForLayer1Measurements        CSI-RSResourceConfiguration     OPTIONAL,
    cSI-RSResourceConfigurationForEarlyCSIAcquisition       CSI-RSResourceConfiguration     OPTIONAL,
```

```
    lTMCFRAResourceInformation                          LTMCFRAResourceInformation      OPTIONAL,
    ltML2ResetConfig                        LTML2ResetConfig                            OPTIONAL,
    iE-Extensions                       ProtocolExtensionContainer { { LTMHandoverInformationAcknowledge-ExtIEs} } OPTIONAL,
    ...
}

LTMHandoverInformationAcknowledge-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    { ID id-UEBasedTAMeasurementConfiguration       CRITICALITY ignore  EXTENSION UEBasedTAMeasurementConfiguration      PRESENCE optional }|
    { ID id-requestedTargetCellGlobalID             CRITICALITY ignore  EXTENSION Target-CGI                              PRESENCE optional },
...
}


LTMCellSwitchInformation    ::= SEQUENCE {
    jointorDLTCIStateID             JointorDLTCIStateID,
    uLTCIStateID                    ULTCIStateID                OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { { LTMCellSwitchInformation-ExtIEs } }  OPTIONAL,
    ...
}

LTMCellSwitchInformation-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

LTMUEAssociationInformation-List ::= SEQUENCE (SIZE (1.. maxnoofLTMCells)) OF LTMUEAssociationInformation-Item

LTMUEAssociationInformation-Item ::= SEQUENCE {
    candidateCellID                             NR-CGI,    -- This IE needs to be refined
    lastTarget-NG-RANnodeUEXnAPID               NG-RANnodeUEXnAPID,
    iE-Extensions       ProtocolExtensionContainer { { LTMUEAssociationInformation-Item-ExtIEs} } OPTIONAL,
    ...
}

LTMUEAssociationInformation-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


LTMUpdatesToCandidateNodeInformation ::= SEQUENCE {
    referenceConfiguration              ReferenceConfiguration          OPTIONAL,
    lTMConfigurationIDMappingList       LTMConfigurationIDMappingList   OPTIONAL,
    cSIResourceConfiguration            CSIResourceConfiguration        OPTIONAL,
    iE-Extensions                       ProtocolExtensionContainer { { LTMUpdatesToCandidateNodeInformation-ExtIEs} } OPTIONAL,
    ...
}

LTMUpdatesToCandidateNodeInformation-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}



LTMUpdatesToCandidateCellInformation-List ::= SEQUENCE (SIZE(1..maxnoofLTMCells)) OF LTMUpdatesToCandidateCellInformation-Item
```

```
LTMUpdatesToCandidateCellInformation-Item ::= SEQUENCE {
    candidateCellID                         NR-CGI,
    earlySyncInformation                    EarlySyncInformation                OPTIONAL,
    lTMCFRAResourceInformation              LTMCFRAResourceInformation          OPTIONAL,
    ueBasedTAMeasurementConfiguration       OCTET STRING                        OPTIONAL,
    aSSecurityInformation                   AS-SecurityInformation              OPTIONAL,
    lTM-NoSecurityChangeID                  LTM-NoSecurityChangeID              OPTIONAL,
    lTMUEAssociation                        LTMUEAssociationInformation-List    OPTIONAL,
    dataForwardingInfoForLTM-List           DataForwardingInfoForLTM-List       OPTIONAL,
    lastTarget-NG-RANnodeUEXnAPID           NG-RANnodeUEXnAPID                  OPTIONAL,
    iE-Extensions                           ProtocolExtensionContainer { { LTMUpdatesToCandidateCellInformation-Item-ExtIEs} } OPTIONAL,
    ...
}

LTMUpdatesToCandidateCellInformation-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


LTMCFRAResourceInformation ::= SEQUENCE {
    lTMCFRAResourceConfiguration            OCTET STRING                        OPTIONAL,
    lTMCFRAResourceConfigurationSUL         OCTET STRING                        OPTIONAL,
    iE-Extensions                           ProtocolExtensionContainer { { LTMCFRAResourceInformation-ExtIEs} } OPTIONAL,
    ...
}

LTMCFRAResourceInformation-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


LTMUpdatesFromCandidateCellInformation-List ::= SEQUENCE (SIZE(1..maxnoofLTMCells)) OF LTMUpdatesFromCandidateCellInformation-Item


LTMUpdatesFromCandidateCellInformation-Item ::= SEQUENCE {
    candidateCellID                                 NR-CGI,
    lTMCandidateConfiguration                       OCTET STRING,
    completeCandidateConfigurationIndicator         CompleteCandidateConfigurationIndicator   OPTIONAL,
    cSI-RSReportConfigurationForEarlyCSIAcquisition OCTET STRING                              OPTIONAL,
    iE-Extensions                           ProtocolExtensionContainer { { LTMUpdatesFromCandidateCellInformation-Item-ExtIEs} } OPTIONAL,
    ...
}

LTMUpdatesFromCandidateCellInformation-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}




LTMUESecurityInformation ::= SEQUENCE {
    lTMUESecurityCapabilities                   LTMUESecurityCapabilities,
    lTMUserPlaneSecurityInformation-List        LTMUserPlaneSecurityInformation-List,
    iE-Extension        ProtocolExtensionContainer { { LTMUESecurityInformation-ExtIEs} }   OPTIONAL,
```

```
    ...
}

LTMUESecurityInformation-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


LTMUESecurityCapabilities ::= SEQUENCE {
    nr-EncyptionAlgorithms                  BIT STRING {nea1-128(1),
                                                        nea2-128(2),
                                                        nea3-128(3)} (SIZE(16, ...)),
    nr-IntegrityProtectionAlgorithms            BIT STRING {nia1-128(1),
                                                        nia2-128(2),
                                                        nia3-128(3)} (SIZE(16, ...)),
    iE-Extension            ProtocolExtensionContainer { {LTMUESecurityCapabilities-ExtIEs} } OPTIONAL,
    ...
}

LTMUESecurityCapabilities-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


LTMUserPlaneSecurityInformation-List ::= SEQUENCE (SIZE(1..maxnoofPDUSessions)) OF LTMUserPlaneSecurityInformation-Item


LTMUserPlaneSecurityInformation-Item ::= SEQUENCE {
    pDUSessionID                PDUSession-ID,
    securityIndication          SecurityIndication      OPTIONAL,
    iE-Extension                ProtocolExtensionContainer { { LTMUserPlaneSecurityInformation-Item-ExtIEs} } OPTIONAL,
    ...
}

LTMUserPlaneSecurityInformation-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


LTMCandidateCellsToBeCancelled-List ::= SEQUENCE (SIZE(0..maxnoofLTMCells)) OF LTMCandidateCellsToBeCancelled-Item

LTMCandidateCellsToBeCancelled-Item ::= SEQUENCE {
    targetCellID                NR-CGI,
    iE-Extensions               ProtocolExtensionContainer { { LTMCandidateCellsToBeCancelled-Item-ExtIEs } } OPTIONAL,
    ...
}

LTMCandidateCellsToBeCancelled-Item-ExtIEs  XNAP-PROTOCOL-EXTENSION ::= {
    ...
}
```

```
LTMInformationSCG-AddReq ::= SEQUENCE {
    source-M-NGRAN-node-ID                  GlobalNG-RANNode-ID,
    source-M-NGRAN-node-UE-XnAP-ID          NG-RANnodeUEXnAPID,
    iE-Extensions                           ProtocolExtensionContainer { { LTMInformationSCG-AddReq-ExtIEs} } OPTIONAL,
    ...
}

LTMInformationSCG-AddReq-ExtIEs XNAP-PROTOCOL-EXTENSION ::={
    ...
}

LTMInformationSCG-AddReqAck ::= SEQUENCE {
    pCell-ID                    GlobalNG-RANCell-ID,
    iE-Extensions               ProtocolExtensionContainer { { LTMInformationSCG-AddReqAck-ExtIEs} } OPTIONAL,
    ...
}

LTMInformationSCG-AddReqAck-ExtIEs XNAP-PROTOCOL-EXTENSION ::={
    ...
}

LTMInformationSCG-ModReq ::= SEQUENCE {
    lTMReconfig                 ENUMERATED {intra-mn-ltm, ...},
    iE-Extensions               ProtocolExtensionContainer { { LTMInformationSCG-ModReq-ExtIEs } } OPTIONAL,
    ...
}

LTMInformationSCG-ModReq-ExtIEs XNAP-PROTOCOL-EXTENSION ::={
    ...
}

LTMInterSNExecutionNotification ::= ENUMERATED {executed, ...}

LTM-DC-DataForwarding-Indicator ::= ENUMERATED {triggered, ...}

LTMPSCellInformation-AddReq ::= SEQUENCE {
    lTM-RequestIndication                   ENUMERATED {request, ...},
    maxNrofPSCellsToPrepare                 MaxNrofPSCellsToPrepare,
    suggestedLTMCandidatePSCellList         LTM-PSCell-Request-List,
    proposedLTM-NoSecurityChangeID-List     LTM-NoSecurityChangeID-List,
    cSI-ResourceConfiguration               CSIResourceConfiguration                                    OPTIONAL,
    sCG-ReferenceConfigRequest              ENUMERATED {request, ...}                                   OPTIONAL,
    lTM-ConfigurationIDMappingList          LTMConfigurationIDMappingList                               OPTIONAL,
    proposedLTML2ResetConfig-List           LTML2ResetConfig-List                                       OPTIONAL,
    iE-Extensions                           ProtocolExtensionContainer { { LTMPSCellInformation-AddReq-ExtIEs} }      OPTIONAL,
    ...
}

LTMPSCellInformation-AddReq-ExtIEs XNAP-PROTOCOL-EXTENSION ::={
    { ID id-ProposedLTM-UEBasedTAMeasurementID-List     CRITICALITY ignore  EXTENSION LTM-UEBasedTAMeasurementID-List    PRESENCE optional },
...
}
```

```
LTMPSCellInformation-AddReqAck ::= SEQUENCE {
    lTM-CandidatePSCellPreparedList     LTM-PSCell-Prepared-List                                    OPTIONAL,
    iE-Extensions                       ProtocolExtensionContainer { { LTMPSCellInformation-AddReqAck-ExtIEs} }       OPTIONAL,
    ...
}

LTMPSCellInformation-AddReqAck-ExtIEs XNAP-PROTOCOL-EXTENSION ::={
    ...
}

LTMPSCellInformation-UpdateReq ::= SEQUENCE {
    multipleSN-List                     MultipleCandidateSN-List,
    cSI-ResourceConfiguration           CSIResourceConfiguration                                    OPTIONAL,
    lTM-ConfigurationIDMappingList      LTMConfigurationIDMappingList                               OPTIONAL,
    proposedLTM-NoSecurityChangeID-List LTM-NoSecurityChangeID-List                                 OPTIONAL,
    lTM-SCG-SecurityConfiguration       LTM-SCG-SecurityConfiguration-List                          OPTIONAL,
    lTM-CandidatePSCellToBeCancelled    LTMCandidateCellsToBeCancelled-List                         OPTIONAL,
    proposedLTML2ResetConfig-List       LTML2ResetConfig-List                                       OPTIONAL,
    iE-Extensions                       ProtocolExtensionContainer { { LTMPSCellInformation-UpdateReq-ExtIEs} }         OPTIONAL,
    ...
}

LTMPSCellInformation-UpdateReq-ExtIEs XNAP-PROTOCOL-EXTENSION ::={
    { ID id-ProposedLTM-UEBasedTAMeasurementID-List CRITICALITY ignore  EXTENSION LTM-UEBasedTAMeasurementID-List     PRESENCE optional },
...
}

LTMPSCellInformation-UpdateReqAck ::= SEQUENCE {
    lTM-CandidatePSCellPreparedList     LTM-PSCell-Prepared-List                                    OPTIONAL,
    cSI-ResourceConfiguration           CSIResourceConfiguration                                    OPTIONAL,
    lTM-ConfigurationIDMappingList      LTMConfigurationIDMappingList                               OPTIONAL,
    cSI-RSReportConfigurationForEarlyCSIAcquisition     OCTET STRING                                OPTIONAL,
    iE-Extensions                       ProtocolExtensionContainer { { LTMPSCellInformation-UpdateReqAck-ExtIEs} }      OPTIONAL,
    ...
}

LTMPSCellInformation-UpdateReqAck-ExtIEs XNAP-PROTOCOL-EXTENSION ::={
    ...
}



LTMPSCellInformation-UpdateRequired ::= SEQUENCE {  lTM-CandidatePSCellToBeCancelled        LTMCandidateCellsToBeCancelled-List
        OPTIONAL,
    iE-Extensions                       ProtocolExtensionContainer { { LTMPSCellInformation-UpdateRequired-ExtIEs} }    OPTIONAL,
    ...
}

LTMPSCellInformation-UpdateRequired-ExtIEs XNAP-PROTOCOL-EXTENSION ::={
    ...
}

LTMPSCellInformation-UpdateConfirm ::= SEQUENCE {
```

```
    lTM-CandidatePSCellPreparedList         LTM-PSCell-Prepared-List                                    OPTIONAL,
    cSI-ResourceConfiguration               CSIResourceConfiguration                                    OPTIONAL,
    lTM-ConfigurationIDMappingList          LTMConfigurationIDMappingList                               OPTIONAL,
    iE-Extensions                           ProtocolExtensionContainer { { LTMPSCellInformation-UpdateConfirm-ExtIEs} }     OPTIONAL,
    ...
}

LTMPSCellInformation-UpdateConfirm-ExtIEs XNAP-PROTOCOL-EXTENSION ::={
    ...
}



LTMPSCellInformation-ChangeRequired ::= SEQUENCE {
    lTM-RequestIndication                   LTM-RequestIndication,
    multipleSNChangeRequired-List           MultipleCandidateSNChangeRequired-List,
    cSI-ResourceConfiguration               CSIResourceConfiguration                                    OPTIONAL,
    lTM-ConfigurationIDMappingList          LTMConfigurationIDMappingList                               OPTIONAL,
    iE-Extensions                           ProtocolExtensionContainer { { LTMPSCellInformation-ChangeRequired-ExtIEs } }   OPTIONAL,
    ...
}

LTMPSCellInformation-ChangeRequired-ExtIEs XNAP-PROTOCOL-EXTENSION ::={
    ...
}

LTMPSCellInformation-ChangeConfirm ::= SEQUENCE {
    lTM-SCG-SecurityConfiguration           LTM-SCG-SecurityConfiguration-List                          OPTIONAL,
    iE-Extensions                           ProtocolExtensionContainer { { LTMPSCellInformation-ChangeConfirm-ExtIEs} }     OPTIONAL,
    ...
}

LTMPSCellInformation-ChangeConfirm-ExtIEs XNAP-PROTOCOL-EXTENSION ::={
    ...
}



LTM-PSCell-Request-List ::= SEQUENCE (SIZE(1..maxnoofLTMCells)) OF LTM-PSCell-Request-Item

LTM-PSCell-Request-Item ::= SEQUENCE {
    pscell-id                                           NR-CGI,
    earlySyncInformationRequest                         EarlySyncInformationRequest                             OPTIONAL,
    requestForCSI-RSResourceConfigForLayer1Measurements     RequestForCSI-RSResourceConfigForLayer1Measurements    OPTIONAL,
    iE-Extensions       ProtocolExtensionContainer { { LTM-PSCell-Request-Item-ExtIEs} }                        OPTIONAL,
    ...
}

LTM-PSCell-Request-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

LTM-PSCell-Prepared-List ::= SEQUENCE (SIZE(1..maxnoofLTMCells)) OF LTM-PSCell-Prepared-Item
```

```
LTM-PSCell-Prepared-Item ::= SEQUENCE {
    pscell-id                                       NR-CGI,
    lTM-NoSecurityChangeID                          LTM-NoSecurityChangeID,
    tCI-StatesConfigurationsList                    OCTET STRING,
    sSBInformation                                  SSBInformation,
    earlySyncInformation                            EarlySyncInformation                            OPTIONAL,
    lTMCFRAResourceInformation                      LTMCFRAResourceInformation                      OPTIONAL,
    cSI-RSResourceConfigurationForLayer1Measurements    CSI-RSResourceConfiguration                 OPTIONAL,
    cSI-RSResourceConfigurationForEarlyCSIAcquisition   CSI-RSResourceConfiguration                 OPTIONAL,
    complete-CandidateConfigurationIndicator        ENUMERATED {complete, ...}                      OPTIONAL,
    lTML2ResetConfig                                LTML2ResetConfig                                OPTIONAL,
    iE-Extensions       ProtocolExtensionContainer { { LTM-PSCell-Prepared-Item-ExtIEs} }            OPTIONAL,
    ...
}

LTM-PSCell-Prepared-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    { ID id-UEBasedTAMeasurementConfiguration       CRITICALITY ignore  EXTENSION UEBasedTAMeasurementConfiguration      PRESENCE optional },
...
}

LTM-UEBasedTAMeasurementID-List ::= SEQUENCE (SIZE (1.. maxnoofLTMCells)) OF LTM-UEBasedTAMeasurementID-Item

LTM-UEBasedTAMeasurementID-Item ::= SEQUENCE {
    uEBasedTAMeasurementConfiguration               OCTET STRING,
    iE-Extensions                           ProtocolExtensionContainer { { LTM-UEBasedTAMeasurementID-Item-ExtIEs} } OPTIONAL,
    ...
}

LTM-UEBasedTAMeasurementID-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

LTM-RequestIndication ::= ENUMERATED {request, ...}

LTM-SCG-SecurityConfiguration-List ::= SEQUENCE (SIZE(1..maxnoofLTMCellsPlusOne)) OF LTM-SCG-SecurityConfiguration-Item

LTM-SCG-SecurityConfiguration-Item ::= SEQUENCE {
    lTM-NoSecurityChangeID              LTM-NoSecurityChangeID,
    lTM-SCG-SecurityConfig-Info         LTM-SCG-SecurityConfig-Info-List,
    iE-Extensions                       ProtocolExtensionContainer { { LTM-SCG-SecurityConfiguration-Item-ExtIEs} } OPTIONAL,
    ...
}

LTM-SCG-SecurityConfiguration-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

LTM-SCG-SecurityConfig-Info-List ::= SEQUENCE (SIZE(1..maxnoofSCGSecurityConfigurations)) OF LTM-SCG-SecurityConfig-Info-Item

LTM-SCG-SecurityConfig-Info-Item ::= SEQUENCE {
    s-ng-RANnode-SecurityKey            S-NG-RANnode-SecurityKey,
    sk-counter                          SK-COUNTER,
    iE-Extensions       ProtocolExtensionContainer { { LTM-SCG-SecurityConfig-Info-Item-ExtIEs} } OPTIONAL,
    ...
```

```
}

LTM-SCG-SecurityConfig-Info-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

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


-- M

MaxNrofRS-IndexesToReport::= INTEGER (1..64, ...)

MaxNrofPSCellsToPrepare::= INTEGER (1..8, ...)

MBSCommServiceType ::= ENUMERATED {multicast, broadcast, ...}

MDTAlignmentInfo ::= CHOICE {
    s-BasedMDT                      S-BasedMDT,
    choice-extension                ProtocolIE-Single-Container { {MDTAlignmentInfo-ExtIEs} }
}


MDTAlignmentInfo-ExtIEs XNAP-PROTOCOL-IES ::= {
    ...
}

MeasCollectionEntityIPAddress ::= TransportLayerAddress


M1Configuration ::= SEQUENCE {
    m1reportingTrigger          M1ReportingTrigger,
    m1thresholdeventA2          M1ThresholdEventA2              OPTIONAL,
-- This IE shall be present if the Measurements to Activate IE has the first bit set to "1" and the M1 Reporting Trigger IE is set to "A2event-
triggered" or to "A2event-triggered periodic".
    m1periodicReporting         M1PeriodicReporting             OPTIONAL,
-- This IE shall be present if the M1 Reporting Trigger IE is set to "periodic", or to "A2event-triggered periodic".
    iE-Extensions               ProtocolExtensionContainer { { M1Configuration-ExtIEs} } OPTIONAL,
    ...
}

M1Configuration-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    {ID id-BeamMeasurementIndicationM1              CRITICALITY ignore  EXTENSION BeamMeasurementIndicationM1            PRESENCE optional    }|
    {ID id-BeamMeasurementsReportConfiguration      CRITICALITY ignore  EXTENSION BeamMeasurementsReportConfiguration    PRESENCE conditional },
-- This IE shall be present if the Include Beam Measurements Indication IE is set to "true".
    ...
}


M1PeriodicReporting ::= SEQUENCE {
    reportInterval              ReportIntervalMDT,
    reportAmount                ReportAmountMDT,
    iE-Extensions               ProtocolExtensionContainer { { M1PeriodicReporting-ExtIEs} } OPTIONAL,
    ...
```

```
}

M1PeriodicReporting-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    {ID id-ExtendedReportIntervalMDT        CRITICALITY ignore  EXTENSION ExtendedReportIntervalMDT    PRESENCE optional},
    ...
}

M1ReportingTrigger ::= ENUMERATED{
    periodic,
    a2eventtriggered,
    a2eventtriggered-periodic,
    ...

}

M1ThresholdEventA2 ::= SEQUENCE {
    measurementThreshold    MeasurementThresholdA2,
    iE-Extensions           ProtocolExtensionContainer { { M1ThresholdEventA2-ExtIEs} } OPTIONAL,
    ...
}

M1ThresholdEventA2-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}



M4Configuration ::= SEQUENCE {
    m4period            M4period,
    m4-links-to-log     Links-to-log,
    iE-Extensions       ProtocolExtensionContainer { { M4Configuration-ExtIEs} } OPTIONAL,
    ...
}

M4Configuration-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    { ID id-M4ReportAmount      CRITICALITY ignore  EXTENSION M4ReportAmountMDT         PRESENCE optional    },
    ...
}

M4ReportAmountMDT ::= ENUMERATED{r1, r2, r4, r8, r16, r32, r64, infinity, ...}

M4period ::= ENUMERATED {ms1024, ms2048, ms5120, ms10240, min1, ... }

M5Configuration ::= SEQUENCE {
    m5period            M5period,
    m5-links-to-log     Links-to-log,
    iE-Extensions       ProtocolExtensionContainer { { M5Configuration-ExtIEs} } OPTIONAL,
    ...
}

M5Configuration-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    { ID id-M5ReportAmount      CRITICALITY ignore  EXTENSION M5ReportAmountMDT         PRESENCE optional    },
    ...
}
```

```
M5ReportAmountMDT ::= ENUMERATED{r1, r2, r4, r8, r16, r32, r64, infinity, ...}

M5period ::= ENUMERATED {ms1024, ms2048, ms5120, ms10240, min1, ... }

M6Configuration ::= SEQUENCE {
    m6report-Interval   M6report-Interval,
    m6-links-to-log     Links-to-log,
    iE-Extensions       ProtocolExtensionContainer { { M6Configuration-ExtIEs} } OPTIONAL,
    ...
}

M6Configuration-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    { ID id-M6ReportAmount                          CRITICALITY ignore  EXTENSION M6ReportAmountMDT                          PRESENCE optional}|
    { ID id-ExcessPacketDelayThresholdConfiguration CRITICALITY ignore  EXTENSION ExcessPacketDelayThresholdConfiguration   PRESENCE optional},
    ...
}

M6ReportAmountMDT ::= ENUMERATED{r1, r2, r4, r8, r16, r32, r64, infinity, ...}

M6report-Interval ::= ENUMERATED { ms120, ms240, ms480, ms640, ms1024, ms2048, ms5120, ms10240, ms20480, ms40960, min1, min6, min12, min30,... }


M7Configuration ::= SEQUENCE {
    m7period            M7period,
    m7-links-to-log     Links-to-log,
    iE-Extensions       ProtocolExtensionContainer { { M7Configuration-ExtIEs} } OPTIONAL,
    ...
}

M7Configuration-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    { ID id-M7ReportAmount      CRITICALITY ignore  EXTENSION M7ReportAmountMDT     PRESENCE optional     },
    ...
}

M7ReportAmountMDT ::= ENUMERATED{r1, r2, r4, r8, r16, r32, r64, infinity, ...}

M7period ::= INTEGER(1..60, ...)


MAC-I ::= BIT STRING (SIZE(16))


MaskedIMEISV    ::= BIT STRING (SIZE(64))


MaxCHOpreparations ::= INTEGER (1..8, ...)


MaximumDataBurstVolume ::= INTEGER (0..4095, ..., 4096.. 2000000)


MaximumIPdatarate ::= SEQUENCE {
    maxIPrate-UL            MaxIPrate,
```

```
    iE-Extensions       ProtocolExtensionContainer { {MaximumIPdatarate-ExtIEs} }   OPTIONAL,
    ...
}

MaximumIPdatarate-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
{ ID id-MaxIPrate-DL    CRITICALITY ignore  EXTENSION MaxIPrate PRESENCE optional},
    ...
}

MaxIPrate ::= ENUMERATED {
    bitrate64kbs,
    max-UErate,
    ...
}


MBSFNControlRegionLength ::= INTEGER (0..3)


MBSFNSubframeAllocation-E-UTRA ::= CHOICE {
    oneframe                BIT STRING (SIZE(6)),
    fourframes              BIT STRING (SIZE(24)),
    choice-extension        ProtocolIE-Single-Container { {MBSFNSubframeAllocation-E-UTRA-ExtIEs} }
}

MBSFNSubframeAllocation-E-UTRA-ExtIEs XNAP-PROTOCOL-IES ::= {
    ...
}


MBSFNSubframeInfo-E-UTRA ::= SEQUENCE (SIZE(1..maxnoofMBSFNEUTRA)) OF MBSFNSubframeInfo-E-UTRA-Item


MBSFNSubframeInfo-E-UTRA-Item ::= SEQUENCE {
    radioframeAllocationPeriod      ENUMERATED{n1,n2,n4,n8,n16,n32,...},
    radioframeAllocationOffset      INTEGER (0..7, ...),
    subframeAllocation              MBSFNSubframeAllocation-E-UTRA,
    iE-Extensions                   ProtocolExtensionContainer { {MBSFNSubframeInfo-E-UTRA-Item-ExtIEs} } OPTIONAL,
    ...
}

MBSFNSubframeInfo-E-UTRA-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::={
    ...
}

MBS-FrequencySelectionArea-Identity ::= OCTET STRING (SIZE(3))

MBS-Area-Session-ID ::= INTEGER (0..65535, ...)

MBS-MappingandDataForwardingRequestInfofromSource ::= SEQUENCE (SIZE(1..maxnoofMRBs)) OF MBS-MappingandDataForwardingRequestInfofromSource-Item

MBS-MappingandDataForwardingRequestInfofromSource-Item ::= SEQUENCE {
    mRB-ID                      MRB-ID,
    mBS-QoSFlow-List            MBS-QoSFlow-List,
```

```
    mRB-ProgressInformation     MRB-ProgressInformation            OPTIONAL,
    iE-Extensions           ProtocolExtensionContainer { { MBS-MappingandDataForwardingRequestInfofromSource-Item-ExtIEs} } OPTIONAL,
    ...
}

MBS-MappingandDataForwardingRequestInfofromSource-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

MBS-DataForwarding-Indicator ::= ENUMERATED{mbs-only, ...}

MBS-DataForwardingResponseInfofromTarget ::= SEQUENCE (SIZE(1..maxnoofMRBs)) OF MBS-DataForwardingResponseInfofromTarget-Item

MBS-DataForwardingResponseInfofromTarget-Item ::= SEQUENCE {
    mRB-ID                  MRB-ID,
    dlForwardingUPTNL       UPTransportLayerInformation,
    mRB-ProgressInformation MRB-ProgressInformation                OPTIONAL,
    iE-Extensions           ProtocolExtensionContainer { { MBS-DataForwardingResponseInfofromTarget-Item-ExtIEs} } OPTIONAL,
    ...
}

MBS-DataForwardingResponseInfofromTarget-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

MBS-QoSFlow-List ::= SEQUENCE (SIZE(1..maxnoofMBSQoSFlows)) OF QoSFlowIdentifier

MBS-QoSFlowsToAdd-List ::= SEQUENCE (SIZE(1..maxnoofMBSQoSFlows)) OF MBS-QoSFlowsToAdd-Item

MBS-QoSFlowsToAdd-Item ::= SEQUENCE {
    mBS-QosFlowIdentifier               QoSFlowIdentifier,
    mBS-QosFlowLevelQosParameters       QoSFlowLevelQoSParameters,
    iE-Extensions                   ProtocolExtensionContainer { { MBS-QoSFlowsToAdd-Item-ExtIEs} } OPTIONAL,
    ...
}

MBS-QoSFlowsToAdd-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

MBS-ServiceArea ::= CHOICE {
    locationindependent     MBS-ServiceAreaInformation,
    locationdependent       MBS-ServiceAreaInformationList,
    choice-extension        ProtocolIE-Single-Container { {MBS-ServiceArea-ExtIEs} }
}

MBS-ServiceArea-ExtIEs XNAP-PROTOCOL-IES ::= {
    ...
}

MBS-ServiceAreaCell-List ::= SEQUENCE (SIZE(1.. maxnoofCellsforMBS)) OF NR-CGI

MBS-ServiceAreaInformation ::= SEQUENCE {
    mBS-ServiceAreaCell-List        MBS-ServiceAreaCell-List                                        OPTIONAL,
```

```
    mBS-ServiceAreaTAI-List         MBS-ServiceAreaTAI-List                                                 OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { {MBS-ServiceAreaInformation-ExtIEs} }      OPTIONAL,
    ...
}

MBS-ServiceAreaInformation-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

MBS-ServiceAreaInformationList ::= SEQUENCE (SIZE(1..maxnoofMBSServiceAreaInformation)) OF MBS-ServiceAreaInformation-Item

MBS-ServiceAreaInformation-Item ::= SEQUENCE {  mBS-Area-Session-ID         MBS-Area-Session-ID,
    mBS-ServiceAreaInformation  MBS-ServiceAreaInformation,
    iE-Extensions           ProtocolExtensionContainer { { MBS-ServiceAreaInformation-Item-ExtIEs} } OPTIONAL,
    ...
}

MBS-ServiceAreaInformation-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

MBS-ServiceAreaTAI-List ::= SEQUENCE (SIZE(1.. maxnoofTAIforMBS)) OF MBS-ServiceAreaTAI-Item

MBS-ServiceAreaTAI-Item ::= SEQUENCE {
    plmn-ID                 PLMN-Identity,
    tAC                     TAC,
    iE-Extensions           ProtocolExtensionContainer { {MBS-ServiceAreaTAI-Item-ExtIEs} } OPTIONAL,
    ...
}

MBS-ServiceAreaTAI-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


MBS-Session-ID ::= SEQUENCE {
    tMGI                            TMGI,
    nID                             NID                                                     OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { {MBS-Session-ID-ExtIEs} }   OPTIONAL,
    ...
}

MBS-Session-ID-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

MBS-AssistanceInformation ::= ENUMERATED {true, ...}

MBS-SessionAssociatedInformation ::= SEQUENCE (SIZE(1..maxnoofAssociatedMBSSessions)) OF MBS-SessionAssociatedInformation-Item

MBS-SessionAssociatedInformation-Item ::= SEQUENCE {
    mBS-Session-ID              MBS-Session-ID,
    associated-QoSFlowInfo-List Associated-QoSFlowInfo-List,
    iE-Extensions               ProtocolExtensionContainer { { MBS-SessionAssociatedInformation-Item-ExtIEs} } OPTIONAL,
```

```
    ...
}

MBS-SessionAssociatedInformation-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}
MBS-SessionInformation-List ::= SEQUENCE (SIZE(1..maxnoofMBSSessions)) OF MBS-SessionInformation-Item

MBS-SessionInformation-Item ::= SEQUENCE {
    mBS-Session-ID          MBS-Session-ID,
    mBS-Area-Session-ID     MBS-Area-Session-ID                                         OPTIONAL,
    active-MBS-SessioInformation            Active-MBS-SessionInformation               OPTIONAL,
    iE-Extensions           ProtocolExtensionContainer { { MBS-SessionInformation-Item-ExtIEs} }  OPTIONAL,
    ...
}

MBS-SessionInformation-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    { ID id-MBS-AssistanceInformation           CRITICALITY ignore          EXTENSION MBS-AssistanceInformation    PRESENCE optional },
    ...
}


MBS-SessionInformationResponse-List ::= SEQUENCE (SIZE(1..maxnoofMBSSessions)) OF MBS-SessionInformationResponse-Item

MBS-SessionInformationResponse-Item ::= SEQUENCE {
    mBS-Session-ID                      MBS-Session-ID,
    mBS-DataForwardingResponseInfofromTarget        MBS-DataForwardingResponseInfofromTarget              OPTIONAL,
    iE-Extensions           ProtocolExtensionContainer { { MBS-SessionInformationResponse-Item-ExtIEs} }  OPTIONAL,
    ...
}

MBS-SessionInformationResponse-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

MRB-ID ::= INTEGER (1..512, ...)

MRB-ProgressInformation ::= CHOICE {
    pdcp-SN12           INTEGER (0..4095),
    pdcp-SN18           INTEGER (0..262143),
    choice-extension        ProtocolIE-Single-Container { { MRB-ProgressInformation-ExtIEs} }
}

MRB-ProgressInformation-ExtIEs XNAP-PROTOCOL-IES ::= {
    ...
}

MDT-Activation  ::= ENUMERATED {
    immediate-MDT-only,
    immediate-MDT-and-Trace,
    logged-MDT-only,
    ...
}
```

```
MDT-Configuration ::= SEQUENCE {
    mDT-Configuration-NR        MDT-Configuration-NR        OPTIONAL,
    mDT-Configuration-EUTRA     MDT-Configuration-EUTRA     OPTIONAL,
iE-Extensions       ProtocolExtensionContainer { { MDT-Configuration-ExtIEs} } OPTIONAL,
    ...
}
MDT-Configuration-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
{ ID id-MN-only-MDT-collection  CRITICALITY ignore      EXTENSION MN-only-MDT-collection         PRESENCE optional },
    ...
}

MN-only-MDT-collection ::= ENUMERATED {
    mN-Only,
    ...
}

MDT-Configuration-NR ::= SEQUENCE {
    mdt-Activation              MDT-Activation,
    areaScopeOfMDT-NR           AreaScopeOfMDT-NR   OPTIONAL,
    mDTMode-NR                  MDTMode-NR,
    signallingBasedMDTPLMNList  MDTPLMNList         OPTIONAL,
    iE-Extensions       ProtocolExtensionContainer { { MDT-Configuration-NR-ExtIEs} } OPTIONAL,
    ...
}
MDT-Configuration-NR-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    {ID id-PNI-NPN-AreaScopeofMDT       CRITICALITY ignore  EXTENSION PNI-NPN-AreaScopeofMDT     PRESENCE optional }|
    {ID id-NetworkSliceAreaScopeofMDT   CRITICALITY ignore  EXTENSION NetworkSliceAreaScopeofMDT  PRESENCE optional },
    ...
}

MDT-Configuration-EUTRA ::= SEQUENCE {
    mdt-Activation              MDT-Activation,
    areaScopeOfMDT-EUTRA        AreaScopeOfMDT-EUTRA    OPTIONAL,
    mDTMode-EUTRA               MDTMode-EUTRA,
    signallingBasedMDTPLMNList  MDTPLMNList,
    iE-Extensions       ProtocolExtensionContainer { { MDT-Configuration-EUTRA-ExtIEs} } OPTIONAL,
    ...
}
MDT-Configuration-EUTRA-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


MDT-Location-Info ::= BIT STRING (SIZE (8))


MDTPLMNList ::= SEQUENCE (SIZE(1..maxnoofMDTPLMNs)) OF PLMN-Identity

MDTPLMNModificationList ::= SEQUENCE (SIZE(0..maxnoofMDTPLMNs)) OF PLMN-Identity

MDTMode-NR ::= CHOICE {
    immediateMDT                ImmediateMDT-NR,
    loggedMDT                   LoggedMDT-NR,
    ...,
```

```
    mDTMode-NR-Extension            MDTMode-NR-Extension
}

MDTMode-NR-Extension ::= ProtocolIE-Single-Container {{ MDTMode-NR-ExtensionIE }}

MDTMode-NR-ExtensionIE XNAP-PROTOCOL-IES ::= {
    ...
}

MDTMode-EUTRA ::= OCTET STRING


MeasObjectContainer ::= OCTET STRING

MeasurementsToActivate ::= BIT STRING (SIZE (8))

MeasurementThresholdA2 ::= CHOICE {
    threshold-RSRP              Threshold-RSRP,
    threshold-RSRQ              Threshold-RSRQ,
    threshold-SINR              Threshold-SINR,
    choice-extension    ProtocolIE-Single-Container { { MeasurementThresholdA2-ExtIEs} }
}

MeasurementThresholdA2-ExtIEs XNAP-PROTOCOL-IES ::= {
    ...
}


Measurement-ID  ::= INTEGER (1..4095,...)


MIMOPRBusageInformation ::= SEQUENCE {
    dl-GBR-PRB-usage-for-MIMO                   DL-GBR-PRB-usage-for-MIMO,
    ul-GBR-PRB-usage-for-MIMO                   UL-GBR-PRB-usage-for-MIMO,
    dl-non-GBR-PRB-usage-for-MIMO               DL-non-GBR-PRB-usage-for-MIMO,
    ul-non-GBR-PRB-usage-for-MIMO               UL-non-GBR-PRB-usage-for-MIMO,
    dl-Total-PRB-usage-for-MIMO                 DL-Total-PRB-usage-for-MIMO,
    ul-Total-PRB-usage-for-MIMO                 UL-Total-PRB-usage-for-MIMO,
    iE-Extensions                           ProtocolExtensionContainer { { MIMOPRBusageInformation-ExtIEs} }  OPTIONAL,
    ...
}

MIMOPRBusageInformation-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

MobileIAB-AuthorizationStatus ::= ENUMERATED {authorized, not-authorized,...}

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

MobilityInformation ::= BIT STRING (SIZE(32))
```

```
MobilityParametersModificationRange ::= SEQUENCE {
    handoverTriggerChangeLowerLimit     INTEGER (-20..20),
    handoverTriggerChangeUpperLimit     INTEGER (-20..20),
    ...
}

MobilityParametersInformation ::= SEQUENCE {
    handoverTriggerChange           INTEGER (-20..20),
    ...
}


MobilityRestrictionList ::= SEQUENCE {
    serving-PLMN                        PLMN-Identity,
    equivalent-PLMNs                    SEQUENCE (SIZE(1..maxnoofEPLMNs)) OF PLMN-Identity       OPTIONAL,
    rat-Restrictions                    RAT-RestrictionsList                                     OPTIONAL,
    forbiddenAreaInformation            ForbiddenAreaList                                        OPTIONAL,
    serviceAreaInformation              ServiceAreaList                                          OPTIONAL,
    iE-Extensions       ProtocolExtensionContainer { {MobilityRestrictionList-ExtIEs} }          OPTIONAL,
    ...
}

MobilityRestrictionList-ExtIEs XNAP-PROTOCOL-EXTENSION ::={
{ ID id-LastE-UTRANPLMNIdentity                CRITICALITY ignore  EXTENSION PLMN-Identity                       PRESENCE optional    }|
{ ID id-CNTypeRestrictionsForServing           CRITICALITY ignore  EXTENSION CNTypeRestrictionsForServing        PRESENCE optional    }|
{ ID id-CNTypeRestrictionsForEquivalent        CRITICALITY ignore  EXTENSION CNTypeRestrictionsForEquivalent     PRESENCE optional    }|
{ ID id-NPNMobilityInformation                 CRITICALITY reject  EXTENSION NPNMobilityInformation              PRESENCE optional    },
    ...
}

MonitoringRequestonAvailableBitrate ::= SEQUENCE {
    monitoringRequest                       MonitoringRequest,
    dlAvailableBitrateReportThresholds      AvailableBitrateReportThresholdList         OPTIONAL,
-- The above IE shall be present if the Monitoring Request IE is set to the value “dl” or “both”
    ulAvailableBitrateReportThresholds      AvailableBitrateReportThresholdList         OPTIONAL,
-- The above IE shall be present if the Monitoring Request IE is set to the value “ul” or “both”
    iE-Extensions                           ProtocolExtensionContainer { { MonitoringRequestonAvailableBitrate-ExtIEs} } OPTIONAL,
    ...
}

MonitoringRequestonAvailableBitrate-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

MonitoringRequest ::= ENUMERATED {ul, dl, both, stop,...}


MMSID ::= OCTET STRING (SIZE (1))

CNTypeRestrictionsForEquivalent ::= SEQUENCE (SIZE(1..maxnoofEPLMNs)) OF CNTypeRestrictionsForEquivalentItem

CNTypeRestrictionsForEquivalentItem ::= SEQUENCE {
    plmn-Identity                       PLMN-Identity,
```

```
    cn-Type                          ENUMERATED {epc-forbidden, fiveGC-forbidden, ...},
    iE-Extensions                    ProtocolExtensionContainer { {CNTypeRestrictionsForEquivalentItem-ExtIEs} }         OPTIONAL,
    ...
}

CNTypeRestrictionsForEquivalentItem-ExtIEs XNAP-PROTOCOL-EXTENSION ::={
    ...
}

CNTypeRestrictionsForServing ::= ENUMERATED {
    epc-forbidden,
    ...
}

RAT-RestrictionsList ::= SEQUENCE (SIZE(1..maxnoofPLMNs)) OF RAT-RestrictionsItem


RAT-RestrictionsItem ::= SEQUENCE {
    plmn-Identity                  PLMN-Identity,
    rat-RestrictionInformation     RAT-RestrictionInformation,
    iE-Extensions       ProtocolExtensionContainer { {RAT-RestrictionsItem-ExtIEs} } OPTIONAL,
    ...
}

RAT-RestrictionsItem-ExtIEs XNAP-PROTOCOL-EXTENSION ::={
    { ID id-ExtendedRATRestrictionInformation   CRITICALITY ignore  EXTENSION ExtendedRATRestrictionInformation    PRESENCE optional},
    ...
}


RAT-RestrictionInformation ::= BIT STRING {e-UTRA (0),nR (1), nR-unlicensed (2), nR-LEO (3), nR-MEO (4), nR-GEO (5), nR-OTHERSAT (6)}
(SIZE(8, ...))


ForbiddenAreaList ::= SEQUENCE (SIZE(1..maxnoofPLMNs)) OF ForbiddenAreaItem


ForbiddenAreaItem ::= SEQUENCE {
    plmn-Identity       PLMN-Identity,
    forbidden-TACs      SEQUENCE (SIZE(1..maxnoofForbiddenTACs)) OF TAC,
    iE-Extensions       ProtocolExtensionContainer { {ForbiddenAreaItem-ExtIEs} } OPTIONAL,
    ...
}

ForbiddenAreaItem-ExtIEs XNAP-PROTOCOL-EXTENSION ::={
    ...
}


ServiceAreaList ::= SEQUENCE (SIZE(1..maxnoofPLMNs)) OF ServiceAreaItem


ServiceAreaItem ::= SEQUENCE {
    plmn-Identity                    PLMN-Identity,
```

```
    allowed-TACs-ServiceArea            SEQUENCE (SIZE(1..maxnoofAllowedAreas)) OF TAC      OPTIONAL,
    not-allowed-TACs-ServiceArea        SEQUENCE (SIZE(1..maxnoofAllowedAreas)) OF TAC      OPTIONAL,
    iE-Extensions       ProtocolExtensionContainer { {ServiceAreaItem-ExtIEs} }             OPTIONAL,
    ...
}

ServiceAreaItem-ExtIEs XNAP-PROTOCOL-EXTENSION ::={
    ...
}

MR-DC-ResourceCoordinationInfo ::= SEQUENCE {
        ng-RAN-Node-ResourceCoordinationInfo            NG-RAN-Node-ResourceCoordinationInfo,
        iE-Extension                                            ProtocolExtensionContainer { {MR-DC-ResourceCoordinationInfo-ExtIEs}}OPTIONAL,
        ...
}

MR-DC-ResourceCoordinationInfo-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
...
}

NG-RAN-Node-ResourceCoordinationInfo ::= CHOICE {
        eutra-resource-coordination-info                    E-UTRA-ResourceCoordinationInfo,
        nr-resource-coordination-info                       NR-ResourceCoordinationInfo
}

E-UTRA-ResourceCoordinationInfo ::= SEQUENCE {
        e-utra-cell                                             E-UTRA-CGI,
        ul-coordination-info                                    BIT STRING (SIZE (6..4400)),
        dl-coordination-info                                    BIT STRING (SIZE (6..4400)) OPTIONAL,
        nr-cell                                                 NR-CGI  OPTIONAL,
        e-utra-coordination-assistance-info             E-UTRA-CoordinationAssistanceInfo   OPTIONAL,
        iE-Extension            ProtocolExtensionContainer { {E-UTRA-ResourceCoordinationInfo-ExtIEs} } OPTIONAL,
    ...
}

E-UTRA-ResourceCoordinationInfo-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

E-UTRA-CoordinationAssistanceInfo ::= ENUMERATED {coordination-not-required, ...}

NR-ResourceCoordinationInfo ::= SEQUENCE {
        nr-cell                                                 NR-CGI,
        ul-coordination-info                                    BIT STRING (SIZE (6..4400)),
        dl-coordination-info                                    BIT STRING (SIZE (6..4400)) OPTIONAL,
        e-utra-cell                                             E-UTRA-CGI  OPTIONAL,
        nr-coordination-assistance-info                 NR-CoordinationAssistanceInfo       OPTIONAL,
        iE-Extension            ProtocolExtensionContainer { {NR-ResourceCoordinationInfo-ExtIEs} }  OPTIONAL,
    ...
}

NR-ResourceCoordinationInfo-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}
```

```
NR-CoordinationAssistanceInfo ::= ENUMERATED {coordination-not-required, ...}

MessageOversizeNotification ::= SEQUENCE {
    maximumCellListSize                             MaximumCellListSize,
    iE-Extension                ProtocolExtensionContainer { {MessageOversizeNotification-ExtIEs}}   OPTIONAL,
    ...
}

MessageOversizeNotification-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

MaximumCellListSize ::= INTEGER(1..16384, ...)

MT-SDT-Information ::= SEQUENCE {
    mT-SDT-Indicator            MT-SDT-Indicator,
    mT-SDT-DataSize         MT-SDT-DataSize,
    iE-Extensions               ProtocolExtensionContainer { { MT-SDT-Information-ExtIEs} } OPTIONAL,
    ...
}

MT-SDT-Information-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

MT-SDT-DataSize ::= INTEGER (1..96000, ...)

MT-SDT-Indicator ::= ENUMERATED {true, ...}

MultiplexingInfo    ::= SEQUENCE{
    iAB-MT-Cell-List    IAB-MT-Cell-List,
    iE-Extensions       ProtocolExtensionContainer { {MultiplexingInfo-ExtIEs} } OPTIONAL,
    ...
}

MultiplexingInfo-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


MeasuredUETrajectory ::= SEQUENCE (SIZE(1..maxnoofCellsTrajectory)) OF MeasuredUETrajectory-Item

MeasuredUETrajectory-Item ::= SEQUENCE{
    measuredtrajectoryCellInfo      MeasuredTrajectoryCellInfo,
    iE-Extensions                   ProtocolExtensionContainer { { MeasuredUETrajectory-Item-ExtIEs} }  OPTIONAL,
    ...
}

MeasuredUETrajectory-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}
```

```
MeasuredTrajectoryCellInfo ::= CHOICE {
    nG-RAN-Cell                     MeasuredTrajectoryNGRANCellInfo,
    choice-extension                ProtocolIE-Single-Container { { MeasuredTrajectoryCellInfo-ExtIEs} }
}

MeasuredTrajectoryCellInfo-ExtIEs XNAP-PROTOCOL-IES ::= {
    ...
}

MeasuredTrajectoryNGRANCellInfo ::= SEQUENCE {
    globalNG-RANCell-ID             GlobalNG-RANCell-ID,
    timeUEStaysInCell               INTEGER (0..4095),
    iE-Extensions                   ProtocolExtensionContainer { { MeasuredTrajectoryNGRANCellInfo-ExtIEs} } OPTIONAL,
    ...
}

MeasuredTrajectoryNGRANCellInfo-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

MultipleCandidateSN-List ::= SEQUENCE (SIZE(1..maxnoofTargetSNs)) OF MultipleCandidateSN-Item

MultipleCandidateSN-Item ::= SEQUENCE {
    s-NG-RANnodeID                    GlobalNG-RANNode-ID,
    lTM-CandidatePSCellPreparedList   LTM-PSCell-Prepared-List                              OPTIONAL,
    iE-Extensions       ProtocolExtensionContainer { { MultipleCandidateSN-Item-ExtIEs} }   OPTIONAL,
    ...
}

MultipleCandidateSN-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

MultipleCandidateSNChangeRequired-List ::= SEQUENCE (SIZE(1..maxnoofTargetSNs)) OF MultipleCandidateSNChangeRequired-Item

MultipleCandidateSNChangeRequired-Item ::= SEQUENCE {
    s-NG-RANnodeID                    GlobalNG-RANNode-ID,
    maxNrofPSCellsToPrepare           MaxNrofPSCellsToPrepare,
    sN-to-MN-Container                OCTET STRING,
    suggestedLTMCandidatePSCellList   LTM-PSCell-Request-List                                  OPTIONAL,
    iE-Extensions       ProtocolExtensionContainer { { MultipleCandidateSNChangeRequired-Item-ExtIEs} }   OPTIONAL,
    ...
}

MultipleCandidateSNChangeRequired-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

-- N

N6JitterInformation ::= SEQUENCE {
    n6JitterLowerBound      INTEGER (-127..127),
    n6JitterUpperBound      INTEGER (-127..127),
```

```
    iE-Extensions           ProtocolExtensionContainer { { N6JitterInformationExtIEs } }    OPTIONAL,
    ...
}
N6JitterInformationExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

NACellResourceConfigurationList ::= SEQUENCE (SIZE(1..maxnoofHSNASlots)) OF NACellResourceConfiguration-Item

NACellResourceConfiguration-Item ::= SEQUENCE {
    nAdownlink          ENUMERATED {true, false, ...}   OPTIONAL,
    nAuplink            ENUMERATED {true, false, ...}   OPTIONAL,
    nAflexible          ENUMERATED {true, false, ...}   OPTIONAL,
    iE-Extensions       ProtocolExtensionContainer { { NACellResourceConfiguration-Item-ExtIEs} } OPTIONAL,
    ...
}

NACellResourceConfiguration-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


NBIoT-UL-DL-AlignmentOffset ::= ENUMERATED {
    khz-7dot5,
    khz0,
    khz7dot5,
    ...
}
NE-DC-TDM-Pattern ::= SEQUENCE {
        subframeAssignment          ENUMERATED {sa0,sa1,sa2,sa3,sa4,sa5,sa6},
        harqOffset                  INTEGER (0..9),
        iE-Extension                ProtocolExtensionContainer { {NE-DC-TDM-Pattern-ExtIEs}}    OPTIONAL,
        ...
}

NE-DC-TDM-Pattern-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
...
}

NeighbourInformation-E-UTRA ::= SEQUENCE (SIZE(1..maxnoofNeighbours)) OF NeighbourInformation-E-UTRA-Item

NeighbourInformation-E-UTRA-Item ::= SEQUENCE {
    e-utra-PCI          E-UTRAPCI,
    e-utra-cgi          E-UTRA-CGI,
    earfcn              E-UTRAARFCN,
    tac                 TAC,
    ranac               RANAC                                                           OPTIONAL,
    iE-Extensions       ProtocolExtensionContainer { {NeighbourInformation-E-UTRA-Item-ExtIEs} }  OPTIONAL,
    ...
}

NeighbourInformation-E-UTRA-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::={
    ...
}
```

```
NeighbourInformation-NR ::= SEQUENCE (SIZE(1..maxnoofNeighbours)) OF NeighbourInformation-NR-Item

NeighbourInformation-NR-Item ::= SEQUENCE {
    nr-PCI                          NRPCI,
    nr-cgi                          NR-CGI,
    tac                             TAC,
    ranac                           RANAC                                                   OPTIONAL,
    nr-mode-info                    NeighbourInformation-NR-ModeInfo,
    connectivitySupport             Connectivity-Support,
    measurementTimingConfiguration  OCTET STRING,
    iE-Extensions           ProtocolExtensionContainer { {NeighbourInformation-NR-Item-ExtIEs} }  OPTIONAL,
    ...
}

NeighbourInformation-NR-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::={
    { ID id-MobileIABCell                     CRITICALITY ignore  EXTENSION MobileIABCell PRESENCE optional},
    ...
}


NeighbourInformation-NR-ModeInfo ::= CHOICE {
    fdd-info                NeighbourInformation-NR-ModeFDDInfo,
    tdd-info                NeighbourInformation-NR-ModeTDDInfo,
    choice-extension        ProtocolIE-Single-Container { {NeighbourInformation-NR-ModeInfo-ExtIEs} }
}

NeighbourInformation-NR-ModeInfo-ExtIEs XNAP-PROTOCOL-IES ::= {
    ...
}


NeighbourInformation-NR-ModeFDDInfo ::= SEQUENCE {
    ul-NR-FreqInfo      NRFrequencyInfo,
    dl-NR-FequInfo      NRFrequencyInfo,
    ie-Extensions       ProtocolExtensionContainer { {NeighbourInformation-NR-ModeFDDInfo-ExtIEs} } OPTIONAL,
    ...
}

NeighbourInformation-NR-ModeFDDInfo-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


NeighbourInformation-NR-ModeTDDInfo ::= SEQUENCE {
    nr-FreqInfo         NRFrequencyInfo,
    ie-Extensions       ProtocolExtensionContainer { {NeighbourInformation-NR-ModeTDDInfo-ExtIEs} } OPTIONAL,
    ...
}

NeighbourInformation-NR-ModeTDDInfo-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}
```

```
Neighbour-NG-RAN-Node-List ::= SEQUENCE (SIZE(0..maxnoofNeighbour-NG-RAN-Nodes)) OF Neighbour-NG-RAN-Node-Item

Neighbour-NG-RAN-Node-Item ::= SEQUENCE {
    globalNG-RANNodeID              GlobalNG-RANNode-ID,
    local-NG-RAN-Node-Identifier    Local-NG-RAN-Node-Identifier,
    ie-Extensions       ProtocolExtensionContainer { {Neighbour-NG-RAN-Node-Item-ExtIEs} } OPTIONAL,
    ...
}

Neighbour-NG-RAN-Node-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

NetworkSliceListforMDT ::= SEQUENCE (SIZE(1.. maxnoofMDTPLMNs)) OF NetworkSliceItemforMDT

NetworkSliceItemforMDT ::= SEQUENCE {
    plmnID              PLMN-Identity,
    sliceMDTList        SliceMDTList,
    iE-Extensions       ProtocolExtensionContainer { {NetworkSliceListforMDT-ExtIEs} }  OPTIONAL,
    ...
}

NetworkSliceListforMDT-ExtIEs XNAP-PROTOCOL-EXTENSION ::={
    ...
}

NetworkSliceAreaScopeofMDT ::= SEQUENCE {
    networkSliceListforMDT      NetworkSliceListforMDT,
    iE-Extensions               ProtocolExtensionContainer { {NetworkSliceAreaScopeofMDT-ExtIEs} } OPTIONAL,
    ...
}

NetworkSliceAreaScopeofMDT-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

NID ::= BIT STRING (SIZE(44))


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 XNAP-PROTOCOL-EXTENSION ::= {
    ...
}
```

```
NRCellPRACHConfig ::= OCTET STRING


NG-RAN-Cell-Identity ::= CHOICE {
    nr                      NR-Cell-Identity,
    e-utra                  E-UTRA-Cell-Identity,
    choice-extension        ProtocolIE-Single-Container { {NG-RAN-Cell-Identity-ExtIEs} }
}

NG-RAN-Cell-Identity-ExtIEs XNAP-PROTOCOL-IES ::= {
    ...
}


NG-RAN-CellPCI ::= CHOICE {
    nr                  NRPCI,
    e-utra              E-UTRAPCI,
    choice-extension    ProtocolIE-Single-Container { {NG-RAN-CellPCI-ExtIEs} }
}

NG-RAN-CellPCI-ExtIEs XNAP-PROTOCOL-IES ::= {
    ...
}


NG-RANnode2SSBOffsetsModificationRange ::= SEQUENCE (SIZE(1..maxnoofSSBAreas)) OF SSBOffsetModificationRange

NG-RANnodeUEXnAPID ::= INTEGER (0.. 4294967295)


NumberofActiveUEs::= INTEGER(0..16777215, ...)


NodeAssociatedInfoResult ::= SEQUENCE {
    energyCost              EnergyCost          OPTIONAL,
    iE-Extensions           ProtocolExtensionContainer { { NodeAssociatedInfoResult-ExtIEs} } OPTIONAL,
    ...
}

NodeAssociatedInfoResult-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


NodeMeasurementInitiationResult-List ::= SEQUENCE (SIZE(1..maxFailedMeasPerNode)) OF NodeMeasurementInitiationResult-Item


NodeMeasurementInitiationResult-Item ::= SEQUENCE {
    nodemeasurementFailedReportCharacteristics      BIT STRING(SIZE(32)),
    cause                                           Cause,
    iE-Extensions                                   ProtocolExtensionContainer { { NodeMeasurementInitiationResult-Item-ExtIEs} } OPTIONAL,
    ...
}
```

```
NodeMeasurementInitiationResult-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


NoofRRCConnections ::= INTEGER (1..65536,...)


NonDynamic5QIDescriptor ::= SEQUENCE {
    fiveQI                      FiveQI,
    priorityLevelQoS            PriorityLevelQoS                                        OPTIONAL,
    averagingWindow             AveragingWindow                                         OPTIONAL,
    maximumDataBurstVolume      MaximumDataBurstVolume                                  OPTIONAL,
    iE-Extension                ProtocolExtensionContainer { {NonDynamic5QIDescriptor-ExtIEs } }  OPTIONAL,
    ...
}

NonDynamic5QIDescriptor-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    { ID id-CNPacketDelayBudgetDownlink     CRITICALITY ignore  EXTENSION ExtendedPacketDelayBudget  PRESENCE optional}|
    { ID id-CNPacketDelayBudgetUplink       CRITICALITY ignore  EXTENSION ExtendedPacketDelayBudget  PRESENCE optional},
    ...
}


NRARFCN ::= INTEGER (0.. maxNRARFCN)


NG-eNB-RadioResourceStatus  ::= SEQUENCE {
    dL-GBR-PRB-usage                        DL-GBR-PRB-usage,
    uL-GBR-PRB-usage                        UL-GBR-PRB-usage,
    dL-non-GBR-PRB-usage                    DL-non-GBR-PRB-usage,
    uL-non-GBR-PRB-usage                    UL-non-GBR-PRB-usage,
    dL-Total-PRB-usage                      DL-Total-PRB-usage,
    uL-Total-PRB-usage                      UL-Total-PRB-usage,
    iE-Extensions                       ProtocolExtensionContainer { { NG-eNB-RadioResourceStatus-ExtIEs} } OPTIONAL,
    ...
}

NG-eNB-RadioResourceStatus-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    { ID id-DL-scheduling-PDCCH-CCE-usage       CRITICALITY ignore  EXTENSION DL-scheduling-PDCCH-CCE-usage   PRESENCE optional}|
    { ID id-UL-scheduling-PDCCH-CCE-usage       CRITICALITY ignore  EXTENSION UL-scheduling-PDCCH-CCE-usage   PRESENCE optional},
    ...
}

DL-scheduling-PDCCH-CCE-usage ::= INTEGER (0.. 100)
UL-scheduling-PDCCH-CCE-usage ::= INTEGER (0.. 100)


TNLCapacityIndicator ::= SEQUENCE {
    dLTNLOfferedCapacity                OfferedCapacity,
    dLTNLAvailableCapacity              AvailableCapacity,
    uLTNLOfferedCapacity                OfferedCapacity,
    uLTNLAvailableCapacity              AvailableCapacity,
```

```
    iE-Extensions                           ProtocolExtensionContainer { { TNLCapacityIndicator-ExtIEs} } OPTIONAL,
    ...
}

TNLCapacityIndicator-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

Non-F1-TerminatingTopologyBHInformation ::= SEQUENCE {
    nonF1TerminatingBHInformation-List      NonF1TerminatingBHInformation-List,
    bAPControlPDURLCCH-List                 BAPControlPDURLCCH-List         OPTIONAL,
    iE-Extensions                           ProtocolExtensionContainer { {Non-F1-TerminatingTopologyBHInformation-ExtIEs} } OPTIONAL,
    ...
}

Non-F1-TerminatingTopologyBHInformation-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

NonF1TerminatingBHInformation-List ::= SEQUENCE (SIZE(1..maxnoofBHInfo)) OF NonF1TerminatingBHInformation-Item

NonF1TerminatingBHInformation-Item ::= SEQUENCE {
    bHInfoIndex                     BHInfoIndex,
    dlNon-F1TerminatingBHInfo       DLNonF1Terminating-BHInfo       OPTIONAL,
    ulNon-F1TerminatingBHInfo       ULNonF1Terminating-BHInfo       OPTIONAL,
    iE-Extension            ProtocolExtensionContainer { { NonF1TerminatingBHInformation-Item-ExtIEs} } OPTIONAL,
    ...
}

NonF1TerminatingBHInformation-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


NonUPTraffic ::= CHOICE {
    nonUPTrafficType                NonUPTrafficType,
    controlPlaneTrafficType         ControlPlaneTrafficType,
    choice-extension                ProtocolIE-Single-Container { { NonUPTraffic-ExtIEs} }
}

NonUPTraffic-ExtIEs XNAP-PROTOCOL-IES ::= {
    ...
}

NonUPTrafficType ::= ENUMERATED {ueassociatedf1ap, nonueassociatedf1ap, nonf1, ...}

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

NPN-Broadcast-Information ::= CHOICE {
    snpn-Information                    NPN-Broadcast-Information-SNPN,
    pni-npn-Information                 NPN-Broadcast-Information-PNI-NPN,
    choice-extension                    ProtocolIE-Single-Container { {NPN-Broadcast-Information-ExtIEs} }
}
```

```
NPN-Broadcast-Information-ExtIEs XNAP-PROTOCOL-IES ::= {
    ...
}

NPN-Broadcast-Information-SNPN ::= SEQUENCE {
    broadcastSNPNID-List        BroadcastSNPNID-List,
    iE-Extension                ProtocolExtensionContainer { {NPN-Broadcast-Information-SNPN-ExtIEs} }  OPTIONAL,
    ...
}

NPN-Broadcast-Information-SNPN-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}
NPN-Broadcast-Information-PNI-NPN ::= SEQUENCE {
    broadcastPNI-NPN-ID-Information     BroadcastPNI-NPN-ID-Information,
    iE-Extension                        ProtocolExtensionContainer { {NPN-Broadcast-Information-PNI-NPN-ExtIEs} }   OPTIONAL,
    ...
}

NPN-Broadcast-Information-PNI-NPN-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

NPNMobilityInformation::= CHOICE {
    snpn-mobility-information           NPNMobilityInformation-SNPN,
    pni-npn-mobility-information        NPNMobilityInformation-PNI-NPN,
    choice-extension                    ProtocolIE-Single-Container { {NPNMobilityInformation-ExtIEs} }
}

NPNMobilityInformation-ExtIEs XNAP-PROTOCOL-IES ::= {
    ...
}

NPNMobilityInformation-SNPN ::= SEQUENCE {
    serving-NID                 NID,
    iE-Extension                ProtocolExtensionContainer { {NPNMobilityInformation-SNPN-ExtIEs} }  OPTIONAL,
    ...
}

NPNMobilityInformation-SNPN-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    { ID id-EquivalentSNPNs     CRITICALITY reject  EXTENSION EquivalentSNPNs   PRESENCE optional},
    ...
}

NPNMobilityInformation-PNI-NPN ::= SEQUENCE {
    allowedPNI-NPN-ID-List      AllowedPNI-NPN-ID-List,
    iE-Extension                ProtocolExtensionContainer { {NPNMobilityInformation-PNI-NPN-ExtIEs} }  OPTIONAL,
    ...
}

NPNMobilityInformation-PNI-NPN-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}
```

```
NPNPagingAssistanceInformation ::= CHOICE {
    pni-npn-Information                 NPNPagingAssistanceInformation-PNI-NPN,
    choice-extension                    ProtocolIE-Single-Container { {NPNPagingAssistanceInformation-ExtIEs} }
}

NPNPagingAssistanceInformation-ExtIEs XNAP-PROTOCOL-IES ::= {
    ...
}

NPNPagingAssistanceInformation-PNI-NPN ::= SEQUENCE {
    allowedPNI-NPN-ID-List          AllowedPNI-NPN-ID-List,
    iE-Extension                    ProtocolExtensionContainer { {NPNPagingAssistanceInformation-PNI-NPN-ExtIEs} }  OPTIONAL,
    ...
}

NPNPagingAssistanceInformation-PNI-NPN-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


NPN-Support ::= CHOICE {
    sNPN                    NPN-Support-SNPN,
    choice-Extensions       ProtocolIE-Single-Container { {NPN-Support-ExtIEs} }
}

NPN-Support-ExtIEs XNAP-PROTOCOL-IES ::= {
    ...
}

NPN-Support-SNPN ::= SEQUENCE {
    nid                 NID,
    ie-Extension        ProtocolExtensionContainer { {NPN-Support-SNPN-ExtIEs} }    OPTIONAL,
    ...
}

NPN-Support-SNPN-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

NPRACHConfiguration::= SEQUENCE {
    fdd-or-tdd              CHOICE {
        fdd         NPRACHConfiguration-FDD,
        tdd         NPRACHConfiguration-TDD,
        choice-extension        ProtocolIE-Single-Container { { FDD-or-TDD-in-NPRACHConfiguration-Choice-ExtIEs} }
    },
    iE-Extensions                       ProtocolExtensionContainer { { NPRACHConfiguration-ExtIEs} } OPTIONAL,
    ...
}

NPRACHConfiguration-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}
```

```
FDD-or-TDD-in-NPRACHConfiguration-Choice-ExtIEs XNAP-PROTOCOL-IES ::= {
    ...
}

NPRACHConfiguration-FDD::= SEQUENCE {
    nprach-CP-length                            NPRACH-CP-Length,
    anchorCarrier-NPRACHConfig                  OCTET STRING,
    anchorCarrier-EDT-NPRACHConfig              OCTET STRING                        OPTIONAL,
    anchorCarrier-Format2-NPRACHConfig          OCTET STRING                        OPTIONAL,
    anchorCarrier-Format2-EDT-NPRACHConfig      OCTET STRING                        OPTIONAL,
    non-anchorCarrier-NPRACHConfig              OCTET STRING                        OPTIONAL,
    non-anchorCarrier-Format2-NPRACHConfig      OCTET STRING                        OPTIONAL,
    iE-Extensions     ProtocolExtensionContainer { { NPRACHConfiguration-FDD-ExtIEs} }  OPTIONAL,
    ...
}

NPRACHConfiguration-FDD-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

NPRACHConfiguration-TDD::= SEQUENCE {
    nprach-preambleFormat                       NPRACH-preambleFormat,
    anchorCarrier-NPRACHConfigTDD               OCTET STRING,
    non-anchorCarrierFequencyConfiglist         Non-AnchorCarrierFrequencylist      OPTIONAL,
    non-anchorCarrier-NPRACHConfigTDD           OCTET STRING                        OPTIONAL,
    iE-Extensions    ProtocolExtensionContainer { { NPRACHConfiguration-TDD-ExtIEs} }   OPTIONAL,

...
}

NPRACHConfiguration-TDD-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

NPRACH-CP-Length::=         ENUMERATED {
    us66dot7,
    us266dot7,
    ...
}

NPRACH-preambleFormat::=    ENUMERATED {fmt0,fmt1,fmt2,fmt0a,fmt1a,...}

Non-AnchorCarrierFrequencylist ::= SEQUENCE (SIZE(1..maxnoofNonAnchorCarrierFreqConfig)) OF
    SEQUENCE {
        non-anchorCarrierFrquency       OCTET STRING,
        iE-Extensions                   ProtocolExtensionContainer { { Non-AnchorCarrierFrequencylist-ExtIEs} } OPTIONAL,
        ...
    }

Non-AnchorCarrierFrequencylist-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}
```

```
NR-Cell-Identity        ::= BIT STRING (SIZE (36))


NG-RAN-Cell-Identity-ListinRANPagingArea ::= SEQUENCE (SIZE (1..maxnoofCellsinRNA)) OF NG-RAN-Cell-Identity


NR-CGI ::= SEQUENCE {
    plmn-id             PLMN-Identity,
    nr-CI               NR-Cell-Identity,
    iE-Extension        ProtocolExtensionContainer { {NR-CGI-ExtIEs} }  OPTIONAL,
    ...
}

NR-CGI-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

NR-U-Channel-List ::= SEQUENCE (SIZE (1..maxnoofNR-UChannelIDs)) OF NR-U-Channel-Item

NR-U-Channel-Item ::= SEQUENCE {
    nR-U-ChannelID                      NR-U-ChannelID,
    channelOccupancyTimePercentageDL    ChannelOccupancyTimePercentage,
    energyDetectionThresholdDL          EnergyDetectionThreshold,
    iE-Extension        ProtocolExtensionContainer { {NR-U-Channel-Item-ExtIEs} }   OPTIONAL,
    ...
}

NR-U-Channel-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    { ID id-ChannelOccupancyTimePercentageUL    CRITICALITY ignore  EXTENSION ChannelOccupancyTimePercentage  PRESENCE optional}|
    { ID id-EnergyDetectionThresholdUL          CRITICALITY ignore  EXTENSION EnergyDetectionThreshold        PRESENCE optional}|
    { ID id-RadioResourceStatusNR-U             CRITICALITY ignore  EXTENSION RadioResourceStatusNR-U         PRESENCE optional},
    ...
}

NR-U-ChannelID ::= INTEGER (1..maxnoofNR-UChannelIDs, ...)

ChannelOccupancyTimePercentage ::= INTEGER (0..100,...)

EnergyDetectionThreshold ::= INTEGER (-100..-50, ...)


NR-U-ChannelInfo-List ::= SEQUENCE (SIZE (1..maxnoofNR-UChannelIDs)) OF NR-U-ChannelInfo-Item

NR-U-ChannelInfo-Item ::= SEQUENCE {
    nR-U-ChannelID  NR-U-ChannelID,
    nRARFCN         NRARFCN,
    bandwidth       Bandwidth,
    iE-Extension        ProtocolExtensionContainer { {NR-U-ChannelInfo-Item-ExtIEs} }   OPTIONAL,
    ...
}

NR-U-ChannelInfo-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}
```

```
Bandwidth ::= ENUMERATED{mhz10, mhz20, mhz40, mhz60, mhz80, ...,mhz100}

NRA2XServicesAuthorized ::= SEQUENCE {
    aerialUE                AerialUE                                                OPTIONAL,
    aerialControllerUE  AerialControllerUE                                      OPTIONAL,
    iE-Extensions           ProtocolExtensionContainer { {NRA2XServicesAuthorized-ExtIEs} } OPTIONAL,
    ...
}

NRA2XServicesAuthorized-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

NRCyclicPrefix ::= ENUMERATED {normal, extended, ...}

NRDL-ULTransmissionPeriodicity ::= ENUMERATED {ms0p5, ms0p625, ms1, ms1p25, ms2, ms2p5, ms3, ms4, ms5, ms10, ms20, ms40, ms60, ms80, ms100, ms120,
ms140, ms160, ...}

NRFrequencyBand ::= INTEGER (1..1024, ...)


NRFrequencyBand-List ::= SEQUENCE (SIZE(1..maxnoofNRCellBands)) OF NRFrequencyBandItem

NRFrequencyBandItem ::= SEQUENCE {
    nr-frequency-band           NRFrequencyBand,
    supported-SUL-Band-List     SupportedSULBandList                                        OPTIONAL,
    iE-Extension                ProtocolExtensionContainer { {NRFrequencyBandItem-ExtIEs} }     OPTIONAL,
    ...
}

NRFrequencyBandItem-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}



NRFrequencyInfo ::= SEQUENCE {
    nrARFCN             NRARFCN,
    sul-information     SUL-Information                                         OPTIONAL,
    frequencyBand-List  NRFrequencyBand-List,
    iE-Extension        ProtocolExtensionContainer { {NRFrequencyInfo-ExtIEs} }     OPTIONAL,
    ...
}

NRFrequencyInfo-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    { ID id-FrequencyShift7p5khz    CRITICALITY ignore  EXTENSION FrequencyShift7p5khz  PRESENCE optional },...
}

NRMobilityHistoryReport ::= OCTET STRING


NRModeInfo ::= CHOICE {
```

```
    fdd                         NRModeInfoFDD,
    tdd                         NRModeInfoTDD,
    choice-extension            ProtocolIE-Single-Container { {NRModeInfo-ExtIEs} }
}

NRModeInfo-ExtIEs XNAP-PROTOCOL-IES ::= {
    ...
}

NRModeInfoFDD ::= SEQUENCE {
    ulNRFrequencyInfo           NRFrequencyInfo,
    dlNRFrequencyInfo           NRFrequencyInfo,
    ulNRTransmissonBandwidth    NRTransmissionBandwidth,
    dlNRTransmissonBandwidth    NRTransmissionBandwidth,
    iE-Extension        ProtocolExtensionContainer { {NRModeInfoFDD-ExtIEs} }   OPTIONAL,
    ...
}

NRModeInfoFDD-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    { ID id-ULCarrierList                           CRITICALITY ignore  EXTENSION NRCarrierList                         PRESENCE optional }|
    { ID id-DLCarrierList                           CRITICALITY ignore  EXTENSION NRCarrierList                         PRESENCE optional }|
    { ID id-UL-GNB-DU-Cell-Resource-Configuration   CRITICALITY ignore  EXTENSION GNB-DU-Cell-Resource-Configuration     PRESENCE optional }|
    { ID id-DL-GNB-DU-Cell-Resource-Configuration   CRITICALITY ignore  EXTENSION GNB-DU-Cell-Resource-Configuration     PRESENCE optional },
...
}


NRModeInfoTDD ::= SEQUENCE {
    nrFrequencyInfo         NRFrequencyInfo,
    nrTransmissonBandwidth  NRTransmissionBandwidth,
    iE-Extension            ProtocolExtensionContainer { {NRModeInfoTDD-ExtIEs} }   OPTIONAL,
    ...
}

NRModeInfoTDD-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    { ID id-IntendedTDD-DL-ULConfiguration-NR       CRITICALITY ignore  EXTENSION IntendedTDD-DL-ULConfiguration-NR   PRESENCE optional }|
    { ID id-TDDULDLConfigurationCommonNR            CRITICALITY ignore  EXTENSION TDDULDLConfigurationCommonNR        PRESENCE optional }|
    { ID id-CarrierList                             CRITICALITY ignore  EXTENSION NRCarrierList                       PRESENCE optional }|
    { ID id-tdd-GNB-DU-Cell-Resource-Configuration  CRITICALITY ignore  EXTENSION GNB-DU-Cell-Resource-Configuration  PRESENCE optional }|
    { ID id-Transmission-Bandwidth-asymmetric       CRITICALITY ignore  EXTENSION Transmission-Bandwidth-asymmetric   PRESENCE optional }|
    { ID id-SBFD-Frequency-Configuration            CRITICALITY ignore  EXTENSION SBFD-Frequency-Configuration        PRESENCE optional },
    ...
}


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, nrb15, nrb35}


NRPagingeDRXInformation ::= SEQUENCE {
    nRPaging-eDRX-Cycle     NRPaging-eDRX-Cycle,
    nRPaging-Time-Window    NRPaging-Time-Window                    OPTIONAL,
    iE-Extensions           ProtocolExtensionContainer { {NRPagingeDRXInformation-ExtIEs} } OPTIONAL,
```

```
    ...
}

NRPagingeDRXInformation-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

NRPaging-eDRX-Cycle ::= 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 XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

NRPaging-eDRX-Cycle-Inactive ::= ENUMERATED {
    hfquarter, hfhalf, hf1,
    ...
}

NRPagingLongeDRXInformationforRRCINACTIVE ::= SEQUENCE {
    nRPaging-long-eDRX-Cycle-Inactive   NRPaging-long-eDRX-Cycle-Inactive,
    nRPaging-Time-Window-Inactive       NRPaging-Time-Window-Inactive,
    iE-Extensions                       ProtocolExtensionContainer { {NRPagingLongeDRXInformationforRRCINACTIVE-ExtIEs} } OPTIONAL,
    ...
}

NRPagingLongeDRXInformationforRRCINACTIVE-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

NRPaging-long-eDRX-Cycle-Inactive ::= ENUMERATED {
    hf2, hf4, hf8, hf16,
    hf32, hf64, hf128, hf256,
```

```
    hf512, hf1024,
    ...
}


NRPaging-Time-Window-Inactive ::= 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, ...
}

NRPCI ::= INTEGER (0..1007, ...)

NRSCS ::= ENUMERATED { scs15, scs30, scs60, scs120, ..., scs480, scs960}


NRTransmissionBandwidth ::= SEQUENCE {
    nRSCS   NRSCS,
    nRNRB   NRNRB,
    iE-Extensions               ProtocolExtensionContainer { {NRTransmissionBandwidth-ExtIEs} } OPTIONAL,
    ...
}

NRPPaPositioningInformation ::= SEQUENCE {
    routingID                                       RoutingID,
    nRPPaTransactionID                              INTEGER (0..32767),
    iE-Extension                ProtocolExtensionContainer { { NRPPaPositioningInformation-ExtIEs} } OPTIONAL,
    ...
}

NRPPaPositioningInformation-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


NRTransmissionBandwidth-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

Transmission-Bandwidth-asymmetric ::= SEQUENCE {
    ul-Transmission-Bandwidth   NRTransmissionBandwidth,
    dl-Transmission-Bandwidth   NRTransmissionBandwidth,
    iE-Extensions               ProtocolExtensionContainer { { Transmission-Bandwidth-asymmetric-ExtIEs} } OPTIONAL,
    ...
}

Transmission-Bandwidth-asymmetric-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}
```

```
NumberOfAntennaPorts-E-UTRA ::= ENUMERATED {an1, an2, an4, ...}

NG-RANTraceID               ::=OCTET STRING (SIZE (8))

NonGBRResources-Offered ::= ENUMERATED {true, ...}

NRV2XServicesAuthorized ::= SEQUENCE {
    vehicleUE           VehicleUE                           OPTIONAL,
    pedestrianUE        PedestrianUE                        OPTIONAL,
    iE-Extensions       ProtocolExtensionContainer { {NRV2XServicesAuthorized-ExtIEs} } OPTIONAL,
    ...
}

NRV2XServicesAuthorized-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


NRUESidelinkAggregateMaximumBitRate ::= SEQUENCE {
    uESidelinkAggregateMaximumBitRate       BitRate,
    iE-Extensions                   ProtocolExtensionContainer { {NRUESidelinkAggregateMaximumBitRate-ExtIEs} } OPTIONAL,
    ...
}

NRUESidelinkAggregateMaximumBitRate-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

NSAG-ID ::= INTEGER (0..255, ...)

NZP-CSI-RS-Resources-Config ::= SEQUENCE {
    nZP-CSI-RS-ResourceSet                  OCTET STRING,
    nZP-CSI-RS-Resource-List                NZP-CSI-RS-Resource-List,
    iE-Extensions                           ProtocolExtensionContainer { {NZP-CSI-RS-Resources-Config-ExtIEs} } OPTIONAL,
    ...
}

NZP-CSI-RS-Resources-Config-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

NZP-CSI-RS-Resource-List ::= SEQUENCE (SIZE(1..maxnoofNZP-CSI-RS-ResourcesPerSet)) OF NZP-CSI-RS-Resource-Item

NZP-CSI-RS-Resource-Item ::= SEQUENCE {
    nZP-CSI-RS-Resource                     OCTET STRING,
    iE-Extensions                           ProtocolExtensionContainer { {NZP-CSI-RS-Resource-Item-ExtIEs} } OPTIONAL,
    ...
}

NZP-CSI-RS-Resource-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

NTNGeographicalArea ::= SEQUENCE (SIZE(1.. maxnoofAreaNTNforMDT)) OF NTNGeographicalAreaItem
```

```
NTNGeographicalAreaItem ::= CHOICE {
    circle                      Circle,
    polygon                     Polygon,
    cHOICE-Extensions           ProtocolIE-Single-Container { {NTNGeographicalAreaItem-ExtIEs} }
}

NTNGeographicalAreaItem-ExtIEs XNAP-PROTOCOL-IES ::={
    ...
}



-- O


OfferedCapacity ::= INTEGER (1.. 16777216,...)

OffsetOfNbiotChannelNumberToEARFCN ::= ENUMERATED {
        minusTen,
        minusNine,
        minusEightDotFive,
        minusEight,
        minusSeven,
        minusSix,
        minusFive,
        minusFourDotFive,
        minusFour,
        minusThree,
        minusTwo,
        minusOne,
        minusZeroDotFive,
        zero,
        one,
        two,
        three,
        threeDotFive,
        four,
        five,
        six,
        seven,
        sevenDotFive,
        eight,
        nine,
        ...
}

-- P
Polygon ::= OCTET STRING

PositioningInformation ::= SEQUENCE {
    requestedSRSTransmissionCharacteristics            RequestedSRSTransmissionCharacteristics,
    routingID                                          RoutingID,
    nRPPaTransactionID                                 INTEGER (0..32767),
```

```
    iE-Extension               ProtocolExtensionContainer { { PositioningInformation-ExtIEs} } OPTIONAL,
    ...
}

PositioningInformation-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

PacketDelayBudget ::= INTEGER (0..1023, ...)


PacketErrorRate ::= SEQUENCE {
    pER-Scalar          PER-Scalar,
    pER-Exponent        PER-Exponent,
    iE-Extensions       ProtocolExtensionContainer { {PacketErrorRate-ExtIEs} } OPTIONAL,
    ...
}

PacketErrorRate-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

PagingCause ::= ENUMERATED {
    voice,
    ...
}

PedestrianUE ::= ENUMERATED {
    authorized,
    not-authorized,
    ...
}

PER-Scalar ::= INTEGER (0..9, ...)

PER-Exponent ::= INTEGER (0..9, ...)

PEIPSassistanceInformation ::= SEQUENCE {
    cNsubgroupID            CNsubgroupID,
    iE-Extensions       ProtocolExtensionContainer { {PEIPSassistanceInformation-ExtIEs} } OPTIONAL,
    ...
}

PEIPSassistanceInformation-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


PacketLossRate ::= INTEGER (0..1000, ...)


PagingDRX   ::= ENUMERATED {
    v32,
    v64,
```

```
    v128,
    v256,
    ... ,
    v512,
    v1024
   }


PagingPriority ::= ENUMERATED {
    priolevel1,
    priolevel2,
    priolevel3,
    priolevel4,
    priolevel5,
    priolevel6,
    priolevel7,
    priolevel8,
    ...
}

PartialListIndicator ::= ENUMERATED {partial, ...}

PC5QoSParameters ::= SEQUENCE {
    pc5QoSFlowList              PC5QoSFlowList,
    pc5LinkAggregateBitRates    BitRate             OPTIONAL,
    iE-Extensions       ProtocolExtensionContainer { { PC5QoSParameters-ExtIEs} }   OPTIONAL,
    ...
}


PC5QoSParameters-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

PC5QoSFlowList ::= SEQUENCE (SIZE(1..maxnoofPC5QoSFlows)) OF PC5QoSFlowItem
-- The size of the PC5 QoS Flow List shall not exceed 2048 items.

PC5QoSFlowItem::= SEQUENCE {
    pQI                         FiveQI,
    pc5FlowBitRates             PC5FlowBitRates             OPTIONAL,
    range                       Range                       OPTIONAL,
    iE-Extensions       ProtocolExtensionContainer { { PC5QoSFlowItem-ExtIEs} } OPTIONAL,
    ...
}

PC5QoSFlowItem-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


PC5FlowBitRates ::= SEQUENCE {
    guaranteedFlowBitRate       BitRate,
    maximumFlowBitRate          BitRate,
    iE-Extensions       ProtocolExtensionContainer { { PC5FlowBitRates-ExtIEs} }    OPTIONAL,
```

```
    ...
}

PC5FlowBitRates-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

PDCPChangeIndication ::= CHOICE {
    from-S-NG-RAN-node              ENUMERATED {s-ng-ran-node-key-update-required, pdcp-data-recovery-required, ...},
    from-M-NG-RAN-node              ENUMERATED {pdcp-data-recovery-required, ...},
    choice-extension                ProtocolIE-Single-Container { {PDCPChangeIndication-ExtIEs} }
}

PDCPChangeIndication-ExtIEs XNAP-PROTOCOL-IES ::= {
    ...
}


PDCPDuplicationConfiguration ::= ENUMERATED {
    configured,
    de-configured,
    ...
}


PDCPSNLength ::= SEQUENCE {
    ulPDCPSNLength          ENUMERATED {v12bits, v18bits, ...},
    dlPDCPSNLength          ENUMERATED {v12bits, v18bits, ...},
    iE-Extension            ProtocolExtensionContainer { {PDCPSNLength-ExtIEs} }        OPTIONAL,
    ...
}

PDCPSNLength-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

PDUSetQoSParameters ::= SEQUENCE {
    ulPDUSetQoSInformation                  PDUSetQoSInformation    OPTIONAL,
    dlPDUSetQoSInformation                  PDUSetQoSInformation    OPTIONAL,
    iE-Extensions                           ProtocolExtensionContainer { { PDUSetQoSParameters-ExtIEs } }  OPTIONAL
}

PDUSetQoSParameters-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
    }


PDUSetQoSInformation    ::= SEQUENCE {
    pduSetDelayBudget                       ExtendedPacketDelayBudget       OPTIONAL,
    pduSetErrorRate                         PacketErrorRate                 OPTIONAL,
    pduSetIntegratedHandlingInformation     ENUMERATED {true, false, ...}   OPTIONAL,
    iE-Extensions                           ProtocolExtensionContainer { { PDUSetQoSInformation-ExtIEs } } OPTIONAL
}
```

```
PDUSetQoSInformation-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

PDUSetbasedHandlingIndicator ::= ENUMERATED {
    supported,
    ...
}



PDUSessionAggregateMaximumBitRate ::= SEQUENCE {
    downlink-session-AMBR               BitRate,
    uplink-session-AMBR                 BitRate,
    iE-Extensions                       ProtocolExtensionContainer { {PDUSessionAggregateMaximumBitRate-ExtIEs} }   OPTIONAL,
    ...
}

PDUSessionAggregateMaximumBitRate-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


PDUSession-List ::= SEQUENCE (SIZE (1.. maxnoofPDUSessions)) OF PDUSession-ID


PDUSession-List-withCause ::= SEQUENCE (SIZE (1.. maxnoofPDUSessions)) OF PDUSession-List-withCause-Item

PDUSession-List-withCause-Item ::= SEQUENCE {
    pduSessionId        PDUSession-ID,
    cause               Cause               OPTIONAL,
    iE-Extension        ProtocolExtensionContainer { {PDUSession-List-withCause-Item-ExtIEs} }  OPTIONAL,
    ...
}

PDUSession-List-withCause-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


PDUSession-List-withDataForwardingFromTarget ::= SEQUENCE (SIZE (1.. maxnoofPDUSessions)) OF
                                                    PDUSession-List-withDataForwardingFromTarget-Item

PDUSession-List-withDataForwardingFromTarget-Item ::= SEQUENCE {
    pduSessionId                        PDUSession-ID,
    dataforwardinginfoTarget            DataForwardingInfoFromTargetNGRANnode,
    iE-Extension        ProtocolExtensionContainer { {PDUSession-List-withDataForwardingFromTarget-Item-ExtIEs} }  OPTIONAL,
    ...
}

PDUSession-List-withDataForwardingFromTarget-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    { ID id-DRB-IDs-takenintouse        CRITICALITY reject  EXTENSION DRB-List  PRESENCE optional},
    ...
}
```

```
PDUSession-List-withDataForwardingRequest ::= SEQUENCE (SIZE (1.. maxnoofPDUSessions)) OF
                                                    PDUSession-List-withDataForwardingRequest-Item

PDUSession-List-withDataForwardingRequest-Item ::= SEQUENCE {
    pduSessionId                        PDUSession-ID,
    dataforwardingInfofromSource        DataforwardingandOffloadingInfofromSource           OPTIONAL,
    dRBtoBeReleasedList                 DRBToQoSFlowMapping-List                            OPTIONAL,
    iE-Extension        ProtocolExtensionContainer { {PDUSession-List-withDataForwardingRequest-Item-ExtIEs} }   OPTIONAL,
    ...
}

PDUSession-List-withDataForwardingRequest-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    {ID id-Cause               CRITICALITY ignore EXTENSION Cause             PRESENCE optional},
...
}


PDUSessionsListToBeReleased-UPError ::= SEQUENCE (SIZE (1.. maxnoofPDUSessions)) OF PDUSessionsListToBeReleased-UPError-Item

PDUSessionsListToBeReleased-UPError-Item ::= SEQUENCE {
    pduSessionId                    PDUSession-ID,
    userPlaneErrorIndicator         UserPlaneErrorIndicator,
    iE-Extension        ProtocolExtensionContainer { {PDUSessionsListToBeReleased-UPError-Item-ExtIEs} }   OPTIONAL,
    ...
}

PDUSessionsListToBeReleased-UPError-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


-- **************************************************************
--
-- PDU Session related message level IEs BEGIN
--
-- **************************************************************


-- **************************************************************
--
-- PDU Session Resources Admitted List
--
-- **************************************************************


PDUSessionResourcesAdmitted-List ::= SEQUENCE (SIZE(1..maxnoofPDUSessions)) OF PDUSessionResourcesAdmitted-Item

PDUSessionResourcesAdmitted-Item ::= SEQUENCE {
    pduSessionId                    PDUSession-ID,
    pduSessionResourceAdmittedInfo  PDUSessionResourceAdmittedInfo,
    iE-Extensions                   ProtocolExtensionContainer { {PDUSessionResourcesAdmitted-Item-ExtIEs} }   OPTIONAL,
    ...
```

```
}

PDUSessionResourcesAdmitted-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


PDUSessionResourceAdmittedInfo ::= SEQUENCE {
    dL-NG-U-TNL-Information-Unchanged       ENUMERATED {true, ...}                                          OPTIONAL,
    qosFlowsAdmitted-List                   QoSFlowsAdmitted-List,
    qosFlowsNotAdmitted-List                QoSFlows-List-withCause                                         OPTIONAL,
    dataForwardingInfoFromTarget            DataForwardingInfoFromTargetNGRANnode                           OPTIONAL,
    iE-Extensions                      ProtocolExtensionContainer { {PDUSessionResourceAdmittedInfo-ExtIEs} }   OPTIONAL,
    ...
}

PDUSessionResourceAdmittedInfo-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
{ ID id-SecondarydataForwardingInfoFromTarget-List  CRITICALITY ignore  EXTENSION SecondarydataForwardingInfoFromTarget-List PRESENCE optional},
    ...
}


-- **************************************************************
--
-- PDU Session Resources Not Admitted List
--
-- **************************************************************


PDUSessionResourcesNotAdmitted-List ::= SEQUENCE (SIZE (1..maxnoofPDUSessions)) OF PDUSessionResourcesNotAdmitted-Item

PDUSessionResourcesNotAdmitted-Item ::= SEQUENCE {
    pduSessionId                PDUSession-ID,
    cause                       Cause               OPTIONAL,
    iE-Extension        ProtocolExtensionContainer { {PDUSessionResourcesNotAdmitted-Item-Item-ExtIEs} }   OPTIONAL,
    ...
}

PDUSessionResourcesNotAdmitted-Item-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


-- **************************************************************
--
-- PDU Session Resources To Be Setup List
--
-- **************************************************************


PDUSessionResourcesToBeSetup-List ::= SEQUENCE (SIZE(1..maxnoofPDUSessions)) OF PDUSessionResourcesToBeSetup-Item

PDUSessionResourcesToBeSetup-Item ::= SEQUENCE {
    pduSessionId                    PDUSession-ID,
```

```
    s-NSSAI                         S-NSSAI,
    pduSessionAMBR                  PDUSessionAggregateMaximumBitRate                                   OPTIONAL,
    uL-NG-U-TNLatUPF                UPTransportLayerInformation,
    source-DL-NG-U-TNL-Information  UPTransportLayerInformation                                        OPTIONAL,
    securityIndication              SecurityIndication                                                  OPTIONAL,
    pduSessionType                  PDUSessionType,
    pduSessionNetworkInstance       PDUSessionNetworkInstance                                           OPTIONAL,
    qosFlowsToBeSetup-List          QoSFlowsToBeSetup-List,
    dataforwardinginfofromSource    DataforwardingandOffloadingInfofromSource                           OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { {PDUSessionResourcesToBeSetup-Item-ExtIEs} }   OPTIONAL,
    ...
}

PDUSessionResourcesToBeSetup-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    { ID id-Additional-UL-NG-U-TNLatUPF-List            CRITICALITY ignore  EXTENSION Additional-UL-NG-U-TNLatUPF-List        PRESENCE optional}|
    { ID id-PDUSessionCommonNetworkInstance             CRITICALITY ignore  EXTENSION PDUSessionCommonNetworkInstance         PRESENCE optional}|
    { ID id-Redundant-UL-NG-U-TNLatUPF                  CRITICALITY ignore  EXTENSION UPTransportLayerInformation             PRESENCE optional}|
    { ID id-Additional-Redundant-UL-NG-U-TNLatUPF-List  CRITICALITY ignore  EXTENSION Additional-UL-NG-U-TNLatUPF-List        PRESENCE optional}|
    { ID id-RedundantCommonNetworkInstance              CRITICALITY ignore  EXTENSION PDUSessionCommonNetworkInstance         PRESENCE optional}|
    { ID id-RedundantPDUSessionInformation              CRITICALITY ignore  EXTENSION RedundantPDUSessionInformation          PRESENCE optional}|
    { ID id-MBS-SessionAssociatedInformation            CRITICALITY ignore  EXTENSION MBS-SessionAssociatedInformation        PRESENCE optional},
    ...
}


-- **************************************************************
--
-- PDU Session Resource Setup Info - SN terminated
--
-- **************************************************************


PDUSessionResourceSetupInfo-SNterminated ::= SEQUENCE {
    uL-NG-U-TNLatUPF                UPTransportLayerInformation,
    pduSessionType                  PDUSessionType,
    pduSessionNetworkInstance       PDUSessionNetworkInstance                                               OPTIONAL,
    qosFlowsToBeSetup-List          QoSFlowsToBeSetup-List-Setup-SNterminated,
    dataforwardinginfofromSource    DataforwardingandOffloadingInfofromSource                               OPTIONAL,
    securityIndication              SecurityIndication                                                      OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { {PDUSessionResourceSetupInfo-SNterminated-ExtIEs} }   OPTIONAL,
    ...
}

PDUSessionResourceSetupInfo-SNterminated-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    { ID id-SecurityResult                      CRITICALITY reject  EXTENSION SecurityResult                    PRESENCE optional}|
    { ID id-PDUSessionCommonNetworkInstance     CRITICALITY ignore  EXTENSION PDUSessionCommonNetworkInstance    PRESENCE optional}|
    { ID id-DefaultDRB-Allowed                  CRITICALITY ignore  EXTENSION DefaultDRB-Allowed                 PRESENCE optional}|
    { ID id-SplitSessionIndicator               CRITICALITY reject  EXTENSION SplitSessionIndicator              PRESENCE optional}|
    { ID id-NonGBRResources-Offered             CRITICALITY ignore  EXTENSION NonGBRResources-Offered            PRESENCE optional}|
    { ID id-Redundant-UL-NG-U-TNLatUPF          CRITICALITY ignore  EXTENSION UPTransportLayerInformation        PRESENCE optional}|
    { ID id-RedundantCommonNetworkInstance      CRITICALITY ignore  EXTENSION PDUSessionCommonNetworkInstance    PRESENCE optional}|
    { ID id-RedundantPDUSessionInformation      CRITICALITY ignore  EXTENSION RedundantPDUSessionInformation     PRESENCE optional},
    ...
}
```

```
QoSFlowsToBeSetup-List-Setup-SNterminated ::= SEQUENCE (SIZE(1..maxnoofQoSFlows)) OF QoSFlowsToBeSetup-List-Setup-SNterminated-Item

QoSFlowsToBeSetup-List-Setup-SNterminated-Item ::= SEQUENCE {
    qfi                             QoSFlowIdentifier,
    qosFlowLevelQoSParameters       QoSFlowLevelQoSParameters,
    offeredGBRQoSFlowInfo           GBRQoSFlowInfo                                                          OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { {QoSFlowsToBeSetup-List-Setup-SNterminated-Item-ExtIEs} }  OPTIONAL,
    ...
}

QoSFlowsToBeSetup-List-Setup-SNterminated-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    { ID id-TSCTrafficCharacteristics       CRITICALITY ignore  EXTENSION TSCTrafficCharacteristics  PRESENCE optional}|
    { ID id-RedundantQoSFlowIndicator       CRITICALITY ignore  EXTENSION RedundantQoSFlowIndicator  PRESENCE optional}|
    { ID id-ECNMarkingorCongestionInformationReportingRequest       CRITICALITY ignore  EXTENSION ECNMarkingorCongestionInformationReportingRequest
    PRESENCE optional},
    ...
}

-- **************************************************************
--
-- PDU Session Resource Setup Response Info - SN terminated
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-- **************************************************************


PDUSessionResourceSetupResponseInfo-SNterminated ::= SEQUENCE {
    dL-NG-U-TNLatNG-RAN             UPTransportLayerInformation,
    dRBsToBeSetup                   DRBsToBeSetupList-SetupResponse-SNterminated    OPTIONAL,
    dataforwardinginfoTarget        DataForwardingInfoFromTargetNGRANnode           OPTIONAL,
    qosFlowsNotAdmittedList         QoSFlows-List-withCause                         OPTIONAL,
    securityResult                  SecurityResult                                  OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { {PDUSessionResourceSetupResponseInfo-SNterminated-ExtIEs} }   OPTIONAL,
    ...
}

PDUSessionResourceSetupResponseInfo-SNterminated-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    { ID id-DRB-IDs-takenintouse                    CRITICALITY reject  EXTENSION DRB-List                                  PRESENCE optional}|
    { ID id-Redundant-DL-NG-U-TNLatNG-RAN           CRITICALITY ignore  EXTENSION UPTransportLayerInformation               PRESENCE optional}|
    { ID id-UsedRSNInformation                      CRITICALITY ignore  EXTENSION RedundantPDUSessionInformation            PRESENCE optional}|
    { ID id-S-CPAC-dataforwardinginfofromSource     CRITICALITY ignore  EXTENSION DataforwardingandOffloadingInfofromSource PRESENCE optional}|
    { ID id-AdditionalDRBSetupInfoList              CRITICALITY ignore  EXTENSION AdditionalDRBSetupInfoList                PRESENCE optional},
    ...
}

DRBsToBeSetupList-SetupResponse-SNterminated ::= SEQUENCE (SIZE(1..maxnoofDRBs)) OF DRBsToBeSetupList-SetupResponse-SNterminated-Item

DRBsToBeSetupList-SetupResponse-SNterminated-Item ::= SEQUENCE {
    drb-ID                                          DRB-ID,
    sN-UL-PDCP-UP-TNLInfo                           UPTransportParameters,
    dRB-QoS                                         QoSFlowLevelQoSParameters,
    pDCP-SNLength                                   PDCPSNLength                    OPTIONAL,
    rLC-Mode                                        RLCMode,
    uL-Configuration                                ULConfiguration                 OPTIONAL,
```

```
    secondary-SN-UL-PDCP-UP-TNLInfo                         UPTransportParameters              OPTIONAL,
    duplicationActivation                                   DuplicationActivation              OPTIONAL,
    qoSFlowsMappedtoDRB-SetupResponse-SNterminated          QoSFlowsMappedtoDRB-SetupResponse-SNterminated,
    iE-Extensions                   ProtocolExtensionContainer { {DRBsToBeSetupList-SetupResponse-SNterminated-Item-ExtIEs} }  OPTIONAL,
    ...
}

DRBsToBeSetupList-SetupResponse-SNterminated-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    { ID id-Additional-PDCP-Duplication-TNL-List        CRITICALITY ignore  EXTENSION Additional-PDCP-Duplication-TNL-List  PRESENCE optional}|
    { ID id-RLCDuplicationInformation                   CRITICALITY ignore  EXTENSION RLCDuplicationInformation             PRESENCE optional}|
    { ID id-ECNMarkingorCongestionInformationReportingStatus        CRITICALITY ignore  EXTENSION ECNMarkingorCongestionInformationReportingStatus
    PRESENCE optional}|
    { ID id-PSIbasedSDUdiscardUL                        CRITICALITY ignore  EXTENSION PSIbasedSDUdiscardUL                  PRESENCE optional}|
    { ID id-PSIbasedSDUdiscardDL                        CRITICALITY ignore  EXTENSION PSIbasedSDUdiscardDL                  PRESENCE optional},
    ...
}

QoSFlowsMappedtoDRB-SetupResponse-SNterminated ::= SEQUENCE (SIZE(1..maxnoofQoSFlows)) OF
                                                        QoSFlowsMappedtoDRB-SetupResponse-SNterminated-Item

QoSFlowsMappedtoDRB-SetupResponse-SNterminated-Item ::= SEQUENCE {
    qoSFlowIdentifier               QoSFlowIdentifier,
    mCGRequestedGBRQoSFlowInfo      GBRQoSFlowInfo                                          OPTIONAL,
    qosFlowMappingIndication        QoSFlowMappingIndication                                OPTIONAL,
    iE-Extensions       ProtocolExtensionContainer { {QoSFlowsMappedtoDRB-SetupResponse-SNterminated-Item-ExtIEs} }   OPTIONAL,
    ...
}

QoSFlowsMappedtoDRB-SetupResponse-SNterminated-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    { ID id-CurrentQoSParaSetIndex              CRITICALITY ignore  EXTENSION QoSParaSetIndex          PRESENCE optional }|
    { ID id-SourceDLForwardingIPAddress         CRITICALITY ignore  EXTENSION TransportLayerAddress    PRESENCE optional},
    ...
}


-- **************************************************************
--
-- PDU Session Resource Setup Info - MN terminated
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-- **************************************************************


PDUSessionResourceSetupInfo-MNterminated ::= SEQUENCE {
    pduSessionType                  PDUSessionType,
    dRBsToBeSetup                   DRBsToBeSetupList-Setup-MNterminated,
    iE-Extensions                   ProtocolExtensionContainer { {PDUSessionResourceSetupInfo-MNterminated-ExtIEs} }  OPTIONAL,
    ...
}

PDUSessionResourceSetupInfo-MNterminated-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

DRBsToBeSetupList-Setup-MNterminated ::= SEQUENCE (SIZE(1..maxnoofDRBs)) OF DRBsToBeSetupList-Setup-MNterminated-Item
```

```
DRBsToBeSetupList-Setup-MNterminated-Item ::= SEQUENCE {
    drb-ID                                          DRB-ID,
    mN-UL-PDCP-UP-TNLInfo                           UPTransportParameters,
    rLC-Mode                                        RLCMode,
    uL-Configuration                                ULConfiguration                 OPTIONAL,
    dRB-QoS                                         QoSFlowLevelQoSParameters,
    pDCP-SNLength                                   PDCPSNLength                    OPTIONAL,
    secondary-MN-UL-PDCP-UP-TNLInfo                 UPTransportParameters           OPTIONAL,
    duplicationActivation                           DuplicationActivation           OPTIONAL,
    qoSFlowsMappedtoDRB-Setup-MNterminated      QoSFlowsMappedtoDRB-Setup-MNterminated,
    iE-Extensions                   ProtocolExtensionContainer { {DRBsToBeSetupList-Setup-MNterminated-Item-ExtIEs} } OPTIONAL,
    ...
}

DRBsToBeSetupList-Setup-MNterminated-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    { ID id-Additional-PDCP-Duplication-TNL-List        CRITICALITY ignore  EXTENSION Additional-PDCP-Duplication-TNL-List  PRESENCE optional}|
    { ID id-RLCDuplicationInformation                   CRITICALITY ignore  EXTENSION RLCDuplicationInformation             PRESENCE optional}|
    { ID id-ECNMarkingorCongestionInformationReportingRequest   CRITICALITY ignore  EXTENSION ECNMarkingorCongestionInformationReportingRequest
    PRESENCE optional}|
    { ID id-PSIbasedSDUdiscardUL                        CRITICALITY ignore  EXTENSION PSIbasedSDUdiscardUL                  PRESENCE optional}|
    { ID id-PSIbasedSDUdiscardDL                        CRITICALITY ignore  EXTENSION PSIbasedSDUdiscardDL                  PRESENCE optional},
    ...
}

QoSFlowsMappedtoDRB-Setup-MNterminated ::= SEQUENCE (SIZE(1..maxnoofQoSFlows)) OF QoSFlowsMappedtoDRB-Setup-MNterminated-Item

QoSFlowsMappedtoDRB-Setup-MNterminated-Item ::= SEQUENCE {
    qoSFlowIdentifier               QoSFlowIdentifier,
    qoSFlowLevelQoSParameters       QoSFlowLevelQoSParameters,
    qosFlowMappingIndication        QoSFlowMappingIndication        OPTIONAL,
    iE-Extensions       ProtocolExtensionContainer { {QoSFlowsMappedtoDRB-Setup-MNterminated-Item-ExtIEs} }   OPTIONAL,
    ...
}

QoSFlowsMappedtoDRB-Setup-MNterminated-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    { ID id-TSCTrafficCharacteristics       CRITICALITY ignore  EXTENSION TSCTrafficCharacteristics  PRESENCE optional},
    ...
}


-- **************************************************************
--
-- PDU Session Resource Setup Response Info - MN terminated
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-- **************************************************************


PDUSessionResourceSetupResponseInfo-MNterminated ::= SEQUENCE {
    dRBsAdmittedList                DRBsAdmittedList-SetupResponse-MNterminated,
    iE-Extensions                   ProtocolExtensionContainer { {PDUSessionResourceSetupResponseInfo-MNterminated-ExtIEs} }    OPTIONAL,
    ...
}
```

```
PDUSessionResourceSetupResponseInfo-MNterminated-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    {ID id-DRBsNotAdmittedSetupModifyList   CRITICALITY ignore  EXTENSION DRB-List-withCause     PRESENCE optional},
    ...
}

DRBsAdmittedList-SetupResponse-MNterminated ::= SEQUENCE (SIZE(1..maxnoofDRBs)) OF DRBsAdmittedList-SetupResponse-MNterminated-Item

DRBsAdmittedList-SetupResponse-MNterminated-Item ::= SEQUENCE {
    drb-ID                                  DRB-ID,
    sN-DL-SCG-UP-TNLInfo                    UPTransportParameters,
    secondary-SN-DL-SCG-UP-TNLInfo          UPTransportParameters              OPTIONAL,
    lCID                                    LCID                               OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { {DRBsAdmittedList-SetupResponse-MNterminated-Item-ExtIEs} }   OPTIONAL,
    ...
}

DRBsAdmittedList-SetupResponse-MNterminated-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    { ID id-Additional-PDCP-Duplication-TNL-List        CRITICALITY ignore  EXTENSION Additional-PDCP-Duplication-TNL-List  PRESENCE optional}|
    { ID id-QoSFlowsMappedtoDRB-SetupResponse-MNterminated  CRITICALITY ignore  EXTENSION   QoSFlowsMappedtoDRB-SetupResponse-MNterminated PRESENCE
optional}|
    { ID id-ECNMarkingorCongestionInformationReportingStatus    CRITICALITY ignore  EXTENSION   ECNMarkingorCongestionInformationReportingStatus
    PRESENCE optional},
    ...
}

QoSFlowsMappedtoDRB-SetupResponse-MNterminated ::= SEQUENCE (SIZE(1..maxnoofQoSFlows)) OF QoSFlowsMappedtoDRB-SetupResponse-MNterminated-Item

QoSFlowsMappedtoDRB-SetupResponse-MNterminated-Item ::= SEQUENCE {
    qoSFlowIdentifier               QoSFlowIdentifier,
    currentQoSParaSetIndex          QoSParaSetIndex,
    iE-Extensions                   ProtocolExtensionContainer { {QoSFlowsMappedtoDRB-SetupResponse-MNterminated-Item-ExtIEs} }   OPTIONAL,
    ...
}

QoSFlowsMappedtoDRB-SetupResponse-MNterminated-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


-- **************************************************************
--
-- PDU Session Resource Modification Info - SN terminated
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-- **************************************************************


PDUSessionResourceModificationInfo-SNterminated ::= SEQUENCE {
    uL-NG-U-TNLatUPF                UPTransportLayerInformation                     OPTIONAL,
    pduSessionNetworkInstance       PDUSessionNetworkInstance                       OPTIONAL,
    qosFlowsToBeSetup-List          QoSFlowsToBeSetup-List-Setup-SNterminated       OPTIONAL,
    dataforwardinginfofromSource    DataforwardingandOffloadingInfofromSource       OPTIONAL,
    qosFlowsToBeModified-List       QoSFlowsToBeSetup-List-Modified-SNterminated    OPTIONAL,
    qoSFlowsToBeReleased-List       QoSFlows-List-withCause                         OPTIONAL,
    drbsToBeModifiedList            DRBsToBeModified-List-Modified-SNterminated     OPTIONAL,
```

```
    dRBsToBeReleased                DRB-List-withCause                              OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { {PDUSessionResourceModificationInfo-SNterminated-ExtIEs} } OPTIONAL,
    ...
}

PDUSessionResourceModificationInfo-SNterminated-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    { ID id-PDUSessionCommonNetworkInstance     CRITICALITY ignore  EXTENSION PDUSessionCommonNetworkInstance   PRESENCE optional}|
    {ID id-DefaultDRB-Allowed                   CRITICALITY ignore  EXTENSION DefaultDRB-Allowed                PRESENCE optional}|
    {ID id-NonGBRResources-Offered              CRITICALITY ignore  EXTENSION NonGBRResources-Offered           PRESENCE optional}|
    {ID id-Redundant-UL-NG-U-TNLatUPF           CRITICALITY ignore  EXTENSION UPTransportLayerInformation       PRESENCE optional}|
    {ID id-RedundantCommonNetworkInstance       CRITICALITY ignore  EXTENSION PDUSessionCommonNetworkInstance   PRESENCE optional}|
    {ID id-SecurityIndication                   CRITICALITY ignore  EXTENSION SecurityIndication                PRESENCE optional},
    ...
}

QoSFlowsToBeSetup-List-Modified-SNterminated ::= SEQUENCE (SIZE(1..maxnoofQoSFlows)) OF QoSFlowsToBeSetup-List-Modified-SNterminated-Item

QoSFlowsToBeSetup-List-Modified-SNterminated-Item ::= SEQUENCE {
    qfi                             QoSFlowIdentifier,
    qosFlowLevelQoSParameters       QoSFlowLevelQoSParameters                       OPTIONAL,
    offeredGBRQoSFlowInfo           GBRQoSFlowInfo                                  OPTIONAL,
    qosFlowMappingIndication        QoSFlowMappingIndication                        OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { {QoSFlowsToBeSetup-List-Modified-SNterminated-Item-ExtIEs} }  OPTIONAL,
    ...
}

QoSFlowsToBeSetup-List-Modified-SNterminated-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    { ID id-TSCTrafficCharacteristics       CRITICALITY ignore  EXTENSION TSCTrafficCharacteristics  PRESENCE optional}|
    { ID id-RedundantQoSFlowIndicator       CRITICALITY ignore  EXTENSION RedundantQoSFlowIndicator  PRESENCE optional}|
    { ID id-ECNMarkingorCongestionInformationReportingRequest       CRITICALITY ignore  EXTENSION ECNMarkingorCongestionInformationReportingRequest
    PRESENCE optional},
    ...
}

DRBsToBeModified-List-Modified-SNterminated ::= SEQUENCE (SIZE(1..maxnoofDRBs)) OF DRBsToBeModified-List-Modified-SNterminated-Item

DRBsToBeModified-List-Modified-SNterminated-Item ::= SEQUENCE {
    drb-ID                                  DRB-ID,
    mN-DL-SCG-UP-TNLInfo                    UPTransportParameters       OPTIONAL,
    secondary-MN-DL-SCG-UP-TNLInfo          UPTransportParameters       OPTIONAL,
    lCID                                    LCID                        OPTIONAL,
    rlc-status                              RLC-Status                  OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { {DRBsToBeModified-List-Modified-SNterminated-Item-ExtIEs} }   OPTIONAL,
    ...
}

DRBsToBeModified-List-Modified-SNterminated-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    { ID id-Additional-PDCP-Duplication-TNL-List        CRITICALITY ignore  EXTENSION Additional-PDCP-Duplication-TNL-List  PRESENCE optional},
    ...
}

-- ************************************************************
--
-- PDU Session Resource Modification Response Info - SN terminated
```

```
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-- **************************************************************


PDUSessionResourceModificationResponseInfo-SNterminated ::= SEQUENCE {
    dL-NG-U-TNLatNG-RAN             UPTransportLayerInformation                             OPTIONAL,
    dRBsToBeSetup                   DRBsToBeSetupList-SetupResponse-SNterminated            OPTIONAL,
    dataforwardinginfoTarget        DataForwardingInfoFromTargetNGRANnode                   OPTIONAL,
    dRBsToBeModified                DRBsToBeModifiedList-ModificationResponse-SNterminated  OPTIONAL,
    dRBsToBeReleased                DRB-List-withCause                                      OPTIONAL,
    dataforwardinginfofromSource    DataforwardingandOffloadingInfofromSource               OPTIONAL,
    qosFlowsNotAdmittedTBAdded      QoSFlows-List-withCause                                 OPTIONAL,
    qosFlowsReleased                QoSFlows-List-withCause                                 OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { {PDUSessionResourceModificationResponseInfo-SNterminated-ExtIEs} }  OPTIONAL,
    ...
}

PDUSessionResourceModificationResponseInfo-SNterminated-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    { ID id-DRB-IDs-takenintouse            CRITICALITY reject  EXTENSION DRB-List                          PRESENCE optional}|
    { ID id-Redundant-DL-NG-U-TNLatNG-RAN   CRITICALITY ignore  EXTENSION UPTransportLayerInformation      PRESENCE optional}|
    { ID id-SecurityResult                  CRITICALITY ignore  EXTENSION SecurityResult                    PRESENCE optional}|
    { ID id-AdditionalDRBSetupInfoList      CRITICALITY ignore  EXTENSION AdditionalDRBSetupInfoList        PRESENCE optional},
    ...
}

DRBsToBeModifiedList-ModificationResponse-SNterminated ::= SEQUENCE (SIZE(1..maxnoofDRBs)) OF
                                                            DRBsToBeModifiedList-ModificationResponse-SNterminated-Item

DRBsToBeModifiedList-ModificationResponse-SNterminated-Item ::= SEQUENCE {
    drb-ID                                          DRB-ID,
    sN-UL-PDCP-UP-TNLInfo                           UPTransportParameters                           OPTIONAL,
    dRB-QoS                                         QoSFlowLevelQoSParameters                       OPTIONAL,
    qoSFlowsMappedtoDRB-SetupResponse-SNterminated  QoSFlowsMappedtoDRB-SetupResponse-SNterminated  OPTIONAL,
    iE-Extensions       ProtocolExtensionContainer { {DRBsToBeModifiedList-ModificationResponse-SNterminated-Item-ExtIEs} } OPTIONAL,
    ...
}

DRBsToBeModifiedList-ModificationResponse-SNterminated-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    { ID id-Additional-PDCP-Duplication-TNL-List        CRITICALITY ignore  EXTENSION Additional-PDCP-Duplication-TNL-List  PRESENCE optional}|
    { ID id-RLCDuplicationInformation                   CRITICALITY ignore  EXTENSION RLCDuplicationInformation             PRESENCE optional}|
    { ID id-secondary-SN-UL-PDCP-UP-TNLInfo             CRITICALITY ignore  EXTENSION UPTransportParameters                PRESENCE optional}|
    { ID id-pdcpDuplicationConfiguration                CRITICALITY ignore  EXTENSION PDCPDuplicationConfiguration         PRESENCE optional}|
    { ID id-duplicationActivation                       CRITICALITY ignore  EXTENSION DuplicationActivation                PRESENCE optional}|
    { ID id-ECNMarkingorCongestionInformationReportingStatus        CRITICALITY ignore  EXTENSION ECNMarkingorCongestionInformationReportingStatus
    PRESENCE optional}|
    { ID id-PSIbasedSDUdiscardUL                        CRITICALITY ignore  EXTENSION PSIbasedSDUdiscardUL                 PRESENCE optional}|
    { ID id-PSIbasedSDUdiscardDL                        CRITICALITY ignore  EXTENSION PSIbasedSDUdiscardDL                 PRESENCE optional},
    ...
}


-- **************************************************************
--
-- PDU Session Resource Modification Info - MN terminated
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```
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-- **************************************************************


PDUSessionResourceModificationInfo-MNterminated ::= SEQUENCE {
    pduSessionType                  PDUSessionType,
    dRBsToBeSetup                   DRBsToBeSetupList-Setup-MNterminated                        OPTIONAL,
    dRBsToBeModified                DRBsToBeModifiedList-Modification-MNterminated              OPTIONAL,
    dRBsToBeReleased                DRB-List-withCause                                          OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { {PDUSessionResourceModificationInfo-MNterminated-ExtIEs} } OPTIONAL,
    ...
}

PDUSessionResourceModificationInfo-MNterminated-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

DRBsToBeModifiedList-Modification-MNterminated ::= SEQUENCE (SIZE(1..maxnoofDRBs)) OF
                                                                    DRBsToBeModifiedList-Modification-MNterminated-Item

DRBsToBeModifiedList-Modification-MNterminated-Item ::= SEQUENCE {
    drb-ID                                          DRB-ID,
    mN-UL-PDCP-UP-TNLInfo                           UPTransportParameters                   OPTIONAL,
    dRB-QoS                                         QoSFlowLevelQoSParameters               OPTIONAL,
    secondary-MN-UL-PDCP-UP-TNLInfo                 UPTransportParameters                   OPTIONAL,
    uL-Configuration                                ULConfiguration                         OPTIONAL,
    pdcpDuplicationConfiguration                    PDCPDuplicationConfiguration            OPTIONAL,
    duplicationActivation                           DuplicationActivation                   OPTIONAL,
    qoSFlowsMappedtoDRB-Setup-MNterminated          QoSFlowsMappedtoDRB-Setup-MNterminated  OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { {DRBsToBeModifiedList-Modification-MNterminated-Item-ExtIEs} }   OPTIONAL,
    ...
}

DRBsToBeModifiedList-Modification-MNterminated-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    { ID id-Additional-PDCP-Duplication-TNL-List        CRITICALITY ignore  EXTENSION Additional-PDCP-Duplication-TNL-List  PRESENCE optional}|
    { ID id-RLCDuplicationInformation                   CRITICALITY ignore  EXTENSION RLCDuplicationInformation             PRESENCE optional}|
    { ID id-ECNMarkingorCongestionInformationReportingRequest   CRITICALITY ignore  EXTENSION ECNMarkingorCongestionInformationReportingRequest
    PRESENCE optional}|
    { ID id-PSIbasedSDUdiscardUL                        CRITICALITY ignore  EXTENSION PSIbasedSDUdiscardUL                  PRESENCE optional}|
    { ID id-PSIbasedSDUdiscardDL                        CRITICALITY ignore  EXTENSION PSIbasedSDUdiscardDL                  PRESENCE optional},
    ...
}


-- **************************************************************
--
-- PDU Session Resource Modification Response Info - MN terminated
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-- **************************************************************


PDUSessionResourceModificationResponseInfo-MNterminated ::= SEQUENCE {
    dRBsAdmittedList                    DRBsAdmittedList-ModificationResponse-MNterminated,
    dRBsReleasedList                    DRB-List                                                    OPTIONAL,
```

```
    dRBsNotAdmittedSetupModifyList          DRB-List-withCause                                                  OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { {PDUSessionResourceModificationResponseInfo-MNterminated-ExtIEs} }  OPTIONAL,
    ...
}

PDUSessionResourceModificationResponseInfo-MNterminated-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

DRBsAdmittedList-ModificationResponse-MNterminated ::= SEQUENCE (SIZE(1..maxnoofDRBs)) OF DRBsAdmittedList-ModificationResponse-MNterminated-Item

DRBsAdmittedList-ModificationResponse-MNterminated-Item ::= SEQUENCE {
    drb-ID                              DRB-ID,
    sN-DL-SCG-UP-TNLInfo                UPTransportParameters               OPTIONAL,
    secondary-SN-DL-SCG-UP-TNLInfo      UPTransportParameters               OPTIONAL,
    lCID                                LCID                                OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { {DRBsAdmittedList-ModificationResponse-MNterminated-Item-ExtIEs} }  OPTIONAL,
    ...
}

DRBsAdmittedList-ModificationResponse-MNterminated-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    { ID id-Additional-PDCP-Duplication-TNL-List        CRITICALITY ignore  EXTENSION Additional-PDCP-Duplication-TNL-List  PRESENCE optional}|
    { ID id-QoSFlowsMappedtoDRB-SetupResponse-MNterminated  CRITICALITY ignore  EXTENSION   QoSFlowsMappedtoDRB-SetupResponse-MNterminated PRESENCE
optional}|
    { ID id-ECNMarkingorCongestionInformationReportingStatus    CRITICALITY ignore  EXTENSION   ECNMarkingorCongestionInformationReportingStatus
    PRESENCE optional},
    ...
}


-- **************************************************************
--
-- PDU Session Resource Change Required Info - SN terminated
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-- **************************************************************


PDUSessionResourceChangeRequiredInfo-SNterminated ::= SEQUENCE {
    dataforwardinginfofromSource    DataforwardingandOffloadingInfofromSource                                   OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { {PDUSessionResourceChangeRequiredInfo-SNterminated-ExtIEs} }  OPTIONAL,
    ...
}

PDUSessionResourceChangeRequiredInfo-SNterminated-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


-- **************************************************************
--
-- PDU Session Resource Change Confirm Info - SN terminated
--
-- **************************************************************
```

```
PDUSessionResourceChangeConfirmInfo-SNterminated ::= SEQUENCE {
    dataforwardinginfoTarget        DataForwardingInfoFromTargetNGRANnode               OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { {PDUSessionResourceChangeConfirmInfo-SNterminated-ExtIEs} }   OPTIONAL,
    ...
}

PDUSessionResourceChangeConfirmInfo-SNterminated-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    { ID id-DRB-IDs-takenintouse    CRITICALITY reject  EXTENSION DRB-List  PRESENCE optional},
    ...
}


-- **************************************************************
--
-- PDU Session Resource Change Required Info - MN terminated
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-- **************************************************************


PDUSessionResourceChangeRequiredInfo-MNterminated ::= SEQUENCE {
    iE-Extensions                   ProtocolExtensionContainer { {PDUSessionResourceChangeRequiredInfo-MNterminated-ExtIEs} }  OPTIONAL,
    ...
}

PDUSessionResourceChangeRequiredInfo-MNterminated-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


-- **************************************************************
--
-- PDU Session Resource Change Confirm Info - MN terminated
--
-- **************************************************************


PDUSessionResourceChangeConfirmInfo-MNterminated ::= SEQUENCE {
    iE-Extensions                   ProtocolExtensionContainer { {PDUSessionResourceChangeConfirmInfo-MNterminated-ExtIEs} }   OPTIONAL,
    ...
}

PDUSessionResourceChangeConfirmInfo-MNterminated-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


-- **************************************************************
--
-- PDU Session Resource Modification Required Info - SN terminated
--
-- **************************************************************
```

```
PDUSessionResourceModRqdInfo-SNterminated ::= SEQUENCE {
    dL-NG-U-TNLatNG-RAN             UPTransportLayerInformation                     OPTIONAL,
    qoSFlowsToBeReleased-List       QoSFlows-List-withCause                         OPTIONAL,
    dataforwardinginfofromSource    DataforwardingandOffloadingInfofromSource       OPTIONAL,
    drbsToBeSetupList               DRBsToBeSetup-List-ModRqd-SNterminated          OPTIONAL,
    drbsToBeModifiedList            DRBsToBeModified-List-ModRqd-SNterminated       OPTIONAL,
    dRBsToBeReleased                DRB-List-withCause                              OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { {PDUSessionResourceModRqdInfo-SNterminated-ExtIEs} } OPTIONAL,
    ...
}

PDUSessionResourceModRqdInfo-SNterminated-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    { ID id-AdditionalDRBSetupInfoList      CRITICALITY ignore  EXTENSION AdditionalDRBSetupInfoList      PRESENCE optional},
    ...
}

DRBsToBeSetup-List-ModRqd-SNterminated ::= SEQUENCE (SIZE(1..maxnoofDRBs)) OF DRBsToBeSetup-List-ModRqd-SNterminated-Item

DRBsToBeSetup-List-ModRqd-SNterminated-Item ::= SEQUENCE {
    drb-ID                                  DRB-ID,
    pDCP-SNLength                           PDCPSNLength                                OPTIONAL,
    sn-UL-PDCP-UPTNLinfo                    UPTransportParameters,
    dRB-QoS                                 QoSFlowLevelQoSParameters,
    secondary-SN-UL-PDCP-UP-TNLInfo         UPTransportParameters                       OPTIONAL,
    duplicationActivation                   DuplicationActivation                       OPTIONAL,
    uL-Configuration                        ULConfiguration                             OPTIONAL,
    qoSFlowsMappedtoDRB-ModRqd-SNterminated QoSFlowsSetupMappedtoDRB-ModRqd-SNterminated,
    rLC-Mode                                RLCMode,
    iE-Extensions                   ProtocolExtensionContainer { {DRBsToBeSetup-List-ModRqd-SNterminated-Item-ExtIEs} }  OPTIONAL,
    ...
}

DRBsToBeSetup-List-ModRqd-SNterminated-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    { ID id-Additional-PDCP-Duplication-TNL-List        CRITICALITY ignore  EXTENSION Additional-PDCP-Duplication-TNL-List  PRESENCE optional}|
    { ID id-RLCDuplicationInformation                   CRITICALITY ignore  EXTENSION RLCDuplicationInformation             PRESENCE optional}|
    { ID id-ECNMarkingorCongestionInformationReportingStatus        CRITICALITY ignore  EXTENSION ECNMarkingorCongestionInformationReportingStatus
    PRESENCE optional}|
    { ID id-PSIbasedSDUdiscardUL                        CRITICALITY ignore  EXTENSION PSIbasedSDUdiscardUL                  PRESENCE optional}|
    { ID id-PSIbasedSDUdiscardDL                        CRITICALITY ignore  EXTENSION PSIbasedSDUdiscardDL                  PRESENCE optional},
    ...
}

QoSFlowsSetupMappedtoDRB-ModRqd-SNterminated ::= SEQUENCE (SIZE(1..maxnoofQoSFlows)) OF
                                                    QoSFlowsSetupMappedtoDRB-ModRqd-SNterminated-Item

QoSFlowsSetupMappedtoDRB-ModRqd-SNterminated-Item ::= SEQUENCE {
    qoSFlowIdentifier               QoSFlowIdentifier,
    mCGRequestedGBRQoSFlowInfo      GBRQoSFlowInfo                                  OPTIONAL,
    iE-Extensions       ProtocolExtensionContainer { {QoSFlowsSetupMappedtoDRB-ModRqd-SNterminated-Item-ExtIEs} }  OPTIONAL,
    ...
}

QoSFlowsSetupMappedtoDRB-ModRqd-SNterminated-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    {ID id-QosFlowMappingIndication CRITICALITY ignore  EXTENSION QoSFlowMappingIndication      PRESENCE optional},
```

```
    ...
}

DRBsToBeModified-List-ModRqd-SNterminated ::= SEQUENCE (SIZE(1..maxnoofDRBs)) OF DRBsToBeModified-List-ModRqd-SNterminated-Item

DRBsToBeModified-List-ModRqd-SNterminated-Item ::= SEQUENCE {
    drb-ID                                  DRB-ID,
    sN-UL-PDCP-UP-TNLInfo                   UPTransportParameters                           OPTIONAL,
    dRB-QoS                                 QoSFlowLevelQoSParameters                       OPTIONAL,
    secondary-SN-UL-PDCP-UP-TNLInfo         UPTransportParameters                           OPTIONAL,
    uL-Configuration                        ULConfiguration                                 OPTIONAL,
    pdcpDuplicationConfiguration            PDCPDuplicationConfiguration                    OPTIONAL,
    duplicationActivation                   DuplicationActivation                           OPTIONAL,
    qoSFlowsMappedtoDRB-ModRqd-SNterminated     QoSFlowsModifiedMappedtoDRB-ModRqd-SNterminated     OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { {DRBsToBeModified-List-ModRqd-SNterminated-Item-ExtIEs} }  OPTIONAL,
    ...
}

DRBsToBeModified-List-ModRqd-SNterminated-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    { ID id-Additional-PDCP-Duplication-TNL-List        CRITICALITY ignore  EXTENSION Additional-PDCP-Duplication-TNL-List  PRESENCE optional}|
    { ID id-RLCDuplicationInformation                   CRITICALITY ignore  EXTENSION RLCDuplicationInformation             PRESENCE optional}|
    { ID id-ECNMarkingorCongestionInformationReportingStatus        CRITICALITY ignore  EXTENSION ECNMarkingorCongestionInformationReportingStatus
    PRESENCE optional}|
    { ID id-PSIbasedSDUdiscardUL                        CRITICALITY ignore  EXTENSION PSIbasedSDUdiscardUL                  PRESENCE optional}|
    { ID id-PSIbasedSDUdiscardDL                        CRITICALITY ignore  EXTENSION PSIbasedSDUdiscardDL                  PRESENCE optional},
    ...
}

QoSFlowsModifiedMappedtoDRB-ModRqd-SNterminated ::= SEQUENCE (SIZE(1..maxnoofQoSFlows)) OF
                                                    QoSFlowsModifiedMappedtoDRB-ModRqd-SNterminated-Item

QoSFlowsModifiedMappedtoDRB-ModRqd-SNterminated-Item ::= SEQUENCE {
    qoSFlowIdentifier                   QoSFlowIdentifier,
    mCGRequestedGBRQoSFlowInfo          GBRQoSFlowInfo                                  OPTIONAL,
    iE-Extensions       ProtocolExtensionContainer { {QoSFlowsModifiedMappedtoDRB-ModRqd-SNterminated-Item-ExtIEs} }  OPTIONAL,
    ...
}

QoSFlowsModifiedMappedtoDRB-ModRqd-SNterminated-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    {ID id-QosFlowMappingIndication CRITICALITY ignore  EXTENSION QoSFlowMappingIndication      PRESENCE optional},
    ...
}


-- **************************************************************
--
-- PDU Session Resource Modification Confirm Info - SN terminated
--
-- **************************************************************


PDUSessionResourceModConfirmInfo-SNterminated ::= SEQUENCE {
    uL-NG-U-TNLatUPF                        UPTransportLayerInformation                         OPTIONAL,
    dRBsAdmittedList                        DRBsAdmittedList-ModConfirm-SNterminated,
```

```
    dRBsNotAdmittedSetupModifyList          DRB-List-withCause                                  OPTIONAL,
    dataforwardinginfoTarget                DataForwardingInfoFromTargetNGRANnode               OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { {PDUSessionResourceModConfirmInfo-SNterminated-ExtIEs} }   OPTIONAL,
    ...
}

PDUSessionResourceModConfirmInfo-SNterminated-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    { ID id-DRB-IDs-takenintouse        CRITICALITY reject  EXTENSION DRB-List  PRESENCE optional},
    ...
}

DRBsAdmittedList-ModConfirm-SNterminated ::= SEQUENCE (SIZE(1..maxnoofDRBs)) OF
                                                                    DRBsAdmittedList-ModConfirm-SNterminated-Item

DRBsAdmittedList-ModConfirm-SNterminated-Item ::= SEQUENCE {
    drb-ID                                      DRB-ID,
    mN-DL-CG-UP-TNLInfo                         UPTransportParameters                       OPTIONAL,
    secondary-MN-DL-CG-UP-TNLInfo               UPTransportParameters                       OPTIONAL,
    lCID                                        LCID                                        OPTIONAL,
    iE-Extensions               ProtocolExtensionContainer { {DRBsAdmittedList-ModConfirm-SNterminated-Item-ExtIEs} } OPTIONAL,
    ...
}

DRBsAdmittedList-ModConfirm-SNterminated-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    { ID id-Additional-PDCP-Duplication-TNL-List        CRITICALITY ignore  EXTENSION Additional-PDCP-Duplication-TNL-List  PRESENCE optional},
    ...
}


-- **************************************************************
--
-- PDU Session Resource Modification Required Info - MN terminated
--
-- **************************************************************


PDUSessionResourceModRqdInfo-MNterminated ::= SEQUENCE {
    dRBsToBeModified                DRBsToBeModified-List-ModRqd-MNterminated               OPTIONAL,
    dRBsToBeReleased                DRB-List-withCause                                      OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { {PDUSessionResourceModRqdInfo-MNterminated-ExtIEs} } OPTIONAL,
    ...
}

PDUSessionResourceModRqdInfo-MNterminated-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


DRBsToBeModified-List-ModRqd-MNterminated ::= SEQUENCE (SIZE(1..maxnoofDRBs)) OF DRBsToBeModified-List-ModRqd-MNterminated-Item

DRBsToBeModified-List-ModRqd-MNterminated-Item ::= SEQUENCE {
    drb-ID                              DRB-ID,
    sN-DL-SCG-UP-TNLInfo                UPTransportLayerInformation,
    secondary-SN-DL-SCG-UP-TNLInfo      UPTransportLayerInformation     OPTIONAL,
```

```
    lCID                            LCID                            OPTIONAL,
    rlc-status                      RLC-Status                      OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { {DRBsToBeModified-List-ModRqd-MNterminated-Item-ExtIEs} } OPTIONAL,
    ...
}

DRBsToBeModified-List-ModRqd-MNterminated-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    { ID id-Additional-PDCP-Duplication-TNL-List        CRITICALITY ignore  EXTENSION Additional-PDCP-Duplication-TNL-List  PRESENCE optional}|
    { ID id-ECNMarkingorCongestionInformationReportingStatus    CRITICALITY ignore  EXTENSION   ECNMarkingorCongestionInformationReportingStatus
    PRESENCE optional},
    ...
}


-- **************************************************************
--
-- PDU Session Resource Modification Confirm Info - MN terminated
--
-- **************************************************************


PDUSessionResourceModConfirmInfo-MNterminated ::= SEQUENCE {
    iE-Extensions                   ProtocolExtensionContainer { {PDUSessionResourceModConfirmInfo-MNterminated-ExtIEs} }   OPTIONAL,
    ...
}

PDUSessionResourceModConfirmInfo-MNterminated-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


-- **************************************************************
--
-- PDU Session Resource Setup Complete Info - SN terminated
--
-- **************************************************************

PDUSessionResourceBearerSetupCompleteInfo-SNterminated ::= SEQUENCE {
    dRBsToBeSetupList           SEQUENCE (SIZE(1..maxnoofDRBs)) OF DRBsToBeSetupList-BearerSetupComplete-SNterminated-Item,
    iE-Extensions               ProtocolExtensionContainer { {PDUSessionResourceBearerSetupCompleteInfo-SNterminated-ExtIEs} } OPTIONAL,
    ...
}

PDUSessionResourceBearerSetupCompleteInfo-SNterminated-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

DRBsToBeSetupList-BearerSetupComplete-SNterminated-Item ::= SEQUENCE {
    dRB-ID                      DRB-ID,
    mN-Xn-U-TNLInfoatM          UPTransportLayerInformation,
    iE-Extensions               ProtocolExtensionContainer { {DRBsToBeSetupList-BearerSetupComplete-SNterminated-Item-ExtIEs} }   OPTIONAL,
    ...
}
```

```
DRBsToBeSetupList-BearerSetupComplete-SNterminated-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    {ID id-Secondary-MN-Xn-U-TNLInfoatM CRITICALITY ignore  EXTENSION UPTransportLayerInformation    PRESENCE optional},
    ...
}

-- ************************************************************
--
-- PDU Session related message level IEs END
--
-- ************************************************************

PDUSessionResourceSecondaryRATUsageList ::= SEQUENCE (SIZE(1..maxnoofPDUSessions)) OF PDUSessionResourceSecondaryRATUsageItem

PDUSessionResourceSecondaryRATUsageItem ::= SEQUENCE {
    pDUSessionID                                PDUSession-ID,
    secondaryRATUsageInformation                        SecondaryRATUsageInformation,
    iE-Extensions       ProtocolExtensionContainer { {PDUSessionResourceSecondaryRATUsageItem-ExtIEs} } OPTIONAL,
    ...
}

PDUSessionResourceSecondaryRATUsageItem-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

PDUSessionUsageReport ::= SEQUENCE {
    rATType                             ENUMERATED {nr, eutra, ..., nr-unlicensed, e-utra-unlicensed},
    pDUSessionTimedReportList           VolumeTimedReportList,
    iE-Extensions                       ProtocolExtensionContainer { {PDUSessionUsageReport-ExtIEs} } OPTIONAL,
...
}

PDUSessionUsageReport-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

PDUSessionType ::= ENUMERATED {ipv4, ipv6, ipv4v6, ethernet, unstructured, ...}

PDUSession-ID   ::= INTEGER (0..255)

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

PDUSessionCommonNetworkInstance ::= OCTET STRING

PDUSession-PairID   ::= INTEGER (0..255, ...)



Periodical ::= SEQUENCE {
    iE-Extensions       ProtocolExtensionContainer { { Periodical-ExtIEs} } OPTIONAL,
    ...
}
```

```
Periodical-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

Permutation ::= ENUMERATED {dfu, ufd, ...}


PLMN-Identity ::= OCTET STRING (SIZE(3))

PLMNAreaBasedQMC ::= SEQUENCE {
    plmnListforQMC      PLMNListforQMC,
    iE-Extensions       ProtocolExtensionContainer { {PLMNAreaBasedQMC-ExtIEs} } OPTIONAL,
    ...
}

PLMNAreaBasedQMC-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

PLMNListforQMC ::= SEQUENCE (SIZE(1..maxnoofPLMNforQMC)) OF PLMN-Identity

PCIListForMDT ::= SEQUENCE (SIZE(1.. maxnoofNeighPCIforMDT)) OF NRPCI


PNI-NPN-Restricted-Information ::= ENUMERATED { restriced, not-restricted, ...}

PortNumber ::= BIT STRING (SIZE (16))

PosPartialUEContextInfo ::= SEQUENCE {
    requestedSRSTransmissionCharacteristics     RequestedSRSTransmissionCharacteristics OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { { PosPartialUEContextInfo-ExtIEs} } OPTIONAL,
    ...
}

PosPartialUEContextInfo-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


PredictedUETrajectory-Item ::= SEQUENCE{
    predictedtrajectoryCellInfo     PredictedTrajectoryCellInfo,
    iE-Extensions                   ProtocolExtensionContainer { { PredictedUETrajectory-Item-ExtIEs} } OPTIONAL,
    ...
}

PredictedUETrajectory-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


PredictedTrajectoryCellInfo::= CHOICE {
    nG-RAN-Cell-Predicted           PredictedTrajectoryNGRANCellInfo,
    choice-extension                ProtocolIE-Single-Container { { PredictedTrajectoryCellInfo-ExtIEs} }
}
```

```
PredictedTrajectoryCellInfo-ExtIEs XNAP-PROTOCOL-IES ::= {
    ...
}

PredictedTrajectoryNGRANCellInfo ::= SEQUENCE {
    globalNG-RANCell-ID             GlobalNG-RANCell-ID,
    predictedTimeUEStaysInCell      INTEGER (0..4095)   OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { { PredictedTrajectoryNGRANCellInfo-ExtIEs} } OPTIONAL,
    ...
}

PredictedTrajectoryNGRANCellInfo-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}



PriorityLevelQoS ::= INTEGER (1..127, ...)


ProtectedE-UTRAResourceIndication ::= SEQUENCE {
    activationSFN                   ActivationSFN,
    protectedResourceList           ProtectedE-UTRAResourceList,
    mbsfnControlRegionLength        MBSFNControlRegionLength                    OPTIONAL,
    pDCCHRegionLength               INTEGER (1..3),
    iE-Extensions                   ProtocolExtensionContainer { {ProtectedE-UTRAResourceIndication-ExtIEs} }    OPTIONAL,
    ...
}

ProtectedE-UTRAResourceIndication-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

ProtectedE-UTRAResourceList ::= SEQUENCE (SIZE (1.. maxnoofProtectedResourcePatterns)) OF ProtectedE-UTRAResource-Item

ProtectedE-UTRAResource-Item ::= SEQUENCE {
    resourceType                        ENUMERATED {downlinknonCRS, cRS, uplink, ...},
    intra-PRBProtectedResourceFootprint     BIT STRING (SIZE(84, ...)),
    protectedFootprintFrequencyPattern      BIT STRING (SIZE(6..110, ...)),
    protectedFootprintTimePattern           ProtectedE-UTRAFootprintTimePattern,
    iE-Extensions                   ProtocolExtensionContainer { {ProtectedE-UTRAResource-Item-ExtIEs} }   OPTIONAL,
    ...
}

ProtectedE-UTRAResource-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


ProtectedE-UTRAFootprintTimePattern ::= SEQUENCE {
    protectedFootprintTimeperiodicity           INTEGER (1..320, ...),
    protectedFootrpintStartTime                 INTEGER (1..20, ...),
    iE-Extensions                   ProtocolExtensionContainer { {ProtectedE-UTRAFootprintTimePattern-ExtIEs} }  OPTIONAL,
```

```
    ...
}

ProtectedE-UTRAFootprintTimePattern-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

PrivacyIndicator ::= ENUMERATED {
    immediate-MDT,
    logged-MDT,
    ...
}


PSCellChangeHistory ::= ENUMERATED {reporting-full-history, ...}

PSCellHistoryInformationRetrieve ::= ENUMERATED {query, ...}

PSCellListContainer ::= OCTET STRING

PSIbasedSDUdiscardUL ::= ENUMERATED {start, stop, ...}

PSIbasedSDUdiscardDL ::= ENUMERATED {configured, not-configured, ...}

PNI-NPN-AreaScopeofMDT ::= SEQUENCE {
    cAGListforMDT       CAGListforMDT,
    iE-Extensions       ProtocolExtensionContainer { {PNI-NPN-AreaScopeofMDT-ExtIEs} } OPTIONAL,
    ...
}

PNI-NPN-AreaScopeofMDT-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

PNI-NPNBasedMDT::= SEQUENCE {
    cAGListforMDT       CAGListforMDT,
    iE-Extensions       ProtocolExtensionContainer { {PNI-NPNBasedMDT-ExtIEs} } OPTIONAL,
    ...
}

PNI-NPNBasedMDT-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

PreambleIndexList ::= SEQUENCE (SIZE (1.. maxnoofPreambleIndexes)) OF PreambleIndex

PreambleIndex ::= INTEGER (0..63)

Predicted-CoverageModificationCause ::= ENUMERATED {
    coverage,
    cell-edge-capacity,
    cancel,
    ...
}
```

```
PredictedSliceAvailableCapacityGroup    ::= SEQUENCE {
    predictedSliceAvailableCapacity     SliceAvailableCapacity,
    cellCapacityClassValueDownlink      CellCapacityClassValue          OPTIONAL,
    cellCapacityClassValueUplink        CellCapacityClassValue          OPTIONAL,
    iE-Extensions                       ProtocolExtensionContainer { { PredictedSliceAvailableCapacityGroup-ExtIEs} } OPTIONAL,
    ...
}

PredictedSliceAvailableCapacityGroup-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

-- Q


QMCConfigInfo ::= SEQUENCE {
    uEAppLayerMeasInfoList          UEAppLayerMeasInfoList,
    iE-Extensions                   ProtocolExtensionContainer { {QMCConfigInfo-ExtIEs} }   OPTIONAL,
    ...
}

QMCConfigInfo-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

UEAppLayerMeasInfoList ::= SEQUENCE (SIZE(1..maxnoofUEAppLayerMeas)) OF UEAppLayerMeasInfo-Item

UEAppLayerMeasInfo-Item ::= SEQUENCE {
    uEAppLayerMeasConfigInfo    UEAppLayerMeasConfigInfo,
    iE-Extensions               ProtocolExtensionContainer { { UEAppLayerMeasInfo-Item-ExtIEs} }  OPTIONAL,
    ...
}

UEAppLayerMeasInfo-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

QMCCoordinationRequest ::= SEQUENCE {
    mN-to-SN-QMCCoordRequestList    MN-to-SN-QMCCoordRequestList    OPTIONAL,
    sN-to-MN-QMCCoordRequestList    SN-to-MN-QMCCoordRequestList    OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { {QMCCoordinationRequest-ExtIEs} }   OPTIONAL,
    ...
}

QMCCoordinationRequest-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


MN-to-SN-QMCCoordRequestList ::= SEQUENCE (SIZE(1..maxnoofUEAppLayerMeas)) OF MN-to-SN-QMCCoordRequestList-Item
```

```
MN-to-SN-QMCCoordRequestList-Item ::= SEQUENCE {
    qOEReference                    QOEReference,
    qOEMeasConfigAppLayerID         QOEMeasConfAppLayerID                   OPTIONAL,
    measCollectionEntityIPAddress   MeasCollectionEntityIPAddress           OPTIONAL,
    qoEReportingPathRequest         ENUMERATED{srb4, srb5, ...}             OPTIONAL,
    rVQoEReportingPathRequest       ENUMERATED{srb4, srb5, ...}             OPTIONAL,
    furtherRVQoEInterestInquiry     ENUMERATED{true, ...}                   OPTIONAL,
    furtherRVQoEReportingPathInquiry        ENUMERATED{true, ...}           OPTIONAL,
    currentRVQoEConfig              RVQoEConfig                             OPTIONAL,
    availableRVQoEMetrics           AvailableRVQoEMetrics                   OPTIONAL,
    configReleaseIndication         ENUMERATED{rvqoe,qoe-and-rvqoe, ...}    OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { { MN-to-SN-QMCCoordRequestList-Item-ExtIEs} }   OPTIONAL,
    ...
}

MN-to-SN-QMCCoordRequestList-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

SN-to-MN-QMCCoordRequestList ::= SEQUENCE (SIZE(1..maxnoofUEAppLayerMeas)) OF SN-to-MN-QMCCoordRequestList-Item


SN-to-MN-QMCCoordRequestList-Item ::= SEQUENCE {
    qOEReference                    QOEReference,
    measCollectionEntityIPAddress   MeasCollectionEntityIPAddress           OPTIONAL,
    qoEReportingPathRequest         ENUMERATED{srb4, srb5, ...}             OPTIONAL,
    rVQoEReportingPathRequest       ENUMERATED{srb4, srb5, ...}             OPTIONAL,
    furtherRVQoEInterestInquiry     ENUMERATED{true, ...}                   OPTIONAL,
    furtherRVQoEReportingPathInquiry        ENUMERATED{true, ...}           OPTIONAL,
    currentRVQoEConfig              RVQoEConfig                             OPTIONAL,
    availableRVQoEMetrics       AvailableRVQoEMetrics                       OPTIONAL,
    configReleaseIndication         ENUMERATED{rvqoe,qoe-and-rvqoe, ...}    OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { { SN-to-MN-QMCCoordRequestList-Item-ExtIEs} }   OPTIONAL,
    ...
}

SN-to-MN-QMCCoordRequestList-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


QMCCoordinationResponse ::= SEQUENCE {
    mN-to-SN-QMCCoordResponseList   MN-to-SN-QMCCoordResponseList   OPTIONAL,
    sN-to-MN-QMCCoordResponseList   SN-to-MN-QMCCoordResponseList   OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { {QMCCoordinationResponse-ExtIEs} }  OPTIONAL,
    ...
}

QMCCoordinationResponse-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


MN-to-SN-QMCCoordResponseList ::= SEQUENCE (SIZE(1..maxnoofUEAppLayerMeas)) OF MN-to-SN-QMCCoordResponseList-Item
```

```
MN-to-SN-QMCCoordResponseList-Item ::= SEQUENCE {
    qOEReference                    QOEReference,
    qOEMeasConfigAppLayerID         QOEMeasConfAppLayerID                    OPTIONAL,
    qoEConfigSendingPath            ENUMERATED{mn, sn, ...}                  OPTIONAL,
    qoEReportingPathResponse        ENUMERATED{accepted, rejected, ...}      OPTIONAL,
    rVQoEReportingPathResponse      ENUMERATED{accepted, rejected, ...}          OPTIONAL,
    furtherRVQoEInterestResponse    ENUMERATED{interested, not-interested, ...} OPTIONAL,
    furtherRVQoEReportingPathResponse       ENUMERATED{srb4, srb5, ...}      OPTIONAL,
    preferredRVQoEConfig            RVQoEConfig                              OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { { MN-to-SN-QMCCoordResponseList-Item-ExtIEs} }  OPTIONAL,
    ...
}

MN-to-SN-QMCCoordResponseList-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

SN-to-MN-QMCCoordResponseList ::= SEQUENCE (SIZE(1..maxnoofUEAppLayerMeas)) OF SN-to-MN-QMCCoordResponseList-Item


SN-to-MN-QMCCoordResponseList-Item ::= SEQUENCE {
    qOEReference                    QOEReference,
    qoEReportingPathResponse        ENUMERATED{accepted, rejected, ...}                                 OPTIONAL,
    rVQoEReportingPathResponse      ENUMERATED{accepted, rejected, ...}                                    OPTIONAL,
    furtherRVQoEInterestResponse    ENUMERATED{interested, not-interested, ...}                         OPTIONAL,
    furtherRVQoEReportingPathResponse       ENUMERATED{srb4, srb5, ...}                                 OPTIONAL,
    preferredRVQoEConfig            RVQoEConfig                                                         OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { { SN-to-MN-QMCCoordResponseList-Item-ExtIEs} }  OPTIONAL,
    ...
}

SN-to-MN-QMCCoordResponseList-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


QoERVQoEReportingPaths ::= SEQUENCE {
    qoEReportingPath                    ENUMERATED{srb4, srb5, ...} OPTIONAL,
    rVQoEReportingPath                  ENUMERATED{srb4, srb5, ...} OPTIONAL,
    iE-Extensions                       ProtocolExtensionContainer { {QoERVQoEReportingPaths-ExtIEs} } OPTIONAL,
    ...
}

QoERVQoEReportingPaths-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

RVQoEConfig ::= SEQUENCE {
    availableRANVisibleQoEMetrics       AvailableRVQoEMetrics           OPTIONAL,
    reportingPeriodicity                RVQoEReportingPeriodicity       OPTIONAL,
    iE-Extensions                       ProtocolExtensionContainer { {RVQoEConfig-ExtIEs} } OPTIONAL,
    ...
```

```
}

RVQoEConfig-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

RVQoEReportingPeriodicity ::= ENUMERATED {
    ms120,
    ms240,
    ms480,
    ms640,
    ms1024,
    ...
}

QOEMeasConfAppLayerID ::= INTEGER (0..15, ...)

QOEMeasStatus ::= ENUMERATED {ongoing, ...}

QOEReference ::= OCTET STRING (SIZE (6))

QoSCharacteristics ::= CHOICE {
    non-dynamic                     NonDynamic5QIDescriptor,
    dynamic                         Dynamic5QIDescriptor,
    choice-extension                ProtocolIE-Single-Container { {QoSCharacteristics-ExtIEs} }
}

QoSCharacteristics-ExtIEs XNAP-PROTOCOL-IES ::= {
    ...
}


QoSFlowIdentifier   ::= INTEGER (0..63, ...)


QoSFlowLevelQoSParameters ::= SEQUENCE {
    qos-characteristics         QoSCharacteristics,
    allocationAndRetentionPrio  AllocationandRetentionPriority,
    gBRQoSFlowInfo              GBRQoSFlowInfo                                          OPTIONAL,
    reflectiveQoS               ReflectiveQoSAttribute                                  OPTIONAL,
    additionalQoSflowInfo       ENUMERATED {more-likely, ...}                           OPTIONAL,
    iE-Extensions               ProtocolExtensionContainer { {QoSFlowLevelQoSParameters-ExtIEs} } OPTIONAL,
    ...
}

QoSFlowLevelQoSParameters-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    {ID id-QoSMonitoringRequest                 CRITICALITY ignore  EXTENSION QosMonitoringRequest                 PRESENCE optional}|
    {ID id-QosMonitoringReportingFrequency      CRITICALITY ignore  EXTENSION QosMonitoringReportingFrequency      PRESENCE optional}|
    {ID id-QoSMonitoringDisabled                CRITICALITY ignore  EXTENSION QoSMonitoringDisabled                PRESENCE optional}|
    {ID id-PDUSetQoSParameters                  CRITICALITY ignore  EXTENSION PDUSetQoSParameters                  PRESENCE optional}|
    {ID id-DLPDUSetInformationMarkingSupportIndication      CRITICALITY ignore  EXTENSION DLPDUSetInformationMarkingSupportIndication      PRESENCE
optional}|
    {ID id-MMSID                                CRITICALITY ignore  EXTENSION   MMSID                              PRESENCE optional}|
    {ID id-Indication-of-bitrate-adaptation     CRITICALITY ignore  EXTENSION   Indication-of-bitrate-adaptation   PRESENCE optional},
```

```
    ...
}


QoSFlowMappingIndication ::= ENUMERATED {
    ul,
    dl,
    ...
}


QoSFlowNotificationControlIndicationInfo ::= SEQUENCE (SIZE (1..maxnoofQoSFlows)) OF QoSFlowNotify-Item

QoSFlowNotify-Item ::= SEQUENCE {
    qosFlowIdentifier           QoSFlowIdentifier,
    notificationInformation     ENUMERATED {fulfilled, not-fulfilled, ... , not-fulfilled-dl, not-fulfilled-ul },
    iE-Extensions               ProtocolExtensionContainer { {QoSFlowNotificationControlIndicationInfo-ExtIEs} } OPTIONAL,
    ...
}

QoSFlowNotificationControlIndicationInfo-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
{   ID id-CurrentQoSParaSetIndex    CRITICALITY ignore  EXTENSION QoSParaSetNotifyIndex     PRESENCE optional },
    ...
}


QoSFlows-List ::= SEQUENCE (SIZE (1..maxnoofQoSFlows)) OF QoSFlow-Item

QoSFlow-Item ::= SEQUENCE {
    qfi                             QoSFlowIdentifier,
    qosFlowMappingIndication        QoSFlowMappingIndication                    OPTIONAL,
    iE-Extension        ProtocolExtensionContainer { {QoSFlow-Item-ExtIEs} }    OPTIONAL,
    ...
}

QoSFlow-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


QoSFlows-List-withCause ::= SEQUENCE (SIZE (1..maxnoofQoSFlows)) OF QoSFlowwithCause-Item

QoSFlowwithCause-Item ::= SEQUENCE {
    qfi                 QoSFlowIdentifier,
    cause               Cause                   OPTIONAL,
    iE-Extension        ProtocolExtensionContainer { {QoSFlowwithCause-Item-ExtIEs} }   OPTIONAL,
    ...
}

QoSFlowwithCause-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

QoS-Mapping-Information ::= SEQUENCE {
```

```
    dscp                            BIT STRING (SIZE(6))            OPTIONAL,
    flow-label                      BIT STRING (SIZE(20))           OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { {QoS-Mapping-Information-ExtIEs} }  OPTIONAL,
    ...
}

QoS-Mapping-Information-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

QoSParaSetIndex ::= INTEGER (1..8,...)
QoSParaSetNotifyIndex ::= INTEGER (0..8,...)


QoSFlowsAdmitted-List ::= SEQUENCE (SIZE (1..maxnoofQoSFlows)) OF QoSFlowsAdmitted-Item

QoSFlowsAdmitted-Item ::= SEQUENCE {
    qfi                             QoSFlowIdentifier,
    iE-Extension        ProtocolExtensionContainer { {QoSFlowsAdmitted-Item-ExtIEs} }   OPTIONAL,
    ...
}

QoSFlowsAdmitted-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
{ ID id-CurrentQoSParaSetIndex  CRITICALITY ignore  EXTENSION QoSParaSetIndex   PRESENCE optional },
    ...
}


QoSFlowsToBeSetup-List ::= SEQUENCE (SIZE (1..maxnoofQoSFlows)) OF QoSFlowsToBeSetup-Item

QoSFlowsToBeSetup-Item ::= SEQUENCE {
    qfi                             QoSFlowIdentifier,
    qosFlowLevelQoSParameters       QoSFlowLevelQoSParameters,
    e-RAB-ID                        E-RAB-ID                                            OPTIONAL,
    iE-Extension        ProtocolExtensionContainer { {QoSFlowsToBeSetup-Item-ExtIEs} }  OPTIONAL,
    ...
}

QoSFlowsToBeSetup-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    { ID id-TSCTrafficCharacteristics                               CRITICALITY ignore  EXTENSION TSCTrafficCharacteristics  PRESENCE optional}|
    { ID id-RedundantQoSFlowIndicator                               CRITICALITY ignore  EXTENSION RedundantQoSFlowIndicator  PRESENCE optional}|
    { ID id-ECNMarkingorCongestionInformationReportingRequest       CRITICALITY ignore  EXTENSION ECNMarkingorCongestionInformationReportingRequest
    PRESENCE optional},
    ...
}

QoSFlowsUsageReportList ::= SEQUENCE (SIZE(1..maxnoofQoSFlows)) OF QoSFlowsUsageReport-Item

QoSFlowsUsageReport-Item ::= SEQUENCE {
    qosFlowIdentifier                 QoSFlowIdentifier,
    rATType                           ENUMERATED {nr, eutra, ..., nr-unlicensed, e-utra-unlicensed},
    qoSFlowsTimedReportList           VolumeTimedReportList,
    iE-Extensions                     ProtocolExtensionContainer { {QoSFlowsUsageReport-Item-ExtIEs} } OPTIONAL,
...
```

```
}

QoSFlowsUsageReport-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

QosMonitoringRequest ::= ENUMERATED {ul, dl, both}
QoSMonitoringDisabled ::= ENUMERATED {true, ...}
QosMonitoringReportingFrequency ::= INTEGER (1..1800, ...)

-- R

RACH-Config-Common  ::= OCTET STRING

RACH-Config-Common-IAB  ::= OCTET STRING

RAReport    ::= SEQUENCE (SIZE(1.. maxnoofRAReports)) OF RAReportList-Item
RAReportList-Item   ::= SEQUENCE {
    rAReport                RAReportContainer,
    iE-Extensions                       ProtocolExtensionContainer { { RAReportList-Item-ExtIEs} }   OPTIONAL,
    ...
}

RAReportList-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    { ID id-UEAssistantIdentifier   CRITICALITY ignore  EXTENSION NG-RANnodeUEXnAPID    PRESENCE optional}|
    { ID id-PSCellListContainer     CRITICALITY ignore  EXTENSION PSCellListContainer   PRESENCE optional},
    ...
}

RAReportContainer   ::= OCTET STRING


RadioResourceStatus ::= CHOICE {
    ng-eNB-RadioResourceStatus  NG-eNB-RadioResourceStatus,
    gNB-RadioResourceStatus     GNB-RadioResourceStatus,
    choice-extension            ProtocolIE-Single-Container { { RadioResourceStatus-ExtIEs} }

}

RadioResourceStatus-ExtIEs XNAP-PROTOCOL-IES ::= {
    ...
}


RANAC ::= INTEGER (0..255)


RANAreaID ::= SEQUENCE {
    tAC                 TAC,
    rANAC               RANAC                                                   OPTIONAL,
    iE-Extensions       ProtocolExtensionContainer { {RANAreaID-ExtIEs} }   OPTIONAL,
    ...
}
```

```
RANAreaID-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


RANAreaID-List ::= SEQUENCE (SIZE(1..maxnoofRANAreasinRNA)) OF RANAreaID

Range ::= ENUMERATED {m50, m80, m180, m200, m350, m400, m500, m700, m1000, ...}

RANPagingArea ::= SEQUENCE {
    pLMN-Identity           PLMN-Identity,
    rANPagingAreaChoice     RANPagingAreaChoice,
    iE-Extensions           ProtocolExtensionContainer { {RANPagingArea-ExtIEs} } OPTIONAL,
    ...
}

RANPagingArea-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

RANPagingAreaChoice ::= CHOICE {
    cell-List           NG-RAN-Cell-Identity-ListinRANPagingArea,
    rANAreaID-List      RANAreaID-List,
    choice-extension    ProtocolIE-Single-Container { {RANPagingAreaChoice-ExtIEs} }
}

RANPagingAreaChoice-ExtIEs XNAP-PROTOCOL-IES ::= {
    ...
}


RANPagingAttemptInfo ::= SEQUENCE {
    pagingAttemptCount                  INTEGER (1..16, ...),
    intendedNumberOfPagingAttempts      INTEGER (1..16, ...),
    nextPagingAreaScope                 ENUMERATED {same, changed, ...} OPTIONAL,
    iE-Extensions           ProtocolExtensionContainer { {RANPagingAttemptInfo-ExtIEs} } OPTIONAL,
    ...
}

RANPagingAttemptInfo-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

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

RBsetConfiguration ::= SEQUENCE {
    subcarrierSpacing       SubcarrierSpacing,
    rBsetSize               ENUMERATED {rb2, rb4, rb8, rb16, rb32, rb64},
    numberofRBSets          INTEGER(1.. maxnoofRBsetsPerCell),
    iE-Extensions               ProtocolExtensionContainer { { RBsetConfiguration-ExtIEs} } OPTIONAL,
    ...
```

```
}

RBsetConfiguration-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


Redcap-Bcast-Information ::= BIT STRING(SIZE(8))

RedundantQoSFlowIndicator ::= ENUMERATED {true, false}

RedundantPDUSessionInformation ::= SEQUENCE {
    rSN                 RSN,
    iE-Extensions       ProtocolExtensionContainer { {RedundantPDUSessionInformation-ExtIEs} }  OPTIONAL,
    ...
}

RedundantPDUSessionInformation-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    { ID id-PDUSession-PairID   CRITICALITY ignore  EXTENSION PDUSession-PairID PRESENCE optional },
    ...
}

RSN ::= ENUMERATED {v1, v2, ...}


ReflectiveQoSAttribute ::= ENUMERATED {subject-to-reflective-QoS, ...}

RequestedSRSTransmissionCharacteristics ::= OCTET STRING


RoutingID ::= OCTET STRING

ReplacingCells ::= SEQUENCE (SIZE(0.. maxnoofCellsinNG-RANnode)) OF ReplacingCells-Item

ReplacingCells-Item ::= SEQUENCE {
    globalNG-RANCell-ID             GlobalCell-ID,
    iE-Extensions       ProtocolExtensionContainer { {ReplacingCells-Item-ExtIEs} } OPTIONAL,
    ...
}

ReplacingCells-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

ReportAmountMDT ::= ENUMERATED{r1, r2, r4, r8, r16, r32, r64, infinity, ...}


ReportArea ::= ENUMERATED {
    cell,
    ...
}

ReportConfigContainer ::= OCTET STRING
```

```
ReportIntervalMDT ::= ENUMERATED {ms120, ms240, ms480, ms640, ms1024, ms2048, ms5120, ms10240, min1, min6, min12, min30, min60, ...}

ReportType ::= CHOICE {
    periodical                  Periodical,
    eventTriggered              EventTriggered,
    ...,
    choice-extension        ProtocolIE-Single-Container { {ReportType-ExtIEs} }
}

ReportType-ExtIEs XNAP-PROTOCOL-IES ::= {
    ...
}


ExtendedReportIntervalMDT ::= ENUMERATED {
    ms20480,
    ms40960,
    ...
}


ReportCharacteristics ::= BIT STRING(SIZE(32))

ReportCharacteristicsForDataCollection ::= BIT STRING(SIZE(32))



ReportingPeriodicity ::= ENUMERATED {
    half-thousand-ms,
    one-thousand-ms,
    two-thousand-ms,
    five-thousand-ms,
    ten-thousand-ms,
    ...
}

ReportingPeriodicityForDataCollection ::= ENUMERATED {
    half-thousand-ms,
    one-thousand-ms,
    two-thousand-ms,
    five-thousand-ms,
    ten-thousand-ms,
    ...
}

RequestedPredictionTime ::= INTEGER (1..60, ...)


RegistrationRequest ::= ENUMERATED {start, stop, add, ... }

RegistrationRequestForDataCollection ::= ENUMERATED {start, stop, ... }


RequestReferenceID ::= INTEGER (1..64, ...)
```

```
ReservedSubframePattern ::= SEQUENCE {
    subframeType                    ENUMERATED {mbsfn, non-mbsfn, ...},
    reservedSubframePattern         BIT STRING (SIZE(10..160)),
    mbsfnControlRegionLength        MBSFNControlRegionLength                    OPTIONAL,
    iE-Extension                    ProtocolExtensionContainer { {ReservedSubframePattern-ExtIEs} } OPTIONAL,
    ...
}

ReservedSubframePattern-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}



ResetRequestTypeInfo ::= CHOICE {
    fullReset           ResetRequestTypeInfo-Full,
    partialReset        ResetRequestTypeInfo-Partial,
    choice-extension    ProtocolIE-Single-Container { {ResetRequestTypeInfo-ExtIEs} }
}

ResetRequestTypeInfo-ExtIEs XNAP-PROTOCOL-IES ::= {
    ...
}

ResetRequestTypeInfo-Full ::= SEQUENCE {
    iE-Extension                    ProtocolExtensionContainer { {ResetRequestTypeInfo-Full-ExtIEs} } OPTIONAL,
    ...
}

ResetRequestTypeInfo-Full-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

ResetRequestTypeInfo-Partial ::= SEQUENCE {
    ue-contexts-ToBeReleasedList    ResetRequestPartialReleaseList,
    iE-Extension                    ProtocolExtensionContainer { {ResetRequestTypeInfo-Partial-ExtIEs} } OPTIONAL,
    ...
}

ResetRequestTypeInfo-Partial-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

ResetRequestPartialReleaseList ::= SEQUENCE (SIZE(1..maxnoofUEContexts)) OF ResetRequestPartialReleaseItem

ResetRequestPartialReleaseItem ::= SEQUENCE {
    ng-ran-node1UEXnAPID                        NG-RANnodeUEXnAPID          OPTIONAL,
    ng-ran-node2UEXnAPID                        NG-RANnodeUEXnAPID          OPTIONAL,
    iE-Extensions                           ProtocolExtensionContainer { {ResetRequestPartialReleaseItem-ExtIEs} } OPTIONAL,
    ...
}
```

```
ResetRequestPartialReleaseItem-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


ResetResponseTypeInfo ::= CHOICE {
    fullReset           ResetResponseTypeInfo-Full,
    partialReset        ResetResponseTypeInfo-Partial,
    choice-extension    ProtocolIE-Single-Container { {ResetResponseTypeInfo-ExtIEs} }
}

ResetResponseTypeInfo-ExtIEs XNAP-PROTOCOL-IES ::= {
    ...
}

ResetResponseTypeInfo-Full ::= SEQUENCE {
    iE-Extension                    ProtocolExtensionContainer { {ResetResponseTypeInfo-Full-ExtIEs} } OPTIONAL,
    ...
}

ResetResponseTypeInfo-Full-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

ResetResponseTypeInfo-Partial ::= SEQUENCE {
    ue-contexts-AdmittedToBeReleasedList    ResetResponsePartialReleaseList,
    iE-Extension                    ProtocolExtensionContainer { {ResetResponseTypeInfo-Partial-ExtIEs} } OPTIONAL,
    ...
}

ResetResponseTypeInfo-Partial-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

ResetResponsePartialReleaseList ::= SEQUENCE (SIZE(1..maxnoofUEContexts)) OF ResetResponsePartialReleaseItem

ResetResponsePartialReleaseItem ::= SEQUENCE {
    ng-ran-node1UEXnAPID                        NG-RANnodeUEXnAPID      OPTIONAL,
    ng-ran-node2UEXnAPID                        NG-RANnodeUEXnAPID      OPTIONAL,
    iE-Extensions                           ProtocolExtensionContainer { {ResetResponsePartialReleaseItem-ExtIEs} } OPTIONAL,
    ...
}

ResetResponsePartialReleaseItem-ExtIEs XNAP-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 XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

RLCDuplicationInformation ::=       SEQUENCE {
    rLCDuplicationStateList         RLCDuplicationStateList,
    rLC-PrimaryIndicator        ENUMERATED {true, false}        OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { {RLCDuplicationInformation-ItemExtIEs} }  OPTIONAL
}

RLCDuplicationInformation-ItemExtIEs    XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

RLCDuplicationStateList ::=     SEQUENCE (SIZE(1..maxnoofRLCDuplicationstate)) OF RLCDuplicationState-Item

RLCDuplicationState-Item ::=    SEQUENCE {
    duplicationState            ENUMERATED {active,inactive, ...},
    iE-Extensions   ProtocolExtensionContainer { {RLCDuplicationState-ItemExtIEs } }    OPTIONAL,
    ...
}

RLCDuplicationState-ItemExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

Reestablishment-Indication ::= ENUMERATED {
    reestablished,
    ...
}


RFSP-Index ::= INTEGER (1..256)


RRCConfigIndication ::= ENUMERATED {
    full-config,
    delta-config,
    ...
}

RRCConnections::= SEQUENCE {
    noofRRCConnections                          NoofRRCConnections,
    availableRRCConnectionCapacityValue         AvailableRRCConnectionCapacityValue,
    iE-Extensions               ProtocolExtensionContainer { { RRCConnections-ExtIEs} } OPTIONAL,
```

```
    ...
}

RRCConnections-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


RRCConnReestab-Indicator ::= ENUMERATED { reconfigurationFailure, handoverFailure, otherFailure, ...}

RRCReestab-initiated ::= SEQUENCE {
    rRRCReestab-initiated-reporting RRCReestab-Initiated-Reporting,
    iE-Extensions           ProtocolExtensionContainer { { RRCReestab-initiated-ExtIEs} } OPTIONAL,
    ...
}

RRCReestab-initiated-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

RRCReestab-Initiated-Reporting ::= CHOICE {
    rRCReestab-reporting-wo-UERLFReport                RRCReestab-Initiated-Reporting-wo-UERLFReport,
    rRCReestab-reporting-with-UERLFReport              RRCReestab-Initiated-Reporting-with-UERLFReport,
    choice-extension                ProtocolIE-Single-Container { {RRCReestab-Initiated-Reporting-ExtIEs} }
}

RRCReestab-Initiated-Reporting-ExtIEs XNAP-PROTOCOL-IES ::= {
    ...
}

RRCReestab-Initiated-Reporting-wo-UERLFReport ::= SEQUENCE {
    failureCellPCI      NG-RAN-CellPCI,
    reestabCellCGI      GlobalNG-RANCell-ID,
    c-RNTI              C-RNTI,
    shortMAC-I          MAC-I,
    iE-Extensions       ProtocolExtensionContainer { { RRCReestab-Initiated-Reporting-wo-UERLFReport-ExtIEs} } OPTIONAL,
    ...
}

RRCReestab-Initiated-Reporting-wo-UERLFReport-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    { ID id-RRCConnReestab-Indicator    CRITICALITY ignore  EXTENSION RRCConnReestab-Indicator    PRESENCE optional },
    ...
}

RRCReestab-Initiated-Reporting-with-UERLFReport ::= SEQUENCE {
    uERLFReportContainer    UERLFReportContainer,
    iE-Extensions           ProtocolExtensionContainer { {RRCReestab-Initiated-Reporting-with-UERLFReport-ExtIEs} } OPTIONAL,
    ...
}

RRCReestab-Initiated-Reporting-with-UERLFReport-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}
```

```
RRCSetup-initiated ::= SEQUENCE {
    rRRCSetup-Initiated-Reporting   RRCSetup-Initiated-Reporting,
    uERLFReportContainer            UERLFReportContainer            OPTIONAL,
    iE-Extensions           ProtocolExtensionContainer { { RRCSetup-initiated-ExtIEs} } OPTIONAL,
    ...
}

RRCSetup-initiated-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

RRCSetup-Initiated-Reporting ::= CHOICE {
    rRCSetup-reporting-with-UERLFReport            RRCSetup-Initiated-Reporting-with-UERLFReport,
    choice-extension                ProtocolIE-Single-Container { {RRCSetup-Initiated-Reporting-ExtIEs} }
}

RRCSetup-Initiated-Reporting-ExtIEs XNAP-PROTOCOL-IES ::= {
    ...
}

RRCSetup-Initiated-Reporting-with-UERLFReport ::= SEQUENCE {
    uERLFReportContainer    UERLFReportContainer,
    iE-Extensions           ProtocolExtensionContainer { {RRCSetup-Initiated-Reporting-with-UERLFReport-ExtIEs} } OPTIONAL,
    ...
}

RRCSetup-Initiated-Reporting-with-UERLFReport-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


RRCResumeCause ::= ENUMERATED {
    rna-Update,
    ...
}


RaReportIndicationList ::= SEQUENCE (SIZE(1..maxnoofUEsforRAReportIndications)) OF RaReportIndicationList-Item

RaReportIndicationList-Item ::= SEQUENCE {
    m-NG-RAN-node-UE-XnAP-ID            NG-RANnodeUEXnAPID,
    iE-Extensions                       ProtocolExtensionContainer { { RaReportIndicationList-Item-ExtIEs} }  OPTIONAL,
    ...
}

RaReportIndicationList-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}



RadioResourceStatusNR-U ::= SEQUENCE {
    dL-Total-PRB-usage          INTEGER (0..100),
    uL-Total-PRB-usage          INTEGER (0..100),
```

```
    iE-Extensions       ProtocolExtensionContainer {{ RadioResourceStatusNR-U-ExtIEs}} OPTIONAL,
    ...
}

RadioResourceStatusNR-U-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

ReportingThreshold  ::= INTEGER (0.. 4000000000, ...)

ReferenceConfiguration ::= OCTET STRING

RequestForCSI-RSResourceConfigForLayer1Measurements  ::= ENUMERATED {true, ...}


RA-RNTI ::= INTEGER (0..65535, ...)


-- S

SBFD-Frequency-Configuration ::= OCTET STRING

SCGreconfigNotification ::= ENUMERATED {executed, ... , executed-deleted, deleted }

S-NSSAIListQoE ::= SEQUENCE (SIZE(1..maxnoofSNSSAIforQMC)) OF S-NSSAI

S-BasedMDT ::= SEQUENCE {
    ng-ran-TraceID              NG-RANTraceID,
    iE-Extension                ProtocolExtensionContainer { {S-BasedMDT-ExtIEs} }  OPTIONAL,
    ...
}

S-BasedMDT-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

S-CPAC-Request ::= ENUMERATED {initiation, ...}

S-CPAC-Request-Info ::= SEQUENCE {
    s-CPAC-Security-Config-List         S-CPAC-SecurityConfig-List,
    s-CPAC-MultiTargetSN-List           S-CPAC-MultiTargetSN-List           OPTIONAL,
    iE-Extensions                       ProtocolExtensionContainer { {S-CPAC-Request-Info-ExtIEs} } OPTIONAL,
    ...
}

S-CPAC-Request-Info-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

S-CPAC-ReferenceConfig-Request ::= ENUMERATED {request, ...}

S-CPAC-SecurityConfig-List ::= SEQUENCE (SIZE(1..maxnoofSecurityConfigurations)) OF S-CPAC-SecurityConfig-Item
```

```
S-CPAC-SecurityConfig-Item ::= SEQUENCE {
    s-ng-RANnode-SecurityKey            S-NG-RANnode-SecurityKey,
    sk-counter                          SK-COUNTER,
    iE-Extensions       ProtocolExtensionContainer { {S-CPAC-SecurityConfig-Item-ExtIEs} } OPTIONAL,
    ...
}

S-CPAC-SecurityConfig-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

S-CPAC-MultiTargetSN-List ::= SEQUENCE (SIZE(1..maxnoofTargetSNsMinusOne)) OF S-CPAC-MultiTargetSN-Item

S-CPAC-MultiTargetSN-Item ::= SEQUENCE {
    target-S-NG-RANnodeID               GlobalNG-RANNode-ID,
    recommendedCandidatePSCells         OCTET STRING,
    iE-Extensions       ProtocolExtensionContainer { {S-CPAC-MultiTargetSN-Item-ExtIEs} } OPTIONAL,
    ...
}

S-CPAC-MultiTargetSN-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

S-CPAC-InterSN-ExecutionNotify ::= ENUMERATED {executed, ...}

ServiceType ::= ENUMERATED{
    qMC-for-streaming-service,
    qMC-for-MTSI-service,
    qMC-for-VR-service,
    ...
}

SecondarydataForwardingInfoFromTarget-Item::= SEQUENCE {
    secondarydataForwardingInfoFromTarget               DataForwardingInfoFromTargetNGRANnode,
    iE-Extensions       ProtocolExtensionContainer { { SecondarydataForwardingInfoFromTarget-Item-ExtIEs} }   OPTIONAL,
    ...
}

SecondarydataForwardingInfoFromTarget-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

SecondarydataForwardingInfoFromTarget-List ::= SEQUENCE (SIZE(1..maxnoofMultiConnectivityMinusOne)) OF SecondarydataForwardingInfoFromTarget-Item

SCGActivationRequest ::= ENUMERATED {activate-scg, deactivate-scg, ...}

SCGActivationStatus ::= ENUMERATED {scg-activated, scg-deactivated, ...}

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

SCGIndicator    ::= ENUMERATED{released, ...}
```

```
SCGFailureReportContainer   ::= OCTET STRING

SDTSupportRequest ::= SEQUENCE {
    sdtindicator                SDTIndicator,
    sdtAssistantInfo            SDTAssistantInfo        OPTIONAL,
    iE-Extensions               ProtocolExtensionContainer { { SDTSupportRequest-ExtIEs} } OPTIONAL,
    ...
}

SDTSupportRequest-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

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

SDTAssistantInfo ::= ENUMERATED {single-packet, multiple-packets, ...}

SDT-Termination-Request ::= ENUMERATED {radio-link-problem, normal, ..., large-sdt-volume-from-BSR}

SDTPartialUEContextInfo ::= SEQUENCE {
    dRBsToBeSetup                   SDT-DRBsToBeSetupList       OPTIONAL,
    sRBsToBeSetup                   SDT-SRBsToBeSetupList,
    iE-Extensions                   ProtocolExtensionContainer { { SDTPartialUEContextInfo-ExtIEs} }    OPTIONAL,
    ...
}
SDTPartialUEContextInfo-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

SDT-DRBsToBeSetupList ::= SEQUENCE (SIZE(1..maxnoofDRBs)) OF SDT-DRBsToBeSetupList-Item

SDT-DRBsToBeSetupList-Item  ::= SEQUENCE {
    drb-ID                          DRB-ID,
    uL-TNLInfo                      UPTransportLayerInformation,
    dRB-RLC-Bearer-Configuration    OCTET STRING,
    dRB-QoS                         QoSFlowLevelQoSParameters,
    rLC-Mode                        RLCMode,
    s-nssai                         S-NSSAI,
    pDCP-SNLength                   PDCPSNLength,
    flows-Mapped-To-DRB-List        Flows-Mapped-To-DRB-List,
    iE-Extensions       ProtocolExtensionContainer { { SDT-DRBsToBeSetupList-Item-ExtIEs} } OPTIONAL,
    ...
}

SDT-DRBsToBeSetupList-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

SDT-SRBsToBeSetupList ::= SEQUENCE (SIZE(1..maxnoofSRBs)) OF SDT-SRBsToBeSetupList-Item

SDT-SRBsToBeSetupList-Item  ::= SEQUENCE {
    srb-ID                          SRB-ID,
    sRB-RLC-Bearer-Configuration    OCTET STRING,
    iE-Extensions                   ProtocolExtensionContainer { { SDT-SRBsToBeSetupList-Item-ExtIEs} } OPTIONAL,
```

```
    ...
}

SDT-SRBsToBeSetupList-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

SRB-ID ::= INTEGER (0..4, ...)

SDTDataForwardingDRBList ::= SEQUENCE (SIZE(1..maxnoofDRBs)) OF SDTDataForwardingDRBList-Item

SDTDataForwardingDRBList-Item ::= SEQUENCE {
    drb-ID                          DRB-ID,
    dL-TNLInfo                      UPTransportLayerInformation     OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { { SDTDataForwardingDRBList-Item-ExtIEs} } OPTIONAL,
    ...
}

SDTDataForwardingDRBList-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

SecondaryRATUsageInformation ::= SEQUENCE {
    pDUSessionUsageReport       PDUSessionUsageReport               OPTIONAL,
    qosFlowsUsageReportList     QoSFlowsUsageReportList             OPTIONAL,
    iE-Extension                ProtocolExtensionContainer { {SecondaryRATUsageInformation-ExtIEs} } OPTIONAL,
    ...
}

SecondaryRATUsageInformation-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

SecurityIndication ::= SEQUENCE {
    integrityProtectionIndication           ENUMERATED {required, preferred, not-needed, ...},
    confidentialityProtectionIndication     ENUMERATED {required, preferred, not-needed, ...},
    maximumIPdatarate                       MaximumIPdatarate                                       OPTIONAL,
-- This IE shall be present if the Integrity Protection IE within the Security Indication IE is present and set to "required" or "preferred". --
    iE-Extensions                           ProtocolExtensionContainer { {SecurityIndication-ExtIEs} } OPTIONAL,
    ...
}

SecurityIndication-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


SecurityResult ::= SEQUENCE {
    integrityProtectionResult               ENUMERATED {performed, not-performed, ...},
    confidentialityProtectionResult         ENUMERATED {performed, not-performed, ...},
    iE-Extensions                           ProtocolExtensionContainer { {SecurityResult-ExtIEs} } OPTIONAL,
    ...
}
```

```
SecurityResult-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

SensorMeasurementConfiguration ::= SEQUENCE {
    sensorMeasConfig                SensorMeasConfig,
    sensorMeasConfigNameList        SensorMeasConfigNameList            OPTIONAL,
    iE-Extensions       ProtocolExtensionContainer { { SensorMeasurementConfiguration-ExtIEs } } OPTIONAL,
    ...
}

SensorMeasurementConfiguration-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

SensorMeasConfigNameList ::= SEQUENCE (SIZE(1..maxnoofSensorName)) OF SensorName

SensorMeasConfig::= ENUMERATED {setup,...}

SensorName ::= SEQUENCE {
    uncompensatedBarometricConfig   ENUMERATED {true, ...}      OPTIONAL,
    ueSpeedConfig                   ENUMERATED {true, ...}      OPTIONAL,
    ueOrientationConfig             ENUMERATED {true, ...}      OPTIONAL,
    iE-Extensions               ProtocolExtensionContainer { {SensorNameConfig-ExtIEs} } OPTIONAL,
...
}

SensorNameConfig-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


-- Served Cells E-UTRA IEs


ServedCellInformation-E-UTRA ::= SEQUENCE {
    e-utra-pci                              E-UTRAPCI,
    e-utra-cgi                              E-UTRA-CGI,
    tac                                     TAC,
    ranac                                   RANAC                                                                   OPTIONAL,
    broadcastPLMNs                          SEQUENCE (SIZE(1..maxnoofBPLMNs)) OF ServedCellInformation-E-UTRA-perBPLMN,
    e-utra-mode-info                        ServedCellInformation-E-UTRA-ModeInfo,
    numberofAntennaPorts                    NumberOfAntennaPorts-E-UTRA                                             OPTIONAL,
    prach-configuration                     E-UTRAPRACHConfiguration                                                OPTIONAL,
    mBSFNsubframeInfo                       MBSFNSubframeInfo-E-UTRA                                                OPTIONAL,
    multibandInfo                           E-UTRAMultibandInfoList                                                 OPTIONAL,
    freqBandIndicatorPriority               ENUMERATED {not-broadcast, broadcast, ...}                              OPTIONAL,
    bandwidthReducedSI                      ENUMERATED {scheduled, ...}                                             OPTIONAL,
    protectedE-UTRAResourceIndication       ProtectedE-UTRAResourceIndication                                       OPTIONAL,
    iE-Extensions               ProtocolExtensionContainer { {ServedCellInformation-E-UTRA-ExtIEs} }        OPTIONAL,
    ...
}

ServedCellInformation-E-UTRA-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
```

```
    { ID id-BPLMN-ID-Info-EUTRA     CRITICALITY ignore  EXTENSION BPLMN-ID-Info-EUTRA       PRESENCE optional }|
    { ID id-NPRACHConfiguration     CRITICALITY ignore  EXTENSION   NPRACHConfiguration     PRESENCE optional},
    ...
}


ServedCellInformation-E-UTRA-perBPLMN ::= SEQUENCE {
    plmn-id                 PLMN-Identity,
    iE-Extensions           ProtocolExtensionContainer { {ServedCellInformation-E-UTRA-perBPLMN-ExtIEs} } OPTIONAL,
    ...
}

ServedCellInformation-E-UTRA-perBPLMN-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


ServedCellInformation-E-UTRA-ModeInfo ::= CHOICE {
    fdd                 ServedCellInformation-E-UTRA-FDDInfo,
    tdd                 ServedCellInformation-E-UTRA-TDDInfo,
    choice-extension    ProtocolIE-Single-Container{ {ServedCellInformation-E-UTRA-ModeInfo-ExtIEs} }
}

ServedCellInformation-E-UTRA-ModeInfo-ExtIEs XNAP-PROTOCOL-IES ::= {
    ...
}


ServedCellInformation-E-UTRA-FDDInfo ::= SEQUENCE {
    ul-earfcn           E-UTRAARFCN,
    dl-earfcn           E-UTRAARFCN,
    ul-e-utraTxBW       E-UTRATransmissionBandwidth,
    dl-e-utraTxBW       E-UTRATransmissionBandwidth,
    iE-Extensions       ProtocolExtensionContainer { {ServedCellInformation-E-UTRA-FDDInfo-ExtIEs} } OPTIONAL,
    ...
}

ServedCellInformation-E-UTRA-FDDInfo-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    { ID id-OffsetOfNbiotChannelNumberToDL-EARFCN   CRITICALITY reject  EXTENSION OffsetOfNbiotChannelNumberToEARFCN     PRESENCE optional}|
    { ID id-OffsetOfNbiotChannelNumberToUL-EARFCN   CRITICALITY reject  EXTENSION OffsetOfNbiotChannelNumberToEARFCN     PRESENCE optional},
    ...
}


ServedCellInformation-E-UTRA-TDDInfo ::= SEQUENCE {
    earfcn                  E-UTRAARFCN,
    e-utraTxBW              E-UTRATransmissionBandwidth,
    subframeAssignmnet      ENUMERATED {sa0,sa1,sa2,sa3,sa4,sa5,sa6,...},
    specialSubframeInfo     SpecialSubframeInfo-E-UTRA,
    iE-Extensions           ProtocolExtensionContainer { {ServedCellInformation-E-UTRA-TDDInfo-ExtIEs} } OPTIONAL,
    ...
}

ServedCellInformation-E-UTRA-TDDInfo-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
```

```
    { ID id-OffsetOfNbiotChannelNumberToDL-EARFCN   CRITICALITY reject  EXTENSION OffsetOfNbiotChannelNumberToEARFCN     PRESENCE optional}|
    { ID id-NBIoT-UL-DL-AlignmentOffset             CRITICALITY reject  EXTENSION NBIoT-UL-DL-AlignmentOffset            PRESENCE optional},
    ...
}


ServedCells-E-UTRA ::= SEQUENCE (SIZE (1..maxnoofCellsinNG-RANnode)) OF ServedCells-E-UTRA-Item

ServedCells-E-UTRA-Item ::= SEQUENCE {
    served-cell-info-E-UTRA     ServedCellInformation-E-UTRA,
    neighbour-info-NR           NeighbourInformation-NR                                 OPTIONAL,
    neighbour-info-E-UTRA       NeighbourInformation-E-UTRA                             OPTIONAL,
    iE-Extensions       ProtocolExtensionContainer { {ServedCells-E-UTRA-Item-ExtIEs} } OPTIONAL,
    ...
}

ServedCells-E-UTRA-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    { ID id-SFN-Offset              CRITICALITY ignore EXTENSION SFN-Offset                 PRESENCE optional },
...
}


ServedCellsToUpdate-E-UTRA ::= SEQUENCE {
    served-Cells-ToAdd-E-UTRA       ServedCells-E-UTRA                                                  OPTIONAL,
    served-Cells-ToModify-E-UTRA    ServedCells-ToModify-E-UTRA                                         OPTIONAL,
    served-Cells-ToDelete-E-UTRA    SEQUENCE (SIZE (1..maxnoofCellsinNG-RANnode)) OF E-UTRA-CGI             OPTIONAL,
iE-Extensions                   ProtocolExtensionContainer { {ServedCellsToUpdate-E-UTRA-ExtIEs} }   OPTIONAL,
    ...
}

ServedCellsToUpdate-E-UTRA-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


ServedCells-ToModify-E-UTRA ::= SEQUENCE (SIZE (1..maxnoofCellsinNG-RANnode)) OF ServedCells-ToModify-E-UTRA-Item

ServedCells-ToModify-E-UTRA-Item ::= SEQUENCE {
    old-ECGI                    E-UTRA-CGI,
    served-cell-info-E-UTRA     ServedCellInformation-E-UTRA,
    neighbour-info-NR           NeighbourInformation-NR                                     OPTIONAL,
    neighbour-info-E-UTRA       NeighbourInformation-E-UTRA                                 OPTIONAL,
    deactivation-indication     ENUMERATED {deactivated, ...}                               OPTIONAL,
    iE-Extensions       ProtocolExtensionContainer { {Served-cells-ToModify-E-UTRA-Item-ExtIEs} } OPTIONAL,
    ...
}

Served-cells-ToModify-E-UTRA-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    { ID id-SFN-Offset              CRITICALITY ignore EXTENSION SFN-Offset                 PRESENCE optional },
    ...
}


-- Served Cells NR IEs
```

```
ServedCellInformation-NR ::= SEQUENCE {
    nrPCI                               NRPCI,
    cellID                              NR-CGI,
    tac                                 TAC,
    ranac                               RANAC                       OPTIONAL,
    broadcastPLMN                       BroadcastPLMNs,
    nrModeInfo                          NRModeInfo,
    measurementTimingConfiguration      OCTET STRING,
    connectivitySupport                 Connectivity-Support,
    iE-Extensions                       ProtocolExtensionContainer { {ServedCellInformation-NR-ExtIEs} } OPTIONAL,
    ...
}

ServedCellInformation-NR-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    { ID id-BPLMN-ID-Info-NR                CRITICALITY ignore  EXTENSION BPLMN-ID-Info-NR                PRESENCE optional }|
    { ID id-ConfiguredTACIndication         CRITICALITY ignore  EXTENSION ConfiguredTACIndication         PRESENCE optional }|
    { ID id-SSB-PositionsInBurst            CRITICALITY ignore  EXTENSION SSB-PositionsInBurst            PRESENCE optional }|
    { ID id-NRCellPRACHConfig               CRITICALITY ignore  EXTENSION NRCellPRACHConfig               PRESENCE optional }|
    { ID id-NPN-Broadcast-Information       CRITICALITY reject  EXTENSION NPN-Broadcast-Information       PRESENCE optional }|
    { ID id-CSI-RSTransmissionIndication    CRITICALITY ignore  EXTENSION CSI-RSTransmissionIndication    PRESENCE optional }|
    { ID id-SFN-Offset                      CRITICALITY ignore  EXTENSION SFN-Offset                      PRESENCE optional }|
    { ID id-Supported-MBS-FSA-ID-List       CRITICALITY ignore  EXTENSION Supported-MBS-FSA-ID-List       PRESENCE optional }|
    { ID id-NR-U-ChannelInfo-List           CRITICALITY ignore  EXTENSION NR-U-ChannelInfo-List           PRESENCE optional }|
    { ID id-Additional-Measurement-Timing-Configuration-List        CRITICALITY ignore  EXTENSION Additional-Measurement-Timing-Configuration-List
       PRESENCE optional }|
    { ID id-Redcap-Bcast-Information        CRITICALITY ignore  EXTENSION Redcap-Bcast-Information        PRESENCE optional }|
    { ID id-eRedcap-Bcast-Information       CRITICALITY ignore  EXTENSION ERedcap-Bcast-Information       PRESENCE optional }|
    { ID id-MobileIABCell                   CRITICALITY ignore  EXTENSION MobileIABCell                   PRESENCE optional }|
    { ID id-XR-Bcast-Information            CRITICALITY ignore  EXTENSION XR-Bcast-Information            PRESENCE optional }|
    { ID id-BarringExemptionforEmerCallInfo CRITICALITY ignore  EXTENSION BarringExemptionforEmerCallInfo PRESENCE optional }|
    { ID id-NZP-CSI-RS-Resources-Config     CRITICALITY ignore  EXTENSION NZP-CSI-RS-Resources-Config     PRESENCE optional }|
    { ID id-SRS-Resource-Configuration      CRITICALITY ignore  EXTENSION SRS-Resource-Configuration      PRESENCE optional },
    ...
}

SFN-Offset ::= SEQUENCE {
    sFN-Time-Offset                 BIT STRING (SIZE(24)),

    iE-Extensions       ProtocolExtensionContainer { {SFN-Offset-ExtIEs} } OPTIONAL,
    ...
}
SFN-Offset-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
        ...
}


ServedCells-NR ::= SEQUENCE (SIZE (1..maxnoofCellsinNG-RANnode)) OF ServedCells-NR-Item

ServedCells-NR-Item ::= SEQUENCE {
    served-cell-info-NR         ServedCellInformation-NR,
    neighbour-info-NR           NeighbourInformation-NR             OPTIONAL,
    neighbour-info-E-UTRA       NeighbourInformation-E-UTRA         OPTIONAL,
```

```
    iE-Extensions       ProtocolExtensionContainer { {ServedCells-NR-Item-ExtIEs} } OPTIONAL,
    ...
}

ServedCells-NR-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    { ID id-ServedCellSpecificInfoReq-NR    CRITICALITY ignore EXTENSION    ServedCellSpecificInfoReq-NR   PRESENCE optional },
    ...
}


ServedCells-ToModify-NR ::= SEQUENCE (SIZE (1..maxnoofCellsinNG-RANnode)) OF ServedCells-ToModify-NR-Item

ServedCells-ToModify-NR-Item ::= SEQUENCE {
    old-NR-CGI                  NR-CGI,
    served-cell-info-NR         ServedCellInformation-NR,
    neighbour-info-NR           NeighbourInformation-NR                                     OPTIONAL,
    neighbour-info-E-UTRA       NeighbourInformation-E-UTRA                                 OPTIONAL,
    deactivation-indication     ENUMERATED {deactivated, ...}                               OPTIONAL,
    iE-Extensions       ProtocolExtensionContainer { {Served-cells-ToModify-NR-Item-ExtIEs} }   OPTIONAL,
    ...
}

Served-cells-ToModify-NR-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

ServedCellSpecificInfoReq-NR    ::= SEQUENCE (SIZE(1..maxnoofCellsinNG-RANnode)) OF ServedCellSpecificInfoReq-NR-Item

ServedCellSpecificInfoReq-NR-Item   ::= SEQUENCE {
    nRCGI                               NR-CGI,
    additionalMTCListRequestIndicator       ENUMERATED {additionalMTCListRequested, ...}         OPTIONAL,
    iE-Extensions                           ProtocolExtensionContainer { { ServedCellSpecificInfoReq-NR-Item-ExtIEs} }OPTIONAL,
    ...
}

ServedCellSpecificInfoReq-NR-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

ServedCellsToUpdate-NR ::= SEQUENCE {
    served-Cells-ToAdd-NR       ServedCells-NR                                              OPTIONAL,
    served-Cells-ToModify-NR    ServedCells-ToModify-NR                                     OPTIONAL,
    served-Cells-ToDelete-NR    SEQUENCE (SIZE (1..maxnoofCellsinNG-RANnode)) OF NR-CGI        OPTIONAL,
    iE-Extensions       ProtocolExtensionContainer { {ServedCellsToUpdate-NR-ExtIEs} } OPTIONAL,
    ...
}

ServedCellsToUpdate-NR-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}
```

```
SharedResourceType ::= CHOICE {
    ul-onlySharing              SharedResourceType-UL-OnlySharing,
    ul-and-dl-Sharing           SharedResourceType-ULDL-Sharing,
    choice-extension            ProtocolIE-Single-Container { {SharedResourceType-ExtIEs} }
}

SharedResourceType-ExtIEs XNAP-PROTOCOL-IES ::= {
    ...
}

SharedResourceType-UL-OnlySharing ::= SEQUENCE {
    ul-resourceBitmap           DataTrafficResources,
    iE-Extensions           ProtocolExtensionContainer { {SharedResourceType-UL-OnlySharing-ExtIEs} } OPTIONAL,
    ...
}

SharedResourceType-UL-OnlySharing-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

SharedResourceType-ULDL-Sharing ::= CHOICE {
    ul-resources                SharedResourceType-ULDL-Sharing-UL-Resources,
    dl-resources                SharedResourceType-ULDL-Sharing-DL-Resources,
    choice-extension            ProtocolIE-Single-Container { {SharedResourceType-ULDL-Sharing-ExtIEs} }
}

SharedResourceType-ULDL-Sharing-ExtIEs XNAP-PROTOCOL-IES ::= {
    ...
}

SharedResourceType-ULDL-Sharing-UL-Resources ::= CHOICE {
    unchanged                   NULL,
    changed                     SharedResourceType-ULDL-Sharing-UL-ResourcesChanged,
    choice-extension            ProtocolIE-Single-Container { {SharedResourceType-ULDL-Sharing-UL-Resources-ExtIEs} }
}

SharedResourceType-ULDL-Sharing-UL-Resources-ExtIEs XNAP-PROTOCOL-IES ::= {
    ...
}

SharedResourceType-ULDL-Sharing-UL-ResourcesChanged ::= SEQUENCE {
    ul-resourceBitmap           DataTrafficResources,
    iE-Extensions           ProtocolExtensionContainer { {SharedResourceType-ULDL-Sharing-UL-ResourcesChanged-ExtIEs} } OPTIONAL,
    ...
}

SharedResourceType-ULDL-Sharing-UL-ResourcesChanged-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

SharedResourceType-ULDL-Sharing-DL-Resources ::= CHOICE {
    unchanged                   NULL,
    changed                     SharedResourceType-ULDL-Sharing-DL-ResourcesChanged,
    choice-extension            ProtocolIE-Single-Container { {SharedResourceType-ULDL-Sharing-DL-Resources-ExtIEs} }
```

```
}

SharedResourceType-ULDL-Sharing-DL-Resources-ExtIEs XNAP-PROTOCOL-IES ::= {
    ...
}

SharedResourceType-ULDL-Sharing-DL-ResourcesChanged ::= SEQUENCE {
    dl-resourceBitmap           DataTrafficResources,
    iE-Extensions           ProtocolExtensionContainer { {SharedResourceType-ULDL-Sharing-DL-ResourcesChanged-ExtIEs} } OPTIONAL,
    ...
}

SharedResourceType-ULDL-Sharing-DL-ResourcesChanged-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

SK-COUNTER ::= INTEGER (0..65535)

SliceAvailableCapacity ::= SEQUENCE (SIZE(1..maxnoofBPLMNs)) OF SliceAvailableCapacity-Item

SliceAvailableCapacity-Item ::= SEQUENCE {
    pLMNIdentity                        PLMN-Identity,
    sNSSAIAvailableCapacity-List        SNSSAIAvailableCapacity-List,
    iE-Extensions                       ProtocolExtensionContainer { { SliceAvailableCapacity-Item-ExtIEs} }  OPTIONAL,
    ...
}


SliceAvailableCapacity-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

SliceMDTList ::= SEQUENCE (SIZE(1.. maxnoofSliceItemsforMDT)) OF SliceMDTItem


SliceMDTItem ::= SEQUENCE {
    sNSSAI              S-NSSAI,
    iE-Extensions       ProtocolExtensionContainer { { SliceMDTItem-ExtIEs} }   OPTIONAL,
    ...
}

SliceMDTItem-ExtIEs XNAP-PROTOCOL-EXTENSION ::={
    ...
}

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

SNSSAIAvailableCapacity-Item ::= SEQUENCE {
    sNSSAI      S-NSSAI,
    sliceAvailableCapacityValueDownlink INTEGER (0..100),
    sliceAvailableCapacityValueUplink   INTEGER (0..100),
    iE-Extensions               ProtocolExtensionContainer { { SNSSAIAvailableCapacity-Item-ExtIEs } }  OPTIONAL
}
```

```
SNSSAIAvailableCapacity-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


SliceRadioResourceStatus-List ::= SEQUENCE (SIZE(1..maxnoofBPLMNs)) OF SliceRadioResourceStatus-Item

SliceRadioResourceStatus-Item   ::= SEQUENCE {
    plmn-Identity                       PLMN-Identity,
    sNSSAIRadioResourceStatus-List      SNSSAIRadioResourceStatus-List,
    iE-Extensions                       ProtocolExtensionContainer { { SliceRadioResourceStatus-Item-ExtIEs} }   OPTIONAL,
    ...
}

SliceRadioResourceStatus-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}
SLPositioning-Ranging-Services-Info::= SEQUENCE{
    sLPositioning-Ranging-Authorized    SLPositioning-Ranging-Authorized,
    rSPP-transport-QoS-parameters       RSPP-transport-QoS-parameters       OPTIONAL,
    iE-Extensions       ProtocolExtensionContainer { { SLPositioning-Ranging-Services-Info-ExtIEs} }    OPTIONAL
}

SLPositioning-Ranging-Services-Info-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

SLPositioning-Ranging-Authorized ::= ENUMERATED {
    authorized,
    not-authorized,
    ...
}

RSPP-transport-QoS-parameters ::= SEQUENCE {
    rSPPQoSFlowList             RSPPQoSFlowList,
    rSPPLinkAggregateBitRates   BitRate                                             OPTIONAL,
    iE-Extensions       ProtocolExtensionContainer { { RSPP-transport-QoS-parameters-ExtIEs} }  OPTIONAL,
    ...
}

RSPP-transport-QoS-parameters-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
...
}

RSPPQoSFlowList ::= SEQUENCE (SIZE(1..maxnoofRSPPQoSFlows)) OF RSPPQoSFlowItem

RSPPQoSFlowItem ::= SEQUENCE {
    pQI                 FiveQI,
    rSPPFlowBitRates    RSPPFlowBitRates                                        OPTIONAL,
    range               Range                                                   OPTIONAL,
    iE-Extensions       ProtocolExtensionContainer { { RSPPQoSFlowItem-ExtIEs} }    OPTIONAL,
    ...
}
```

```
RSPPQoSFlowItem-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
...
}

RSPPFlowBitRates ::= SEQUENCE {
    guaranteedFlowBitRate       BitRate,
    maximumFlowBitRate          BitRate,
    iE-Extensions       ProtocolExtensionContainer { { RSPPFlowBitRates-ExtIEs} }   OPTIONAL,
    ...
}

RSPPFlowBitRates-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

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

SNSSAIRadioResourceStatus-Item  ::= SEQUENCE {
    sNSSAI                              S-NSSAI,
    slice-DL-GBR-PRB-Usage              Slice-DL-GBR-PRB-Usage,
    slice-UL-GBR-PRB-Usage              Slice-UL-GBR-PRB-Usage,
    slice-DL-non-GBR-PRB-Usage          Slice-DL-non-GBR-PRB-Usage,
    slice-UL-non-GBR-PRB-Usage          Slice-UL-non-GBR-PRB-Usage,
    slice-DL-Total-PRB-Allocation       Slice-DL-Total-PRB-Allocation,
    slice-UL-Total-PRB-Allocation       Slice-UL-Total-PRB-Allocation,
    iE-Extensions                       ProtocolExtensionContainer { { SNSSAIRadioResourceStatus-Item-ExtIEs} } OPTIONAL,
    ...
}

SNSSAIRadioResourceStatus-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

Slice-DL-GBR-PRB-Usage          ::= INTEGER (0..100)

Slice-UL-GBR-PRB-Usage          ::= INTEGER (0..100)

Slice-DL-non-GBR-PRB-Usage      ::= INTEGER (0..100)

Slice-UL-non-GBR-PRB-Usage      ::= INTEGER (0..100)

Slice-DL-Total-PRB-Allocation   ::= INTEGER (0..100)

Slice-UL-Total-PRB-Allocation   ::= INTEGER (0..100)


SliceSupport-List   ::= SEQUENCE (SIZE(1..maxnoofSliceItems)) OF S-NSSAI

SliceToReport-List ::= SEQUENCE (SIZE(1..maxnoofBPLMNs)) OF SliceToReport-List-Item

SliceToReport-List-Item ::= SEQUENCE {
    pLMNIdentity                PLMN-Identity,
    sNSSAIlist                  SNSSAI-list,
    iE-Extensions                       ProtocolExtensionContainer { { SliceToReport-List-Item-ExtIEs} }   OPTIONAL,
```

```
    ...
}


SliceToReport-List-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

SNSSAI-list ::= SEQUENCE (SIZE(1.. maxnoofSliceItems)) OF SNSSAI-Item

SNSSAI-Item ::= SEQUENCE {
    sNSSAI      S-NSSAI,
    iE-Extensions               ProtocolExtensionContainer { { SNSSAI-Item-ExtIEs } }   OPTIONAL
}

SNSSAI-Item-ExtIEs  XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

SlotConfiguration-List ::= SEQUENCE (SIZE (1..maxnoofslots)) OF SlotConfiguration-List-Item

SlotConfiguration-List-Item ::= SEQUENCE {
    slotIndex                       INTEGER (0..5119),
    symbolAllocation-in-Slot        SymbolAllocation-in-Slot,
    iE-Extensions               ProtocolExtensionContainer { {SlotConfiguration-List-Item-ExtIEs} }  OPTIONAL,
    ...
}

SlotConfiguration-List-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

S-NG-RANnode-SecurityKey ::= BIT STRING (SIZE(256))

S-NG-RANnode-Addition-Trigger-Ind ::= ENUMERATED {
    sn-change,
    inter-MN-HO,
    intra-MN-HO,
    ...
}

S-NSSAI ::= SEQUENCE {
    sst                     OCTET STRING (SIZE(1)),
    sd                      OCTET STRING (SIZE(3))                          OPTIONAL,
    iE-Extensions           ProtocolExtensionContainer { {S-NSSAI-ExtIEs} } OPTIONAL,
    ...
}

S-NSSAI-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

SNMobilityInformation ::= BIT STRING (SIZE(32))
```

```
SNPNIdentity ::= SEQUENCE {
    plmnID              PLMN-Identity,
    nid                 NID,
    iE-Extensions       ProtocolExtensionContainer { {SNPNIdentity-ExtIEs} }    OPTIONAL,
    ...
}

SNPNIdentity-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


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

SpecialSubframeInfo-E-UTRA ::= SEQUENCE {
    specialSubframePattern  SpecialSubframePatterns-E-UTRA,
    cyclicPrefixDL          CyclicPrefix-E-UTRA-DL,
    cyclicPrefixUL          CyclicPrefix-E-UTRA-UL,
    iE-Extensions           ProtocolExtensionContainer { {SpecialSubframeInfo-E-UTRA-ExtIEs} } OPTIONAL,
    ...
}

SpecialSubframeInfo-E-UTRA-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


SpecialSubframePatterns-E-UTRA ::= ENUMERATED {
    ssp0,
    ssp1,
    ssp2,
    ssp3,
    ssp4,
    ssp5,
    ssp6,
    ssp7,
    ssp8,
    ssp9,
    ssp10,
    ...
}


SpectrumSharingGroupID ::= INTEGER (1..maxnoofCellsinNG-RANnode)

SplitSessionIndicator ::= ENUMERATED {
    split,
    ...
}
```

```
SplitSRBsTypes ::= ENUMERATED {srb1, srb2, srb1and2, ...}

SPRAvailability ::= ENUMERATED {spr-available, ...}

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


SRSConfiguration ::= OCTET STRING

SRS-Resource-Indication ::= ENUMERATED {true, ...}

SRS-Resource-Configuration ::= SEQUENCE {
    sRS-Resource-Configuration-List     SRS-Resource-Configuration-List,
    iE-Extensions                       ProtocolExtensionContainer { {SRS-Resource-Configuration-ExtIEs} } OPTIONAL,
    ...
}

SRS-Resource-Configuration-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

SRS-Resource-Configuration-List ::= SEQUENCE (SIZE(1..maxnoofSRS-Resource)) OF SRS-Resource-Configuration-List-Item

SRS-Resource-Configuration-List-Item ::= SEQUENCE {
    sRS-Resource                        OCTET STRING,
    iE-Extensions                       ProtocolExtensionContainer { {SRS-Resource-Configuration-List-Item-ExtIEs} } OPTIONAL,
    ...
}

SRS-Resource-Configuration-List-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

SSBAreaCapacityValue-List ::= SEQUENCE (SIZE(1..maxnoofSSBAreas)) OF SSBAreaCapacityValue-List-Item

SSBAreaCapacityValue-List-Item  ::= SEQUENCE {
    sSBIndex                INTEGER(0..63),
    ssbAreaCapacityValue    INTEGER (0..100),
    iE-Extensions                       ProtocolExtensionContainer { { SSBAreaCapacityValue-List-Item-ExtIEs} }  OPTIONAL,
    ...
}


SSBAreaCapacityValue-List-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


SSBAreaRadioResourceStatus-List ::= SEQUENCE (SIZE(1..maxnoofSSBAreas)) OF SSBAreaRadioResourceStatus-List-Item

SSBAreaRadioResourceStatus-List-Item    ::= SEQUENCE {
    sSBIndex                            INTEGER(0..63),
    ssb-Area-DL-GBR-PRB-usage           DL-GBR-PRB-usage,
    ssb-Area-UL-GBR-PRB-usage           UL-GBR-PRB-usage,
```

```
    ssb-Area-dL-non-GBR-PRB-usage       DL-non-GBR-PRB-usage,
    ssb-Area-uL-non-GBR-PRB-usage       UL-non-GBR-PRB-usage,
    ssb-Area-dL-Total-PRB-usage         DL-Total-PRB-usage,
    ssb-Area-uL-Total-PRB-usage         UL-Total-PRB-usage,
    iE-Extensions                       ProtocolExtensionContainer { { SSBAreaRadioResourceStatus-List-Item-ExtIEs} } OPTIONAL,
    ...
}


SSBAreaRadioResourceStatus-List-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    { ID id-DL-scheduling-PDCCH-CCE-usage       CRITICALITY ignore  EXTENSION DL-scheduling-PDCCH-CCE-usage   PRESENCE optional}|
    { ID id-UL-scheduling-PDCCH-CCE-usage       CRITICALITY ignore  EXTENSION UL-scheduling-PDCCH-CCE-usage   PRESENCE optional},
    ...
}

SSB-Coverage-Modification-List ::= SEQUENCE (SIZE (0..maxnoofSSBAreas)) OF SSB-Coverage-Modification-List-Item

SSB-Coverage-Modification-List-Item ::= SEQUENCE {
    sSBIndex                        INTEGER(0..63),
    sSBCoverageState                INTEGER (0..15, ...),
    iE-Extension            ProtocolExtensionContainer { { SSB-Coverage-Modification-List-Item-ExtIEs} } OPTIONAL,

    ...
}


SSB-Coverage-Modification-List-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


SSB-PositionsInBurst ::= CHOICE {
    shortBitmap                     BIT STRING (SIZE (4)),
    mediumBitmap                    BIT STRING (SIZE (8)),
    longBitmap                      BIT STRING (SIZE (64)),
    choice-extension                ProtocolIE-Single-Container { {SSB-PositionsInBurst-ExtIEs} }
}

SSB-PositionsInBurst-ExtIEs XNAP-PROTOCOL-IES ::= {
    ...
}

SSB-freqInfo ::= INTEGER (0..maxNRARFCN)

SSB-subcarrierSpacing ::= ENUMERATED {kHz15, kHz30, kHz120, kHz240, spare3, spare2, spare1, ...}

SSBOffsets-List ::= SEQUENCE (SIZE(1..maxnoofSSBAreas)) OF SSBOffsets-Item

SSBOffsets-Item ::= SEQUENCE {
    nG-RANnode1SSBOffsets           SSBOffsetInformation                                    OPTIONAL,
    nG-RANnode2ProposedSSBOffsets   SSBOffsetInformation,
    iE-Extensions                   ProtocolExtensionContainer { { SSBOffsets-Item-ExtIEs} }    OPTIONAL,
    ...
}
```

```
SSBOffsets-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


SSBOffsetInformation    ::= SEQUENCE {
    sSBIndex            INTEGER(0..63),
    sSBTriggeringOffset         MobilityParametersInformation,
    iE-Extensions               ProtocolExtensionContainer { { SSBOffsetInformation-ExtIEs} }   OPTIONAL,
    ...
}

SSBOffsetInformation-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

SSBOffsetModificationRange  ::= SEQUENCE {
    sSBIndex                INTEGER(0..63),
    sSBobilityParametersModificationRange       MobilityParametersModificationRange,
    iE-Extensions               ProtocolExtensionContainer { { SSBOffsetModificationRange-ExtIEs} }  OPTIONAL,
    ...
}

SSBOffsetModificationRange-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


SSBToReport-List ::= SEQUENCE (SIZE(1..maxnoofSSBAreas)) OF SSBToReport-List-Item

SSBToReport-List-Item   ::= SEQUENCE {
    sSBIndex                INTEGER(0..63),
    iE-Extensions                       ProtocolExtensionContainer { { SSBToReport-List-Item-ExtIEs} }  OPTIONAL,
    ...
}


SSBToReport-List-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

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-Single-Container { { SSB-transmisisonBitmap-ExtIEs} }
}

SSB-transmisisonBitmap-ExtIEs XNAP-PROTOCOL-IES ::= {
```

```
    ...
}

SuccessfulHOReportInformation   ::= SEQUENCE (SIZE(1.. maxnoofSuccessfulHOReports)) OF SuccessfulHOReportList-Item
SuccessfulHOReportList-Item ::= SEQUENCE {
    successfulHOReport                  SuccessfulHOReportContainer,
    iE-Extensions                       ProtocolExtensionContainer { { SuccessfulHOReportList-Item-ExtIEs} }  OPTIONAL,
    ...
}

SuccessfulHOReportList-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

SuccessfulHOReportContainer ::= OCTET STRING

SuccessfulPSCellChangeReportInformation ::= SEQUENCE (SIZE(1.. maxnoofSuccessfulPSCellChangeReports)) OF SuccessfulPSCellChangeReportList-Item
SuccessfulPSCellChangeReportList-Item   ::= SEQUENCE {
    successfulPSCellChangeReport        SuccessfulPSCellChangeReportContainer,
    sNMobilityInformation               SNMobilityInformation                                                   OPTIONAL,
    iE-Extensions                       ProtocolExtensionContainer { { SuccessfulPSCellChangeReportList-Item-ExtIEs} }OPTIONAL,
    ...
}

SuccessfulPSCellChangeReportList-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

SuccessfulPSCellChangeReportContainer ::= OCTET STRING


SUL-FrequencyBand ::= INTEGER (1..1024)


SUL-Information ::= SEQUENCE {
    sulFrequencyInfo            NRARFCN,
    sulTransmissionBandwidth    NRTransmissionBandwidth,
    iE-Extensions               ProtocolExtensionContainer { {SUL-Information-ExtIEs} } OPTIONAL,
    ...
}

SUL-Information-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    { ID id-CarrierList             CRITICALITY ignore  EXTENSION NRCarrierList         PRESENCE optional }|
    { ID id-FrequencyShift7p5khz    CRITICALITY ignore  EXTENSION FrequencyShift7p5khz  PRESENCE optional },

...
}

Supported-MBS-FSA-ID-List ::= SEQUENCE (SIZE(1..maxnoofMBSFSAs)) OF MBS-FrequencySelectionArea-Identity

SupportedSULBandList ::= SEQUENCE (SIZE(1..maxnoofNRCellBands)) OF SupportedSULBandItem

SupportedSULBandItem ::= SEQUENCE {
    sulBandItem                 SUL-FrequencyBand,
```

```
    iE-Extensions               ProtocolExtensionContainer { {SupportedSULBandItem-ExtIEs} } OPTIONAL,
    ...
}

SupportedSULBandItem-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

SurvivalTime ::= INTEGER (0..1920000, ...)


SymbolAllocation-in-Slot ::= CHOICE {
    allDL               SymbolAllocation-in-Slot-AllDL,
    allUL               SymbolAllocation-in-Slot-AllUL,
    bothDLandUL         SymbolAllocation-in-Slot-BothDLandUL,
    choice-extension    ProtocolIE-Single-Container { {SymbolAllocation-in-Slot-ExtIEs} }
}

SymbolAllocation-in-Slot-ExtIEs XNAP-PROTOCOL-IES ::= {
    ...
}


SymbolAllocation-in-Slot-AllDL ::= SEQUENCE {
    iE-Extension        ProtocolExtensionContainer { {SymbolAllocation-in-Slot-AllDL-ExtIEs} }  OPTIONAL,
    ...
}

SymbolAllocation-in-Slot-AllDL-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


SymbolAllocation-in-Slot-AllUL ::= SEQUENCE {
    iE-Extension        ProtocolExtensionContainer { {SymbolAllocation-in-Slot-AllUL-ExtIEs} }  OPTIONAL,
    ...
}

SymbolAllocation-in-Slot-AllUL-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


SymbolAllocation-in-Slot-BothDLandUL ::= SEQUENCE {
    numberofDLSymbols   INTEGER (0..13),
    numberofULSymbols   INTEGER (0..13),
    iE-Extension        ProtocolExtensionContainer { {SymbolAllocation-in-Slot-BothDLandUL-ExtIEs} } OPTIONAL,
    ...
}

SymbolAllocation-in-Slot-BothDLandUL-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    { ID id-permutation     CRITICALITY ignore  EXTENSION Permutation   PRESENCE optional },
    ...
}
```

```
SNPN-CellBasedMDT::= SEQUENCE {
    sNPN-CellIdListforMDT       SNPN-CellIdListforMDT,
    iE-Extensions               ProtocolExtensionContainer { {SNPN-CellBasedMDT-ExtIEs} } OPTIONAL,
    ...
}

SNPN-CellBasedMDT-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

SNPN-CellIdListforMDT ::= SEQUENCE (SIZE(1..maxnoofCellIDforMDT)) OF SNPN-CellIdforMDT-Item

SNPN-CellIdforMDT-Item ::= SEQUENCE {
    nRCGI               NR-CGI,
    nID                 NID,
    iE-Extensions       ProtocolExtensionContainer { {SNPN-CellIdforMDT-Item-ExtIEs} }  OPTIONAL,
    ...
}

SNPN-CellIdforMDT-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


SNPN-TAIBasedMDT ::= SEQUENCE {
    sNPN-TAIListforMDT      SNPN-TAIListforMDT,
    iE-Extensions           ProtocolExtensionContainer { {SNPN-TAIBasedMDT-ExtIEs} } OPTIONAL,
    ...
}

SNPN-TAIBasedMDT-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

SNPN-TAIListforMDT ::= SEQUENCE (SIZE(1..maxnoofTAforMDT)) OF SNPN-TAIforMDT-Item

SNPN-TAIforMDT-Item ::= SEQUENCE {
    plmn-ID             PLMN-Identity,
    tAC                 TAC,
    nID                 NID,
    iE-Extensions           ProtocolExtensionContainer { {SNPN-TAIforMDT-Item-ExtIEs} } OPTIONAL,
    ...
}

SNPN-TAIforMDT-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


SNPN-BasedMDT::= SEQUENCE {
    sNPNListforMDT      SNPNListforMDT,
    iE-Extensions       ProtocolExtensionContainer { {SNPN-BasedMDT-ExtIEs} } OPTIONAL,
```

```
    ...
}

SNPN-BasedMDT-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

SNPNListforMDT ::= SEQUENCE (SIZE(1.. maxnoofMDTSNPNs)) OF SNPNforMDT-Item

SNPNforMDT-Item ::= SEQUENCE {
    plmn-ID             PLMN-Identity,
    nID                 NID,
    iE-Extensions       ProtocolExtensionContainer {{SNPNforMDT-Item-ExtIEs}}       OPTIONAL,
    ...
}

SNPNforMDT-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


SubcarrierSpacing ::= ENUMERATED {kHz15, kHz30, kHz120, kHz240, spare3, spare2, spare1, ..., kHz60}

SSBInformation ::= SEQUENCE (SIZE(1.. maxNoSSBs)) OF SSBInformation-Item

SSBInformation-Item ::= SEQUENCE {
    sSBConfig                               SSBConfig,
    pCI                                     NRPCI,
    iE-Extensions                           ProtocolExtensionContainer { { SSBInformation-Item-ExtIEs} } OPTIONAL,
    ...
}

SSBInformation-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


SSBConfig ::= SEQUENCE {
    sSB-freqInfo                        SSB-freqInfo,
    sSB-subcarrierSpacing               SSB-subcarrierSpacing,
    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,
    iE-Extensions                       ProtocolExtensionContainer { { SSBConfig-ExtIEs} } OPTIONAL,
    ...
}

SSBConfig-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}
```

```
SliceToReportForDataCollection-List ::= SEQUENCE (SIZE(1..maxnoofBPLMNs)) OF SliceToReportForDataCollection-List-Item

SliceToReportForDataCollection-List-Item    ::= SEQUENCE {
    pLMNIdentity                PLMN-Identity,
    sNSSAIlist                  SNSSAI-list,
    iE-Extensions               ProtocolExtensionContainer { { SliceToReportForDataCollection-List-Item-ExtIEs} }   OPTIONAL,
    ...
}

SliceToReportForDataCollection-List-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


SliceMeasurementInitiationResult::= SEQUENCE {
    sliceMeasurementInitiationResult-List       SliceMeasurementInitiationResult-List,
    iE-Extensions                   ProtocolExtensionContainer { {SliceMeasurementInitiationResult-ExtIEs} } OPTIONAL,
    ...
}

SliceMeasurementInitiationResult-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


SliceMeasurementInitiationResult-List ::= SEQUENCE (SIZE(1..maxnoofBPLMNs)) OF SliceMeasurementInitiationResult-Item

SliceMeasurementInitiationResult-Item ::= SEQUENCE {
    pLMNIdentity                                PLMN-Identity,
    sNSSAIMeasurementInitiationResult-List          SNSSAIMeasurementInitiationResult-List,
    iE-Extensions                               ProtocolExtensionContainer { { SliceMeasurementInitiationResult-Item-ExtIEs} }OPTIONAL,
    ...
}

SliceMeasurementInitiationResult-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


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

SNSSAIMeasurementInitiationResult-Item ::= SEQUENCE {
    sNSSAI                          S-NSSAI,
    sNSSAIMeasurementFailureCause-List      SNSSAIMeasurementFailureCause-List      OPTIONAL,
    iE-Extensions                           ProtocolExtensionContainer { {SNSSAIMeasurementInitiationResult-Item-ExtIEs} }  OPTIONAL,
    ...
}

SNSSAIMeasurementInitiationResult-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


SNSSAIMeasurementFailureCause-List ::=SEQUENCE (SIZE(1..maxnoofFailedSliceMeasObjects)) OF SNSSAIMeasurementFailureCause-Item
```

```
SNSSAIMeasurementFailureCause-Item ::= SEQUENCE {
    sNSSAIMeasurementFailedReportCharacteristics    BIT STRING(SIZE(32)),
    cause                                           Cause,
    iE-Extensions                                   ProtocolExtensionContainer { {SNSSAIMeasurementFailureCause-Item-ExtIEs} }    OPTIONAL,
    ...
}

SNSSAIMeasurementFailureCause-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

SliceUEPerformance ::= SEQUENCE {
    pLMNIdentity                            PLMN-Identity,
    s-NSSAIUEPerformance-List               S-NSSAIUEPerformance-List,
    iE-Extensions                           ProtocolExtensionContainer { { SliceUEPerformance-ExtIEs} } OPTIONAL,
    ...
}

SliceUEPerformance-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

S-NSSAIUEPerformance-List ::= SEQUENCE (SIZE(1..maxnoofSliceItems)) OF S-NSSAIUEPerformance-Item

S-NSSAIUEPerformance-Item   ::= SEQUENCE {
    sNSSAI                          S-NSSAI,
    sliceBasedUEPerformance         SliceBasedUEPerformance,
    iE-Extensions                   ProtocolExtensionContainer { { S-NSSAIUEPerformance-Item-ExtIEs} } OPTIONAL,
    ...
}


S-NSSAIUEPerformance-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

SliceBasedUEPerformance ::= SEQUENCE {
    sliceAverageUEThroughputDL      BitRate     OPTIONAL,
    sliceAverageUEThroughputUL      BitRate     OPTIONAL,
    sliceAverageUEPacketDelay       AveragePacketDelay              OPTIONAL,
    sliceAveragePacketDropDL        INTEGER(0..1000000, ...)        OPTIONAL,
    sliceAveragePacketLossUL        INTEGER(0..1000000, ...)        OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { { SliceBasedUEPerformance-ExtIEs} } OPTIONAL,
    ...
}

SliceBasedUEPerformance-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}
SemipersistentPositioningInformation ::= SEQUENCE {
    sRSTransmissionType             ENUMERATED {activate, deactivate, ...},
    sRSResourceSetID                OCTET STRING,
    sRSSpatialRelation              OCTET STRING        OPTIONAL,
```

```
    spatialRelationInforperSRSResource  OCTET STRING        OPTIONAL,
    iE-Extensions                       ProtocolExtensionContainer { { SemipersistentPositioningInformation-ExtIEs} } OPTIONAL,
    ...
}

SemipersistentPositioningInformation-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


-- T

TABasedMDT ::= SEQUENCE {
    tAListforMDT        TAListforMDT,
    iE-Extensions       ProtocolExtensionContainer { {TABasedMDT-ExtIEs} } OPTIONAL,
    ...
}

TABasedMDT-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

Tci-State-InformationList   ::=  SEQUENCE (SIZE(1.. maxnoofLTM-CSI-ResourcesPerSet)) OF Tci-State-Information-Item

Tci-State-Information-Item  ::= SEQUENCE {
    jointorDLTCIStateID         JointorDLTCIStateID,
    iE-Extensions               ProtocolExtensionContainer { { Tci-State-Information-Item-ExtIEs } } OPTIONAL,
    ...
}

Tci-State-Information-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}



TAIBasedMDT ::= SEQUENCE {
    tAIListforMDT           TAIListforMDT,
    iE-Extensions           ProtocolExtensionContainer { {TAIBasedMDT-ExtIEs} } OPTIONAL,
    ...
}

TAIBasedMDT-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

TAIListforMDT ::= SEQUENCE (SIZE(1..maxnoofTAforMDT)) OF TAIforMDT-Item

TAIforMDT-Item ::= SEQUENCE {
    plmn-ID             PLMN-Identity,
    tAC                     TAC,
    iE-Extensions           ProtocolExtensionContainer { {TAIforMDT-Item-ExtIEs} } OPTIONAL,
    ...
}
```

```
TAIforMDT-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

TAC ::= OCTET STRING (SIZE (3))

TAINSAGSupportList ::= SEQUENCE (SIZE(1..maxnoofNSAGs)) OF TAINSAGSupportItem

TAINSAGSupportItem ::= SEQUENCE {
    nSAG-ID                         NSAG-ID,
    nSAGSliceSupportList            ExtendedSliceSupportList,
    iE-Extensions       ProtocolExtensionContainer { {TAINSAGSupportItem-ExtIEs} } OPTIONAL,
    ...
}

TAINSAGSupportItem-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


TAISliceUnavailableCellList ::= SEQUENCE (SIZE(1..maxnoofExtSliceItems)) OF TAISliceUnavailableCellItem

TAISliceUnavailableCellItem ::= SEQUENCE {
    sNSSAI                  S-NSSAI,
    sliceAvailabilityList   SliceAvailabilityList,
    iE-Extensions           ProtocolExtensionContainer { {TAISliceUnavailableCellItem-ExtIEs} } OPTIONAL,
    ...
}

TAISliceUnavailableCellItem-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

SliceAvailabilityList ::= CHOICE {
    unavailableCellList         UnavailableCellList,
    availableCellList           AvailableCellList,
    choice-extension        ProtocolIE-Single-Container { {SliceAvailabilityList-ExtIEs} },
    ...
}

SliceAvailabilityList-ExtIEs XNAP-PROTOCOL-IES ::= {
    ...
}


AvailableCellList ::= SEQUENCE {
    availableNRCellList                 AvailableNRCellList,
    iE-Extensions           ProtocolExtensionContainer { {AvailableCellList-ExtIEs} }   OPTIONAL,
    ...
}

AvailableCellList-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
```

```
}

AvailableNRCellList ::= SEQUENCE (SIZE (1..maxnoofCellsinNG-RANnode)) OF NR-CGI

UnavailableCellList ::= SEQUENCE {
    unavailableNRCellList                   UnavailableNRCellList,
    iE-Extensions           ProtocolExtensionContainer { {UnavailableCellList-ExtIEs} } OPTIONAL,
    ...
}

UnavailableCellList-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


UnavailableNRCellList ::= SEQUENCE (SIZE (1..maxnoofCellsinNG-RANnode)) OF NR-CGI


TAISupport-List ::= SEQUENCE (SIZE(1..maxnoofsupportedTACs)) OF TAISupport-Item

TAISupport-Item ::= SEQUENCE {
    tac                             TAC,
    broadcastPLMNs                  SEQUENCE (SIZE(1..maxnoofsupportedPLMNs)) OF BroadcastPLMNinTAISupport-Item,
    iE-Extensions                   ProtocolExtensionContainer { {TAISupport-Item-ExtIEs} } OPTIONAL,
    ...
}

TAISupport-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

TAListforMDT ::= SEQUENCE (SIZE(1..maxnoofTAforMDT)) OF TAC


TABasedQMC ::= SEQUENCE {
    tAListforQMC        TAListforQMC,
    iE-Extensions       ProtocolExtensionContainer { {TABasedQMC-ExtIEs} } OPTIONAL,
    ...
}

TABasedQMC-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

TAListforQMC ::= SEQUENCE (SIZE(1..maxnoofTAforQMC)) OF TAC


TAIBasedQMC ::= SEQUENCE {
    tAIListforQMC       TAIListforQMC,
    iE-Extensions       ProtocolExtensionContainer { {TAIBasedQMC-ExtIEs} } OPTIONAL,
    ...
}

TAIBasedQMC-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
```

```
    ...
}

TAIListforQMC ::= SEQUENCE (SIZE(1..maxnoofTAforQMC)) OF TAI-Item


TAI-Item ::= SEQUENCE {
    tAC                 TAC,
    pLMN-Identity       PLMN-Identity,
    iE-Extensions       ProtocolExtensionContainer { {TAI-Item-ExtIEs} } OPTIONAL,
    ...
}

TAI-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


TargetCellinEUTRAN ::= OCTET STRING -- This IE is to be encoded according to Global Cell ID in the Last Visited E-UTRAN Cell Information IE, as
defined in TS 36.413 [31]



Target-CGI ::= CHOICE {
    nr                          NR-CGI,
    e-utra                      E-UTRA-CGI,
    choice-extension            ProtocolIE-Single-Container { {TargetCGI-ExtIEs} }
}

TargetCGI-ExtIEs XNAP-PROTOCOL-IES ::= {
    ...
}


TDDULDLConfigurationCommonNR ::= OCTET STRING


TargetCellList ::= SEQUENCE (SIZE(1..maxnoofCHOcells)) OF TargetCellList-Item

TargetCellList-Item ::= SEQUENCE {
    target-cell                             Target-CGI,
    iE-Extensions                           ProtocolExtensionContainer { { TargetCellList-Item-ExtIEs} } OPTIONAL
}

TargetCellList-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

Threshold-RSRQ ::= INTEGER(0..127)
Threshold-RSRP ::= INTEGER(0..127)
Threshold-SINR ::= INTEGER(0..127)

TimeSCG-Failure ::= INTEGER (0..1023)
```

```
TimeSinceFailure ::= INTEGER (0..172800, ...)

TimeSynchronizationAssistanceInformation ::= SEQUENCE {
    timeDistributionIndication                  ENUMERATED {enabled, disabled, ...},
    uuTimeSynchronizationErrorBudget            INTEGER (0..1000000, ...)               OPTIONAL,
    -- This IE shall be present if the Time Distribution Indication IE is set to “enabled”.
    ie-Extension                                ProtocolExtensionContainer { { TimeSynchronizationAssistanceInformation-ExtIEs} } OPTIONAL,
    ...
}

TimeSynchronizationAssistanceInformation-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {

    { ID id-ClockQualityReportingControlInfo    CRITICALITY ignore  EXTENSION ClockQualityReportingControlInfo     PRESENCE optional},
    ...
}

TimeToTrigger ::= ENUMERATED {ms0, ms40, ms64, ms80, ms100, ms128, ms160, ms256, ms320, ms480, ms512, ms640, ms1024, ms1280, ms2560, ms5120}


TimeToWait ::= ENUMERATED {
    v1s,
    v2s,
    v5s,
    v10s,
    v20s,
    v60s,
    ...
}


TMGI ::= OCTET STRING (SIZE(6))


TNLConfigurationInfo ::= SEQUENCE {
    extendedUPTransportLayerAddressesToAdd          ExtTLAs                                         OPTIONAL,
    extendedUPTransportLayerAddressesToRemove       ExtTLAs                                         OPTIONAL,
    iE-Extensions       ProtocolExtensionContainer { {TNLConfigurationInfo-ExtIEs} }    OPTIONAL,
    ...
}

TNLConfigurationInfo-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

TNLA-To-Add-List ::= SEQUENCE (SIZE(1..maxnoofTNLAssociations)) OF TNLA-To-Add-Item

TNLA-To-Add-Item ::= SEQUENCE {
    tNLAssociationTransportLayerAddress     CPTransportLayerInformation,
    tNLAssociationUsage                     TNLAssociationUsage,
    iE-Extensions                           ProtocolExtensionContainer { { TNLA-To-Add-Item-ExtIEs} } OPTIONAL
}

TNLA-To-Add-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
```

```
}


TNLA-To-Update-List ::= SEQUENCE (SIZE(1..maxnoofTNLAssociations)) OF TNLA-To-Update-Item

TNLA-To-Update-Item::= SEQUENCE {
    tNLAssociationTransportLayerAddress     CPTransportLayerInformation,
    tNLAssociationUsage                     TNLAssociationUsage     OPTIONAL,
    iE-Extensions                           ProtocolExtensionContainer { { TNLA-To-Update-Item-ExtIEs} } OPTIONAL
}

TNLA-To-Update-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

TNLA-To-Remove-List ::= SEQUENCE (SIZE(1..maxnoofTNLAssociations)) OF TNLA-To-Remove-Item

TNLA-To-Remove-Item::= SEQUENCE {
    tNLAssociationTransportLayerAddress     CPTransportLayerInformation,
    iE-Extensions                           ProtocolExtensionContainer { { TNLA-To-Remove-Item-ExtIEs} } OPTIONAL
}

TNLA-To-Remove-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


TNLA-Setup-List ::= SEQUENCE (SIZE(1..maxnoofTNLAssociations)) OF TNLA-Setup-Item

TNLA-Setup-Item ::= SEQUENCE {
    tNLAssociationTransportLayerAddress     CPTransportLayerInformation,
    iE-Extensions                           ProtocolExtensionContainer { { TNLA-Setup-Item-ExtIEs} } OPTIONAL,
    ...
}

TNLA-Setup-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


TNLA-Failed-To-Setup-List ::= SEQUENCE (SIZE(1..maxnoofTNLAssociations)) OF TNLA-Failed-To-Setup-Item

TNLA-Failed-To-Setup-Item ::= SEQUENCE {
    tNLAssociationTransportLayerAddress     CPTransportLayerInformation,
    cause                                   Cause,
    iE-Extensions                           ProtocolExtensionContainer { { TNLA-Failed-To-Setup-Item-ExtIEs} } OPTIONAL
}

TNLA-Failed-To-Setup-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


TNLAssociationUsage ::= ENUMERATED {
```

```
    ue,
    non-ue,
    both,
    ...
}


TransportLayerAddress ::= BIT STRING (SIZE(1..160, ...))


TraceActivation ::= SEQUENCE {
    ng-ran-TraceID          NG-RANTraceID,
    interfaces-to-trace     BIT STRING { ng-c (0), x-nc (1), uu (2), f1-c (3), e1 (4)} (SIZE(8)),
    trace-depth             Trace-Depth,
    trace-coll-address      TransportLayerAddress,
    ie-Extension            ProtocolExtensionContainer { {TraceActivation-ExtIEs} } OPTIONAL,
    ...
}

TraceActivation-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
-- Extension to support MDT –
    { ID id-TraceCollectionEntityURI    CRITICALITY ignore  EXTENSION URIaddress                PRESENCE optional}|
    { ID id-MDT-Configuration           CRITICALITY ignore  EXTENSION MDT-Configuration         PRESENCE optional},
    ...
}


Trace-Depth ::= ENUMERATED {
    minimum,
    medium,
    maximum,
    minimumWithoutVendorSpecificExtension,
    mediumWithoutVendorSpecificExtension,
    maximumWithoutVendorSpecificExtension,
    ...,
    minimumOnlyVendorSpecificTraceRecord,
    mediumOnlyVendorSpecificTraceRecord,
    maximumOnlyVendorSpecificTraceRecord
}

TrafficIndex ::= INTEGER (1..1024, ...)

TrafficProfile ::= CHOICE {
    uPTraffic                   QoSFlowLevelQoSParameters,
    nonUPTraffic                NonUPTraffic,
    choice-extension            ProtocolIE-Single-Container { {TrafficProfile-ExtIEs} }
}

TrafficProfile-ExtIEs XNAP-PROTOCOL-IES ::= {
    ...
}

TrafficReleaseType ::= CHOICE {
    fullRelease             AllTrafficIndication,
```

```
    partialRelease          TrafficToBeRelease-List,
    choice-extension        ProtocolIE-Single-Container { {TrafficReleaseType-ExtIEs} }
}

TrafficReleaseType-ExtIEs XNAP-PROTOCOL-IES ::= {
    ...
}


TrafficToBeReleaseInformation ::= SEQUENCE {
    releaseType             TrafficReleaseType,
    ie-Extensions           ProtocolExtensionContainer { {TrafficToBeReleaseInformation-ExtIEs} } OPTIONAL,
    ...
}

TrafficToBeReleaseInformation-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

TrafficToBeRelease-List ::= SEQUENCE (SIZE(1..maxnoofTrafficIndexEntries)) OF TrafficToBeRelease-Item

TrafficToBeRelease-Item ::= SEQUENCE {
    trafficIndex            TrafficIndex,
    bHInfoList              BHInfoList      OPTIONAL,
    iE-Extension            ProtocolExtensionContainer { {TrafficToBeRelease-Item-ExtIEs} } OPTIONAL,
    ...
}

TrafficToBeRelease-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

TSCTrafficCharacteristics ::= SEQUENCE {
    tSCAssistanceInformationDownlink    TSCAssistanceInformation OPTIONAL,
    tSCAssistanceInformationUplink      TSCAssistanceInformation OPTIONAL,
    ie-Extension            ProtocolExtensionContainer { {TSCTrafficCharacteristics-ExtIEs} } OPTIONAL,
    ...
}

TSCTrafficCharacteristics-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

TSCAssistanceInformation ::= SEQUENCE {
    periodicity         INTEGER (0.. 640000, ...),
    burstArrivalTime    OCTET STRING                OPTIONAL,
    ie-Extension            ProtocolExtensionContainer { { TSCAssistanceInformation-ExtIEs} } OPTIONAL,
    ...
}

TSCAssistanceInformation-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    {   ID id-SurvivalTime                      CRITICALITY ignore  EXTENSION SurvivalTime                   PRESENCE optional}|
    {   ID id-CapabilityForBATAdaptation        CRITICALITY ignore  EXTENSION CapabilityForBATAdaptation     PRESENCE optional}|
    {   ID id-N6JitterInformation               CRITICALITY ignore  EXTENSION N6JitterInformation            PRESENCE optional},
```

```
    ...
}


TypeOfError ::= ENUMERATED {
    not-understood,
    missing,
    ...
}


TAValue ::= INTEGER (0..4095)

TagIDPointer ::= OCTET STRING


TAInformation-List ::= SEQUENCE (SIZE(1..maxnoofTAList)) OF TAInformation-Item


TAInformation-Item ::= SEQUENCE {
    earlyRACHResourcesRequesterID   EarlyRACHResourcesRequesterID,
    candidateCellID                 NR-CGI,
    tAValue                         TAValue,
    preambleIndex                   PreambleIndex,
    rA-RNTI                         RA-RNTI,    tagIDPointer                    TagIDPointer    OPTIONAL,
    ie-Extension                    ProtocolExtensionContainer { { TAInformation-Item-ExtIEs} } OPTIONAL,
    ...
}

TAInformation-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    { ID id-ServingGNB-ID   CRITICALITY ignore  EXTENSION GlobalgNB-ID      PRESENCE optional },
    ...
}



-- U


UEAggregateMaximumBitRate ::= SEQUENCE {
    dl-UE-AMBR              BitRate,
    ul-UE-AMBR              BitRate,
    iE-Extension            ProtocolExtensionContainer { {UEAggregateMaximumBitRate-ExtIEs} } OPTIONAL,
    ...
}

UEAggregateMaximumBitRate-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


UEAppLayerMeasConfigInfo ::= SEQUENCE {
    qOEReference                    QOEReference,
    qOEMeasConfigAppLayerID         QOEMeasConfAppLayerID               OPTIONAL,
```

```
    serviceType                     ServiceType,
    qOEMeasStatus                   QOEMeasStatus                       OPTIONAL,
    containerAppLayerMeasConfig ContainerAppLayerMeasConfig             OPTIONAL,
    mDTAlignmentInfo                MDTAlignmentInfo                    OPTIONAL,
    measCollectionEntityIPAddress   MeasCollectionEntityIPAddress       OPTIONAL,
    areaScopeOfQMC                  AreaScopeOfQMC                      OPTIONAL,
    s-NSSAIListQoE                  S-NSSAIListQoE                      OPTIONAL,
    availableRVQoEMetrics           AvailableRVQoEMetrics               OPTIONAL,
    iE-Extension                    ProtocolExtensionContainer { {UEAppLayerMeasConfigInfo-ExtIEs} } OPTIONAL,
    ...
}

UEAppLayerMeasConfigInfo-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    { ID id-MBSCommServiceType              CRITICALITY ignore  EXTENSION MBSCommServiceType                    PRESENCE optional }|
    { ID id-AssistanceInformationQoE-Meas   CRITICALITY ignore  EXTENSION AssistanceInformationQoE-Meas         PRESENCE optional }|
    { ID id-QoERVQoEReportingPaths          CRITICALITY ignore  EXTENSION QoERVQoEReportingPaths                PRESENCE optional },
    ...
}

UEBasedTAMeasurementConfiguration ::= OCTET STRING

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


UEContextID ::= CHOICE {
    rRCResume               UEContextIDforRRCResume,
    rRRCReestablishment     UEContextIDforRRCReestablishment,
    choice-extension        ProtocolIE-Single-Container { {UEContextID-ExtIEs} }
}

UEContextID-ExtIEs XNAP-PROTOCOL-IES ::= {
    ...
}


UEContextIDforRRCResume ::= SEQUENCE {
    i-rnti                  I-RNTI,
    allocated-c-rnti            C-RNTI,
    accessPCI               NG-RAN-CellPCI,
    iE-Extension            ProtocolExtensionContainer { {UEContextIDforRRCResume-ExtIEs} } OPTIONAL,
    ...
}

UEContextIDforRRCResume-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


UEContextIDforRRCReestablishment ::= SEQUENCE {
    c-rnti                  C-RNTI,
    failureCellPCI          NG-RAN-CellPCI,
    iE-Extension            ProtocolExtensionContainer { {UEContextIDforRRCReestablishment-ExtIEs} } OPTIONAL,
    ...
}
```

```
UEContextIDforRRCReestablishment-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


UEContextInfoRetrUECtxtResp ::= SEQUENCE {
    ng-c-UE-signalling-ref                  AMF-UE-NGAP-ID,
    signalling-TNL-at-source                CPTransportLayerInformation,
    ueSecurityCapabilities                  UESecurityCapabilities,
    securityInformation                     AS-SecurityInformation,
    ue-AMBR                                 UEAggregateMaximumBitRate,
    pduSessionResourcesToBeSetup-List       PDUSessionResourcesToBeSetup-List,
    rrc-Context                             OCTET STRING,
    mobilityRestrictionList                 MobilityRestrictionList                                 OPTIONAL,
    indexToRatFrequencySelectionPriority    RFSP-Index                                              OPTIONAL,
    iE-Extension            ProtocolExtensionContainer { {UEContextInfoRetrUECtxtResp-ExtIEs} }   OPTIONAL,
    ...
}

UEContextInfoRetrUECtxtResp-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    { ID id-FiveGCMobilityRestrictionListContainer  CRITICALITY ignore  EXTENSION FiveGCMobilityRestrictionListContainer    PRESENCE optional }|
    { ID id-NRUESidelinkAggregateMaximumBitRate     CRITICALITY ignore  EXTENSION NRUESidelinkAggregateMaximumBitRate       PRESENCE optional }|
    { ID id-LTEUESidelinkAggregateMaximumBitRate    CRITICALITY ignore  EXTENSION LTEUESidelinkAggregateMaximumBitRate      PRESENCE optional }|
    { ID id-UERadioCapabilityID                     CRITICALITY reject  EXTENSION UERadioCapabilityID                       PRESENCE optional }|
    { ID id-MBS-SessionInformation-List             CRITICALITY ignore  EXTENSION MBS-SessionInformation-List               PRESENCE optional }|
    { ID id-NoPDUSessionIndication                  CRITICALITY ignore  EXTENSION NoPDUSessionIndication                    PRESENCE optional }|
    { ID id-FiveGProSeUEPC5AggregateMaximumBitRate  CRITICALITY ignore  EXTENSION NRUESidelinkAggregateMaximumBitRate       PRESENCE optional }|
    { ID id-UESliceMaximumBitRateList               CRITICALITY ignore  EXTENSION UESliceMaximumBitRateList                 PRESENCE optional }|
    { ID id-PositioningInformation                  CRITICALITY ignore  EXTENSION PositioningInformation                    PRESENCE optional }|
    { ID id-NRA2XUEPC5AggregateMaximumBitRate       CRITICALITY ignore  EXTENSION NRUESidelinkAggregateMaximumBitRate       PRESENCE optional }|
    { ID id-LTEA2XUEPC5AggregateMaximumBitRate      CRITICALITY ignore  EXTENSION LTEUESidelinkAggregateMaximumBitRate      PRESENCE optional }|
    { ID id-NRPPaPositioningInformation             CRITICALITY ignore  EXTENSION NRPPaPositioningInformation               PRESENCE optional }|
    { ID id-SemipersistentPositioningInformation    CRITICALITY ignore  EXTENSION SemipersistentPositioningInformation      PRESENCE optional },
    ...
}


UEHistoryInformation ::= SEQUENCE (SIZE(1..maxnoofCellsinUEHistoryInfo)) OF LastVisitedCell-Item


UEHistoryInformationFromTheUE ::= CHOICE {
    nR                      NRMobilityHistoryReport,
    choice-extension            ProtocolIE-Single-Container { {UEHistoryInformationFromTheUE-ExtIEs} }
}

UEHistoryInformationFromTheUE-ExtIEs XNAP-PROTOCOL-IES ::= {
    ...
}


UEIdentityIndexValue ::= CHOICE {
    indexLength10               BIT STRING (SIZE(10)),
    choice-extension            ProtocolIE-Single-Container { {UEIdentityIndexValue-ExtIEs} }
```

```
}

UEIdentityIndexValue-ExtIEs XNAP-PROTOCOL-IES ::= {
    ...
}

UEIdentityIndexList-MBSGroupPaging ::= SEQUENCE (SIZE(1..maxnoofUEIDIndicesforMBSPaging)) OF UEIdentityIndexList-MBSGroupPaging-Item

UEIdentityIndexList-MBSGroupPaging-Item ::= SEQUENCE {
    ueIdentityIndexList-MBSGroupPagingValue     UEIdentityIndexList-MBSGroupPagingValue,
    pagingDRX                                   UESpecificDRX       OPTIONAL,
    iE-Extension            ProtocolExtensionContainer { {UEIdentityIndexList-MBSGroupPaging-Item-ExtIEs} }   OPTIONAL,
    ...
}

UEIdentityIndexList-MBSGroupPaging-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


UEIdentityIndexList-MBSGroupPagingValue ::= CHOICE {
    uEIdentityIndexValueMBSGroupPaging      BIT STRING (SIZE(10)),
    choice-extension            ProtocolIE-Single-Container { {UEIdentityIndexValueMBSGroupPaging-ExtIEs} }
}

UEIdentityIndexValueMBSGroupPaging-ExtIEs XNAP-PROTOCOL-IES ::= {
    ...
}


UERadioCapabilityForPaging ::= SEQUENCE {
    uERadioCapabilityForPagingOfNR          UERadioCapabilityForPagingOfNR          OPTIONAL,
    uERadioCapabilityForPagingOfEUTRA       UERadioCapabilityForPagingOfEUTRA       OPTIONAL,
    iE-Extensions       ProtocolExtensionContainer { {UERadioCapabilityForPaging-ExtIEs} }  OPTIONAL,
    ...
}

UERadioCapabilityForPaging-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

UERadioCapabilityForPagingOfNR ::= OCTET STRING

UERadioCapabilityForPagingOfEUTRA ::= OCTET STRING

UERadioCapabilityID ::= OCTET STRING

UERANPagingIdentity ::= CHOICE {
    i-RNTI-full         BIT STRING ( SIZE (40)),
    choice-extension    ProtocolIE-Single-Container { {UERANPagingIdentity-ExtIEs} }
}

UERANPagingIdentity-ExtIEs XNAP-PROTOCOL-IES ::= {
    ...
```

```
}


UERLFReportContainer ::= CHOICE {
    nR-UERLFReportContainer         UERLFReportContainerNR,
    lTE-UERLFReportContainer        UERLFReportContainerLTE,
    choice-Extension        ProtocolIE-Single-Container { {UERLFReportContainer-ExtIEs} }
}
UERLFReportContainer-ExtIEs XNAP-PROTOCOL-IES ::= {
    {ID id-UERLFReportContainerLTEExtension CRITICALITY ignore  TYPE UERLFReportContainerLTEExtension     PRESENCE mandatory},
    ...
}

UERLFReportContainerLTE ::= OCTET STRING
-- This IE is a transparent container and includes the rlf-Report-r9 contained in the UEInformationResponse message as defined in TS 36.331 [14].


UERLFReportContainerLTEExtension ::= SEQUENCE {
    ueRLFReportContainerLTE                 UERLFReportContainerLTE,
    ueRLFReportContainerLTEExtendBand       UERLFReportContainerLTEExtendBand,
    iE-Extensions                   ProtocolExtensionContainer { { UERLFReportContainerLTEExtension-ExtIEs} } OPTIONAL,
    ...
}


UERLFReportContainerLTEExtendBand ::= OCTET STRING
-- This IE is a transparent container and includes the rlf-Report-v9e0 contained in the UEInformationResponse message as defined in TS 36.331 [14].


UERLFReportContainerLTEExtension-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


UERLFReportContainerNR ::= OCTET STRING
-- This IE is a transparent container and includes the nr-RLF-Report IE contained in the UEInformationResponse message as defined in TS 38.331
[10].


UESliceMaximumBitRateList ::= SEQUENCE (SIZE(1.. maxnoofSMBR)) OF UESliceMaximumBitRate-Item

UESliceMaximumBitRate-Item ::= SEQUENCE {
    s-NSSAI                     S-NSSAI,
    dl-UE-Slice-MBR             BitRate,
    ul-UE-Slice-MBR             BitRate,
    iE-Extensions                       ProtocolExtensionContainer { { UESliceMaximumBitRate-Item-ExtIEs} } OPTIONAL,
    ...
}

UESliceMaximumBitRate-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

UESecurityCapabilities ::= SEQUENCE {
```

```
    nr-EncyptionAlgorithms                BIT STRING {nea1-128(1),
                                                      nea2-128(2),
                                                      nea3-128(3)} (SIZE(16, ...)),
    nr-IntegrityProtectionAlgorithms      BIT STRING {nia1-128(1),
                                                      nia2-128(2),
                                                      nia3-128(3)} (SIZE(16, ...)),
    e-utra-EncyptionAlgorithms            BIT STRING {eea1-128(1),
                                                      eea2-128(2),
                                                      eea3-128(3)} (SIZE(16, ...)),
    e-utra-IntegrityProtectionAlgorithms  BIT STRING {eia1-128(1),
                                                      eia2-128(2),
                                                      eia3-128(3)} (SIZE(16, ...)),
    iE-Extension            ProtocolExtensionContainer { {UESecurityCapabilities-ExtIEs} } OPTIONAL,
    ...
}

UESecurityCapabilities-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

UESpecificDRX ::= ENUMERATED {
    v32,
    v64,
    v128,
    v256,
    ...
}

ULConfiguration::= SEQUENCE {
    uL-PDCP                       UL-UE-Configuration,
    iE-Extensions                 ProtocolExtensionContainer { {ULConfiguration-ExtIEs} } OPTIONAL,
    ...
}

ULConfiguration-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

UL-UE-Configuration::= ENUMERATED {no-data, shared, only, ...}

ULF1Terminating-BHInfo ::= SEQUENCE {
    ingressBAPRoutingID           BAPRoutingID,
    ingressBHRLCCHID              BHRLCChannelID,
    iE-Extensions       ProtocolExtensionContainer { { ULF1Terminating-BHInfo-ExtIEs} } OPTIONAL,
    ...
}

ULF1Terminating-BHInfo-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

ULNonF1Terminating-BHInfo ::= SEQUENCE {
    egressBAPRoutingID          BAPRoutingID,
    egressBHRLCCHID             BHRLCChannelID,
```

```
    nexthopBAPAddress           BAPAddress,
    iE-Extensions       ProtocolExtensionContainer { { ULNonF1Terminating-BHInfo-ExtIEs} } OPTIONAL,
    ...
}

ULNonF1Terminating-BHInfo-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


ULForwarding    ::= ENUMERATED {ul-forwarding-proposed, ...}

ULForwardingProposal    ::= ENUMERATED {ul-forwarding-proposed, ...}


UL-GBR-PRB-usage::= INTEGER (0..100)


UL-GBR-PRB-usage-for-MIMO::= INTEGER (0..100)

UL-non-GBR-PRB-usage::= INTEGER (0..100)


UL-non-GBR-PRB-usage-for-MIMO::= INTEGER (0..100)

UL-Total-PRB-usage::= INTEGER (0..100)


UL-Total-PRB-usage-for-MIMO::= INTEGER (0..100)


UPTransportLayerInformation ::= CHOICE {
    gtpTunnel                   GTPtunnelTransportLayerInformation,
    choice-extension            ProtocolIE-Single-Container { {UPTransportLayerInformation-ExtIEs} }
}

UPTransportLayerInformation-ExtIEs XNAP-PROTOCOL-IES ::= {
    ...
}


UPTransportParameters ::= SEQUENCE (SIZE(1..maxnoofSCellGroupsplus1)) OF UPTransportParametersItem

UPTransportParametersItem ::= SEQUENCE {
    upTNLInfo       UPTransportLayerInformation,
    cellGroupID     CellGroupID,
    iE-Extension    ProtocolExtensionContainer { {UPTransportParametersItem-ExtIEs} } OPTIONAL,
    ...
}

UPTransportParametersItem-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
        ...
}
```

```
UserPlaneErrorIndicator ::= ENUMERATED {gtpu-error-indication-received, ...}

UserPlaneTrafficActivityReport ::= ENUMERATED {inactive, re-activated, ...}

UserPlaneFailureIndication ::= SEQUENCE {
    userPlaneFailureType        UserPlaneFailureType,
    dL-NG-U-TNLatNG-RAN         UPTransportLayerInformation,
    uL-NG-U-TNLatNG-RAN         UPTransportLayerInformation,
    iE-Extensions       ProtocolExtensionContainer {{ UserPlaneFailureIndication-ExtIEs} }  OPTIONAL,
    ...
}

UserPlaneFailureIndication-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

UserPlaneFailureType ::= ENUMERATED {
    gtp-u-error-indication-received,
    up-path-failure,
    ...
}

URIaddress ::= VisibleString

UEAssociatedInfoResult-List ::= SEQUENCE (SIZE(1..maxnoofUEReports)) OF UEAssociatedInfoResult-Item

UEAssociatedInfoResult-Item ::= SEQUENCE {
    uEAssistantIdentifier                       NG-RANnodeUEXnAPID,
    uEPerformance                               UEPerformance           OPTIONAL,
    measuredUETrajectory                        MeasuredUETrajectory    OPTIONAL,
    iE-Extensions                               ProtocolExtensionContainer { { UEAssociatedInfoResult-Item-ExtIEs} } OPTIONAL,
    ...
}

UEAssociatedInfoResult-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    { ID id-SliceUEPerformance  CRITICALITY ignore  EXTENSION SliceUEPerformance PRESENCE optional },
    ...
}

UEPerformance ::= SEQUENCE {
    dL-UE-AverageThroughput                     BitRate                 OPTIONAL,
    uL-UE-AverageThroughput                     BitRate                 OPTIONAL,
    uE-AveragePacketDelay                       AveragePacketDelay      OPTIONAL,
    uE-AveragePacketDropDL                  INTEGER(0..1000000, ...)            OPTIONAL,
    iE-Extensions                               ProtocolExtensionContainer { { UEPerformance-ExtIEs} } OPTIONAL,
    ...
}

UEPerformance-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    {ID id-UEAveragePacketLossUL        CRITICALITY ignore  EXTENSION UEAveragePacketLossUL      PRESENCE optional },
    ...
}

UEAveragePacketLossUL ::= INTEGER (0..1000000,...)
```

```
UEPerformanceCollectionConfiguration ::= SEQUENCE {
    collectionTimeDurationForUEPerformance              INTEGER(1..5000, ...),
    iE-Extensions                               ProtocolExtensionContainer { { UEPerformanceCollectionConfiguration-ExtIEs} } OPTIONAL,
    ...
}

UEPerformanceCollectionConfiguration-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

UETrajectoryCollectionConfiguration ::= SEQUENCE {
    collectionTimeDurationForUETrajectory                                   INTEGER (1..4096, ...),
    numberOfVisitedCells                            INTEGER (1..16, ...)                        OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { { UETrajectoryCollectionConfiguration-ExtIEs} }   OPTIONAL,
    ...
}

UETrajectoryCollectionConfiguration-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

ULTCIStateID  ::= OCTET STRING

-- V

VehicleUE ::= ENUMERATED {
    authorized,
    not-authorized,
    ...
}

VolumeTimedReportList ::= SEQUENCE (SIZE(1..maxnooftimeperiods)) OF VolumeTimedReport-Item

VolumeTimedReport-Item ::= SEQUENCE {
    startTimeStamp                  OCTET STRING (SIZE(4)),
    endTimeStamp                    OCTET STRING (SIZE(4)),
    usageCountUL                    INTEGER (0..18446744073709551615),
    usageCountDL                    INTEGER (0..18446744073709551615),
    iE-Extensions               ProtocolExtensionContainer { {VolumeTimedReport-Item-ExtIEs} } OPTIONAL,
...
}

VolumeTimedReport-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

-- W

WAB-MT-ID ::= SEQUENCE {
    nrCGI                       NR-CGI,
    cRNTI                       BIT STRING (SIZE(16)),
    iE-Extensions               ProtocolExtensionContainer { { WAB-MT-ID-ExtIEs } } OPTIONAL,
    ...
```

```
}

WAB-MT-ID-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

WLANMeasurementConfiguration ::= SEQUENCE {
    wlanMeasConfig              WLANMeasConfig,
    wlanMeasConfigNameList      WLANMeasConfigNameList              OPTIONAL,
    wlan-rssi                   ENUMERATED {true, ...}              OPTIONAL,
    wlan-rtt                    ENUMERATED {true, ...}              OPTIONAL,
    iE-Extensions       ProtocolExtensionContainer { { WLANMeasurementConfiguration-ExtIEs } } OPTIONAL,
    ...
}

WLANMeasurementConfiguration-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

WLANMeasConfigNameList ::= SEQUENCE (SIZE(1..maxnoofWLANName)) OF WLANName

WLANMeasConfig::= ENUMERATED {setup,...}

WLANName ::= OCTET STRING (SIZE (1..32))


-- X

XnBenefitValue ::= INTEGER (1..8, ...)

XR-Bcast-Information ::= ENUMERATED {true,...}


-- Y


-- Z


END
-- ASN1STOP
```

9.3.6 Common definitions

```
-- ASN1START
-- **************************************************************
--
-- Common definitions
--
-- **************************************************************

XnAP-CommonDataTypes {
itu-t (0) identified-organization (4) etsi (0) mobileDomain (0)
```

```
ngran-access (22) modules (3) xnap (2) version1 (1) xnap-CommonDataTypes (3) }

DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

-- **************************************************************
--
-- Extension constants
--
-- **************************************************************

maxPrivateIEs                                   INTEGER ::= 65535
maxProtocolExtensions                           INTEGER ::= 65535
maxProtocolIEs                                  INTEGER ::= 65535

-- **************************************************************
--
-- Common Data Types
--
-- **************************************************************

Criticality     ::= ENUMERATED { reject, ignore, notify }

Presence        ::= ENUMERATED { optional, conditional, mandatory }

PrivateIE-ID    ::= CHOICE {
    local               INTEGER (0.. maxPrivateIEs),
    global              OBJECT IDENTIFIER
}

ProcedureCode       ::= INTEGER (0..255)


ProtocolIE-ID       ::= INTEGER (0..maxProtocolIEs)


TriggeringMessage   ::= ENUMERATED { initiating-message, successful-outcome, unsuccessful-outcome}

END
-- ASN1STOP
```

9.3.7 Constant definitions

```
-- ASN1START
-- **************************************************************
--
-- Constant definitions
--
-- **************************************************************

XnAP-Constants {
itu-t (0) identified-organization (4) etsi (0) mobileDomain (0)
```

```
ngran-Access (22) modules (3) xnap (2) version1 (1) xnap-Constants (4) }

DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

IMPORTS
    ProcedureCode,
    ProtocolIE-ID
FROM XnAP-CommonDataTypes;

-- ************************************************************
--
-- Elementary Procedures
--
-- ************************************************************

id-handoverPreparation                                  ProcedureCode ::= 0
id-sNStatusTransfer                                     ProcedureCode ::= 1
id-handoverCancel                                       ProcedureCode ::= 2
id-retrieveUEContext                                    ProcedureCode ::= 3
id-rANPaging                                            ProcedureCode ::= 4
id-xnUAddressIndication                                 ProcedureCode ::= 5
id-uEContextRelease                                     ProcedureCode ::= 6
id-sNGRANnodeAdditionPreparation                        ProcedureCode ::= 7
id-sNGRANnodeReconfigurationCompletion                  ProcedureCode ::= 8
id-mNGRANnodeinitiatedSNGRANnodeModificationPreparation ProcedureCode ::= 9
id-sNGRANnodeinitiatedSNGRANnodeModificationPreparation ProcedureCode ::= 10
id-mNGRANnodeinitiatedSNGRANnodeRelease                 ProcedureCode ::= 11
id-sNGRANnodeinitiatedSNGRANnodeRelease                 ProcedureCode ::= 12
id-sNGRANnodeCounterCheck                               ProcedureCode ::= 13
id-sNGRANnodeChange                                     ProcedureCode ::= 14
id-rRCTransfer                                          ProcedureCode ::= 15
id-xnRemoval                                            ProcedureCode ::= 16
id-xnSetup                                              ProcedureCode ::= 17
id-nGRANnodeConfigurationUpdate                         ProcedureCode ::= 18
id-cellActivation                                       ProcedureCode ::= 19
id-reset                                                ProcedureCode ::= 20
id-errorIndication                                      ProcedureCode ::= 21
id-privateMessage                                       ProcedureCode ::= 22
id-notificationControl                                  ProcedureCode ::= 23
id-activityNotification                                 ProcedureCode ::= 24
id-e-UTRA-NR-CellResourceCoordination                   ProcedureCode ::= 25
id-secondaryRATDataUsageReport                          ProcedureCode ::= 26
id-deactivateTrace                                      ProcedureCode ::= 27
id-traceStart                                           ProcedureCode ::= 28
id-handoverSuccess                                      ProcedureCode ::= 29
id-conditionalHandoverCancel                            ProcedureCode ::= 30
id-earlyStatusTransfer                                  ProcedureCode ::= 31
id-failureIndication                                    ProcedureCode ::= 32
id-handoverReport                                       ProcedureCode ::= 33
id-resourceStatusReportingInitiation                    ProcedureCode ::= 34
id-resourceStatusReporting                              ProcedureCode ::= 35
id-mobilitySettingsChange                               ProcedureCode ::= 36
```

```
id-accessAndMobilityIndication                          ProcedureCode ::= 37
id-cellTrafficTrace                                     ProcedureCode ::= 38
id-RANMulticastGroupPaging                              ProcedureCode ::= 39
id-scgFailureInformationReport                          ProcedureCode ::= 40
id-ProcedureCode41-NotToBeUsed                          ProcedureCode ::= 41
id-scgFailureTransfer                                   ProcedureCode ::= 42
id-f1CTrafficTransfer                                   ProcedureCode ::= 43
id-iABTransportMigrationManagement                      ProcedureCode ::= 44
id-iABTransportMigrationModification                    ProcedureCode ::= 45
id-iABResourceCoordination                              ProcedureCode ::= 46
id-retrieveUEContextConfirm                             ProcedureCode ::= 47
id-cPCCancel                                            ProcedureCode ::= 48
id-partialUEContextTransfer                             ProcedureCode ::= 49
id-rachIndication                                       ProcedureCode ::= 50
id-dataCollectionReportingInitiation                    ProcedureCode ::= 51
id-dataCollectionReporting                              ProcedureCode ::= 52
id-ODSIB1ConfigurationProvision                         ProcedureCode ::= 53
id-ODSIB1ConfigurationProvisionStatusUpdate             ProcedureCode ::= 54
id-lTMConfigurationUpdate                               ProcedureCode ::= 55
id-cSIRSCoordination                                    ProcedureCode ::= 56
id-cellSwitchNotification                               ProcedureCode ::= 57
id-tAInformationTransfer                                ProcedureCode ::= 58
id-lTMCancel                                            ProcedureCode ::= 59
id-cLI-Indication                                       ProcedureCode ::= 60
id-scgFailureIndication                                 ProcedureCode ::= 61


-- **************************************************************
--
-- Lists
--
-- **************************************************************

maxEARFCN                               INTEGER ::= 262143
maxnoofAllowedAreas                     INTEGER ::= 16
maxnoofAMFRegions                       INTEGER ::= 16
maxnoofAoIs                             INTEGER ::= 64
maxnoofFlightInfoReportControl          INTEGER ::= 64
maxnoofBluetoothName                    INTEGER ::= 4
maxnoofBPLMNs                           INTEGER ::= 12
maxnoofCAGs                             INTEGER ::= 12
maxnoofCAGsperPLMN                      INTEGER ::= 256
maxnoofCellIDforMDT                     INTEGER ::= 32
maxnoofCellsinAoI                       INTEGER ::= 256
maxnoofCellsinUEHistoryInfo             INTEGER ::= 16
maxnoofCellsinNG-RANnode                INTEGER ::= 16384
maxnoofCellsinRNA                       INTEGER ::= 32
maxnoofCellsUEMovingTrajectory          INTEGER ::= 16
maxnoofDRBs                             INTEGER ::= 32
maxnoofEUTRABands                       INTEGER ::= 16
maxnoofEUTRABPLMNs                      INTEGER ::= 6
maxnoofEPLMNs                           INTEGER ::= 15
maxnoofExtSliceItems                    INTEGER ::= 65535
```

```
maxnoofEPLMNsplus1                      INTEGER ::= 16
maxnoofForbiddenTACs                    INTEGER ::= 4096
maxnoofFreqforMDT                       INTEGER ::= 8
maxnoofMBSFNEUTRA                       INTEGER ::= 8
maxnoofMDTPLMNs                         INTEGER ::= 16
maxnoofMultiConnectivityMinusOne        INTEGER ::= 3
maxnoofNeighbours                       INTEGER ::= 1024
maxnoofNeighPCIforMDT                   INTEGER ::= 32
maxnoofNIDs                             INTEGER ::= 12
maxnoofNRCellBands                      INTEGER ::= 32
maxnoofPLMNs                            INTEGER ::= 16
maxnoofPDUSessions                      INTEGER ::= 256
maxnoofProtectedResourcePatterns        INTEGER ::= 16
maxnoofQoSFlows                         INTEGER ::= 64
maxnoofQoSParaSets                      INTEGER ::= 8
maxnoofRANAreaCodes                     INTEGER ::= 32
maxnoofRANAreasinRNA                    INTEGER ::= 16
maxnoofRANNodesinAoI                    INTEGER ::= 64
maxnoofSCellGroups                      INTEGER ::= 3
maxnoofSCellGroupsplus1                 INTEGER ::= 4
maxnoofSensorName                       INTEGER ::= 3
maxnoofSliceItems                       INTEGER ::= 1024
maxnoofSNPNIDs                          INTEGER ::= 12
maxnoofsupportedPLMNs                   INTEGER ::= 12
maxnoofsupportedTACs                    INTEGER ::= 256
maxnoofTAforMDT                         INTEGER ::= 8
maxnoofTAI                              INTEGER ::= 16
maxnoofTAIsinAoI                        INTEGER ::= 16
maxnooftimeperiods                      INTEGER ::= 2
maxnoofTNLAssociations                  INTEGER ::= 32
maxnoofUEContexts                       INTEGER ::= 8192
maxNRARFCN                              INTEGER ::= 3279165
maxNrOfErrors                           INTEGER ::= 256
maxnoofslots                            INTEGER ::= 5120
maxnoofExtTLAs                          INTEGER ::= 16
maxnoofGTPTLAs                          INTEGER ::= 16
maxnoofCHOcells                         INTEGER ::= 8
maxnoofPC5QoSFlows                      INTEGER ::= 2064
maxnoofSSBAreas                         INTEGER ::= 64
maxnoofRAReports                        INTEGER ::= 64
maxnoofNRSCSs                           INTEGER ::= 5
maxnoofPhysicalResourceBlocks           INTEGER ::= 275
maxnoofAdditionalPDCPDuplicationTNL     INTEGER ::= 2
maxnoofRLCDuplicationstate              INTEGER ::= 3
maxnoofWLANName                         INTEGER ::= 4
maxnoofNonAnchorCarrierFreqConfig       INTEGER ::= 15
maxnoofDataForwardingTunneltoE-UTRAN    INTEGER ::= 256
maxnoofMBSFSAs                          INTEGER ::= 256
maxnoofUEIDIndicesforMBSPaging          INTEGER ::= 4096
maxnoofMBSQoSFlows                      INTEGER ::= 64
maxnoofMRBs                             INTEGER ::= 32
maxnoofCellsforMBS                      INTEGER ::= 8192
maxnoofMBSServiceAreaInformation        INTEGER ::= 256
maxnoofTAIforMBS                        INTEGER ::= 1024
```

```
maxnoofAssociatedMBSSessions               INTEGER ::= 32
maxnoofMBSSessions                         INTEGER ::= 256
maxnoofSuccessfulHOReports                 INTEGER ::= 64
maxnoofPSCellsPerSN                        INTEGER ::= 8
maxnoofNR-UChannelIDs                      INTEGER ::= 16
maxnoofCellsinCHO                          INTEGER ::= 8
maxnoofCHOexecutioncond                    INTEGER ::= 2
maxnoofServedCellsIAB                      INTEGER ::= 512
maxnoofServingCells                        INTEGER ::= 32
maxnoofBHInfo                              INTEGER ::= 1024
maxnoofTrafficIndexEntries                 INTEGER ::= 1024
maxnoofTLAsIAB                             INTEGER ::= 1024
maxnoofBAPControlPDURLCCHs                 INTEGER ::= 2
maxnoofIABSTCInfo                          INTEGER ::= 45
maxnoofSymbols                             INTEGER ::= 14
maxnoofDUFSlots                            INTEGER ::= 320
maxnoofHSNASlots                           INTEGER ::= 5120
maxnoofRBsetsPerCell                       INTEGER ::= 8
maxnoofRBsetsPerCell1                      INTEGER ::= 7
maxnoofChildIABNodes                       INTEGER ::= 1024
maxnoofPSCellCandidates                    INTEGER ::= 8
maxnoofTargetSNs                           INTEGER ::= 8
maxnoofUEAppLayerMeas                      INTEGER ::= 16
maxnoofSNSSAIforQMC                        INTEGER ::= 16
maxnoofCellIDforQMC                        INTEGER ::= 32
maxnoofPLMNforQMC                          INTEGER ::= 16
maxnoofTAforQMC                            INTEGER ::= 8
maxnoofMTCItems                            INTEGER ::= 16
maxnoofCSIRSconfigurations                 INTEGER ::= 96
maxnoofCSIRSneighbourCells                 INTEGER ::= 16
maxnoofCSIRSneighbourCellsInMTC            INTEGER ::= 16
maxnoofNeighbour-NG-RAN-Nodes              INTEGER ::= 256
maxnoofSRBs                                INTEGER ::= 5
maxnoofSMBR                                INTEGER ::= 8
maxnoofNSAGs                               INTEGER ::= 256
maxnoofTargetSNsMinusOne                   INTEGER ::= 7
maxnoofThresholdsForExcessPacketDelay      INTEGER ::= 255
maxnoofESNPNs                              INTEGER ::= 15
maxnoofSuccessfulPSCellChangeReports       INTEGER ::= 64
maxnoofUEsforRAReportIndications           INTEGER ::= 64
maxnoofPSCellsinCPAC                       INTEGER ::= 8
maxnoofCPACexecutioncond                   INTEGER ::= 2
maxnoofLBTFailureInformation               INTEGER ::= 64
maxnoofCellsTrajectoryPredict              INTEGER ::= 16
maxnoofCellsTrajectory                     INTEGER ::= 16
maxFailedCellMeasObjects                   INTEGER ::= 124
maxFailedMeasPerNode                       INTEGER ::= 124
maxnoofUEReports                           INTEGER ::= 16
maxnoofCandidateRelayUEs                   INTEGER ::= 32
maxnoofCAGforMDT                           INTEGER ::= 256
maxnoofMDTSNPNs                            INTEGER ::= 16
maxnoofSecurityConfigurations              INTEGER ::= 8
maxnoofRSPPQoSFlows                        INTEGER ::= 2048
maxnoofThresholds                          INTEGER ::= 8
```

```
maxnoofEarlyRACHResourcesID                INTEGER ::= 8
maxnoofLTMCells                            INTEGER ::= 8
maxNoSSBs                                  INTEGER ::= 255
maxnoofTAList                              INTEGER ::= 8
maxnoofPreambleIndexes                     INTEGER ::= 64
maxnoofCSIResourceConfigurations           INTEGER ::= 112
maxnoofNZP-CSI-RS-ResourcesPerSet          INTEGER ::= 64
maxnoofSRS-Resource                        INTEGER ::= 64
maxnoofFailedSliceMeasObjects              INTEGER ::= 124
maxnoofSliceItemsforMDT                    INTEGER ::= 1024
maxnoofAreaNTNforMDT                       INTEGER ::= 32
maxnoofLTMCellsPlusOne                     INTEGER ::= 9
maxnoofSCGSecurityConfigurations           INTEGER ::= 8
maxnoofLTM-CSI-ResourcesPerSet             INTEGER ::= 512



-- ************************************************************
--
-- IEs
--
-- ************************************************************

id-ActivatedServedCells                                                 ProtocolIE-ID ::= 0
id-ActivationIDforCellActivation                                        ProtocolIE-ID ::= 1
id-admittedSplitSRB                                                     ProtocolIE-ID ::= 2
id-admittedSplitSRBrelease                                              ProtocolIE-ID ::= 3
id-AMF-Region-Information                                               ProtocolIE-ID ::= 4
id-AssistanceDataForRANPaging                                           ProtocolIE-ID ::= 5
id-BearersSubjectToCounterCheck                                         ProtocolIE-ID ::= 6
id-Cause                                                                ProtocolIE-ID ::= 7
id-cellAssistanceInfo-NR                                                ProtocolIE-ID ::= 8
id-ConfigurationUpdateInitiatingNodeChoice                              ProtocolIE-ID ::= 9
id-CriticalityDiagnostics                                               ProtocolIE-ID ::= 10
id-XnUAddressInfoperPDUSession-List                                     ProtocolIE-ID ::= 11
id-DRBsSubjectToStatusTransfer-List                                     ProtocolIE-ID ::= 12
id-ExpectedUEBehaviour                                                  ProtocolIE-ID ::= 13
id-GlobalNG-RAN-node-ID                                                 ProtocolIE-ID ::= 14
id-GUAMI                                                                ProtocolIE-ID ::= 15
id-indexToRatFrequSelectionPriority                                     ProtocolIE-ID ::= 16
id-initiatingNodeType-ResourceCoordRequest                              ProtocolIE-ID ::= 17
id-List-of-served-cells-E-UTRA                                          ProtocolIE-ID ::= 18
id-List-of-served-cells-NR                                              ProtocolIE-ID ::= 19
id-LocationReportingInformation                                         ProtocolIE-ID ::= 20
id-MAC-I                                                                ProtocolIE-ID ::= 21
id-MaskedIMEISV                                                         ProtocolIE-ID ::= 22
id-M-NG-RANnodeUEXnAPID                                                 ProtocolIE-ID ::= 23
id-MN-to-SN-Container                                                   ProtocolIE-ID ::= 24
id-MobilityRestrictionList                                              ProtocolIE-ID ::= 25
id-new-NG-RAN-Cell-Identity                                             ProtocolIE-ID ::= 26
id-newNG-RANnodeUEXnAPID                                                ProtocolIE-ID ::= 27
id-UEReportRRCTransfer                                                  ProtocolIE-ID ::= 28
```

```
id-oldNG-RANnodeUEXnAPID                                    ProtocolIE-ID ::= 29
id-OldtoNewNG-RANnodeResumeContainer                        ProtocolIE-ID ::= 30
id-PagingDRX                                                ProtocolIE-ID ::= 31
id-PCellID                                                  ProtocolIE-ID ::= 32
id-PDCPChangeIndication                                     ProtocolIE-ID ::= 33
id-PDUSessionAdmittedAddedAddReqAck                         ProtocolIE-ID ::= 34
id-PDUSessionAdmittedModSNModConfirm                        ProtocolIE-ID ::= 35
id-PDUSessionAdmitted-SNModResponse                         ProtocolIE-ID ::= 36
id-PDUSessionNotAdmittedAddReqAck                           ProtocolIE-ID ::= 37
id-PDUSessionNotAdmitted-SNModResponse                      ProtocolIE-ID ::= 38
id-PDUSessionReleasedList-RelConf                           ProtocolIE-ID ::= 39
id-PDUSessionReleasedSNModConfirm                           ProtocolIE-ID ::= 40
id-PDUSessionResourcesActivityNotifyList                    ProtocolIE-ID ::= 41
id-PDUSessionResourcesAdmitted-List                         ProtocolIE-ID ::= 42
id-PDUSessionResourcesNotAdmitted-List                      ProtocolIE-ID ::= 43
id-PDUSessionResourcesNotifyList                            ProtocolIE-ID ::= 44
id-PDUSession-SNChangeConfirm-List                          ProtocolIE-ID ::= 45
id-PDUSession-SNChangeRequired-List                         ProtocolIE-ID ::= 46
id-PDUSessionToBeAddedAddReq                                ProtocolIE-ID ::= 47
id-PDUSessionToBeModifiedSNModRequired                      ProtocolIE-ID ::= 48
id-PDUSessionToBeReleasedList-RelRqd                        ProtocolIE-ID ::= 49
id-PDUSessionToBeReleased-RelReq                            ProtocolIE-ID ::= 50
id-PDUSessionToBeReleasedSNModRequired                      ProtocolIE-ID ::= 51
id-RANPagingArea                                            ProtocolIE-ID ::= 52
id-PagingPriority                                           ProtocolIE-ID ::= 53
id-requestedSplitSRB                                        ProtocolIE-ID ::= 54
id-requestedSplitSRBrelease                                 ProtocolIE-ID ::= 55
id-ResetRequestTypeInfo                                     ProtocolIE-ID ::= 56
id-ResetResponseTypeInfo                                    ProtocolIE-ID ::= 57
id-RespondingNodeTypeConfigUpdateAck                        ProtocolIE-ID ::= 58
id-respondingNodeType-ResourceCoordResponse                 ProtocolIE-ID ::= 59
id-ResponseInfo-ReconfCompl                                 ProtocolIE-ID ::= 60
id-RRCConfigIndication                                      ProtocolIE-ID ::= 61
id-RRCResumeCause                                           ProtocolIE-ID ::= 62
id-SCGConfigurationQuery                                    ProtocolIE-ID ::= 63
id-selectedPLMN                                             ProtocolIE-ID ::= 64
id-ServedCellsToActivate                                    ProtocolIE-ID ::= 65
id-servedCellsToUpdate-E-UTRA                               ProtocolIE-ID ::= 66
id-ServedCellsToUpdateInitiatingNodeChoice                  ProtocolIE-ID ::= 67
id-servedCellsToUpdate-NR                                   ProtocolIE-ID ::= 68
id-s-ng-RANnode-SecurityKey                                 ProtocolIE-ID ::= 69
id-S-NG-RANnodeUE-AMBR                                      ProtocolIE-ID ::= 70
id-S-NG-RANnodeUEXnAPID                                     ProtocolIE-ID ::= 71
id-SN-to-MN-Container                                       ProtocolIE-ID ::= 72
id-sourceNG-RANnodeUEXnAPID                                 ProtocolIE-ID ::= 73
id-SplitSRB-RRCTransfer                                     ProtocolIE-ID ::= 74
id-TAISupport-list                                          ProtocolIE-ID ::= 75
id-TimeToWait                                               ProtocolIE-ID ::= 76
id-Target2SourceNG-RANnodeTranspContainer                   ProtocolIE-ID ::= 77
id-targetCellGlobalID                                       ProtocolIE-ID ::= 78
id-targetNG-RANnodeUEXnAPID                                 ProtocolIE-ID ::= 79
id-target-S-NG-RANnodeID                                    ProtocolIE-ID ::= 80
id-TraceActivation                                          ProtocolIE-ID ::= 81
id-UEContextID                                              ProtocolIE-ID ::= 82
```

```
id-UEContextInfoHORequest                                   ProtocolIE-ID ::= 83
id-UEContextInfoRetrUECtxtResp                              ProtocolIE-ID ::= 84
id-UEContextInfo-SNModRequest                               ProtocolIE-ID ::= 85
id-UEContextKeptIndicator                                   ProtocolIE-ID ::= 86
id-UEContextRefAtSN-HORequest                               ProtocolIE-ID ::= 87
id-UEHistoryInformation                                     ProtocolIE-ID ::= 88
id-UEIdentityIndexValue                                     ProtocolIE-ID ::= 89
id-UERANPagingIdentity                                      ProtocolIE-ID ::= 90
id-UESecurityCapabilities                                   ProtocolIE-ID ::= 91
id-UserPlaneTrafficActivityReport                           ProtocolIE-ID ::= 92
id-XnRemovalThreshold                                       ProtocolIE-ID ::= 93
id-DesiredActNotificationLevel                              ProtocolIE-ID ::= 94
id-AvailableDRBIDs                                          ProtocolIE-ID ::= 95
id-AdditionalDRBIDs                                         ProtocolIE-ID ::= 96
id-SpareDRBIDs                                              ProtocolIE-ID ::= 97
id-RequiredNumberOfDRBIDs                                   ProtocolIE-ID ::= 98
id-TNLA-To-Add-List                                         ProtocolIE-ID ::= 99
id-TNLA-To-Update-List                                      ProtocolIE-ID ::= 100
id-TNLA-To-Remove-List                                      ProtocolIE-ID ::= 101
id-TNLA-Setup-List                                          ProtocolIE-ID ::= 102
id-TNLA-Failed-To-Setup-List                                ProtocolIE-ID ::= 103
id-PDUSessionToBeReleased-RelReqAck                         ProtocolIE-ID ::= 104
id-S-NG-RANnodeMaxIPDataRate-UL                             ProtocolIE-ID ::= 105
id-PDUSessionResourceSecondaryRATUsageList                  ProtocolIE-ID ::= 107
id-Additional-UL-NG-U-TNLatUPF-List                         ProtocolIE-ID ::= 108
id-SecondarydataForwardingInfoFromTarget-List               ProtocolIE-ID ::= 109
id-LocationInformationSNReporting                           ProtocolIE-ID ::= 110
id-LocationInformationSN                                    ProtocolIE-ID ::= 111
id-LastE-UTRANPLMNIdentity                                  ProtocolIE-ID ::= 112
id-S-NG-RANnodeMaxIPDataRate-DL                             ProtocolIE-ID ::= 113
id-MaxIPrate-DL                                             ProtocolIE-ID ::= 114
id-SecurityResult                                           ProtocolIE-ID ::= 115
id-S-NSSAI                                                  ProtocolIE-ID ::= 116
id-MR-DC-ResourceCoordinationInfo                           ProtocolIE-ID ::= 117
id-AMF-Region-Information-To-Add                            ProtocolIE-ID ::= 118
id-AMF-Region-Information-To-Delete                         ProtocolIE-ID ::= 119
id-OldQoSFlowMap-ULendmarkerexpected                        ProtocolIE-ID ::= 120
id-RANPagingFailure                                         ProtocolIE-ID ::= 121
id-UERadioCapabilityForPaging                               ProtocolIE-ID ::= 122
id-PDUSessionDataForwarding-SNModResponse                   ProtocolIE-ID ::= 123
id-DRBsNotAdmittedSetupModifyList                           ProtocolIE-ID ::= 124
id-Secondary-MN-Xn-U-TNLInfoatM                             ProtocolIE-ID ::= 125
id-NE-DC-TDM-Pattern                                        ProtocolIE-ID ::= 126
id-PDUSessionCommonNetworkInstance                          ProtocolIE-ID ::= 127
id-BPLMN-ID-Info-EUTRA                                      ProtocolIE-ID ::= 128
id-BPLMN-ID-Info-NR                                         ProtocolIE-ID ::= 129
id-InterfaceInstanceIndication                              ProtocolIE-ID ::= 130
id-S-NG-RANnode-Addition-Trigger-Ind                        ProtocolIE-ID ::= 131
id-DefaultDRB-Allowed                                       ProtocolIE-ID ::= 132
id-DRB-IDs-takenintouse                                     ProtocolIE-ID ::= 133
id-SplitSessionIndicator                                    ProtocolIE-ID ::= 134
id-CNTypeRestrictionsForEquivalent                          ProtocolIE-ID ::= 135
id-CNTypeRestrictionsForServing                             ProtocolIE-ID ::= 136
id-DRBs-transferred-to-MN                                   ProtocolIE-ID ::= 137
```

```
id-ULForwardingProposal                                  ProtocolIE-ID ::= 138
id-EndpointIPAddressAndPort                              ProtocolIE-ID ::= 139
id-IntendedTDD-DL-ULConfiguration-NR                     ProtocolIE-ID ::= 140
id-TNLConfigurationInfo                                  ProtocolIE-ID ::= 141
id-PartialListIndicator-NR                               ProtocolIE-ID ::= 142
id-MessageOversizeNotification                           ProtocolIE-ID ::= 143
id-CellAndCapacityAssistanceInfo-NR                      ProtocolIE-ID ::= 144
id-NG-RANTraceID                                         ProtocolIE-ID ::= 145
id-NonGBRResources-Offered                               ProtocolIE-ID ::= 146
id-FastMCGRecoveryRRCTransfer-SN-to-MN                   ProtocolIE-ID ::= 147
id-RequestedFastMCGRecoveryViaSRB3                       ProtocolIE-ID ::= 148
id-AvailableFastMCGRecoveryViaSRB3                       ProtocolIE-ID ::= 149
id-RequestedFastMCGRecoveryViaSRB3Release                ProtocolIE-ID ::= 150
id-ReleaseFastMCGRecoveryViaSRB3                         ProtocolIE-ID ::= 151
id-FastMCGRecoveryRRCTransfer-MN-to-SN                   ProtocolIE-ID ::= 152
id-ExtendedRATRestrictionInformation                     ProtocolIE-ID ::= 153
id-QoSMonitoringRequest                                  ProtocolIE-ID ::= 154
id-FiveGCMobilityRestrictionListContainer                ProtocolIE-ID ::= 155
id-PartialListIndicator-EUTRA                            ProtocolIE-ID ::= 156
id-CellAndCapacityAssistanceInfo-EUTRA                   ProtocolIE-ID ::= 157
id-CHOinformation-Req                                    ProtocolIE-ID ::= 158
id-CHOinformation-Ack                                    ProtocolIE-ID ::= 159
id-targetCellsToCancel                                   ProtocolIE-ID ::= 160
id-requestedTargetCellGlobalID                           ProtocolIE-ID ::= 161
id-procedureStage                                        ProtocolIE-ID ::= 162
id-DAPSRequestInfo                                       ProtocolIE-ID ::= 163
id-DAPSResponseInfo-List                                 ProtocolIE-ID ::= 164
id-CHO-MRDC-Indicator                                    ProtocolIE-ID ::= 165
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id-LTEV2XServicesAuthorized                              ProtocolIE-ID ::= 169
id-NRV2XServicesAuthorized                               ProtocolIE-ID ::= 170
id-LTEUESidelinkAggregateMaximumBitRate                  ProtocolIE-ID ::= 171
id-NRUESidelinkAggregateMaximumBitRate                   ProtocolIE-ID ::= 172
id-PC5QoSParameters                                      ProtocolIE-ID ::= 173
id-AlternativeQoSParaSetList                             ProtocolIE-ID ::= 174
id-CurrentQoSParaSetIndex                                ProtocolIE-ID ::= 175
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id-InitiatingCondition-FailureIndication                 ProtocolIE-ID ::= 177
id-UEHistoryInformationFromTheUE                         ProtocolIE-ID ::= 178
id-HandoverReportType                                    ProtocolIE-ID ::= 179
id-HandoverCause                                         ProtocolIE-ID ::= 180
id-SourceCellCGI                                         ProtocolIE-ID ::= 181
id-TargetCellCGI                                         ProtocolIE-ID ::= 182
id-ReEstablishmentCellCGI                                ProtocolIE-ID ::= 183
id-TargetCellinEUTRAN                                    ProtocolIE-ID ::= 184
id-SourceCellCRNTI                                       ProtocolIE-ID ::= 185
id-UERLFReportContainer                                  ProtocolIE-ID ::= 186
id-NGRAN-Node1-Measurement-ID                            ProtocolIE-ID ::= 187
id-NGRAN-Node2-Measurement-ID                            ProtocolIE-ID ::= 188
id-RegistrationRequest                                   ProtocolIE-ID ::= 189
id-ReportCharacteristics                                 ProtocolIE-ID ::= 190
id-CellToReport                                          ProtocolIE-ID ::= 191
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id-CellMeasurementResult                                ProtocolIE-ID ::= 193
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id-NG-RANnode2CellID                                    ProtocolIE-ID ::= 195
id-NG-RANnode1MobilityParameters                        ProtocolIE-ID ::= 196
id-NG-RANnode2ProposedMobilityParameters                ProtocolIE-ID ::= 197
id-MobilityParametersModificationRange                  ProtocolIE-ID ::= 198
id-TDDULDLConfigurationCommonNR                         ProtocolIE-ID ::= 199
id-CarrierList                                          ProtocolIE-ID ::= 200
id-ULCarrierList                                        ProtocolIE-ID ::= 201
id-FrequencyShift7p5khz                                 ProtocolIE-ID ::= 202
id-SSB-PositionsInBurst                                 ProtocolIE-ID ::= 203
id-NRCellPRACHConfig                                    ProtocolIE-ID ::= 204
id-RAReport                                             ProtocolIE-ID ::= 205
id-IABNodeIndication                                    ProtocolIE-ID ::= 206
id-Redundant-UL-NG-U-TNLatUPF                           ProtocolIE-ID ::= 207
id-CNPacketDelayBudgetDownlink                          ProtocolIE-ID ::= 208
id-CNPacketDelayBudgetUplink                            ProtocolIE-ID ::= 209
id-Additional-Redundant-UL-NG-U-TNLatUPF-List           ProtocolIE-ID ::= 210
id-RedundantCommonNetworkInstance                       ProtocolIE-ID ::= 211
id-TSCTrafficCharacteristics                            ProtocolIE-ID ::= 212
id-RedundantQoSFlowIndicator                            ProtocolIE-ID ::= 213
id-Redundant-DL-NG-U-TNLatNG-RAN                        ProtocolIE-ID ::= 214
id-ExtendedPacketDelayBudget                            ProtocolIE-ID ::= 215
id-Additional-PDCP-Duplication-TNL-List                 ProtocolIE-ID ::= 216
id-RedundantPDUSessionInformation                       ProtocolIE-ID ::= 217
id-UsedRSNInformation                                   ProtocolIE-ID ::= 218
id-RLCDuplicationInformation                            ProtocolIE-ID ::= 219
id-NPN-Broadcast-Information                            ProtocolIE-ID ::= 220
id-NPNPagingAssistanceInformation                       ProtocolIE-ID ::= 221
id-NPNMobilityInformation                               ProtocolIE-ID ::= 222
id-NPN-Support                                          ProtocolIE-ID ::= 223
id-MDT-Configuration                                    ProtocolIE-ID ::= 224
id-MDTPLMNList                                          ProtocolIE-ID ::= 225
id-TraceCollectionEntityURI                             ProtocolIE-ID ::= 226
id-UERadioCapabilityID                                  ProtocolIE-ID ::= 227
id-CSI-RSTransmissionIndication                         ProtocolIE-ID ::= 228
id-SNTriggered                                          ProtocolIE-ID ::= 229
id-DLCarrierList                                        ProtocolIE-ID ::= 230
id-ExtendedTAISliceSupportList                          ProtocolIE-ID ::= 231
id-cellAssistanceInfo-EUTRA                             ProtocolIE-ID ::= 232
id-ConfiguredTACIndication                              ProtocolIE-ID ::= 233
id-secondary-SN-UL-PDCP-UP-TNLInfo                      ProtocolIE-ID ::= 234
id-pdcpDuplicationConfiguration                         ProtocolIE-ID ::= 235
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id-NPRACHConfiguration                                  ProtocolIE-ID ::= 237
id-QosMonitoringReportingFrequency                      ProtocolIE-ID ::= 238
id-QoSFlowsMappedtoDRB-SetupResponse-MNterminated       ProtocolIE-ID ::= 239
id-DL-scheduling-PDCCH-CCE-usage                        ProtocolIE-ID ::= 240
id-UL-scheduling-PDCCH-CCE-usage                        ProtocolIE-ID ::= 241
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id-QoSMonitoringDisabled                                ProtocolIE-ID ::= 243
id-ExtendedUEIdentityIndexValue                         ProtocolIE-ID ::= 244
id-EUTRAPagingeDRXInformation                           ProtocolIE-ID ::= 245
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id-SCGIndicator                                                 ProtocolIE-ID ::= 247
id-UESpecificDRX                                                ProtocolIE-ID ::= 248
id-PDUSessionExpectedUEActivityBehaviour                        ProtocolIE-ID ::= 249
id-QoS-Mapping-Information                                      ProtocolIE-ID ::= 250
id-AdditionLocationInformation                                  ProtocolIE-ID ::= 251
id-dataForwardingInfoFromTargetE-UTRANnode                      ProtocolIE-ID ::= 252
id-DirectForwardingPathAvailability                             ProtocolIE-ID ::= 253
id-SourceNG-RAN-node-ID                                         ProtocolIE-ID ::= 254
id-SourceDLForwardingIPAddress                                  ProtocolIE-ID ::= 255
id-SourceNodeDLForwardingIPAddress                              ProtocolIE-ID ::= 256
id-ExtendedReportIntervalMDT                                    ProtocolIE-ID ::= 257
id-SecurityIndication                                           ProtocolIE-ID ::= 258
id-RRCConnReestab-Indicator                                     ProtocolIE-ID ::= 259
id-TargetNodeID                                                 ProtocolIE-ID ::= 260
id-ManagementBasedMDTPLMNList                                   ProtocolIE-ID ::= 261
id-PrivacyIndicator                                             ProtocolIE-ID ::= 262
id-TraceCollectionEntityIPAddress                               ProtocolIE-ID ::= 263
id-M4ReportAmount                                               ProtocolIE-ID ::= 264
id-M5ReportAmount                                               ProtocolIE-ID ::= 265
id-M6ReportAmount                                               ProtocolIE-ID ::= 266
id-M7ReportAmount                                               ProtocolIE-ID ::= 267
id-BeamMeasurementIndicationM1                                  ProtocolIE-ID ::= 268
id-MBS-Session-ID                                               ProtocolIE-ID ::= 269
id-UEIdentityIndexList-MBSGroupPaging                           ProtocolIE-ID ::= 270
id-MulticastRANPagingArea                                       ProtocolIE-ID ::= 271
id-Supported-MBS-FSA-ID-List                                    ProtocolIE-ID ::= 272
id-MBS-SessionInformation-List                                  ProtocolIE-ID ::= 273
id-MBS-SessionInformationResponse-List                          ProtocolIE-ID ::= 274
id-MBS-SessionAssociatedInformation                             ProtocolIE-ID ::= 275
id-SuccessfulHOReportInformation                                ProtocolIE-ID ::= 276
id-SliceRadioResourceStatus-List                                ProtocolIE-ID ::= 277
id-CompositeAvailableCapacitySupplementaryUplink                ProtocolIE-ID ::= 278
id-SCGUEHistoryInformation                                      ProtocolIE-ID ::= 279
id-SSBOffsets-List                                              ProtocolIE-ID ::= 280
id-NG-RANnode2SSBOffsetModificationRange                        ProtocolIE-ID ::= 281
id-Coverage-Modification-List                                   ProtocolIE-ID ::= 282
id-NR-U-Channel-List                                            ProtocolIE-ID ::= 283
id-SourcePSCellCGI                                              ProtocolIE-ID ::= 284
id-FailedPSCellCGI                                              ProtocolIE-ID ::= 285
id-SCGFailureReportContainer                                    ProtocolIE-ID ::= 286
id-SNMobilityInformation                                        ProtocolIE-ID ::= 287
id-SourcePSCellID                                               ProtocolIE-ID ::= 288
id-SuitablePSCellCGI                                            ProtocolIE-ID ::= 289
id-PSCellChangeHistory                                          ProtocolIE-ID ::= 290
id-CHOConfiguration                                             ProtocolIE-ID ::= 291
id-NR-U-ChannelInfo-List                                        ProtocolIE-ID ::= 292
id-PSCellHistoryInformationRetrieve                             ProtocolIE-ID ::= 293
id-NG-RANnode2SSBOffsetsModificationRange                       ProtocolIE-ID ::= 294
id-MIMOPRBusageInformation                                      ProtocolIE-ID ::= 295
id-F1CTrafficContainer                                          ProtocolIE-ID ::= 296
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id-TrafficToBeAddedList                                     ProtocolIE-ID ::= 301
id-TrafficToBeModifiedList                                  ProtocolIE-ID ::= 302
id-TrafficToBeReleaseInformation                            ProtocolIE-ID ::= 303
id-TrafficAddedList                                         ProtocolIE-ID ::= 304
id-TrafficModifiedList                                      ProtocolIE-ID ::= 305
id-TrafficNotAddedList                                      ProtocolIE-ID ::= 306
id-TrafficNotModifiedList                                   ProtocolIE-ID ::= 307
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id-CPCInformationConfirm                                    ProtocolIE-ID ::= 331
id-CPAInformationModReq                                     ProtocolIE-ID ::= 332
id-CPAInformationModReqAck                                  ProtocolIE-ID ::= 333
id-CPC-DataForwarding-Indicator                             ProtocolIE-ID ::= 334
id-CPCInformationUpdate                                     ProtocolIE-ID ::= 335
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id-Additional-Measurement-Timing-Configuration-List         ProtocolIE-ID ::= 339
id-PDUSession-PairID                                        ProtocolIE-ID ::= 340
id-Local-NG-RAN-Node-Identifier                             ProtocolIE-ID ::= 341
id-Neighbour-NG-RAN-Node-List                               ProtocolIE-ID ::= 342
id-Local-NG-RAN-Node-Identifier-Removal                     ProtocolIE-ID ::= 343
id-FiveGProSeAuthorized                                     ProtocolIE-ID ::= 344
id-FiveGProSePC5QoSParameters                               ProtocolIE-ID ::= 345
id-FiveGProSeUEPC5AggregateMaximumBitRate                   ProtocolIE-ID ::= 346
id-ServedCellSpecificInfoReq-NR                             ProtocolIE-ID ::= 347
id-NRPagingeDRXInformation                                  ProtocolIE-ID ::= 348
id-NRPagingeDRXInformationforRRCINACTIVE                    ProtocolIE-ID ::= 349
id-Redcap-Bcast-Information                                 ProtocolIE-ID ::= 350
id-SDTSupportRequest                                        ProtocolIE-ID ::= 351
id-SDT-SRB-between-NewNode-OldNode                          ProtocolIE-ID ::= 352
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id-SDTDataForwardingDRBList                                                 ProtocolIE-ID ::= 355
id-PagingCause                                                              ProtocolIE-ID ::= 356
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id-UESliceMaximumBitRateList                                                ProtocolIE-ID ::= 358
id-S-NG-RANnodeUE-Slice-MBR                                                 ProtocolIE-ID ::= 359
id-PositioningInformation                                                   ProtocolIE-ID ::= 360
id-UEAssistantIdentifier                                                    ProtocolIE-ID ::= 361
id-ManagementBasedMDTPLMNModificationList                                   ProtocolIE-ID ::= 362
id-F1-terminatingIAB-donorIndicator                                         ProtocolIE-ID ::= 363
id-TAINSAGSupportList                                                       ProtocolIE-ID ::= 364
id-SCGreconfigNotification                                                  ProtocolIE-ID ::= 365
id-earlyMeasurement                                                         ProtocolIE-ID ::= 366
id-BeamMeasurementsReportConfiguration                                      ProtocolIE-ID ::= 367
id-CoverageModificationCause                                                ProtocolIE-ID ::= 368
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id-UERLFReportContainerLTEExtension                                         ProtocolIE-ID ::= 370
id-ExcessPacketDelayThresholdConfiguration                                  ProtocolIE-ID ::= 371
id-HashedUEIdentityIndexValue                                               ProtocolIE-ID ::= 372
id-QosFlowMappingIndication                                                 ProtocolIE-ID ::= 373
id-Full-and-Short-I-RNTI-Profile-List                                       ProtocolIE-ID ::= 374
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id-SRSConfiguration                                                         ProtocolIE-ID ::= 381
id-CHOTimeBasedInformation                                                  ProtocolIE-ID ::= 382
id-ChannelOccupancyTimePercentageUL                                         ProtocolIE-ID ::= 383
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id-SuccessfulPSCellChangeReportInformation                                  ProtocolIE-ID ::= 385
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id-RaReportIndicationList                                                   ProtocolIE-ID ::= 389
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id-DLLBTFailureInformationRequest                                           ProtocolIE-ID ::= 391
id-DLLBTFailureInformationList                                              ProtocolIE-ID ::= 392
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id-AerialUESubscriptionInformation                                          ProtocolIE-ID ::= 395
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id-RequestedPredictionTime                                                  ProtocolIE-ID ::= 403
id-NodeMeasurementInitiationResult-List                                     ProtocolIE-ID ::= 404
id-CellMeasurementInitiationResult-List                                     ProtocolIE-ID ::= 405
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id-UETrajectoryCollectionConfiguration                                ProtocolIE-ID ::= 408
id-UEPerformanceCollectionConfiguration                               ProtocolIE-ID ::= 409
id-CellMeasurementResultForDataCollection-List                        ProtocolIE-ID ::= 410
id-CellToReportForDataCollection-List                                 ProtocolIE-ID ::= 411
id-FiveGProSeLayer2Multipath                                          ProtocolIE-ID ::= 412
id-FiveGProSeLayer2UEtoUERelay                                        ProtocolIE-ID ::= 413
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id-CandidateRelayUEInfoList                                           ProtocolIE-ID ::= 415
id-NRCellsAndSSBsList                                                 ProtocolIE-ID ::= 416
id-ActivatedNRCellsAndSSBsList                                        ProtocolIE-ID ::= 417
id-ClockQualityReportingControlInfo                                   ProtocolIE-ID ::= 418
id-CapabilityForBATAdaptation                                         ProtocolIE-ID ::= 419
id-PNI-NPN-AreaScopeofMDT                                             ProtocolIE-ID ::= 420
id-PNI-NPNBasedMDT                                                    ProtocolIE-ID ::= 421
id-SNPN-CellBasedMDT                                                  ProtocolIE-ID ::= 422
id-SNPN-TAIBasedMDT                                                   ProtocolIE-ID ::= 423
id-SNPN-BasedMDT                                                      ProtocolIE-ID ::= 424
id-S-CPAC-Request                                                     ProtocolIE-ID ::= 425
id-S-CPAC-Request-Info                                                ProtocolIE-ID ::= 426
id-S-CPAC-ReferenceConfigRequest                                      ProtocolIE-ID ::= 427
id-S-CPAC-InterSN-ExecutionNotify                                     ProtocolIE-ID ::= 428
id-S-CPAC-dataforwardinginfofromSource                                ProtocolIE-ID ::= 429
id-CPACcandidatePSCells-wotherInfo-list                               ProtocolIE-ID ::= 430
id-eRedcap-Bcast-Information                                          ProtocolIE-ID ::= 431
id-NRPagingLongeDRXInformationforRRCINACTIVE                          ProtocolIE-ID ::= 432
id-MBS-AssistanceInformation                                          ProtocolIE-ID ::= 433
id-QMCCoordinationRequest                                             ProtocolIE-ID ::= 434
id-QMCCoordinationResponse                                            ProtocolIE-ID ::= 435
id-QoE-Measurement-Results                                            ProtocolIE-ID ::= 436
id-MBSCommServiceType                                                 ProtocolIE-ID ::= 437
id-AssistanceInformationQoE-Meas                                      ProtocolIE-ID ::= 438
id-ProtocolIE-ID-439-not-to-be-used                                   ProtocolIE-ID ::= 439
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id-Src-SN-to-Tgt-SNQMCInfoInquiry                                     ProtocolIE-ID ::= 441
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id-CHO-Maxnoof-CondReconfig                                           ProtocolIE-ID ::= 443
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id-CHOinformation-AddReqAck                                           ProtocolIE-ID ::= 446
id-CHO-CPAC-Info                                                      ProtocolIE-ID ::= 447
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id-N6JitterInformation                                                ProtocolIE-ID ::= 449
id-ECNMarkingorCongestionInformationReportingRequest                  ProtocolIE-ID ::= 450
id-PDUSetbasedHandlingIndicator                                       ProtocolIE-ID ::= 451
id-TAISliceUnavailableCellList                                        ProtocolIE-ID ::= 452
id-MobileIAB-AuthorizationStatus                                      ProtocolIE-ID ::= 453
id-MIAB-MT-BAP-Address                                                ProtocolIE-ID ::= 454
id-MobileIABCell                                                      ProtocolIE-ID ::= 455
id-sk-Counter                                                         ProtocolIE-ID ::= 456
id-Source-M-NG-RANnodeID                                              ProtocolIE-ID ::= 457
id-ProtocolIE-ID458-NotToBeUsed                                       ProtocolIE-ID ::= 458
id-SourceSN-to-TargetSN-QMCInfo                                       ProtocolIE-ID ::= 459
id-RegistrationRequestForDataCollection                               ProtocolIE-ID ::= 460
id-ReportCharacteristicsForDataCollection                             ProtocolIE-ID ::= 461
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id-NodeAssociatedInfoResult                                       ProtocolIE-ID ::= 463
id-SLPositioning-Ranging-Services-Info                            ProtocolIE-ID ::= 464
id-XR-Bcast-Information                                           ProtocolIE-ID ::= 465
id-PDUSessionsListToBeReleased-UPError                            ProtocolIE-ID ::= 466
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id-UserPlaneFailureIndication                                     ProtocolIE-ID ::= 469
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id-BarringExemptionforEmerCallInfo                                ProtocolIE-ID ::= 471
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id-NRPPaPositioningInformation                                    ProtocolIE-ID ::= 474
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id-PDCPSNGapTransfer-UL                                           ProtocolIE-ID ::= 476
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id-NES-Cell-ID                                                    ProtocolIE-ID ::= 478
id-Cell-A-ID                                                      ProtocolIE-ID ::= 479
id-ProvisionStatus                                                ProtocolIE-ID ::= 480
id-ECNMarkingorCongestionInformationReportingStatus               ProtocolIE-ID ::= 481
id-AdditionalDRBSetupInfoList                                     ProtocolIE-ID ::= 482
id-PSIbasedSDUdiscardUL                                           ProtocolIE-ID ::= 483
id-PSIbasedSDUdiscardDL                                           ProtocolIE-ID ::= 484
id-DLPDUSetInformationMarkingSupportIndication                    ProtocolIE-ID ::= 485
id-PduSetDelayBudgetDownlink                                      ProtocolIE-ID ::= 486
id-PduSetDelayBudgetUplink                                        ProtocolIE-ID ::= 487
id-PduSetErrorRateDownlink                                        ProtocolIE-ID ::= 488
id-PduSetErrorRateUplink                                          ProtocolIE-ID ::= 489
id-MonitoringRequestonAvailableBitrate                            ProtocolIE-ID ::= 490
id-MMSID                                                          ProtocolIE-ID ::= 491
id-Indication-of-bitrate-adaptation                               ProtocolIE-ID ::= 492
id-LTMHandoverInformationRequest                                  ProtocolIE-ID ::= 493
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id-LTMHandoverInformationRequestAcknowledge                       ProtocolIE-ID ::= 495
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id-LTMCellSwitchInformation                                       ProtocolIE-ID ::= 497
id-LTMUEAssociationInformation-List                               ProtocolIE-ID ::= 498
id-CellSwitchTAInformation-List                                   ProtocolIE-ID ::= 499
id-TAInformation-List                                             ProtocolIE-ID ::= 500
id-LTMUpdatesToCandidateNodeInformation                           ProtocolIE-ID ::= 501
id-LTMUpdatesToCandidateCellInformation-List                      ProtocolIE-ID ::= 502
id-LTMUESecurityInformation                                       ProtocolIE-ID ::= 503
id-NGRAN-Node1-ID                                                 ProtocolIE-ID ::= 504
id-NGRAN-Node2-ID                                                 ProtocolIE-ID ::= 505
id-LTMUpdatesFromCandidateCellInformation-List                    ProtocolIE-ID ::= 506
id-LTMCandidateCellsToBeCancelled-List                            ProtocolIE-ID ::= 507
id-CSI-RSCoordinationRequest                                      ProtocolIE-ID ::= 508
id-CSI-RSCoordinationResponse                                     ProtocolIE-ID ::= 509
id-CLI-MeasurementResult-List                                     ProtocolIE-ID ::= 510
id-SBFD-Frequency-Configuration                                   ProtocolIE-ID ::= 511
id-NZP-CSI-RS-Resources-Config                                    ProtocolIE-ID ::= 512
id-SRS-Resource-Configuration                                     ProtocolIE-ID ::= 513
id-SRS-Resource-Indication                                        ProtocolIE-ID ::= 514
id-WAB-MT-ID                                                      ProtocolIE-ID ::= 515
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id-LPWUSPSassistanceInformation                                 ProtocolIE-ID ::= 516
id-FurtherExtended-UEIdentityIndexValue                         ProtocolIE-ID ::= 517
id-Future-Coverage-Modification-List                            ProtocolIE-ID ::= 518
id-SliceToReportForDataCollection-List                          ProtocolIE-ID ::= 519
id-PredictedSliceAvailableCapacity                              ProtocolIE-ID ::= 520
id-SliceMeasurementInitiationResult                             ProtocolIE-ID ::= 521
id-SliceUEPerformance                                           ProtocolIE-ID ::= 522
id-NetworkSliceAreaScopeofMDT                                   ProtocolIE-ID ::= 523
id-GeographicalArea                                             ProtocolIE-ID ::= 524
id-GeographyBasedMDT                                            ProtocolIE-ID ::= 525
id-TimeSCG-Failure                                              ProtocolIE-ID ::= 526
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id-FiveGProSeLayer3MHUEtoNetworkRelay                           ProtocolIE-ID ::= 528
id-FiveGProSeLayer2MHUEtoNetworkRelay                           ProtocolIE-ID ::= 529
id-FiveGProSeLayer2MHIntermediateUEtoNetworkRelay               ProtocolIE-ID ::= 530
id-FiveGProSeLayer2MHRemote                                     ProtocolIE-ID ::= 531
id-LTMInformationSCG-AddReq                                     ProtocolIE-ID ::= 532
id-LTMInformationSCG-AddReqAck                                  ProtocolIE-ID ::= 533
id-LTMInformationSCG-ModReq                                     ProtocolIE-ID ::= 534
id-LTMInterSNExecutionNotification                              ProtocolIE-ID ::= 535
id-LTMPSCellInformation-AddReq                                  ProtocolIE-ID ::= 536
id-LTMPSCellInformation-AddReqAck                               ProtocolIE-ID ::= 537
id-LTMPSCellInformation-UpdateReq                               ProtocolIE-ID ::= 538
id-LTMPSCellInformation-UpdateReqAck                            ProtocolIE-ID ::= 539
id-LTMPSCellInformation-UpdateRequired                          ProtocolIE-ID ::= 540
id-LTMPSCellInformation-UpdateConfirm                           ProtocolIE-ID ::= 541
id-LTMPSCellInformation-ChangeRequired                          ProtocolIE-ID ::= 542
id-LTMPSCellInformation-ChangeConfirm                           ProtocolIE-ID ::= 543
id-LTM-DC-DataForwarding-Indicator                              ProtocolIE-ID ::= 544
id-SemipersistentPositioningInformation                         ProtocolIE-ID ::= 545
id-UEAveragePacketLossUL                                        ProtocolIE-ID ::= 546
id-LP-WUS-Disable-Indication                                    ProtocolIE-ID ::= 547
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id-ProposedLTM-UEBasedTAMeasurementID-List                      ProtocolIE-ID ::= 549
id-UEBasedTAMeasurementConfiguration                            ProtocolIE-ID ::= 550
id-ServingGNB-ID                                                ProtocolIE-ID ::= 551


END
-- ASN1STOP
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9.3.8 Container definitions

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-- ASN1START
-- **************************************************************
--
-- Container definitions
--
-- **************************************************************

XnAP-Containers {
itu-t (0) identified-organization (4) etsi (0) mobileDomain (0)
ngran-access (22) modules (3) xnap (2) version1 (1) xnap-Containers (5) }
```

```
DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

-- **************************************************************
--
-- IE parameter types from other modules.
--
-- **************************************************************

IMPORTS
    maxPrivateIEs,
    maxProtocolExtensions,
    maxProtocolIEs,
    Criticality,
    Presence,
    PrivateIE-ID,
    ProtocolIE-ID
FROM XnAP-CommonDataTypes;

-- **************************************************************
--
-- Class Definition for Protocol IEs
--
-- **************************************************************

XNAP-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 IE pairs
--
-- **************************************************************

XNAP-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
--
-- **************************************************************

XNAP-PROTOCOL-EXTENSION ::= CLASS {
    &id                 ProtocolIE-ID       UNIQUE,
    &criticality        Criticality,
    &Extension,
    &presence           Presence
}
WITH SYNTAX {
    ID                  &id
    CRITICALITY         &criticality
    EXTENSION           &Extension
    PRESENCE            &presence
}

-- **************************************************************
--
-- Class Definition for Private IEs
--
-- **************************************************************

XNAP-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 {XNAP-PROTOCOL-IES : IEsSetParam} ::=
```

```
    SEQUENCE (SIZE (0..maxProtocolIEs)) OF
    ProtocolIE-Field {{IEsSetParam}}

ProtocolIE-Single-Container {XNAP-PROTOCOL-IES : IEsSetParam} ::=   ProtocolIE-Field {{IEsSetParam}}

ProtocolIE-Field {XNAP-PROTOCOL-IES : IEsSetParam} ::= SEQUENCE {
    id              XNAP-PROTOCOL-IES.&id                   ({IEsSetParam}),
    criticality     XNAP-PROTOCOL-IES.&criticality          ({IEsSetParam}{@id}),
    value           XNAP-PROTOCOL-IES.&Value                ({IEsSetParam}{@id})
}

-- **************************************************************
--
-- Container for Protocol IE Pairs
--
-- **************************************************************

ProtocolIE-ContainerPair {XNAP-PROTOCOL-IES-PAIR : IEsSetParam} ::=
    SEQUENCE (SIZE (0..maxProtocolIEs)) OF
    ProtocolIE-FieldPair {{IEsSetParam}}

ProtocolIE-FieldPair {XNAP-PROTOCOL-IES-PAIR : IEsSetParam} ::= SEQUENCE {
    id                  XNAP-PROTOCOL-IES-PAIR.&id                  ({IEsSetParam}),
    firstCriticality    XNAP-PROTOCOL-IES-PAIR.&firstCriticality    ({IEsSetParam}{@id}),
    firstValue          XNAP-PROTOCOL-IES-PAIR.&FirstValue          ({IEsSetParam}{@id}),
    secondCriticality   XNAP-PROTOCOL-IES-PAIR.&secondCriticality   ({IEsSetParam}{@id}),
    secondValue         XNAP-PROTOCOL-IES-PAIR.&SecondValue         ({IEsSetParam}{@id})
}

-- **************************************************************
--
-- Container Lists for Protocol IE Containers
--
-- **************************************************************

ProtocolIE-ContainerList {INTEGER : lowerBound, INTEGER : upperBound, XNAP-PROTOCOL-IES : IEsSetParam} ::=
    SEQUENCE (SIZE (lowerBound..upperBound)) OF
    ProtocolIE-Container {{IEsSetParam}}

ProtocolIE-ContainerPairList {INTEGER : lowerBound, INTEGER : upperBound, XNAP-PROTOCOL-IES-PAIR : IEsSetParam} ::=
    SEQUENCE (SIZE (lowerBound..upperBound)) OF
    ProtocolIE-ContainerPair {{IEsSetParam}}

-- **************************************************************
--
-- Container for Protocol Extensions
--
-- **************************************************************

ProtocolExtensionContainer {XNAP-PROTOCOL-EXTENSION : ExtensionSetParam} ::=    SEQUENCE (SIZE (1..maxProtocolExtensions)) OF
    ProtocolExtensionField {{ExtensionSetParam}}

ProtocolExtensionField {XNAP-PROTOCOL-EXTENSION : ExtensionSetParam} ::= SEQUENCE {
    id                  XNAP-PROTOCOL-EXTENSION.&id             ({ExtensionSetParam}),
```

```
    criticality         XNAP-PROTOCOL-EXTENSION.&criticality    ({ExtensionSetParam}{@id}),
    extensionValue      XNAP-PROTOCOL-EXTENSION.&Extension      ({ExtensionSetParam}{@id})
}

-- ************************************************************
--
-- Container for Private IEs
--
-- ************************************************************

PrivateIE-Container {XNAP-PRIVATE-IES : IEsSetParam} ::=
    SEQUENCE (SIZE (1..maxPrivateIEs)) OF
    PrivateIE-Field {{IEsSetParam}}

PrivateIE-Field {XNAP-PRIVATE-IES : IEsSetParam} ::= SEQUENCE {
    id              XNAP-PRIVATE-IES.&id            ({IEsSetParam}),
    criticality     XNAP-PRIVATE-IES.&criticality   ({IEsSetParam}{@id}),
    value           XNAP-PRIVATE-IES.&Value         ({IEsSetParam}{@id})
}

END
-- ASN1STOP
```

9.4 Message transfer syntax

XnAP shall use the ASN.1 Basic Packed Encoding Rules (BASIC-PER) Aligned Variant as transfer syntax, as specified in ITU-T Rec. X.691 [15].

9.5 Timers

$TXn_{RELOCprep}$

- Specifies the maximum time for the Handover Preparation procedure in the source NG-RAN node.

$TXn_{RELOCoverall}$

- Specifies the maximum time for the protection of the overall handover procedure in the source NG-RAN node.

TXn_{DCprep}

- Specifies the maximum time for the S-NG-RAN node Addition Preparation or M-NG-RAN node initiated S-NG-RAN node Modification Preparation.

$TXn_{DCoverall}$

- Specifies the maximum time in the S-NG-RAN node for either the S-NG-RAN node initiated S-NG-RAN node Modification procedure or the protection of the NG-RAN actions necessary to configure UE resources at S-NG-RAN node Addition or M-NG-RAN node initiated S-NG-RAN node Modification.

10 Handling of unknown, unforeseen and erroneous protocol data

Section 10 of TS 38.413 [5] is applicable for the purposes of the present document.

Annex A (informative): Change history

Change history							
Date	Meeting	TDoc	CR	Rev	Cat	Subject/Comment	New version
2017-04	RAN3#95bis	R3-171316				Implementing agreements from meeting RAN3#95bis: R3-171147 (removing last two IEs and FFS on NG-C UE), R3-171372, R3-171351 (only NSSAI related text), R3-171338 (with Editor's Note on text and message structure), R3-171371 (with Editor's Note in generic section and name for RAN Paging FFS), R3-171345, R3-171347	0.0.1
2017-05	RAN3#96					Add SGNB MODIFICATION REQUEST in tabular. Editorial change	0.0.2
2017-05	RAN3#96					Implementing agreements from meeting RAN3#96: R3-171925 (Handover messages – tabular format), R3-171928 (additions for RAN Paging) Editorials (remove highlight, change style sheet assignments, correcting and adding references to other TSs and TRs, replacing some FFSs by Editor's Notes)	0.1.0
2017-06	RAN3#ad-hoc2	R3-172548				Submission	0.1.1
2017-06	RAN3#ad-hoc2	R3-173452				Implementing agreed R3-172612 and agreed node naming conventions.	0.2.0
2017-08	RAN3#97	R3-173462				Implement the agreed pCRs from RAN3#97 meeting: R3-173237, R3-173337, R3-173416, R3-173429, R3-173431	0.3.0
2017-10	RAN3#97bis	R3-174242				Implementing the agreed pCRs from RAN3#97bis meeting: R3-173976, R3-174097, R3-174183, R3-174192, R3-174205	0.4.0
2017-12	RAN3#98	R3-175058				Implementing agreed pCRs from RAN3#98 meeting: R3-175024, R3-174817, R3-174920, R3-174920, R3-174924, R3-174934, R3-174837, R3-175077	0.5.0
2018.01	RAN3 AH 1801	R3-180656				Implementing agreed pCRs from RAN3 AH 1801: R3-180114, R3-180545, R3-180548, R3-180561, R3-180569, R3-180601, R3-180607, R3-180615, R3-180629, R3-180631, R3-180638	0.6.0
2018-03	RAN3#99	R3-181593				Implementing agreed pCRs from RAN3#99: R3-180850, R3-180980, R3-181247, R3-181280, R3-181350, R3-181385, R3-181390, R3-181415, R3-181418, R3-181461, R3-181504, R3-181509	0.7.0
2018-04	RAN3#99bis	R3-182527				Implementing agreements from RAN3#99bis: R3-182213, R3-182396, R3-182401, R3-181855, R3-182488, R3-182371, R3-182157, R3-182373, R3-182375, R3-182376, R3-182163, R3-182384, R3-182392, R3-181825, R3-182494, R3-181980, R3-182433, update along R3-182378, update along R3-182344, update along R3-181899	0.8.0
2018-05	RAN3#100	R3-183597				Implementing agreements from RAN3#100: R3-182614, R3-182615, R3-182635, R3-182815, R3-182935, R3-183091, R3-183154, R3-183165, R3-183252, R3-183314, R3-183369, R3-183376, R3-183386, R3-183389, R3-183393, R3-183404, R3-183407, R3-183411, R3-183441, R3-183442, R3-183444, R3-183450, R3-183455, R3-183497, R3-183511, R3-183517, R3-183519, R3-183534, R3-183541. Adding ASN.1 and performing editorial cleanups.	0.9.0
2018-06	RAN#80	RP-180816				Submission to TSG RAN for approval	1.0.0
2018-06	RAN#80		-	-	-	Specification approved at TSG-RAN and placed under change control	15.0.0
2018-09	RAN#81	RP-181922	0008	2	F	Collected corrections for XnAP version 15.0.0	15.1.0
2018-09	RAN#81	RP-181921	0002	1	F	Addition of MCG cell ID to solve the PCI confusion at SN	15.1.0
2018-12	RAN#82	RP-182448	0011	4	F	NR Corrections (TS 38.423 Baseline CR covering RAN3-101Bis and RAN3-102 agreements)	15.2.0
2019-03	RAN#83	RP-190555	0012	3	F	Correction to RRC transfer	15.3.0
2019-03	RAN#83	RP-190201	0017	3	F	Transfer of the PSCell information for LI purposes	15.3.0
2019-03	RAN#83	RP-190555	0023	1	F	Missing causes for context retrieval failure	15.3.0
2019-03	RAN#83	RP-190554	0024	1	F	Data volume reporting for MR-DC with 5GC	15.3.0
2019-03	RAN#83	RP-190555	0025	2	F	Separate UL/DL limits for UE's maximum IP rate	15.3.0

Change history							
Date	Meeting	TDoc	CR	Rev	Cat	Subject/Comment	New version
2019-03	RAN#83	RP-190555	0027	2	F	LTE-NR UE Level Resource Coordination	15.3.0
2019-03	RAN#83	RP-190555	0029	2	F	Support of PDU session split during handover procedure	15.3.0
2019-03	RAN#83	RP-190554	0035	-	F	Correction of RAN triggered PDU Session split	15.3.0
2019-03	RAN#83	RP-190555	0036	-	F	Correction of Slice Support over Xn	15.3.0
2019-03	RAN#83	RP-190556	0041	2	F	Correction of QoS Flow Mapping Indication	15.3.0
2019-03	RAN#83	RP-190555	0042	-	F	Correction for RRC container in SN MODIFICATION CONFIRM message	15.3.0
2019-03	RAN#83	RP-190555	0048	-	F	Clarification on Inter-node message for NE-DC	15.3.0
2019-03	RAN#83	RP-190555	0050	-	F	Introduce IMEISV to addition request to Xn	15.3.0
2019-03	RAN#83	RP-190555	0051	2	F	Support of integrity protection for Option 4&7	15.3.0
2019-03	RAN#83	RP-190555	0053	1	F	Correction on partial reset	15.3.0
2019-03	RAN#83	RP-190555	0054	1	F	Correction on TAI Support List	15.3.0
2019-03	RAN#83	RP-190555	0061	1	F	Rapporteur updates on version 15.2.0	15.3.0
2019-03	RAN#83	RP-190556	0065	2	F	S-NSSAI update during EPS to 5GS handover	15.3.0
2019-03	RAN#83	RP-190556	0067	1	F	Correction of EPC interworking	15.3.0
2019-07	RAN#84	RP-191394	0056	3	F	Correction on AMF connectivity	15.4.0
2019-07	RAN#84	RP-191397	0059	2	F	Support of ongoing re-mapping on source side during SDAP mobility	15.4.0
2019-07	RAN#84	RP-191397	0068	1	F	XnAP Alignment of MN Triggered PDU Session Split	15.4.0
2019-07	RAN#84	RP-191395	0071	2	F	CR38423 for Addition of MN (MeNB) cell ID to solve the PCI confusion in SN(SgNB) modification Request message	15.4.0
2019-07	RP-84	RP-191394	0076	1	F	RAN paging failure handling in SN in case of MR-DC	15.4.0
2019-07	RP-84	RP-191397	0082	3	F	Correction to behaviour of SN for security handling This CR was not implemented as is was not based on the latest version of the spec.	15.4.0
2019-07	RP-84	RP-191395	0083	-	F	Support for delivering UE band information in RAN paging	15.4.0
2019-07	RP-84	RP-191396	0086	-	F	Corrections for support of data forwarding for reestablishment UE	15.4.0
2019-07	RP#84	RP-191395	0096	2	F	Rapporteur's corrections to version 15.3.0	15.4.0
2019-07	RP-84	RP-191395	0099	1	F	Correction for SN terminated DRB To Be Setup in SN Addition Response	15.4.0
2019-07	RP-84	RP-191395	0100	2	F	CR for TS 38.423 for Data Forwarding Proposal	15.4.0
2019-07	RP-84	RP-191430	0102	5	F	RAN sharing with multiple Cell ID broadcast	15.4.0
2019-07	RP-84	RP-191397	0104	1	F	Correction of Core Network Type Restriction This CR was not implemented as is was not based on the latest version of the spec.	15.4.0
2019-07	RP-84	RP-191397	0105	2	F	Data forwarding and QoS flow remapping	15.4.0
2019-07	RP-84	RP-191395	0112	1	F	XnAP Correction of PDU Session Resource Setup Response Info – MN terminated	15.4.0
2019-07	RP-84	RP-191395	0113	1	F	XnAP Correction of PDU Session Resource Setup Complete Info – SN terminated	15.4.0
2019-07	RP-84	RP-191395	0125	-	F	Support of single UL transmission for NE-DC	15.4.0
2019-07	RP-84	RP-191395	0126	1	F	In-order delivery when QoS flows offloaded from SN	15.4.0
2019-07	RP-84	RP-191395	0132	-	F	Transferring of RRC message from Master node to Secondary node	15.4.0
2019-07	RP-84	RP-191395	0133	1	F	Clarification on Retrieve UE Context procedure	15.4.0
2019-07	RP-84	RP-191394	0135	1	F	PDCP SN length related clean-up over To Be Modified structure in MN initiated SN Modification procedure	15.4.0
2019-07	RP-84	RP-191397	0140		F	Correction of Network Instance	15.4.0
2019-09	RP-85	RP-192166	0121	2	F	Correction of handling of the Location Information at the MN	15.5.0
2019-09	RP-85	RP-192167	0146		F	XnAP Rel-15 Leftover Clean-ups	15.5.0
2019-09	RP-85	RP-192167	0147	1	F	XnAP Corrections of Activity Notification Usage	15.5.0
2019-09	RP-85	RP-192167	0153	-	F	Critical correction to the presence of the TAC lists in the Service Area Item IE	15.5.0
2019-09	RP-85	RP-192167	0158	1	F	CR38.423 for Correction on RRC configuration indication	15.5.0
2019-09	RP-85	RP-192166	0170	2	F	Correction on source TNL ADDRESS in NG-C interface	15.5.0
2019-09	RP-85	RP-192166	0173	1	F	Correction on Maximum Integrity Protected Data Rate	15.5.0
2019-09	RP-85	RP-192167	0197	1	F	Rapporteur's corrections for TS 38.423	15.5.0
2019-09	RP-85	RP-192166	0210	1	F	Corrections regarding mandatory statements in Semantics Descriptions	15.5.0
2019-09	RP-85	RP-192167	0216	1	F	Support of default DRB coordination in MR-DC with 5GC	15.5.0
2019-12	RP-86	RP-192916	0063	7	F	Correction on DRB ID co-ordination between MN and SN	15.6.0
2019-12	RP-86	RP-192916	0082	4	F	Correction to behaviour of SN for security handling	15.6.0
2019-12	RP-86	RP-192916	0104	2	F	Correction of Core Network Type Restriction	15.6.0
2019-12	RP-86	RP-192916	0236	2	F	SN Status Transfer for bearer reconfiguration during HO with DC	15.6.0
2019-12	RP-86	RP-192915	0244	1	F	Misalignment between tabular and ASN.1	15.6.0

Change history							
Date	Meeting	TDoc	CR	Rev	Cat	Subject/Comment	New version
2019-12	RP-86	RP-192915	0249	1	F	Correction of S-NSSAI coding	15.6.0
2019-12	RP-86	RP-192915	0252	2	F	Correction to UL data forwarding	15.6.0
2019-12	RP-86	RP-192915	0262		F	Add the missing dynamic port support	15.6.0
2019-12	RP-86	RP-192915	0266	-	F	Correction on the data forwarding in S-NG-RAN initiated S-NG-RAN Release	15.6.0
2019-12	RP-86	RP-192916	0272		F	Correction of Xn handover	15.6.0
2019-12	RP-86	RP-192916	0282	1	F	Support of delta configuration in MR-DC	15.6.0
2019-12	RP-86	RP-192916	0288	1	F	Missing description of a cause value	15.6.0
2019-12	RP-86	RP-192916	0294	1	F	Correction to SN Status Transfer considering MR-DC operations	15.6.0
2019-12	RP-86	RP-192908	0089	4	B	BL CR to 38.423: CLI support on XnAP	16.0.0
2019-12	RP-86	RP-192693	0201	7	F	Support for setting up IPSec a priori in Xn	16.0.0
2019-12	RP-86	RP-192913	0208	7	F	Xn Setup message size limitation	16.0.0
2019-12	RP-86	RP-192915	0237	2	F	Trace function in MR-DC	16.0.0
2019-12	RP-86	RP-192913	0253	1	C	Extending the MDBV Range	16.0.0
2019-12	RP-86	RP-192910	0259	2	B	Resuming SCG in RRC Resume	16.0.0
2019-12	RP-86	RP-192916	0283	3	F	Correction on the offered non-GBR resources	16.0.0
2019-12	RP-86	RP-192910	0285	2	B	Fast MCG link Recovery with SRB3	16.0.0
2020-03	RP-87-e	RP-200422	0274	2	B	Introduction of NR-U	16.1.0
2020-03	RP-87-e	RP-200423	0300	1	B	Supporting of RACS in XnAP (The CR is not implemented. The CR was marked agreed by mistake while the WI is not yet complete)	16.1.0
2020-03	RP-87-e	RP-200428	0303	-	A	Correction of the referred RRCResumeRequest1 name	16.1.0
2020-03	RP-87-e	RP-200476	0310	4	B	E2E delay measurement for Qos monitoring for URLLC	16.1.0
2020-03	RP-87-e	RP-200427	0318	1	F	Cleanup for Fast MCG link Recovery with SRB3	16.1.0
2020-03	RP-87-e	RP-200428	0322	1	A	Misalignment between the tabular and ASN.1 within the SN modification procedure	16.1.0
2020-03	RP-87-e	RP-200428	0327	-	A	Propagation of Roaming and Access Restriction information in NG-RAN in non-homogenous NG-RAN node deployments	16.1.0
2020-03	RP-87-e	RP-200428	0329	-	A	Correction of CR0236r2 to explicate procedural interaction	16.1.0
2020-03	RP-87-e	RP-200428	0331	1	A	Correction of CR0282r1 – procedure text	16.1.0
2020-03	RP-87-e	RP-200429	0334	1	F	Correction of CR0089r4: CLI Support on XnAP	16.1.0
2020-03	RP-87-e	RP-200425	0335	-	F	Correction of CR0208 on Xn Setup Message Size Control	16.1.0
2020-03	RP-87-e	RP-200425	0337	1	D	Rapporteur Corrections Rel-16	16.1.0
2020-07	RP-88-e	RP-201075	0136	13	B	Baseline CR for introducing Rel-16 NR mobility enhancement	16.2.0
2020-07	RP-88-e	RP-201088	0144	7	B	Introduction of CP UP NB-IoT Others	16.2.0
2020-07	RP-88-e	RP-201074	0151	13	B	Support of NR V2X over Xn	16.2.0
2020-07	RP-88-e	RP-201086	0182	8	B	Introduction of Suspend-Resume	16.2.0
2020-07	RP-88-e	RP-201082	0221	12	B	Addition of SON features	16.2.0
2020-07	RP-88-e	RP-201077	0223	6	B	BL CR to 38.423: Support for IAB	16.2.0
2020-07	RP-88-e	RP-201079	0230	11	B	Introduction of NR_IIOT support to TS 38.423	16.2.0
2020-07	RP-88-e	RP-201080	0289	7	B	Introduction of Non-Public Networks	16.2.0
2020-07	RP-88-e	RP-201082	0291	10	B	MDT Configuration support for XnAP	16.2.0
2020-07	RP-88-e	RP-201078	0300	5	B	Supporting of RACS in XnAP	16.2.0
2020-07	RP-88-e	RP-201087	0343	2	B	Introduction of eMTC connected to 5GC	16.2.0
2020-07	RP-88-e	RP-201076	0344	1	B	CR38.423 on TDD pattern for NR-DC power control cordination for sol1	16.2.0
2020-07	RP-88-e	RP-201073	0346	3	F	Slot length correction in Intended TDD UL-DL Configuration	16.2.0
2020-07	RP-88-e	RP-201085	0348	1	F	Introduction of CSI-RS configuration switch on Xn	16.2.0
2020-07	RP-88-e	RP-201090	0350	2	A	Encoding PLMNs in served cell information NR	16.2.0
2020-07	RP-88-e	RP-201085	0359	1	F	Rapporteur's Correction to XnAP version 16.1.0	16.2.0
2020-07	RP-88-e	RP-201085	0360	-	F	Correctinos to Xn Setup message size limitation solution	16.2.0
2020-07	RP-88-e	RP-201091	0373		F	Correction on nested SN modification procedure	16.2.0
2020-07	RP-88-e	RP-201090	0375	-	A	Encoding PLMNs in served cell information IEs - semantics corrections	16.2.0
2020-07	RP-88-e	RP-201090	0381	4	A	Clarification on MIB only scenario	16.2.0
2020-07	RP-88-e	RP-201093	0382		A	TS38.423 Resolving Erroneous unknown-old-en-gNB-UE-X2AP-ID Rel-16	16.2.0
2020-07	RP-88-e	RP-201076	0388	-	B	Inter-RAT HO support for fast MCG recovery	16.2.0
2020-07	RP-88-e	RP-201085	0393	2	F	Correction on RF parameters in NR cell information	16.2.0
2020-07	RP-88-e	RP-201090	0394	4	F	Correction of S-NSSAI range	16.2.0
2020-09	RP-89-e	RP-201955	0358	2	A	Support of PSCell/SCell-only operation mode	16.3.0
2020-09	RP-89-e	RP-201946	0389	2	F	Further correction on fast MCG recovery via SRB3	16.3.0
2020-09	RP-89-e	RP-201949	0395	2	F	Correction for TS38.423 on Unsuccessful Operation and Abnormal Conditions of MLB	16.3.0

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2020-09	RP-89-e	RP-201949	0405		B	Introduction of NR SCG Release for Power Saving	16.3.0
2020-09	RP-89-e	RP-201949	0412	1	F	Correction of NPN CAG Cells and non-CAG Cells	16.3.0
2020-09	RP-89-e	RP-201949	0419	2	F	SON Corrections	16.3.0
2020-09	RP-89-e	RP-201949	0420	2	F	Clarification of the TNL Capacity Indicator	16.3.0
2020-09	RP-89-e	RP-201950	0426	1	F	Correction of CR0360 - Enabling an ng-eNB to reply to Cell Assistance Information E-UTRA.	16.3.0
2020-09	RP-89-e	RP-201950	0427	-	F	Correction of CR 0393r2	16.3.0
2020-09	RP-89-e	RP-201949	0428	-	F	Correcting Target Cell List for Rel-16 mobility enhancements	16.3.0
2020-09	RP-89-e	RP-201955	0429	-	A	Missing QoS Flow Mapping Indication IE in PDU Session Resource Modification Info - SN terminated IE.	16.3.0
2020-09	RP-89-e	RP-201949	0430	1	F	Rapporteur's corrections to TS 38.423 v16.2.0	16.3.0
2020-09	RP-89-e	RP-201949	0431	-	F	Restructuring FAILURE INDICATION message - avoid condition upon absence of IE	16.3.0
2020-09	RP-89-e	RP-201955	0432	1	A	Correction CR0063 implementation - missing DRB-IDs-takenintouse in PDU Session Resource Setup Response Info - SN terminated	16.3.0
2020-09	RP-89-e	RP-201955	0436	1	A	Multiple location reporting requests and report	16.3.0
2020-09	RP-89-e	RP-201955	0454	1	A	Correction for Industrial IoT PDCP duplication for Carrier Aggregation	16.3.0
2020-09	RP-89-e	RP-201949	0464	-	F	Correction of mandatory ProtocolExtensionContainer	16.3.0
2020-12	RP-90-e	RP-202314	0399	2	F	NPRACH configuration exchanging	16.4.0
2020-12	RP-90-e	RP-202311	0466	1	F	Correction on CPC Complete Transfer	16.4.0
2020-12	RP-90-e	RP-202312	0472	1	F	CR38423 for NR SCG release for power saving	16.4.0
2020-12	RP-90-e	RP-202312	0485	2	F	Support of release on CAG subscription change	16.4.0
2020-12	RP-90-e	RP-202313	0492	1	F	Introduction of reporting frequency for Qos monitoring for URLLC	16.4.0
2020-12	RP-90-e	RP-202312	0493	1	F	Propagation of immediate MDT configuration in case of Xn inter-RAT HO	16.4.0
2020-12	RP-90-e	RP-202310	0494	1	F	Correction of alternative QoS profile	16.4.0
2020-12	RP-90-e	RP-202312	0495	1	F	Corrections of MLB and MDT	16.4.0
2020-12	RP-90-e	RP-202315	0501	1	F	XnAP Rapporteur CR	16.4.0
2020-12	RP-90-e	RP-202315	0514	-	F	Correction on XnAP ASN.1	16.4.0
2021-03	RP-91-e	RP-210124	0206	7	B	Introduction of SFN Offset per cell over Xn	16.5.0
2021-03	RP-91-e	RP-210239	0512	4	F	Cause value on Xn for insufficient UE capabilities CR 38.423	16.5.0
2021-03	RP-91-e	RP-210240	0519	1	F	Update on QoS monitoring control	16.5.0
2021-03	RP-91-e	RP-210237	0529	-	F	Correction on UE identity index for eMTC UE in RRC_INACTIVE	16.5.0
2021-03	RP-91-e	RP-210240	0534	2	A	Correction of SN modification request ack message	16.5.0
2021-03	RP-91-e	RP-210240	0537	2	A	Correction on UL Configuration handling	16.5.0
2021-03	RP-91-e	RP-210232	0548	1	F	Correction of NPN related Cell Information	16.5.0
2021-03	RP-91-e	RP-210235	0554	2	F	Clarification of Secondary RAT in mobility restrictions	16.5.0
2021-03	RP-91-e	RP-210239	0555	1	F	Cause value on Xn for normal release CR 38.423	16.5.0
2021-06	RP-92-e	RP-211323	0452	3	F	Correction of the DAPS Response Information IE in the tabular	16.6.0
2021-06	RP-92-e	RP-211323	0465	3	F	Clarification of the use of the max no of CHO preparations	16.6.0
2021-06	RP-92-e	RP-211315	0473	3	F	Clarification on TAI Slice Support List	16.6.0
2021-06	RP-92-e	RP-211316	0504	2	F	Correction of Allocated C-RNTI for 2-step RACH	16.6.0
2021-06	RP-92-e	RP-211324	0530	6	F	Paging eDRX information delivery for RRC_INACTIVE UE in XnAP	16.6.0
2021-06	RP-92-e	RP-211317	0559	2	F	Maximum Number of RRC Connections	16.6.0
2021-06	RP-92-e	RP-211323	0577	2	F	38.423 correction for CHO early data forwarding in MN to ng-eNB/gNB Change scenario	16.6.0
2021-06	RP-92-e	RP-211334	0582	1	A	Correction on the RAT Restriction Information	16.6.0
2021-06	RP-92-e	RP-211317	0594	1	F	Correction on description of RACH Report Container in ACCESS AND MOBILITY INDICATION	16.6.0
2021-06	RP-92-e	RP-211317	0609	3	F	Correction of ASN.1 definition and semantics for Resource Status Reporting Initiation procedure	16.6.0
2021-06	RP-92-e	RP-211328	0624	1	F	Addition of sidelink MR-DC resource coordination	16.6.0
2021-06	RP-92-e	RP-211334	0631	1	A	How to release SCG configuration between MN and SN CR 38.423	16.6.0
2021-06	RP-92-e	RP-211336	0632	1	A	Rel-16 CR for UE specific DRX delivery	16.6.0
2021-09	RP-93-e	RP-211881	0622	2	F	Expected UE Activity Behaviour	16.7.0
2021-09	RP-93-e	RP-211878	0643		F	Support for using IAB for a NR-DC UE	16.7.0
2021-09	RP-93-e	RP-211884	0659	1	F	Correction of RESOURCE STATUS UPDATE	16.7.0
2021-09	RP-93-e	RP-211882	0672		A	Correction of Security	16.7.0
2021-09	RP-93-e	RP-211882	0673		F	Correction CR on Network instance	16.7.0
2021-12	RP-94-e	RP-212863	0677	1	F	Adding reference for coding of Common Network Instance	16.8.0

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2021-12	RP-94-e	RP-212863	0689	-	A	Transfer of PSCell Location Reporting control information at Xn mobility	16.8.0
2021-12	RP-94-e	RP-212871	0696	1	F	Redundant network instance for split PDU session	16.8.0
2021-12	RP-94-e	RP-212863	0705	1	F	Correction to the S-NODE MODIFICATION REQUIRED message	16.8.0
2021-12	RP-94-e	RP-212860	0706	1	F	Correction of Direct data forwarding from NR-DC to E-UTRAN	16.8.0
2021-12	RP-94-e	RP-212864	0718	-	A	Correction on Xn Removal for RAN Sharing in Rel-16	16.8.0
2022-03	RP-95-e	RP-220243	0553	7	F	Direct data forwarding for mobility between DC and SA	16.9.0
2022-03	RP-95-e	RP-220279	0691	3	F	Dynamic ACL over Xn CR 38.423	16.9.0
2022-03	RP-95-e	RP-220278	0731	1	A	Correction on UE XnAP ID in the ERROR INDICATION message	16.9.0
2022-03	RP-95-e	RP-220278	0736	1	F	Correction of frequency information for DL only cell	16.9.0
2022-03	RP-95-e	RP-220280	0742	1	F	Value range misalignment for MDT M1, M8 and M9 configuration	16.9.0
2022-03	RP-95-e	RP-220278	0744	1	A	CR to 38.423 on UP security policy update	16.9.0
2022-03	RP-95-e	RP-220280	0753		F	MRO Correction	16.9.0
2022-03	RP-95-e	RP-220279	0756	1	F	CR on direct data forwarding from MR-DC to SA	16.9.0
2022-03	RP-95-e	RP-220280	0760	-	F	Unsuccessful Mobility Setting Change	16.9.0
2022-03	RP-95-e	RP-220279	0766		F	Correction of S-NODE MODIFICATION CONFIRM message	16.9.0
2022-03	RP-95-e	RP-220221	0415	12	B	BLCR to 38.423: Support of MDT enhancement	17.0.0
2022-03	RP-95-e	RP-220225	0488	8	B	Introduction of NTN	17.0.0
2022-03	RP-95-e	RP-220224	0491	9	B	Introduction of NR Multicast and Broadcast Services	17.0.0
2022-03	RP-95-e	RP-220221	0517	10	B	BLCR to 38.423_Addition of SON features enhancement	17.0.0
2022-03	RP-95-e	RP-220222	0532	10	B	BL CR to XnAP on Rel-17 eIAB	17.0.0
2022-03	RP-95-e	RP-220236	0580	3	C	Enabling CHO with SCG configuration [CHOwithDCkept]	17.0.0
2022-03	RP-95-e	RP-220236	0596	6	B	Inter MN resume without SN change [InterMNResume]	17.0.0
2022-03	RP-95-e	RP-220223	0620	8	B	Introduction of Enhanced IIoT support over Xn	17.0.0
2022-03	RP-95-e	RP-220218	0633	8	B	SCG BL CR to TS 38.423	17.0.0
2022-03	RP-95-e	RP-220218	0634	9	B	CPAC BL CR to TS 38.423	17.0.0
2022-03	RP-95-e	RP-220229	0639	7	B	Mobility Support for NR QoE Measurement Collection	17.0.0
2022-03	RP-95-e	RP-220236	0653	1	B	Signalling of Neighbour cell CSI-RS configuration information over Xn [CSIRSXn]	17.0.0
2022-03	RP-95-e	RP-220294	0656	3	B	Support for Enhancement of Redundant PDU Sessions [Paired_ID]	17.0.0
2022-03	RP-95-e	RP-220236	0674	4	B	Support flexible I-RNTI partitioning [RRCInactive]	17.0.0
2022-03	RP-95-e	RP-220236	0676	3	C	Support for mapping complete security capabilities from NAS [UE_Sec_Caps]	17.0.0
2022-03	RP-95-e	RP-220231	0693	6	B	Introduction of Sidelink Relay over Xn	17.0.0
2022-03	RP-95-e	RP-220236	0700	2	B	CSI-RS configuration request Indicator [CSIRSXn]	17.0.0
2022-03	RP-95-e	RP-220230	0716	5	B	Support for Redcap UEs	17.0.0
2022-03	RP-95-e	RP-220233	0720	3	B	RA-SDT BLCR to TS 38.423	17.0.0
2022-03	RP-95-e	RP-220219	0729	3	B	Introduction of MultiSIM support over Xn	17.0.0
2022-03	RP-95-e	RP-220235	0732	4	B	Supporting UE Power Saving Enhancements	17.0.0
2022-03	RP-95-e	RP-220232	0745	3	B	(BL CR to TS38.423) RAN slicing enhancement	17.0.0
2022-03	RP-95-e	RP-220228	0748	3	B	(BL CR to TS 38.423) Transfer of Positioning Context in XnAP	17.0.0
2022-03	RP-95-e	RP-220236	0759	1	D	XnAP Rapporteur Corrections	17.0.0
2022-06	RP-96	RP-221141	0770	1	F	Correction of R17 SON features enhancement	17.1.0
2022-06	RP-96	RP-221135	0772	-	F	Alignment of ASN.1 and tabular for CPC Cancel	17.1.0
2022-06	RP-96	RP-221145	0774	-	F	Correction on CHO Information SN Modification [CHOwithDCkept]	17.1.0
2022-06	RP-96	RP-221135	0776	1	F	Correction on CPAC to 38.423	17.1.0
2022-06	RP-96	RP-221135	0779	1	F	Correction on CPAC	17.1.0
2022-06	RP-96	RP-221136	0780	1	F	Correction for RA-SDT in XnAP	17.1.0
2022-06	RP-96	RP-221136	0782	1	F	Correction of RACH-based SDT Stage 3	17.1.0
2022-06	RP-96	RP-221135	0785		F	ASN.1 corrections for CPAC	17.1.0
2022-06	RP-96	RP-221136	0786		F	SDT corrections over Xn	17.1.0
2022-06	RP-96	RP-221126	0794	1	F	Correction on RedCap Broadcast Information for TS38.423	17.1.0
2022-06	RP-96	RP-221136	0799	1	F	Correction on SRB SDT on XnAP	17.1.0
2022-06	RP-96	RP-221150	0804	1	A	Dynamic ACL over Xn CR 38.423	17.1.0
2022-06	RP-96	RP-221145	0806	1	F	Rapporteur's correction to XnAP version 17.0.0	17.1.0
2022-06	RP-96	RP-221153	0812	2	A	Trace Activation IE support for the Retrieve UE Context procedure	17.1.0
2022-06	RP-96	RP-221141	0813	3	F	XnAP corrections for NR-U	17.1.0
2022-06	RP-96	RP-221141	0814	1	F	MRO for SN change failure correction	17.1.0
2022-06	RP-96	RP-221134	0815	2	F	Correction of MBS Xn handover	17.1.0
2022-06	RP-96	RP-221129	0817	1	F	Correction of the criticality of UE-Slice-MBR	17.1.0

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2022-06	RP-96	RP-221141	0820	2	F	ASN.1 corrections	17.1.0
2022-06	RP-96	RP-221141	0832	1	F	Correction on update management based MDT user consent	17.1.0
2022-06	RP-96	RP-221134	0834	-	F	Correction on NR MBS for 38423	17.1.0
2022-06	RP-96	RP-221134	0835	1	F	Correction on ASN.1 in NR MBS	17.1.0
2022-06	RP-96	RP-221141	0839	1	F	Correction to 38.423 for SON features enhancement	17.1.0
2022-06	RP-96	RP-221143	0840	2	F	CR to 38.423 on corrections to QoE measurement continuity	17.1.0
2022-06	RP-96	RP-221143	0841	1	F	CR to 38.423 on ASN.1 corrections of QoE measurement	17.1.0
2022-06	RP-96	RP-221143	0846	2	F	ASN.1 Correction to 38.423 on NR QoE	17.1.0
2022-06	RP-96	RP-221128	0848	1	F	Corrections on IAB in TS 38.423	17.1.0
2022-06	RP-96	RP-221139	0850	-	F	SL Relay corrections over Xn	17.1.0
2022-06	RP-96	RP-221135	0851		F	Rel-17 Correction for XnAP on the interaction with SN-intiated SCG (de)activation and SN Addition procedure	17.1.0
2022-06	RP-96	RP-221141	0852	-	F	Correction of the handling of Mobility Information in case of CHO	17.1.0
2022-09	RP-97-e	RP-222184	0833	6	F	Correction of Slice Group Configuration	17.2.0
2022-09	RP-97-e	RP-222193	0854	1	F	Coordination of CHO and intra-SN SCG reconfiguration	17.2.0
2022-09	RP-97-e	RP-222199	0856	1	A	CAG access control without mobility restrictions	17.2.0
2022-09	RP-97-e	RP-222195	0859	-	F	Timer handling for CHO with SCG configuration [CHOwithDCkept]	17.2.0
2022-09	RP-97-e	RP-222183	0860	-	F	Miscellaneous Correction on IAB	17.2.0
2022-09	RP-97-e	RP-222203	0865	1	A	Correction of Xn Data Forwarding	17.2.0
2022-09	RP-97-e	RP-222188	0867	-	F	Further Corrections for NR MBS	17.2.0
2022-09	RP-97-e	RP-222185	0868	2	B	CR for TS38.423 on Extending NR Operation to 71GHz	17.2.0
2022-09	RP-97-e	RP-222088	0874	1	F	Correction to RedCap PTW	17.2.0
2022-09	RP-97-e	RP-222201	0891	1	A	Correction on QoS Flow Mapping Indication	17.2.0
2022-09	RP-97-e	RP-222191	0895	1	F	Correction to Report Caracteristics	17.2.0
2022-09	RP-97-e	RP-222191	0898	1	F	Correction for TS 38.423 on UHI in MR-DC	17.2.0
2022-09	RP-97-e	RP-222191	0900	1	F	Correction on NR-U MLB	17.2.0
2022-09	RP-97-e	RP-222191	0901	1	F	Correction to early measurement collection	17.2.0
2022-09	RP-97-e	RP-222628	0902	2	F	Collection on beam measurement report configuration in M1	17.2.0
2022-09	RP-97-e	RP-222192	0903	-	F	Correction to R17 QoE	17.2.0
2022-09	RP-97-e	RP-222191	0905	-	F	Clarification of PSCell ID handling for SCG MRO handling	17.2.0
2022-12	RP-98-e	RP-222879	0908	3	F	The inclusion of the CCO Issue Detection over Xn signalling	17.3.0
2022-12	RP-98-e	RP-222879	0909	1	F	Further correction to Report Caracteristics	17.3.0
2022-12	RP-98-e	RP-222881	0916	2	F	Correction to TS 38.423 on RRC transfer	17.3.0
2022-12	RP-98-e	RP-222881	0917	1	F	Correction on Resource configuration for IAB	17.3.0
2022-12	RP-98-e	RP-222879	0927	2	F	Correction on SHR report	17.3.0
2022-12	RP-98-e	RP-222890	0929	1	A	Correction on RACH report	17.3.0
2022-12	RP-98-e	RP-222879	0930	3	F	Resource Status Reporting correction	17.3.0
2022-12	RP-98-e	RP-222877	0935	2	F	Additional indicator for CHO-CPC coordination	17.3.0
2022-12	RP-98-e	RP-222881	0939		F	Clarification on IAB TNL Address Request IE	17.3.0
2022-12	RP-98-e	RP-222877	0940	1	F	Direct early data forwarding in SN initiated inter-SN CPC	17.3.0
2022-12	RP-98-e	RP-222889	0941	2	F	Correction on providing paritial UE context in small data transmission	17.3.0
2022-12	RP-98-e	RP-222890	0943	1	A	Correction on UE RLF Report in TS38.423	17.3.0
2022-12	RP-98-e	RP-222881	0944	1	F	Correction on IAB STC Info	17.3.0
2022-12	RP-98-e	RP-222879	0946	4	F	XnAP Corrections related to Excess Packet Delay	17.3.0
2022-12	RP-98-e	RP-222879	0947	3	F	Correction related to Management Based MDT PLMN Modification List	17.3.0
2023-03	RAN#99	RP-230595	0960	1	F	Tabular correction of MDT Activation	17.4.0
2023-03	RAN#99	RP-230589	0964	2	F	Correction on the UE identity index to TS38.423	17.4.0
2023-03	RAN#99	RP-230582	0965	1	F	Completion of the work on CHO-CPC coordination	17.4.0
2023-03	RAN#99	RP-230593	0966	1	F	Correction of the presence in the ASN.1 definition of the REL REQ message	17.4.0
2023-03	RAN#99	RP-230595	0971	-	A	Correction of MDT Configuration-EUTRA IE	17.4.0
2023-03	RAN#99	RP-230581	0974	1	F	Correction on SDT Data Forwarding	17.4.0
2023-03	RAN#99	RP-230586	0975	-	F	Correction on Resource configuration for IAB	17.4.0
2023-03	RAN#99	RP-230601	0977	2	A	Correction of SFN offset in served cell information E-UTRA	17.4.0
2023-03	RAN#99	RP-230593	0979	1	F	XnAP corrections of references to RRC	17.4.0
2023-03	RAN#99	RP-230595	0981	1	F	Correction on FAILURE INDICATION	17.4.0
2023-03	RAN#99	RP-230595	0983	-	F	Slice Available Capacity tabular alignment	17.4.0
2023-03	RAN#99	RP-230595	0991	1	A	Correction on MDT area scope	17.4.0
2023-03	RAN#99	RP-230600	0993	1	A	Correction on Conditional Handover Cancel	17.4.0

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2023-03	RAN#99	RP-230595	0995	1	A	ASN.1 Correction of MDT Configuration-NR	17.4.0
2023-03	RAN#99	RP-230593	1003	1	A	Correction on UP security procedure	17.4.0
2023-03	RAN#99	RP-230582	1007	1	F	Correction on coordination of CHO and CPC over Xn	17.4.0
2023-06	RAN#100	RP-231073	0980	4	F	Correction of Burst Arrival Time semantics description	17.5.0
2023-06	RAN#100	RP-231081	1012	2	A	Correction on Mobility Change procedure	17.5.0
2023-06	RAN#100	RP-231072	1014	2	F	Correction to TS 38.423 on RB Set Configuration	17.5.0
2023-06	RAN#100	RP-231067	1015	2	F	Introduction of the UE hashed ID to 38.423	17.5.0
2023-06	RAN#100	RP-231075	1017	2	A	Clarifications on TNLA Addition/Removal/Modification procedures	17.5.0
2023-06	RAN#100	RP-231084	1021	2	B	Missing transmission bandwidth configurations in XnAP [NR_FR1_35MHz_45MHz_BW]	17.5.0
2023-06	RAN#100	RP-231071	1026	2	F	XnAP Rel-17 correction for NR-U metrics	17.5.0
2023-06	RAN#100	RP-231081	1033	2	A	Correction on Trace Activation IE	17.5.0
2023-06	RAN#100	RP-231081	1035	2	A	Correction on the Area Scope IE in MDT Configuration	17.5.0
2023-06	RAN#100	RP-231075	1041	2	F	Correction for UP security policy update in modification procedure	17.5.0
2023-06	RAN#100	RP-231075	1046	3	F	Correction on behaviour procedure text for UP security procedure	17.5.0
2023-06	RAN#100	RP-231076	1048	2	F	Correction on Extended Packet Delay Budget	17.5.0
2023-06	RAN#100	RP-231072	1057	1	A	Correction on QoS mapping information	17.5.0
2023-06	RAN#100	RP-231084	1060		A	Correcting missing extension containers in CHOICE type definitions	17.5.0
2023-09	RAN#101	RP-231899	1071	1	F	Correction on E-UTRA - NR Cell Resource Coordination	17.6.0
2023-09	RAN#101	RP-231903	1072	3	F	Correction on the local NG-RAN Node Identifier on Xn [RRCInactive]	17.6.0
2023-09	RAN#101	RP-231899	1075	-	A	Correction of QoS Flow Mapping Indication IE in PDU Session Resource Modification Required Info - SN terminated	17.6.0
2023-09	RAN#101	RP-231902	1077	1	A	Correction of Additional PDCP Duplication TNL List	17.6.0
2023-09	RAN#101	RP-231902	1083	-	F	Correction to misalignment of TAI between ASN.1 and tabular in QoE	17.6.0
2023-09	RAN#101	RP-231899	1084	-	F	Correction of Served Cell Specific Info Request	17.6.0
2023-12	RAN#102	RP-233849	1092	3	F	Correction on multicast data forwarding in case of UE context retrieval	17.7.0
2023-12	RAN#102	RP-233853	1105	1	F	Correction on Fast MCG Recovery via SRB3	17.7.0
2023-12	RAN#102	RP-233848	1106	1	F	Correction on IAB authorization status transfer	17.7.0
2023-12	RAN#102	RP-233826	0933	12	B	CR for NR NTN	18.0.0
2023-12	RAN#102	RP-233832	0934	12	B	Addition of SON features enhancement	18.0.0
2023-12	RAN#102	RP-233824	0951	8	B	NR support for UAV over Xn	18.0.0
2023-12	RAN#102	RP-234067	0959	13	B	Support of AI/ML in NG-RAN	18.0.0
2023-12	RAN#102	RP-233822	0967	9	B	Support NR Sidelink Relay Enhancements	18.0.0
2023-12	RAN#102	RP-233840	0978	11	B	Introduction of equivalent SNPNs	18.0.0
2023-12	RAN#102	RP-233819	1010	8	B	Introduction of MT-SDT	18.0.0
2023-12	RAN#102	RP-233817	1018	9	B	Introduction of Network Energy Saving	18.0.0
2023-12	RAN#102	RP-233838	1049	10	B	Introduction of 5G Timing Resiliency and URLLC enhancements	18.0.0
2023-12	RAN#102	RP-233832	1050	6	B	Introduction of MDT enhancements to support Non-Public Networks	18.0.0
2023-12	RAN#102	RP-233818	1051	7	B	Introduction of Subsequent CPAC	18.0.0
2023-12	RAN#102	RP-233816	1052	6	B	Introduction of RedCap enhancement	18.0.0
2023-12	RAN#102	RP-233828	1068	5	B	Introduction of NR MBS enhancements	18.0.0
2023-12	RAN#102	RP-233833	1069	8	B	Introduction of R18 QoE measurement enhancements	18.0.0
2023-12	RAN#102	RP-233845	1085	4	B	Positioning inactive mode for SDT without anchor relocation [POS_SDT]	18.0.0
2023-12	RAN#102	RP-233818	1090	4	B	Introduction of CHO with SCG(s)	18.0.0
2023-12	RAN#102	RP-233830	1091	6	B	Introduction of XR enhancement	18.0.0
2023-12	RAN#102	RP-233845	1093	2	B	Support of oversize UL SDT Data Arrival [Large SDT Uplink Data]	18.0.0
2023-12	RAN#102	RP-233841	1094	2	B	Introduction of 3 MHz channel bandwidth	18.0.0
2023-12	RAN#102	RP-233839	1098	4	B	Signalling cells configured with zero resources for a slice	18.0.0
2023-12	RAN#102	RP-233834	1102	3	B	Support for mobile IAB	18.0.0
2023-12	RAN#102	RP-233818	1113	1	B	(CR to 38.423) Introduction of L1/L2 triggered mobility	18.0.0
2024-03	RAN#103	RP-240620	1061	9	B	Support of NR Positioning Enhancements	18.1.0
2024-03	RAN#103	RP-240646	1115	1	F	Clarification of the use of the XnAP IDs	18.1.0
2024-03	RAN#103	RP-240621	1116	1	F	Review of the description of the S-CPAC solution	18.1.0
2024-03	RAN#103	RP-240621	1117	1	F	Correction and completion of the solution for CHO with CPAC	18.1.0
2024-03	RAN#103	RP-240640	1122	2	F	Correction of cell unavailable list	18.1.0
2024-03	RAN#103	RP-240621	1124	1	F	Correction for SK Counter in S-CPAC	18.1.0
2024-03	RAN#103	RP-240621	1131	2	F	Corrections on Complete Configuation Indicator in XnAP	18.1.0

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Date	Meeting	TDoc	CR	Rev	Cat	Subject/Comment	New version
2024-03	RAN#103	RP-240642	1145	1	A	Correction on UE history information and SCG UE History Information	18.1.0
2024-03	RAN#103	RP-240621	1147	1	F	Correction on CHO with SCGs and S-CPAC	18.1.0
2024-03	RAN#103	RP-240634	1149	1	F	Introduction of separate uplink and downlink PDU set QoS parameters	18.1.0
2024-03	RAN#103	RP-240641	1150	1	F	Correction of selected NID in PDU Session Resource Setup Info - SN terminated	18.1.0
2024-03	RAN#103	RP-240646	1152	1	A	Correction of DRBs Subject To Status Transfer List	18.1.0
2024-03	RAN#103	RP-240635	1163	2	F	ASN.1 corrections for MDT enhancements to support NPN	18.1.0
2024-03	RAN#103	RP-240643	1167	-	A	Correction on IAB authorization status transfer for NR-DC	18.1.0
2024-03	RAN#103	RP-240621	1168	2	F	Support direct data forwarding for DC to DC handover	18.1.0
2024-03	RAN#103	RP-240622	1172	-	F	Correction to the XnAP Conditional Handover Time Based Information IE	18.1.0
2024-03	RAN#103	RP-240637	1173	2	F	Corrections on XnAP for mobile IAB (Error in section 8.5.3.2, therefore this part is not implemented)	18.1.0
2024-03	RAN#103	RP-240638	1176	2	F	Miscellaneous correction for AI/ML function in NG-RAN	18.1.0
2024-03	RAN#103	RP-240635	1178	1	F	Correction on SON for NR-U	18.1.0
2024-03	RAN#103	RP-240621	1183	2	F	Support intra-SN subsequent CPAC in MN format	18.1.0
2024-03	RAN#103	RP-240634	1191	4	F	ASN.1 correction for the ECN Marking or Congestion Information Reporting Request IE	18.1.0
2024-03	RAN#103	RP-240636	1193	2	F	Rel-18 Corrections of QMC	18.1.0
2024-03	RAN#103	RP-240617	1195	-	D	Rel-18 Rapporteur corrections of RRC references	18.1.0
2024-03	RAN#103	RP-240617	1196	-	D	Rel-18 Rapporteur corrections of criticality notation in tabular protocol representation	18.1.0
2024-03	RAN#103	RP-240617	1197	1	D	Rel-18 Rapporteur corrections of general errors and editorials	18.1.0
2024-03	RAN#103	RP-240644	1202	2	A	Mobility Restrictions with NR NTN - XnAP Impacts	18.1.0
2024-03	RAN#103	RP-240627	1203	2	F	Correction on oversize DL SDT data arrival	18.1.0
2024-03	RAN#103	RP-240646	1207	1	A	Correction on PDU Session Resources Not Admitted	18.1.0
2024-03	RAN#103	RP-240636	1209	1	F	ASN.1 Correction on XnAP for R18 QoE	18.1.0
2024-03	RAN#103	RP-240644	1212	2	A	Correction on handover procedure	18.1.0
2024-03	RAN#103	RP-240638	1217	2	F	Corrections to XnAP for AI/ML for NG-RAN	18.1.0
2024-03	RAN#103	RP-240636	1221	2	F	ASN.1 corrections on R18 QoE enhancements	18.1.0
2024-03	RAN#103	RP-240639	1225	2	F	ASN.1 Correction on XnAP for Time resilience and uRLLC	18.1.0
2024-03	RAN#103	RP-240621	1226	1	F	Support intra-SN subsequent CPAC in MN format	18.1.0
2024-03	RAN#103	RP-240635	1229	1	F	Correction on SN RACH report	18.1.0
2024-03	RAN#103	RP-240642	1232	1	A	Xn correction for NR-U	18.1.0
2024-03	RAN#103	RP-240642	1239	-	F	Clarification on MIMO PRB usage Information reporting over Xn	18.1.0
2024-03	RAN#103	RP-240643	1240	-	A	Handling of IAB authorization status during MT migration	18.1.0
2024-03	RAN#103	RP-240634	1241	1	F	Correction on PDU set data forwarding	18.1.0
2024-03	RAN#103	RP-240621	1242	-	F	Corrections on Rel-18 S-CPAC	18.1.0
2024-03	RAN#103	RP-240635	1243	1	F	Correction of reference for SN Mobility Information	18.1.0
2024-06	RAN#104	RP-241121	1155	3	A	Correction of IP-Sec Transport Layer Address	18.2.0
2024-06	RAN#104	RP-241112	1228	2	B	Introduction of XR Broadcast Information IE for XnAP [2Rx_XR_Device]	18.2.0
2024-06	RAN#104	RP-241113	1245	1	D	Correcting ASN.1 comments for conditional present IEs	18.2.0
2024-06	RAN#104	RP-241113	1249	2	F	Correction of handling GTP-U Error Indication	18.2.0
2024-06	RAN#104	RP-241113	1255	2	F	Correction on IAB-node de-registration handling	18.2.0
2024-06	RAN#104	RP-241105	1261	2	F	Correction on MDBV for alternative QoS	18.2.0
2024-06	RAN#104	RP-241110	1262	2	F	Correction on text description of UE trajectory information	18.2.0
2024-06	RAN#104	RP-241110	1267	3	F	Stage 3 corrections for AI/ML for NG-RAN	18.2.0
2024-06	RAN#104	RP-241107	1270	4	F	Correction on PSCell List Container List of RA report	18.2.0
2024-06	RAN#104	RP-241107	1282	1	F	ASN.1 correction of CAG List for MDT	18.2.0
2024-06	RAN#104	RP-241106	1283	2	F	Addition of a missing indication in SN-initiated S-CPAC	18.2.0
2024-06	RAN#104	RP-241107	1288	2	F	Corrections on MDT for PNI-NPN	18.2.0
2024-06	RAN#104	RP-241106	1289	-	F	Correction of source UE AP IDs in SN addition procedure	18.2.0
2024-06	RAN#104	RP-241117	1291	1	A	Correcting IE referenced in Coverage Modification	18.2.0
2024-06	RAN#104	RP-241113	1292	2	F	Correction of Recovery of Split PDU Session	18.2.0
2024-06	RAN#104	RP-241108	1309	1	F	Correction to QMC support in NR-DC for session status	18.2.0
2024-06	RAN#104	RP-241107	1315	1	F	Indicator on MDT configuration in MR-DC	18.2.0
2024-06	RAN#104	RP-241113	1319	2	F	Correction on textual description of Early Status Transfer procedure for CHO	18.2.0
2024-06	RAN#104	RP-241113	1321	-	F	Correction on textual description of Early Status Transfer procedure for CPAC	18.2.0
2024-09	RAN#105	RP-241873	1253	3	F	Correction of QoS Flow List	18.3.0

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Date	Meeting	TDoc	CR	Rev	Cat	Subject/Comment	New version
2024-09	RAN#105	RP-241875	1278	3	F	Correction on the QMC information in the SN modification required message	18.3.0
2024-09	RAN#105	RP-241872	1305	3	F	Corrections on information element to support both CPAC and S-CPAC	18.3.0
2024-09	RAN#105	RP-241879	1322	2	B	Introduction of barring exemption for (e)RedCap and 2RX XR UEs [EM_Call_Exemption]	18.3.0
2024-09	RAN#105	RP-241873	1323	1	F	Correction of PDU Sessions List To Be Released - UPError	18.3.0
2024-09	RAN#105	RP-241872	1324	2	F	Correction on S-CPAC Complete Configuration Indicator	18.3.0
2024-09	RAN#105	RP-241873	1328	2	A	Correction on asymmetric UL and DL for TDD Carrier	18.3.0
2024-09	RAN#105	RP-241874	1333	1	F	Support of pre-configured SRS activation	18.3.0
2024-09	RAN#105	RP-241873	1336	1	A	Correction of Served Cell Specific Info Request in NG-RAN node configuration update procedure	18.3.0
2024-09	RAN#105	RP-241876	1337	-	F	Correction of TSC Traffic Characteristics in the PDU Session Resource Modification Info - MN terminated	18.3.0
2024-09	RAN#105	RP-241875	1339	-	F	Changing presence of IE extensions for QoE related IEs	18.3.0
2024-09	RAN#105	RP-241870	1348	1	A	Correction on SSB transmission periodicity for IAB	18.3.0
2024-12	RAN#106	RP-243103	1358	2	A	Correction on Retrieve UE Context Confirm	18.4.0
2024-12	RAN#106	RP-243100	1365	2	A	Correction for the semantics description	18.4.0
2024-12	RAN#106	RP-243099	1373	3	F	Correction of mobility change procedure	18.4.0
2024-12	RAN#106	RP-243099	1375	1	A	Correcting IE reference in Cell Replacing Info	18.4.0
2024-12	RAN#106	RP-243103	1381	1	F	Clarification of the usage of the UE History Information	18.4.0
2024-12	RAN#106	RP-243103	1400	3	F	Correction for the reference specification on UE History Information	18.4.0
2024-12	RAN#106	RP-243100	1417	-	A	Correction on IAB RESOURCE COORDINATION	18.4.0
2024-12	RAN#106	RP-243099	1429	1	F	Addition of procedural description of CPAC Configuration	18.4.0
2024-12	RAN#106	RP-243102	1435	-	F	Correction on "S-CPAC Request" IE description for Intra-SN S-CPAC in MN format	18.4.0
2024-12	RAN#106	RP-243103	1437	2	F	Correction on neighbour information	18.4.0
2025-03	RAN#107	RP-250140	1396	3	F	Correction of a wrong description of the S-NG-RAN node Counter Check procedure	18.5.0
2025-03	RAN#107	RP-250135	1422	3	F	Correction for Data Collection Reporting procedure's interaction with Handover Request procedure	18.5.0
2025-03	RAN#107	RP-250137	1439	2	A	Correction on UE XnAP ID in IAB procedures	18.5.0
2025-03	RAN#107	RP-250136	1440	2	F	Clarification for propagation of MDT Configuration EUTRA	18.5.0
2025-03	RAN#107	RP-250135	1441	1	F	Clarification on predicted UE trajectory over HO Request	18.5.0
2025-03	RAN#107	RP-250136	1454	-	A	Correction on reference in SCG failure information reporting	18.5.0
2025-03	RAN#107	RP-250136	1459	1	F	Correction on DL LBT failure information	18.5.0
2025-06	RAN#108	RP-251147	1442	3	F	Additional procedural text measured UE trajectory request	18.6.0
2025-06	RAN#108	RP-251147	1448	4	F	Additional procedural text for data collection configuration	18.6.0
2025-06	RAN#108	RP-251152	1465	2	F	Correction on S-CPAC for the presence of SN Security Key IE	18.6.0
2025-06	RAN#108	RP-251149	1466	2	F	Clarification on Carrier Bandwidth less than 5MHz	18.6.0
2025-06	RAN#108	RP-251156	1480	2	F	Correction on Served Cells To Update	18.6.0
2025-06	RAN#108	RP-251155	1481	2	F	Correction for MDBV in alternative QoS	18.6.0
2025-06	RAN#108	RP-251150	1494	1	A	Correction on Subcarrier Spacing for IAB	18.6.0
2025-06	RAN#108	RP-251147	1495	1	F	Correction on UE performance feedback	18.6.0
2025-06	RAN#108	RP-251144	1498		F	Correction on the privacy indicator for MDT	18.6.0
2025-06	RAN#108	RP-251147	1499	2	F	Correction on the definition of UE Throughput	18.6.0
2025-09	RAN#109	RP-252679	1269	15	B	Support of XR enhancements	19.0.0
2025-09	RAN#109	RP-252674	1341	10	B	Introduction of low-power wake-up signal and receiver for NR	19.0.0
2025-09	RAN#109	RP-252682	1411	10	B	Support of enhancements on AI/ML for NG-RAN	19.0.0
2025-09	RAN#109	RP-252681	1412	6	B	Addition of MDT enhancements	19.0.0
2025-09	RAN#109	RP-252681	1413	11	B	Addition of SON enhancements	19.0.0
2025-09	RAN#109	RP-252677	1414	12	B	Support of inter-CU LTM	19.0.0
2025-09	RAN#109	RP-252675	1436	10	B	Introduction of Network Energy Saving Enhancement	19.0.0
2025-09	RAN#109	RP-252687	1460	5	B	Support Aerial UE Flight Information Reporting	19.0.0
2025-09	RAN#109	RP-252680	1461	4	B	Support of Multi-hop relay	19.0.0
2025-09	RAN#109	RP-252687	1485	2	B	Trace Depth for Vendor Specific Trace Record	19.0.0
2025-09	RAN#109	RP-252672	1486	4	B	Introduction of Evolution of NR duplex operation	19.0.0
2025-09	RAN#109	RP-252683	1487	3	B	Support for Wireless Access Backhaul	19.0.0
2025-09	RAN#109	RP-252677	1488	4	B	Xn support for inter-CU LTM in DC	19.0.0
2025-09	RAN#109	RP-252690	1491	4	F	Correction for PDCP SN gap report during UE's handover	19.0.0
2025-09	RAN#109	RP-252684	1505	1	B	Introduction of 7 MHz Channel Bandwidth	19.0.0
2025-12	RAN#110	RP-253342	1514	2	F	Correction on the description of UE Context Information - Retrieve UE Context Response	19.1.0

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2025-12	RAN#110	RP-253352	1526	1	F	Correction on the description of the geographical area scope	19.1.0
2025-12	RAN#110	RP-253357	1528	2	A	Correction to positioning activation and deactivation procedure	19.1.0
2025-12	RAN#110	RP-253354	1534	1	F	Correction on the description of WAB-MT Identifier	19.1.0
2025-12	RAN#110	RP-253353	1541	2	F	Miscellaneous corrections on AI/ML for NG-RAN	19.1.0
2025-12	RAN#110	RP-253348	1549	2	F	Essential correction on inter-CU LTM in DC	19.1.0
2025-12	RAN#110	RP-253350	1551	2	F	Add the missing behavior text for DL PDU Set Information Marking Support Indication	19.1.0
2025-12	RAN#110	RP-253345	1555	2	F	Correction of RAN Paging for low-power wake-up signal and receiver	19.1.0
2025-12	RAN#110	RP-253353	1559	3	F	Continuous MDT support	19.1.0
2025-12	RAN#110	RP-253354	1560	3	F	Corrections of Xn-related issues for WAB-gNB	19.1.0
2025-12	RAN#110	RP-253359	1564	3	A	Correction on UE Performance metrics	19.1.0
2025-12	RAN#110	RP-253345	1573	1	F	Introducing LP-WUS disabling indication	19.1.0
2025-12	RAN#110	RP-253346	1578	4	F	Corrections to Xn support for on-demand SIB1 coordination	19.1.0
2025-12	RAN#110	RP-253346	1579	3	F	Corrections to OD-SIB1 Configuration Provision Status Update	19.1.0
2025-12	RAN#110	RP-253348	1582	1	F	Correction on LTM Cell Switch Notification	19.1.0
2025-12	RAN#110	RP-253348	1583	3	F	Correction on CSI-RS Resource Set and CSI IM Resource Transfer for inter-CU LTM	19.1.0
2025-12	RAN#110	RP-253344	1595	2	F	Correction to XnAP on CLI Indication	19.1.0
2025-12	RAN#110	RP-253348	1596	2	F	Removal of Request for CSI-RS resource configuration for Early CSI acquisition	19.1.0
2025-12	RAN#110	RP-253348	1597	1	F	Corrections on Inter-CU LTM	19.1.0
2025-12	RAN#110	RP-253353	1601	1	F	Correction for Slice UE performance metrics	19.1.0
2025-12	RAN#110	RP-253348	1604	1	F	Introduction of missing LTM Indicator for inter-CU LTM	19.1.0
2025-12	RAN#110	RP-253348	1606	1	F	Correction on the CSI-RS Coordination procedure	19.1.0
2025-12	RAN#110	RP-253350	1610		F	Add the missing behavior text for the MMSID IE and the Indication of Bitrate Adaptation IE	19.1.0
2025-12	RAN#110	RP-253348	1624	1	F	Correction to L2 reset in inter-CU LTM	19.1.0
2025-12	RAN#110	RP-253354	1630	2	F	Clarification of handover for WAB-MT	19.1.0
2025-12	RAN#110	RP-253341	1650	1	D	Rapporteur Rel-19 Corrections	19.1.0
2026-03	RAN#111	RP-260275	1553	2	A	Correction on Notification Control Indication	19.2.0
2026-03	RAN#111	RP-260276	1614	2	A	Correction on prioritized alternative QoS profile	19.2.0
2026-03	RAN#111	RP-260271	1667	1	F	Interaction between Handover Success and Cell Switch Notification	19.2.0
2026-03	RAN#111	RP-260271	1668	1	F	Correction on CSI Report Configuration for CSI Acquisition for inter-CU LTM	19.2.0
2026-03	RAN#111	RP-260271	1670	1	F	Correction on NG-RAN node UE XnAP ID transfer in LTM CONFIGURATION UPDATE	19.2.0
2026-03	RAN#111	RP-260273	1675	-	A	Beam measurement report quantity	19.2.0
2026-03	RAN#111	RP-260274	1678	1	A	Correction of QMC Coordination Request	19.2.0
2026-03	RAN#111	RP-260271	1680	1	F	Correction to timer issue for inter-SN LTM	19.2.0
2026-03	RAN#111	RP-260271	1681	1	F	Miscellaneous corrections for LTM	19.2.0
2026-03	RAN#111	RP-260270	1686	2	F	Corrections of AI/ML-based CCO for XnAP	19.2.0
2026-03	RAN#111	RP-260271	1690	3	F	Support for Handover Cancel from the source gNB for LTM	19.2.0
2026-03	RAN#111	RP-260271	1692	1	F	Correction on IE presence for LTM L2 Reset Configuration List	19.2.0
2026-03	RAN#111	RP-260655	1696	5	F	Support Aerial UE Flight Information Reporting	19.2.0
2026-03	RAN#111	RP-260271	1697	2	F	Correction on Handover Preparation for LTM	19.2.0
2026-03	RAN#111	RP-260271	1699	2	F	Correction on TA Information Transfer inter-SN SCG LTM	19.2.0
2026-03	RAN#111	RP-260271	1700	1	F	Correction on UE Based TA Measurement ID assignment for inter-CU (SCG) LTM	19.2.0

History

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V19.0.0	October 2025	Publication
V19.1.0	February 2026	Publication
V19.2.0	April 2026	Publication