ETSI TS 138 423 V17.14.0 (2026-04)

TECHNICAL SPECIFICATION

5G;
NG-RAN;
Xn Application Protocol (XnAP)
(3GPP TS 38.423 version 17.14.0 Release 17)

Reference
RTS/TSGR-0338423vhe0

Keywords
5G

ETSI

650 Route des Lucioles
F-06921 Sophia Antipolis Cedex - FRANCE

Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

Siret N° 348 623 562 00017 - APE 7112B
Association à but non lucratif enregistrée à la
Sous-Préfecture de Grasse (06) N° w061004871

Important notice

The present document can be downloaded from the
ETSI Search & Browse Standards application.

The present document may be made available in electronic versions and/or in print. The content of any electronic and/or print versions of the present document shall not be modified without the prior written authorization of ETSI. In case of any existing or perceived difference in contents between such versions and/or in print, the prevailing version of an ETSI deliverable is the one made publicly available in PDF format on ETSI deliver repository.

Users should be aware that the present document may be revised or have its status changed, this information is available in the Milestones listing.

If you find errors in the present document, please send your comments to the relevant service listed under Committee Support Staff.

If you find a security vulnerability in the present document, please report it through our Coordinated Vulnerability Disclosure (CVD) program.

Notice of disclaimer & limitation of liability

The information provided in the present deliverable is directed solely to professionals who have the appropriate degree of experience to understand and interpret its content in accordance with generally accepted engineering or other professional standard and applicable regulations.
No recommendation as to products and services or vendors is made or should be implied.
No representation or warranty is made that this deliverable is technically accurate or sufficient or conforms to any law and/or governmental rule and/or regulation and further, no representation or warranty is made of merchantability or fitness for any particular purpose or against infringement of intellectual property rights.
In no event shall ETSI be held liable for loss of profits or any other incidental or consequential damages.

Any software contained in this deliverable is provided "AS IS" with no warranties, express or implied, including but not limited to, the warranties of merchantability, fitness for a particular purpose and non-infringement of intellectual property rights and ETSI shall not be held liable in any event for any damages whatsoever (including, without limitation, damages for loss of profits, business interruption, loss of information, or any other pecuniary loss) arising out of or related to the use of or inability to use the software.

Copyright Notification

No part may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm except as authorized by written permission of ETSI.
The content of the PDF version shall not be modified without the written authorization of ETSI.
The copyright and the foregoing restriction extend to reproduction in all media.

© ETSI 2026.
All rights reserved.

Intellectual Property Rights

Essential patents

IPRs essential or potentially essential to normative deliverables may have been declared to ETSI. The declarations pertaining to these essential IPRs, if any, are publicly available for **ETSI members and non-members**, and can be found in ETSI SR 000 314: *"Intellectual Property Rights (IPRs); Essential, or potentially Essential, IPRs notified to ETSI in respect of ETSI standards"*, which is available from the ETSI Secretariat. Latest updates are available on the ETSI IPR online database.

Pursuant to the ETSI Directives including the ETSI IPR Policy, no investigation regarding the essentiality of IPRs, including IPR searches, has been carried out by ETSI. No guarantee can be given as to the existence of other IPRs not referenced in ETSI SR 000 314 (or the updates on the ETSI Web server) which are, or may be, or may become, essential to the present document.

Trademarks

The present document may include trademarks and/or tradenames which are asserted and/or registered by their owners. ETSI claims no ownership of these except for any which are indicated as being the property of ETSI, and conveys no right to use or reproduce any trademark and/or tradename. Mention of those trademarks in the present document does not constitute an endorsement by ETSI of products, services or organizations associated with those trademarks.

DECT™, **PLUGTESTS™**, **UMTS™** and the ETSI logo are trademarks of ETSI registered for the benefit of its Members. **3GPP™**, **LTE™** and **5G™** logo are trademarks of ETSI registered for the benefit of its Members and of the 3GPP Organizational Partners. **oneM2M™** logo is a trademark of ETSI registered for the benefit of its Members and of the oneM2M Partners. **GSM**® and the GSM logo are trademarks registered and owned by the GSM Association.

Legal Notice

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

The present document may refer to technical specifications or reports using their 3GPP identities. These shall be interpreted as being references to the corresponding ETSI deliverables.

The cross reference between 3GPP and ETSI identities can be found at 3GPP to ETSI numbering cross-referencing.

Modal verbs terminology

In the present document "**shall**", "**shall not**", "**should**", "**should not**", "**may**", "**need not**", "**will**", "**will not**", "**can**" and "**cannot**" are to be interpreted as described in clause 3.2 of the ETSI Drafting Rules (Verbal forms for the expression of provisions).

"**must**" and "**must not**" are **NOT** allowed in ETSI deliverables except when used in direct citation.

Contents

Intellectual Property Rights 2
Legal Notice 2
Modal verbs terminology 2
Foreword 15
1 Scope 16
2 References 16
3 Definitions, symbols and abbreviations 18
3.1 Definitions 18
3.2 Abbreviations 19
4 General 19
4.1 Procedure specification principles 19
4.2 Forwards and backwards compatibility 20
4.3 Specification notations 20
5 XnAP services 20
5.1 XnAP procedure modules 20
5.2 Parallel transactions 21
6 Services expected from signalling transport 21
7 Functions of XnAP 21
8 XnAP procedures 21
8.1 Elementary procedures 21
8.2 Basic mobility procedures 24
8.2.1 Handover Preparation 24
8.2.1.1 General 24
8.2.1.2 Successful Operation 24
8.2.1.3 Unsuccessful Operation 30
8.2.1.4 Abnormal Conditions 30
8.2.2 SN Status Transfer 31
8.2.2.1 General 31
8.2.2.2 Successful Operation 31
8.2.2.3 Unsuccessful Operation 32
8.2.2.4 Abnormal Conditions 32
8.2.3 Handover Cancel 32
8.2.3.1 General 32
8.2.3.2 Successful Operation 32
8.2.3.3 Unsuccessful Operation 33
8.2.3.4 Abnormal Conditions 33
8.2.4 Retrieve UE Context 33
8.2.4.1 General 33
8.2.4.2 Successful Operation 33
8.2.4.3 Unsuccessful Operation 36
8.2.4.4 Abnormal Conditions 36
8.2.5 RAN Paging 37
8.2.5.1 General 37
8.2.5.2 Successful operation 37
8.2.5.3 Unsuccessful Operation 38
8.2.5.4 Abnormal Condition 38
8.2.6 XN-U Address Indication 38
8.2.6.1 General 38
8.2.6.2 Successful Operation 38
8.2.6.3 Unsuccessful Operation 39
8.2.6.4 Abnormal Conditions 39

8.2.7 UE Context Release 40
8.2.7.1 General 40
8.2.7.2 Successful Operation 40
8.2.7.3 Unsuccessful Operation 41
8.2.7.4 Abnormal Conditions 41
8.2.8 Handover Success 41
8.2.8.1 General 41
8.2.8.2 Successful Operation 42
8.2.8.3 Unsuccessful Operation 42
8.2.8.4 Abnormal Conditions 42
8.2.9 Conditional Handover Cancel 42
8.2.9.1 General 42
8.2.9.2 Successful Operation 43
8.2.9.3 Unsuccessful Operation 43
8.2.9.4 Abnormal Conditions 43
8.2.10 Early Status Transfer 43
8.2.10.1 General 43
8.2.10.2 Successful Operation 44
8.2.10.3 Unsuccessful Operation 45
8.2.10.4 Abnormal Conditions 45
8.2.11 RAN Multicast Group Paging 45
8.2.11.1 General 45
8.2.11.2 Successful operation 45
8.2.12 Retrieve UE Context Confirm 46
8.2.12.1 General 46
8.2.12.2 Successful Operation 46
8.2.12.3 Unsuccessful Operation 46
8.2.12.4 Abnormal Conditions 46
8.2.13 Partial UE Context Transfer 46
8.2.13.1 General 46
8.2.13.2 Successful Operation 47
8.2.13.3 Unsuccessful Operation 47
8.2.13.4 Abnormal Condition 47
8.3 Procedures for Dual Connectivity 47
8.3.1 S-NG-RAN node Addition Preparation 47
8.3.1.1 General 47
8.3.1.2 Successful Operation 48
8.3.1.3 Unsuccessful Operation 54
8.3.1.4 Abnormal Conditions 54
8.3.2 S-NG-RAN node Reconfiguration Completion 55
8.3.2.1 General 55
8.3.2.2 Successful Operation 55
8.3.2.3 Abnormal Conditions 55
8.3.3 M-NG-RAN node initiated S-NG-RAN node Modification Preparation 55
8.3.3.1 General 55
8.3.3.2 Successful Operation 56
8.3.3.3 Unsuccessful Operation 64
8.3.3.4 Abnormal Conditions 64
8.3.4 S-NG-RAN node initiated S-NG-RAN node Modification 65
8.3.4.1 General 65
8.3.4.2 Successful Operation 66
8.3.4.3 Unsuccessful Operation 68
8.3.4.4 Abnormal Conditions 69
8.3.5 S-NG-RAN node initiated S-NG-RAN node Change 70
8.3.5.1 General 70
8.3.5.2 Successful Operation 70
8.3.5.3 Unsuccessful Operation 71
8.3.5.4 Abnormal Conditions 71
8.3.6 M-NG-RAN node initiated S-NG-RAN node Release 72
8.3.6.1 General 72
8.3.6.2 Successful Operation 72
8.3.6.3 Unsuccessful Operation 73

8.3.6.4 Abnormal Conditions 73
8.3.7 S-NG-RAN node initiated S-NG-RAN node Release 73
8.3.7.1 General 73
8.3.7.2 Successful Operation 73
8.3.7.3 Unsuccessful Operation 74
8.3.7.4 Abnormal Conditions 74
8.3.8 S-NG-RAN node Counter Check 74
8.3.8.1 General 74
8.3.8.2 Successful Operation 74
8.3.8.3 Unsuccessful Operation 75
8.3.8.4 Abnormal Conditions 75
8.3.9 RRC Transfer 75
8.3.9.1 General 75
8.3.9.2 Successful Operation 75
8.3.9.3 Unsuccessful Operation 76
8.3.9.4 Abnormal Conditions 76
8.3.10 Notification Control Indication 76
8.3.10.1 General 76
8.3.10.2 Successful Operation – M-NG-RAN node initiated 77
8.3.10.3 Successful Operation – S-NG-RAN node initiated 77
8.3.10.4 Abnormal Conditions 77
8.3.11 Activity Notification 78
8.3.11.1 General 78
8.3.11.2 Successful Operation 78
8.3.11.3 Abnormal Conditions 78
8.3.12 E-UTRA – NR Cell Resource Coordination 79
8.3.12.1 General 79
8.3.12.2 Successful Operation 79
8.3.13 Secondary RAT Data Usage Report 80
8.3.13.1 General 80
8.3.13.2 Successful Operation 80
8.3.13.3 Unsuccessful Operation 80
8.3.13.4 Abnormal Conditions 80
8.3.14 Trace Start 80
8.3.14.1 General 80
8.3.14.2 Successful Operation 81
8.3.14.3 Abnormal Conditions 81
8.3.15 Deactivate Trace 81
8.3.15.1 General 81
8.3.15.2 Successful Operation 82
8.3.15.3 Abnormal Conditions 82
8.3.16 Cell Traffic Trace 82
8.3.16.1 General 82
8.3.16.2 Successful Operation 82
8.3.17 SCG Failure Information Report 82
8.3.17.1 General 82
8.3.17.2 Successful Operation 83
8.3.17.3 Unsuccessful Operation 83
8.3.17.4 Abnormal Conditions 83
8.3.18 SCG Failure Transfer 83
8.3.18.1 General 83
8.3.18.2 Successful Operation 84
8.3.18.3 Unsuccessful Operation 84
8.3.18.4 Abnormal Conditions 84
8.3.19 Conditional PSCell Change Cancel 84
8.3.19.1 General 84
8.3.19.2 Successful Operation 84
8.3.19.3 Unsuccessful Operation 84
8.3.19.4 Abnormal Conditions 85
8.4 Global procedures 85
8.4.1 Xn Setup 85
8.4.1.1 General 85

8.4.1.2 Successful Operation 85
8.4.1.3 Unsuccessful Operation 88
8.4.1.4 Abnormal Conditions 88
8.4.2 NG-RAN node Configuration Update 88
8.4.2.1 General 88
8.4.2.2 Successful Operation 89
8.4.2.3 Unsuccessful Operation 93
8.4.2.4 Abnormal Conditions 94
8.4.3 Cell Activation 94
8.4.3.1 General 94
8.4.3.2 Successful Operation 94
8.4.3.3 Unsuccessful Operation 95
8.4.3.4 Abnormal Conditions 95
8.4.4 Reset 95
8.4.4.1 General 95
8.4.4.2 Successful Operation 95
8.4.4.3 Unsuccessful Operation 96
8.4.4.4 Abnormal Conditions 96
8.4.5 Error Indication 96
8.4.5.1 General 96
8.4.5.2 Successful Operation 97
8.4.5.3 Unsuccessful Operation 97
8.4.5.4 Abnormal Conditions 97
8.4.6 Xn Removal 97
8.4.6.1 General 97
8.4.6.2 Successful Operation 98
8.4.6.3 Unsuccessful Operation 98
8.4.6.4 Abnormal Conditions 98
8.4.7 Failure Indication 99
8.4.7.1 General 99
8.4.7.2 Successful Operation 99
8.4.7.3 Unsuccessful Operation 99
8.4.7.4 Abnormal Conditions 99
8.4.8 Handover Report 99
8.4.8.1 General 99
8.4.8.2 Successful Operation 100
8.4.8.3 Unsuccessful Operation 100
8.4.8.4 Abnormal Conditions 100
8.4.9 Mobility Settings Change 100
8.4.9.1 General 100
8.4.9.2 Successful Operation 101
8.4.9.3 Unsuccessful Operation 101
8.4.9.4 Abnormal Conditions 101
8.4.10 Resource Status Reporting Initiation 102
8.4.10.1 General 102
8.4.10.2 Successful Operation 102
8.4.10.3 Unsuccessful Operation 103
8.4.10.4 Abnormal Conditions 103
8.4.11 Resource Status Reporting 104
8.4.11.1 General 104
8.4.11.2 Successful Operation 104
8.4.11.3 Unsuccessful Operation 104
8.4.11.4 Abnormal Conditions 104
8.4.12 Access And Mobility Indication 104
8.4.12.1 General 104
8.4.12.2 Successful Operation 105
8.4.12.3 Abnormal Conditions 105
8.5 IAB Procedures 105
8.5.1 F1-C Traffic Transfer 105
8.5.1.1 General 105
8.5.1.2 Successful Operation 105
8.5.1.3 Unsuccessful Operation 106

8.5.1.4 Abnormal Conditions 106
8.5.2 IAB Transport Migration Management 106
8.5.2.1 General 106
8.5.2.2 Successful Operation 106
8.5.2.3 Unsuccessful Operation 107
8.5.2.4 Abnormal Conditions 107
8.5.3 IAB Transport Migration Modification 107
8.5.3.1 General 107
8.5.3.2 Successful Operation 108
8.5.3.3 Unsuccessful Operation 108
8.5.3.4 Abnormal Conditions 109
8.5.4 IAB Resource Coordination 109
8.5.4.1 General 109
8.5.4.2 Successful Operation 109
8.5.4.3 Unsuccessful Operation 109
8.5.4.4 Abnormal Conditions 109

9 Elements for XnAP Communication 110
9.0 General 110
9.1 Message Functional Definition and Content 110
9.1.1 Messages for Basic Mobility Procedures 110
9.1.1.1 HANDOVER REQUEST 110
9.1.1.2 HANDOVER REQUEST ACKNOWLEDGE 113
9.1.1.3 HANDOVER PREPARATION FAILURE 114
9.1.1.4 SN STATUS TRANSFER 114
9.1.1.5 UE CONTEXT RELEASE 115
9.1.1.6 HANDOVER CANCEL 115
9.1.1.7 RAN PAGING 116
9.1.1.8 RETRIEVE UE CONTEXT REQUEST 116
9.1.1.9 RETRIEVE UE CONTEXT RESPONSE 119
9.1.1.10 RETRIEVE UE CONTEXT FAILURE 119
9.1.1.11 XN-U ADDRESS INDICATION 120
9.1.1.12 HANDOVER SUCCESS 121
9.1.1.13 CONDITIONAL HANDOVER CANCEL 122
9.1.1.14 EARLY STATUS TRANSFER 122
9.1.1.15 RAN MULTICAST GROUP PAGING 124
9.1.1.16 RETRIEVE UE CONTEXT CONFIRM 124
9.1.1.17 PARTIAL UE CONTEXT TRANSFER 125
9.1.1.18 PARTIAL UE CONTEXT TRANSFER ACKNOWLEDGE 125
9.1.1.19 PARTIAL UE CONTEXT TRANSFER FAILURE 126
9.1.2 Messages for Dual Connectivity Procedures 126
9.1.2.1 S-NODE ADDITION REQUEST 126
9.1.2.2 S-NODE ADDITION REQUEST ACKNOWLEDGE 129
9.1.2.3 S-NODE ADDITION REQUEST REJECT 131
9.1.2.4 S-NODE RECONFIGURATION COMPLETE 132
9.1.2.5 S-NODE MODIFICATION REQUEST 132
9.1.2.6 S-NODE MODIFICATION REQUEST ACKNOWLEDGE 137
9.1.2.7 S-NODE MODIFICATION REQUEST REJECT 139
9.1.2.8 S-NODE MODIFICATION REQUIRED 140
9.1.2.9 S-NODE MODIFICATION CONFIRM 142
9.1.2.10 S-NODE MODIFICATION REFUSE 143
9.1.2.11 S-NODE CHANGE REQUIRED 144
9.1.2.12 S-NODE CHANGE CONFIRM 145
9.1.2.13 S-NODE CHANGE REFUSE 147
9.1.2.14 S-NODE RELEASE REQUEST 147
9.1.2.15 S-NODE RELEASE REQUEST ACKNOWLEDGE 148
9.1.2.16 S-NODE RELEASE REJECT 148
9.1.2.17 S-NODE RELEASE REQUIRED 148
9.1.2.18 S-NODE RELEASE CONFIRM 149
9.1.2.19 S-NODE COUNTER CHECK REQUEST 149
9.1.2.20 RRC TRANSFER 150
9.1.2.21 NOTIFICATION CONTROL INDICATION 152

9.1.2.22 ACTIVITY NOTIFICATION 153
9.1.2.23 E-UTRA – NR CELL RESOURCE COORDINATION REQUEST 153
9.1.2.24 E-UTRA – NR CELL RESOURCE COORDINATION RESPONSE 155
9.1.2.25 SECONDARY RAT DATA USAGE REPORT 156
9.1.2.26 TRACE START 156
9.1.2.27 DEACTIVATE TRACE 157
9.1.2.28 CELL TRAFFIC TRACE 157
9.1.2.29 SCG FAILURE INFORMATION REPORT 158
9.1.2.30 SCG FAILURE TRANSFER 158
9.1.2.31 CONDITIONAL PSCELL CHANGE CANCEL 159
9.1.3 Messages for Global Procedures 159
9.1.3.1 XN SETUP REQUEST 159
9.1.3.2 XN SETUP RESPONSE 160
9.1.3.3 XN SETUP FAILURE 162
9.1.3.4 NG-RAN NODE CONFIGURATION UPDATE 162
9.1.3.5 NG-RAN NODE CONFIGURATION UPDATE ACKNOWLEDGE 165
9.1.3.6 NG-RAN NODE CONFIGURATION UPDATE FAILURE 167
9.1.3.7 CELL ACTIVATION REQUEST 167
9.1.3.8 CELL ACTIVATION RESPONSE 168
9.1.3.9 CELL ACTIVATION FAILURE 168
9.1.3.10 RESET REQUEST 169
9.1.3.11 RESET RESPONSE 169
9.1.3.12 ERROR INDICATION 170
9.1.3.13 XN REMOVAL REQUEST 170
9.1.3.14 XN REMOVAL RESPONSE 171
9.1.3.15 XN REMOVAL FAILURE 171
9.1.3.16 FAILURE INDICATION 171
9.1.3.17 HANDOVER REPORT 173
9.1.3.18 RESOURCE STATUS REQUEST 174
9.1.3.19 RESOURCE STATUS RESPONSE 176
9.1.3.20 RESOURCE STATUS FAILURE 176
9.1.3.21 RESOURCE STATUS UPDATE 176
9.1.3.22 MOBILITY CHANGE REQUEST 177
9.1.3.23 MOBILITY CHANGE ACKNOWLEDGE 178
9.1.3.24 MOBILITY CHANGE FAILURE 178
9.1.3.25 ACCESS AND MOBILITY INDICATION 179
9.1.4 Messages for IAB Procedures 180
9.1.4.1 F1-C TRAFFIC TRANSFER 180
9.1.4.2 IAB TRANSPORT MIGRATION MANAGEMENT REQUEST 180
9.1.4.3 IAB TRANSPORT MIGRATION MANAGEMENT RESPONSE 181
9.1.4.3a IAB TRANSPORT MIGRATION MANAGEMENT REJECT 182
9.1.4.4 IAB TRANSPORT MIGRATION MODIFICATION REQUEST 182
9.1.4.5 IAB TRANSPORT MIGRATION MODIFICATION RESPONSE 183
9.1.4.6 IAB RESOURCE COORDINATION REQUEST 184
9.1.4.7 IAB RESOURCE COORDINATION RESPONSE 184
9.2 Information Element definitions 185
9.2.0 General 185
9.2.1 Container and List IE definitions 185
9.2.1.1 PDU Session Resources To Be Setup List 185
9.2.1.2 PDU Session Resources Admitted List 187
9.2.1.3 PDU Session Resources Not Admitted List 188
9.2.1.4 QoS Flow List with Cause 188
9.2.1.4a QoS Flow List 188
9.2.1.5 PDU Session Resource Setup Info – SN terminated 189
9.2.1.6 PDU Session Resource Setup Response Info – SN terminated 190
9.2.1.7 PDU Session Resource Setup Info – MN terminated 192
9.2.1.8 PDU Session Resource Setup Response Info – MN terminated 194
9.2.1.9 PDU Session Resource Modification Info – SN terminated 195
9.2.1.10 PDU Session Resource Modification Response Info – SN terminated 197
9.2.1.11 PDU Session Resource Modification Info – MN terminated 201
9.2.1.12 PDU Session Resource Modification Response Info – MN terminated 204
9.2.1.13 UE Context Information – Retrieve UE Context Response 205

9.2.1.14 DRBs Subject To Status Transfer List 206
9.2.1.15 DRB to QoS Flow Mapping List 208
9.2.1.16 Data Forwarding Info from target NG-RAN node 209
9.2.1.17 Data Forwarding and Offloading Info from source NG-RAN node 209
9.2.1.18 PDU Session Resource Change Required Info – SN terminated 210
9.2.1.19 PDU Session Resource Change Confirm Info – SN terminated 210
9.2.1.20 PDU Session Resource Modification Required Info – SN terminated 211
9.2.1.21 PDU Session Resource Modification Confirm Info – SN terminated 214
9.2.1.22 PDU Session Resource Modification Required Info – MN terminated 215
9.2.1.23 PDU Session Resource Modification Confirm Info – MN terminated 216
9.2.1.24 PDU Session List with data forwarding request info 216
9.2.1.25 PDU Session List with data forwarding info from the target node 217
9.2.1.26 PDU Session List with Cause 217
9.2.1.27 PDU Session List 217
9.2.1.28 DRB List with Cause 217
9.2.1.29 DRB List 218
9.2.1.30 PDU Session Resource Setup Complete Info – SN terminated 218
9.2.1.31 Secondary Data Forwarding Info from target NG-RAN node List 218
9.2.1.32 Additional UL NG-U UP TNL Information at UPF List 219
9.2.1.33 DAPS Request Information 219
9.2.1.34 DAPS Response Information 219
9.2.1.35 Data Forwarding Info from target E-UTRAN node 220
9.2.1.36 MBS Session Information List 220
9.2.1.37 MBS Session Associated Information 220
9.2.1.38 MBS Session Information Response List 221
9.2.1.39 MBS Mapping and Data Forwarding Request Info from source NG-RAN node 221
9.2.1.40 MBS Data Forwarding Response Info from target NG-RAN node 222
9.2.2 NG-RAN Node and Cell Configuration related IE definitions 222
9.2.2.1 Global gNB ID 222
9.2.2.2 Global ng-eNB ID 222
9.2.2.3 Global NG-RAN Node ID 223
9.2.2.4 PLMN Identity 223
9.2.2.5 TAC 223
9.2.2.6 RAN Area Code 224
9.2.2.7 NR CGI 224
9.2.2.8 E-UTRA CGI 224
9.2.2.9 NG-RAN Cell Identity 224
9.2.2.10 NG-RAN Cell PCI 224
9.2.2.11 Served Cell Information NR 225
9.2.2.12 Served Cell Information E-UTRA 231
9.2.2.13 Neighbour Information NR 234
9.2.2.14 Neighbour Information E-UTRA 235
9.2.2.15 Served Cells To Update NR 235
9.2.2.16 Served Cells to Update E-UTRA 236
9.2.2.17 Cell Assistance Information NR 237
9.2.2.18 SUL Information 237
9.2.2.19 NR Frequency Info 238
9.2.2.20 NR Transmission Bandwidth 239
9.2.2.21 E-UTRA ARFCN 239
9.2.2.22 E-UTRA Transmission Bandwidth 240
9.2.2.23 Number of Antenna Ports E-UTRA 240
9.2.2.24 E-UTRA Multiband Info List 240
9.2.2.25 E-UTRA PRACH Configuration 240
9.2.2.26 MBSFN Subframe Allocation E-UTRA 241
9.2.2.27 Global NG-RAN Cell Identity 241
9.2.2.28 Connectivity Support 241
9.2.2.29 Protected E-UTRA Resource Indication 241
9.2.2.30 Data Traffic Resource Indication 243
9.2.2.31 Data Traffic Resources 243
9.2.2.32 Reserved Subframe Pattern 244
9.2.2.33 MR-DC Resource Coordination Information 244
9.2.2.34 E-UTRA Resource Coordination Information 245

9.2.2.35 NR Resource Coordination Information 246
9.2.2.36 E-UTRA Coordination Assistance Information 247
9.2.2.37 NR Coordination Assistance Information 247
9.2.2.38 NE-DC TDM Pattern 248
9.2.2.39 Interface Instance Indication 248
9.2.2.39a Configured TAC Indication 248
9.2.2.40 Intended TDD DL-UL Configuration NR 248
9.2.2.41 Cell and Capacity Assistance Information NR 250
9.2.2.42 Cell and Capacity Assistance Information E-UTRA 250
9.2.2.43 Cell Assistance Information E-UTRA 250
9.2.2.44 Maximum Cell List Size 250
9.2.2.45 Message Oversize Notification 251
9.2.2.46 Partial List Indicator 251
9.2.2.47 Offset of NB-IoT Channel Number to EARFCN 251
9.2.2.48 NB-IoT UL DL Alignment Offset 251
9.2.2.49 TNL Capacity Indicator 251
9.2.2.50 Radio Resource Status 252
9.2.2.51 Composite Available Capacity Group 254
9.2.2.52 Composite Available Capacity 255
9.2.2.53 Cell Capacity Class Value 255
9.2.2.54 Capacity Value 255
9.2.2.55 Slice Available Capacity 256
9.2.2.56 RRC Connections 256
9.2.2.57 Number of RRC Connections 256
9.2.2.58 Available RRC Connection Capacity Value 257
9.2.2.59 UE RLF Report 257
9.2.2.60 Mobility Parameters Information 257
9.2.2.61 Mobility Parameters Modification Range 258
9.2.2.62 Number of Active UEs 258
9.2.2.63 NR Carrier List 258
9.2.2.64 SSB Positions In Burst 259
9.2.2.65 NID 259
9.2.2.66 CAG-Identifier 259
9.2.2.67 Broadcast NID List 259
9.2.2.68 Broadcast SNPN ID List 260
9.2.2.69 Broadcast CAG-Identifier List 260
9.2.2.70 Broadcast PNI-NPN ID Information 260
9.2.2.71 NPN Broadcast Information 260
9.2.2.72 NPN Support 261
9.2.2.73 Global Cell Identity 261
9.2.2.74 NPRACH Configuration 261
9.2.2.75 SFN Offset 262
9.2.2.76 CHO Configuration 263
9.2.2.77 SSB Offset Information 263
9.2.2.78 SSB Offset Modification Range 263
9.2.2.79 Multiplexing Info 264
9.2.2.80 Traffic Index 264
9.2.2.81 Traffic Profile 264
9.2.2.82 F1-Terminating Topology BH Information 265
9.2.2.83 Non-F1-terminating Topology BH Information 265
9.2.2.84 Traffic To Be Released Information 266
9.2.2.85 IAB TNL Address Request 266
9.2.2.86 IAB TNL Address Response 267
9.2.2.87 BAP Routing ID 267
9.2.2.88 BH RLC Channel ID 267
9.2.2.89 BAP Address 268
9.2.2.90 BAP Path ID 268
9.2.2.91 IAB QoS mapping information 268
9.2.2.92 IAB TNL Address 268
9.2.2.93 IAB TNL Addresses Requested 269
9.2.2.94 IAB Cell Information 269
9.2.2.95 gNB-DU Cell Resource Configuration 270

9.2.2.96 IAB STC Info 272
9.2.2.97 RB Set Configuration 273
9.2.2.98 IAB TNL Address Exception 273
9.2.2.99 BH Info List 274
9.2.2.100 Non-UP traffic 274
9.2.2.101 Local NG-RAN Node Identifier 274
9.2.2.102 Served Cell Specific Info Request 276
9.2.3 General IE definitions 276
9.2.3.1 Message Type 276
9.2.3.2 Cause 276
9.2.3.3 Criticality Diagnostics 282
9.2.3.4 Bit Rate 283
9.2.3.5 QoS Flow Level QoS Parameters 283
9.2.3.6 GBR QoS Flow Information 284
9.2.3.7 Allocation and Retention Priority 285
9.2.3.8 Non dynamic 5QI Descriptor 286
9.2.3.9 Dynamic 5QI Descriptor 287
9.2.3.10 QoS Flow Identifier 288
9.2.3.11 Packet Loss Rate 288
9.2.3.12 Packet Delay Budget 288
9.2.3.13 Packet Error Rate 288
9.2.3.14 Averaging Window 289
9.2.3.15 Maximum Data Burst Volume 289
9.2.3.16 NG-RAN node UE XnAP ID 289
9.2.3.17 UE Aggregate Maximum Bit Rate 289
9.2.3.18 PDU Session ID 289
9.2.3.19 PDU Session Type 290
9.2.3.20 TAI Support List 290
9.2.3.21 S-NSSAI 290
9.2.3.22 Slice Support List 291
9.2.3.23 Index to RAT/Frequency Selection Priority 291
9.2.3.24 GUAMI 291
9.2.3.25 Target Cell Global ID 291
9.2.3.26 AMF UE NGAP ID 291
9.2.3.27 SCG Configuration Query 292
9.2.3.28 RLC Mode 292
9.2.3.29 Transport Layer Address 292
9.2.3.30 UP Transport Layer Information 292
9.2.3.31 CP Transport Layer Information 293
9.2.3.32 Masked IMEISV 293
9.2.3.33 DRB ID 293
9.2.3.34 DL Forwarding 293
9.2.3.35 Data Forwarding Accepted 294
9.2.3.36 COUNT Value for PDCP SN Length 12 294
9.2.3.37 COUNT Value for PDCP SN Length 18 294
9.2.3.38 RAN Paging Area 294
9.2.3.39 RAN Area ID 295
9.2.3.40 UE Context ID 295
9.2.3.41 Assistance Data for RAN Paging 295
9.2.3.42 RAN Paging Attempt Information 295
9.2.3.43 UE RAN Paging Identity 296
9.2.3.44 Paging Priority 296
9.2.3.45 Delivery Status 296
9.2.3.46 I-RNTI 296
9.2.3.47 Location Reporting Information 297
9.2.3.48 Area of Interest Information 297
9.2.3.49 UE Security Capabilities 298
9.2.3.50 AS Security Information 299
9.2.3.51 S-NG-RAN node Security Key 299
9.2.3.52 Security Indication 300
9.2.3.53 Mobility Restriction List 300
9.2.3.54 Xn Benefit Value 302

9.2.3.55 Trace Activation 302
9.2.3.56 Time To Wait 303
9.2.3.57 QoS Flow Notification Control Indication Info 303
9.2.3.58 Request Reporting Reference ID 304
9.2.3.59 User plane traffic activity report 304
9.2.3.60 Lower Layer presence status change 304
9.2.3.61 RRC Resume Cause 304
9.2.3.62 Priority Level 305
9.2.3.63 PDCP SN Length 305
9.2.3.64 UE History Information 305
9.2.3.65 Last Visited Cell Information 305
9.2.3.66 Paging DRX 306
9.2.3.67 Security Result 306
9.2.3.68 UE Context Kept Indicator 306
9.2.3.69 PDU Session Aggregate Maximum Bit Rate 306
9.2.3.70 LCID 307
9.2.3.71 Duplication Activation 307
9.2.3.72 RRC Config Indication 307
9.2.3.73 Maximum Integrity Protected Data Rate 307
9.2.3.74 PDCP Change Indication 308
9.2.3.75 UL Configuration 308
9.2.3.76 UP Transport Parameters 308
9.2.3.77 Desired Activity Notification Level 309
9.2.3.78 Number of DRB IDs 309
9.2.3.79 QoS Flow Mapping Indication 309
9.2.3.80 RLC Status 309
9.2.3.81 Expected UE Behaviour 309
9.2.3.82 Expected UE Activity Behaviour 310
9.2.3.83 AMF Region Information 311
9.2.3.84 TNL Association Usage 311
9.2.3.85 Network Instance 311
9.2.3.86 PDCP Duplication Configuration 311
9.2.3.87 Secondary RAT Usage Information 311
9.2.3.88 Volume Timed Report List 312
9.2.3.89 Maximum IP Rate 312
9.2.3.90 UL Forwarding 313
9.2.3.91 UE Radio Capability for Paging 313
9.2.3.92 Common Network Instance 313
9.2.3.93 Default DRB Allowed 313
9.2.3.94 Split Session Indicator 313
9.2.3.95 UL Forwarding Proposal 314
9.2.3.96 TNL Configuration Info 314
9.2.3.97 NG-RAN Trace ID 315
9.2.3.98 Non-GBR Resources Offered 315
9.2.3.99 Extended RAT Restriction Information 315
9.2.3.100 5GC Mobility Restriction List Container 315
9.2.3.101 Maximum Number of CHO Preparations 316
9.2.3.102 Alternative QoS Parameters Set List 316
9.2.3.103 Alternative QoS Parameters Set Index 316
9.2.3.104 Alternative QoS Parameters Set Notify Index 316
9.2.3.105 NR V2X Services Authorized 317
9.2.3.106 LTE V2X Services Authorized 317
9.2.3.107 NR UE Sidelink Aggregate Maximum Bit Rate 317
9.2.3.108 LTE UE Sidelink Aggregate Maximum Bit Rate 317
9.2.3.109 PC5 QoS Parameters 317
9.2.3.110 UE History Information from the UE 318
9.2.3.111 RLC Duplication Information 318
9.2.3.112 Redundant PDU Session Information 319
9.2.3.113 Extended Packet Delay Budget 319
9.2.3.114 TSC Traffic Characteristics 319
9.2.3.115 TSC Assistance Information 319
9.2.3.116 Periodicity 320

9.2.3.117 Burst Arrival Time 320
9.2.3.118 Redundant QoS Flow Indicator 320
9.2.3.119 NPN Mobility Information 320
9.2.3.120 Allowed PNI-NPN ID List 321
9.2.3.121 NPN Paging Assistance Information 321
9.2.3.122 Void 321
9.2.3.123 PNI-NPN Restricted Information 321
9.2.3.124 URI 321
9.2.3.125 MDT Configuration 321
9.2.3.126 MDT Configuration-NR 322
9.2.3.127 MDT Configuration-EUTRA 324
9.2.3.128 M1 Configuration 324
9.2.3.129 M4 Configuration 326
9.2.3.130 M5 Configuration 327
9.2.3.131 M6 Configuration 327
9.2.3.132 M7 Configuration 327
9.2.3.133 MDT PLMN List 328
9.2.3.134 Bluetooth Measurement Configuration 328
9.2.3.135 WLAN Measurement Configuration 328
9.2.3.136 Sensor Measurement Configuration 329
9.2.3.137 Logged Event Trigger Config 329
9.2.3.138 UE Radio Capability ID 330
9.2.3.139 Extended Slice Support List 330
9.2.3.140 Area Scope of Neighbour Cells 330
9.2.3.141 Extended UE Identity Index Value 331
9.2.3.142 E-UTRA Paging eDRX Information 331
9.2.3.143 UE Specific DRX 331
9.2.3.144 QoS Mapping Information 331
9.2.3.144a Hashed UE Identity Index Value 331
9.2.3.145 MRB ID 332
9.2.3.146 MBS Session ID 332
9.2.3.147 MRB Progress Information 332
9.2.3.148 MBS Area Session ID 332
9.2.3.149 MBS Service Area information 332
9.2.3.150 MBS Service Area 333
9.2.3.151 SCG UE History Information 333
9.2.3.152 Survival Time 333
9.2.3.153 Time Synchronisation Assistance Information 334
9.2.3.154 SCG Activation Request 334
9.2.3.155 SCG Activation Status 334
9.2.3.156 QMC Configuration Information 334
9.2.3.157 UE Application Layer Measurement Configuration Information 335
9.2.3.158 Available RAN Visible QoE Metrics 336
9.2.3.159 5G ProSe Authorized 336
9.2.3.160 5G ProSe PC5 QoS Parameters 336
9.2.3.161 NR Paging eDRX Information 337
9.2.3.162 NR Paging eDRX Information for RRC INACTIVE 337
9.2.3.163 SDT Support Request 338
9.2.3.164 Partial UE Context Information for SDT 338
9.2.3.165 SRB ID 339
9.2.3.166 PEIPS Assistance Information 339
9.2.3.167 UE Slice Maximum Bit Rate List 339
9.2.3.168 Positioning Information 340
9.2.3.169 MDT PLMN Modification List 340
9.2.3.170 TAI NSAG Support List 340
9.2.3.171 Excess Packet Delay Threshold Configuration 340
9.3 Message and Information Element Abstract Syntax (with ASN.1) 342
9.3.1 General 342
9.3.2 Usage of Private Message Mechanism for Non-standard Use 342
9.3.3 Elementary Procedure Definitions 342
9.3.4 PDU Definitions 355
9.3.5 Information Element definitions 414

9.3.6 Common definitions 559
9.3.7 Constant definitions 560
9.3.8 Container definitions 570
9.4 Message transfer syntax 575
9.5 Timers 575
10 Handling of unknown, unforeseen and erroneous protocol data 575
Annex A (informative): Change history 576
History 583

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:

Version x.y.z

where:

- x the first digit:
  - 1 presented to TSG for information;
  - 2 presented to TSG for approval;
  - 3 or greater indicates TSG approved document under change control.
- y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.
- z the third digit is incremented when editorial only changes have been incorporated in the document.

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".

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].

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

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].

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].

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

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
AMF	Access and Mobility Management Function
BH	Backhaul
CAG	Closed Access Group
CGI	Cell Global Identifier
CHO	Conditional Handover
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
MBS	Multicast/Broadcast Service
MCG	Master Cell Group
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
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
SCG	Secondary Cell Group
SCTP	Stream Control Transmission Protocol
SNPN	Stand-alone Non-Public Network
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

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

Elementary Procedure	Initiating Message	Successful Outcome	Unsuccessful Outcome
		Response message	Response message
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
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

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
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

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.

The procedure uses UE-associated signalling.

8.2.1.2 Successful Operation

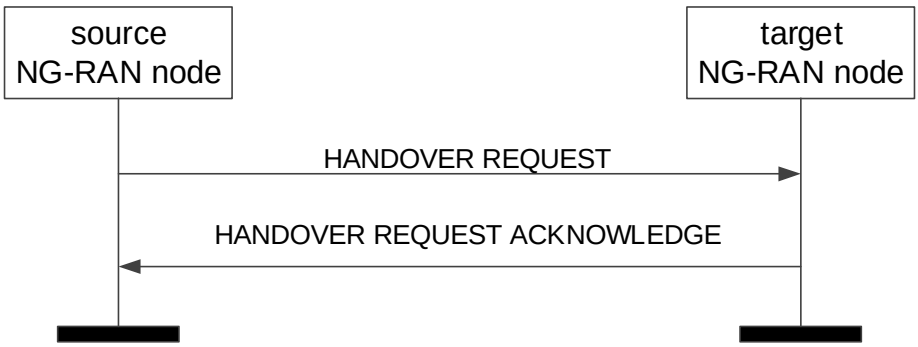

Figure 8.2.1.2-1: Handover Preparation, successful operation

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 Flow 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 Resource 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.

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].

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 Resource 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* 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 Resource 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 Resource 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 Resource 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 Resource 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 Resource 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 in the *PDU Session Resource 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 Resource 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 Resource 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 Resource 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 Resource 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 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].

- 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].

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.

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.

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].

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 *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 *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* 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 Flows 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 *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].

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].

8.2.1.3 Unsuccessful Operation

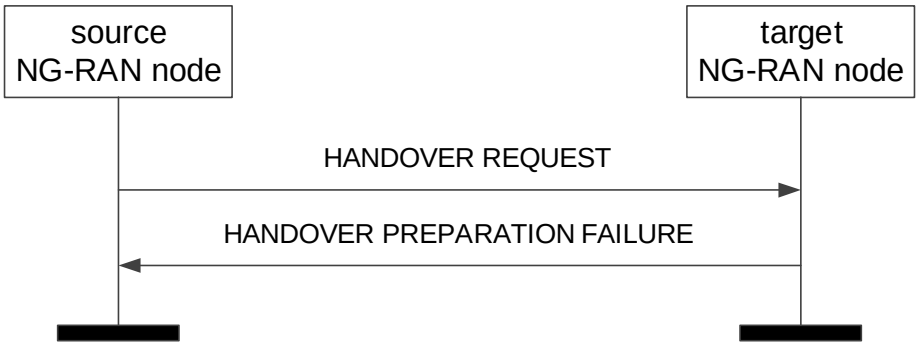

Figure 8.2.1.3-1: Handover Preparation, unsuccessful operation

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 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.

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, 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.

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 one or more candidate cells in the *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 uses UE-associated signalling.

8.2.4.2 Successful Operation

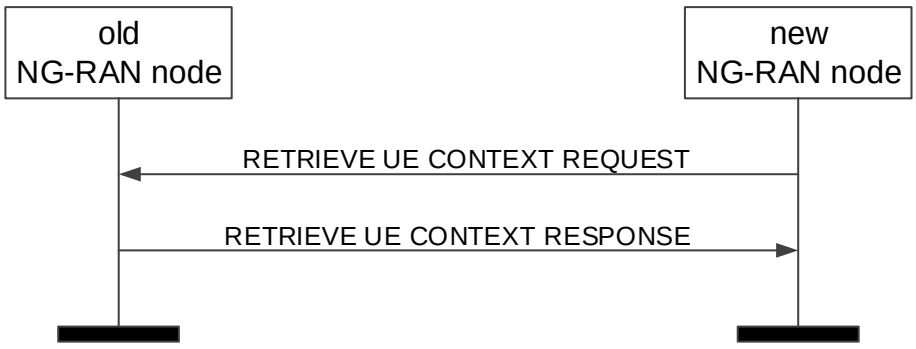

Figure 8.2.4.2-1: Retrieve UE Context, successful operation

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

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].

- 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].

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.

If the *5GC Mobility Restriction List Container* 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 specified in TS 38.300 [9].

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.

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].

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 *UE Radio Capability ID* 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] and TS 23.502 [13].

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 *MBS Session Information List* IE is included in the *UE Context Information – Retrieve UE Context Response* IE contained in the RETRIEVE UE CONTEXT RESPONSE message, the new NG-RAN node shall, if supported, use this information to establish an NG-RAN MBS session resources context, if applicable.

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 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 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 *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 *UE Slice-Maximum Bit Rate List* IE is contained in RETRIEVE UE CONTEXT RESPONSE message, 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].

If the *Positioning Information* IE is contained in the RETRIEVE UE CONTEXT RESPONSE message, 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.

Interaction with the Retrieve UE Context Confirm procedure

If the *UE Context Reference at the S-NG-RAN* 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

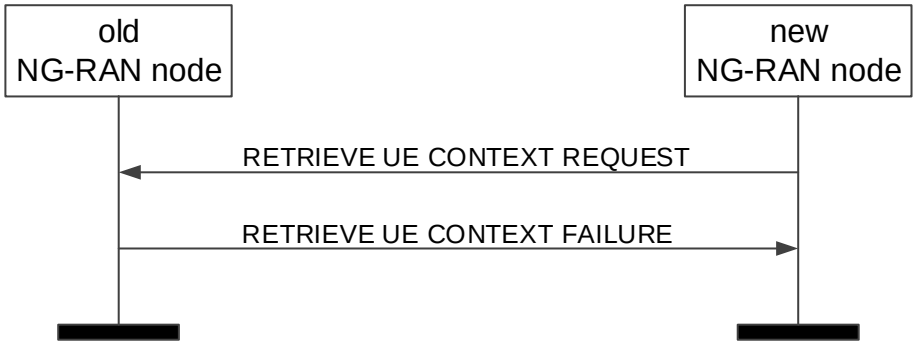

Figure 8.2.4.3-1: Retrieve UE Context, unsuccessful operation

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].

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

Void.

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.

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]. When available, NG-RAN $node_1$ may include the *Extended UE Identity Index Value* IE in the RAN PAGING message towards the NG-RAN $node_2$.

When available, the NG-RAN $node_1$ shall include the *E-UTRA Paging eDRX Information* IE in the RAN PAGING message towards the NG-RAN $node_2$. 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].

When available, the NG-RAN $node_1$ shall include the *UE Specific DRX* IE in the RAN PAGING message towards the NG-RAN $node_2$. 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].

When available, the NG-RAN $node_1$ shall include the *NR Paging eDRX Information* IE in the RAN PAGING message towards the NG-RAN $node_2$. 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].

When available, the NG-RAN $node_1$ shall include the *Paging Cause* IE in the RAN PAGING message towards the NG-RAN $node_2$. 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].

When available, the NG-RAN $node_1$ shall include the *Hashed UE Identity Index Value* IE in the RAN PAGING message towards the NG-RAN $node_2$. 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].

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.

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 TS38.300 [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.

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 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.

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 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.

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

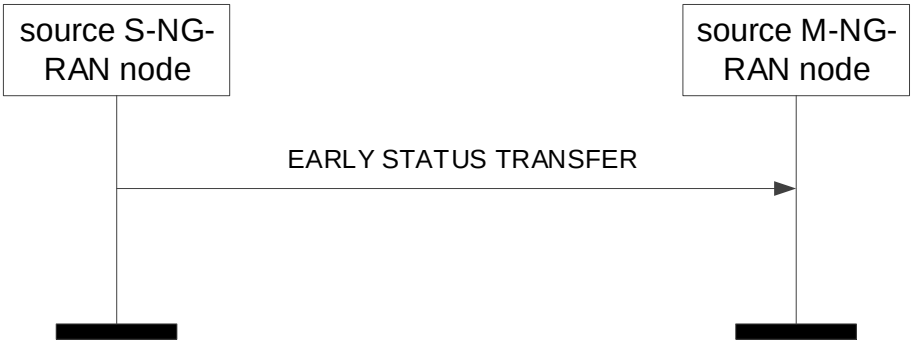

Figure 8.2.10.2-2: Early Status Transfer during Conditional Handover in MR-DC operation, successful operation

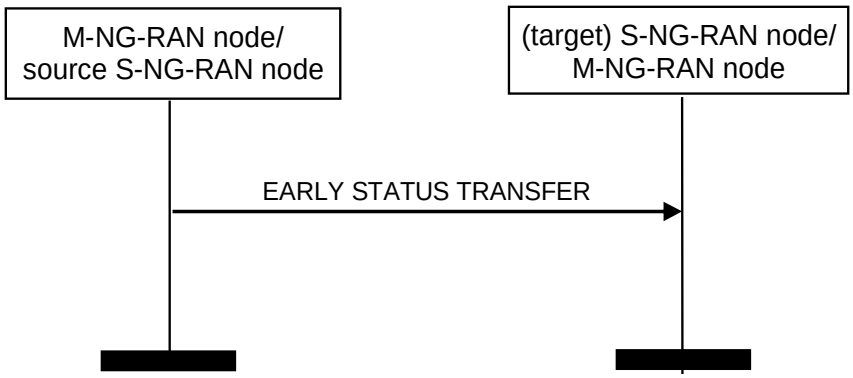

Figure 8.2.10.2-3: Early Status Transfer during CPAC, successful operation

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 Early Status Transfer 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, the source 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 or *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 or *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 or *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].

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

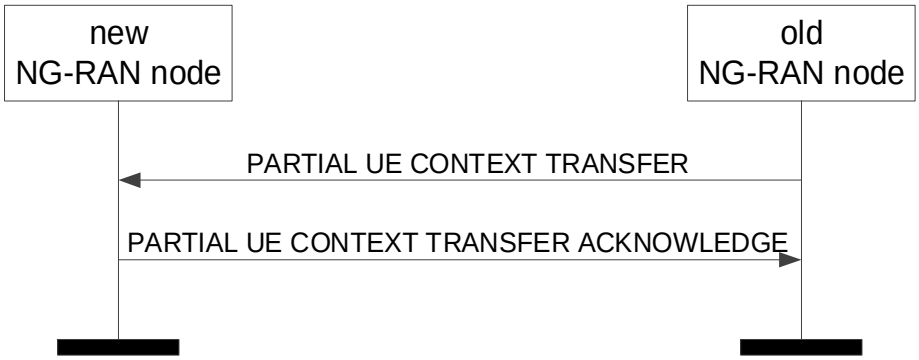

Figure 8.2.13.2-1: Partial UE Context Transfer, successful operation

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.

8.2.13.3 Unsuccessful Operation

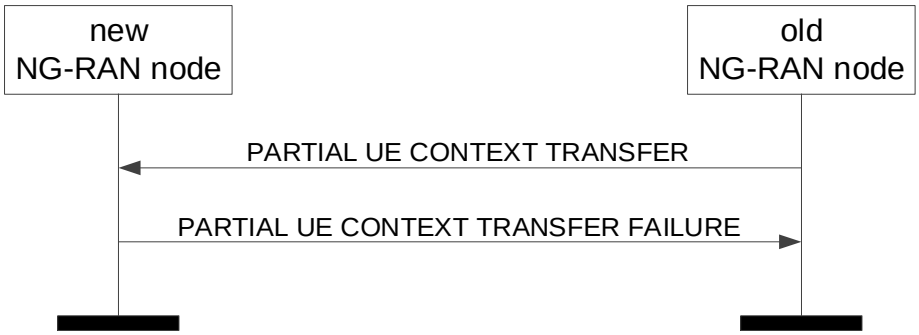

Figure 8.2.13.3-1: Partial UE Context Transfer, unsuccessful operation

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.

The procedure uses UE-associated signalling.

8.3.1.2 Successful Operation

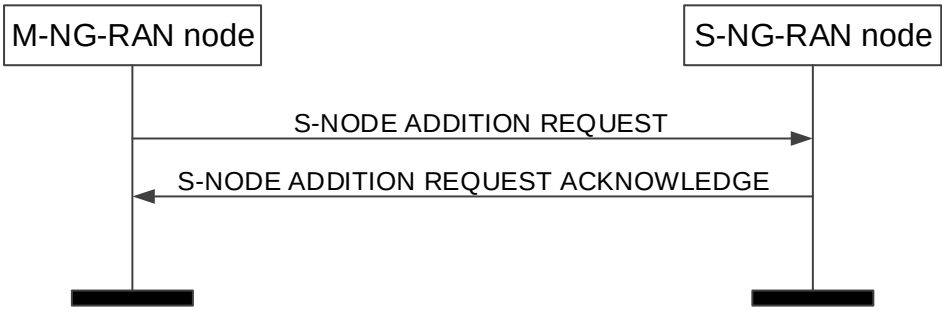

Figure 8.3.1.2-1: S-NG-RAN node Addition Preparation, successful operation

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 Sets* 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 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].

- 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 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 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 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 *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 *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 Acknowledge* IE in the S-NODE ADDITION REQUEST ACKNOWLEDGE message.

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

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.

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 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 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].

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 except for a request for conditional configuration. 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.

8.3.1.3 Unsuccessful Operation

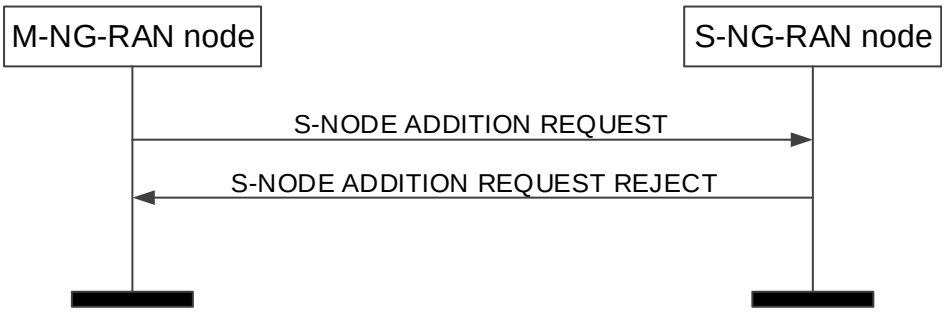

Figure 8.3.1.3-1: S-NG-RAN node Addition Preparation, unsuccessful operation

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.

8.3.1.4 Abnormal Conditions

If the S-NG-RAN node receives an S-NODE ADDITION REQUEST message containing in a *PDU Session Resource 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 *PDU Session ID* in *PDU Session Resources Admitted 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.

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

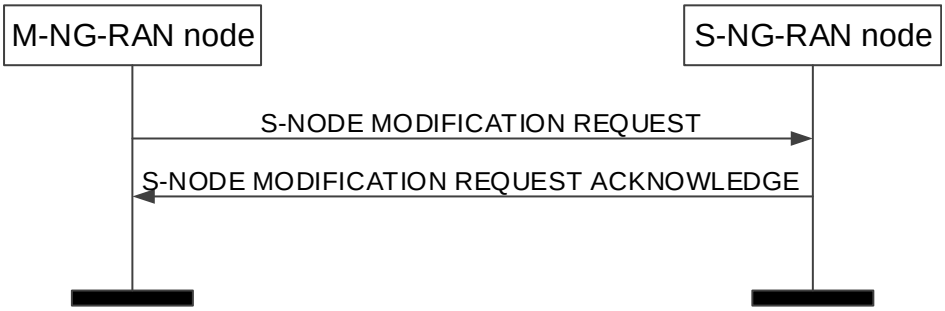

Figure 8.3.3.2-1: M-NG-RAN node initiated S-NG-RAN node Modification Preparation, successful operation

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 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 Sets* 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 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 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 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 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, 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 *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.

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 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 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].

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 except for a request for conditional configuration. The reception of the S-NG-RAN 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 provides 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

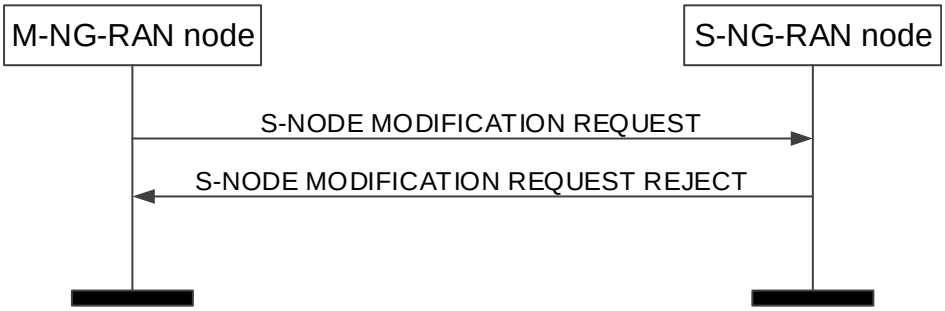

Figure 8.3.3.3-1: M-NG-RAN node initiated S-NG-RAN node Modification Preparation, unsuccessful operation

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 [58]), 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

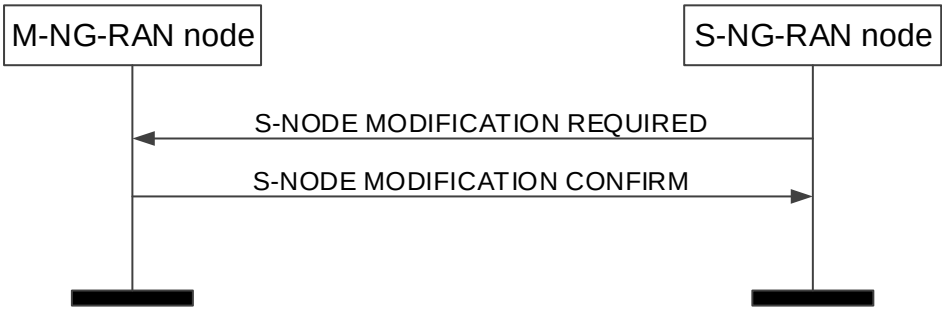

Figure 8.3.4.2-1: S-NG-RAN node initiated S-NG-RAN node Modification, successful operation.

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 target SN, as described in TS 37.340 [8].

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.

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.

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

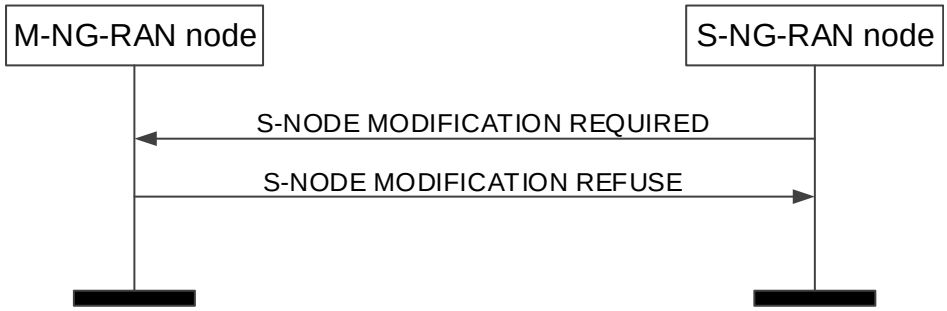

Figure 8.3.4.3-1: S-NG-RAN node initiated S-NG-RAN node Modification, unsuccessful operation.

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

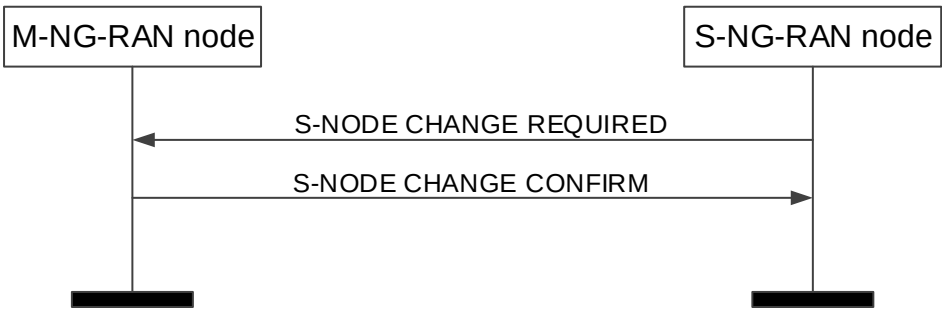

Figure 8.3.5.2-1: S-NG-RAN node initiated S-NG-RAN node Change, successful operation.

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 S-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 38.300 [9].

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]. 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 *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 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.

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

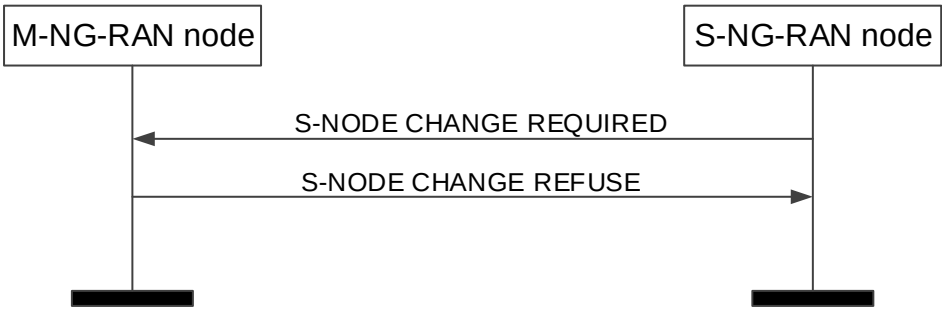

Figure 8.3.5.3-1: S-NG-RAN node initiated S-NG-RAN node Change, unsuccessful operation.

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

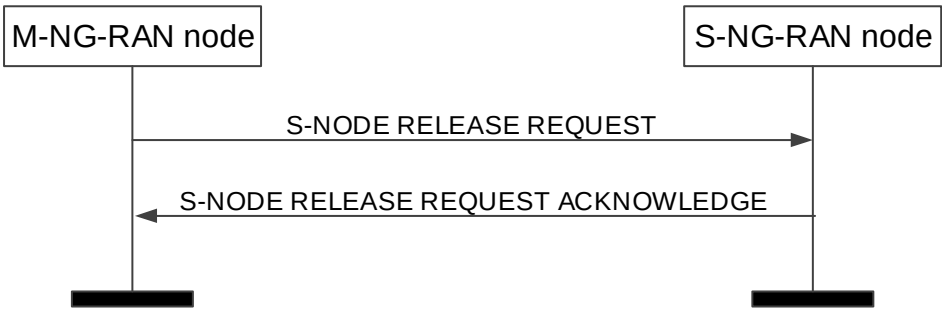

Figure 8.3.6.2-1: M-NG-RAN node initiated S-NG-RAN node Release, successful operation

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 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.

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

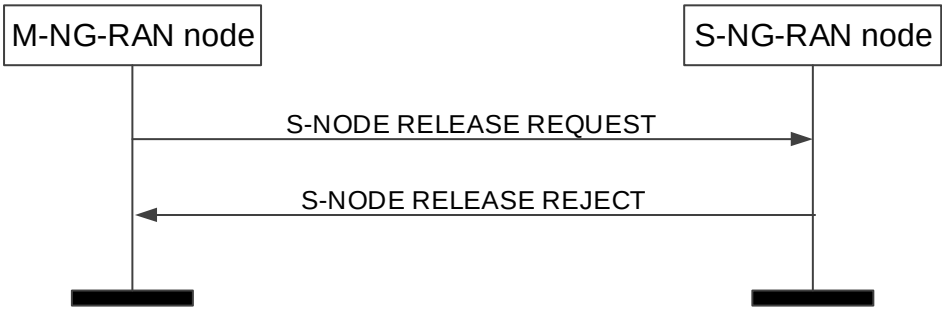

Figure 8.3.6.3-1: M-NG-RAN node initiated S-NG-RAN node Release, unsuccessful operation

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

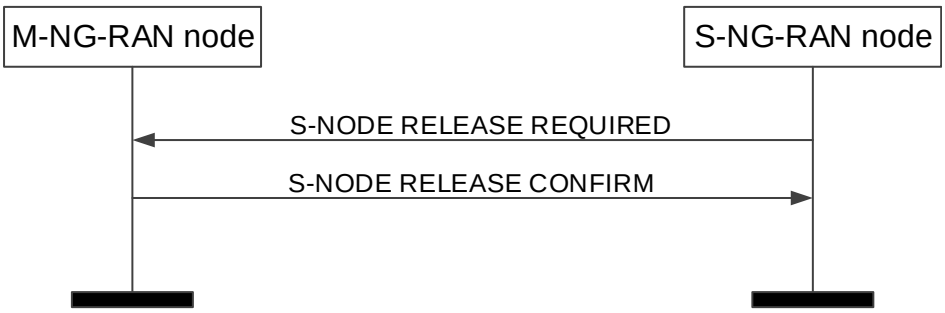

Figure 8.3.7.2-1: S-NG-RAN node initiated S-NG-RAN node Release, successful operation.

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.

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 SCG 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 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

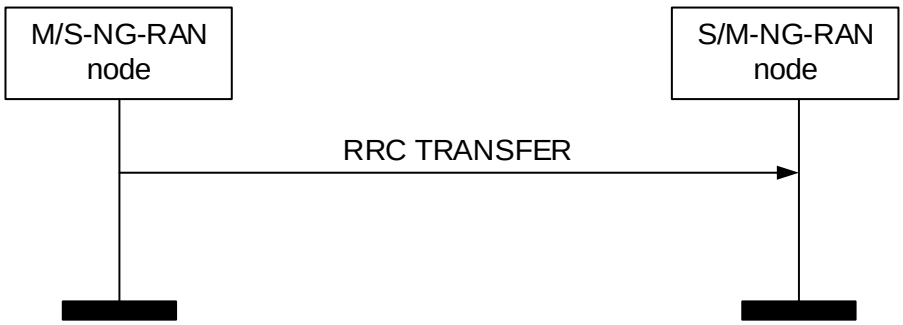

Figure 8.3.9.2-1: RRC Transfer procedure for dual connectivity, successful operation.

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 NR UE Report IE, or the the *RRC Container* IE in the *Fast MCG Recovery via SRB3 from MN to SN* IE, or the 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 GFBR anymore or that it can fulfil the GFBR 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 GFBR anymore or that the GFBR 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 GFBR anymore or that the GFBR 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 GFBR anymore or that the GFBR 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

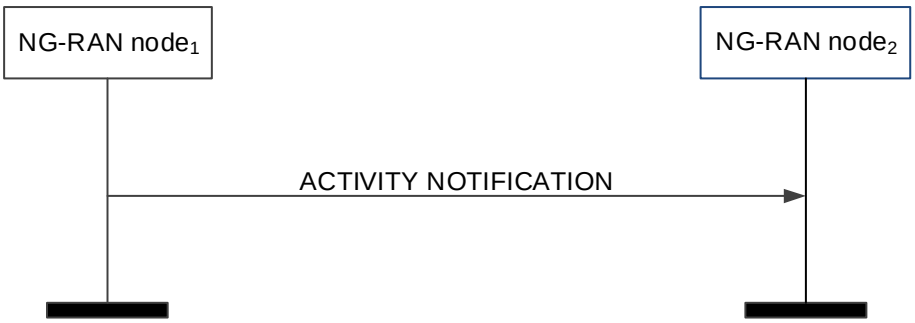

Figure 8.3.11.2-1: Activity Notification, successful operation

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, 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

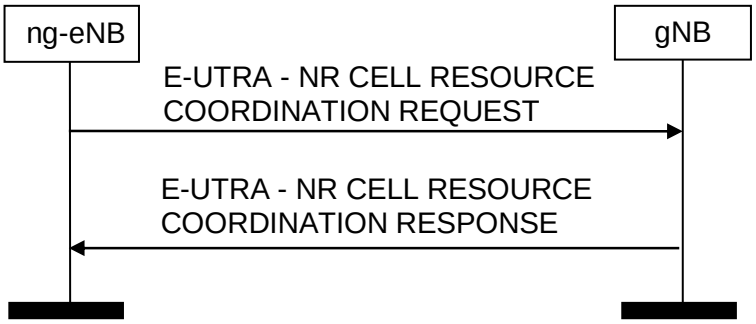

Figure 8.3.12.2-1: ng-eNB-initiated E-UTRA – NR Cell Resource Coordination request, successful operation

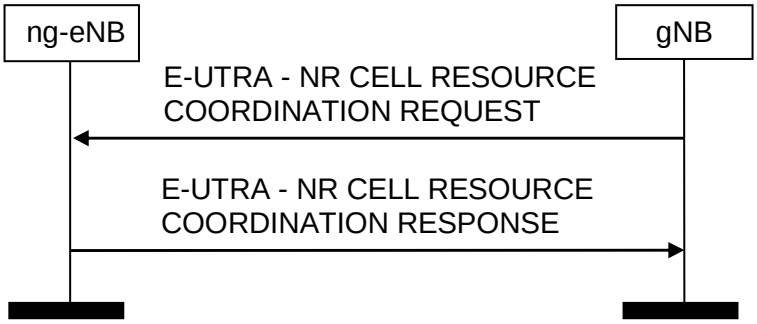

Figure 8.3.12.2-2: gNB-initiated E-UTRA – NR Cell Resource Coordination request, successful operation

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

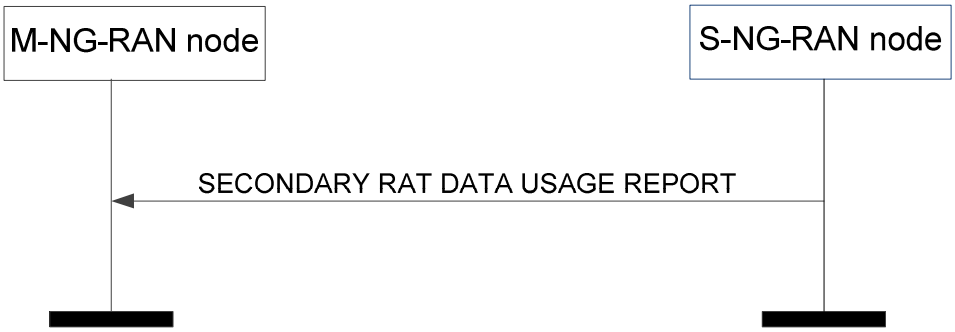

Figure 8.3.13.2-1: Secondary RAT Data Usage Report procedure, successful operation.

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].
- 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].

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.

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 opration

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

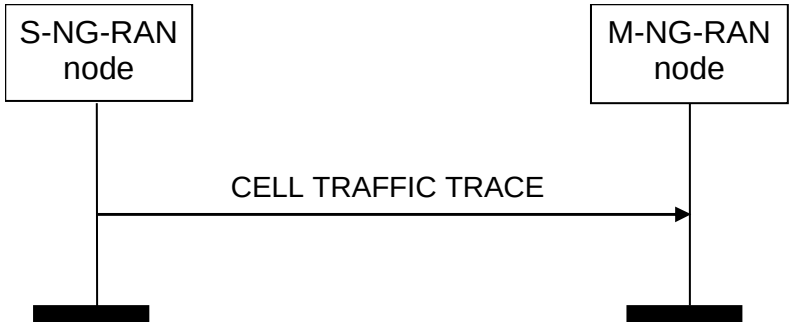

Figure 8.3.16.2-1: Cell Traffic Trace procedure, successful operation

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 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 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

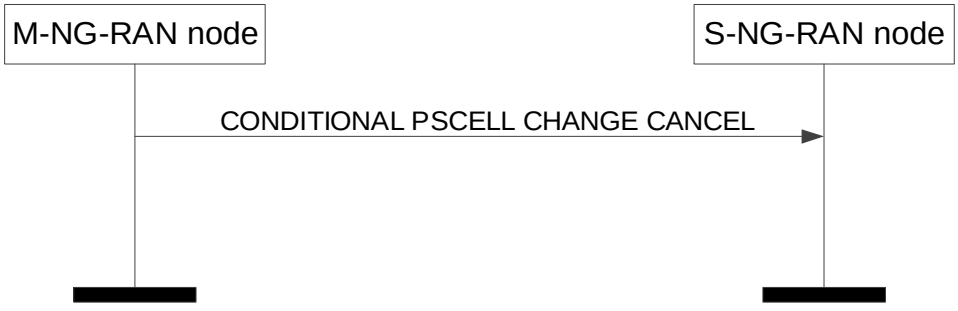

Figure 8.3.19.2-1: Conditional PSCell Change Cancel, successful operation

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.

8.4 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

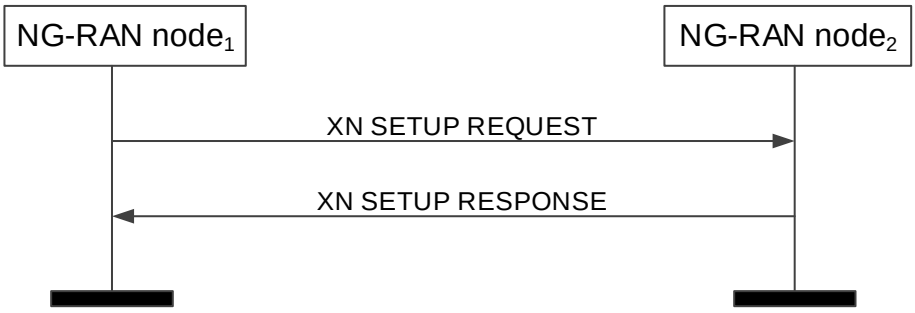

Figure 8.4.1.2: Xn Setup, successful operation

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.

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

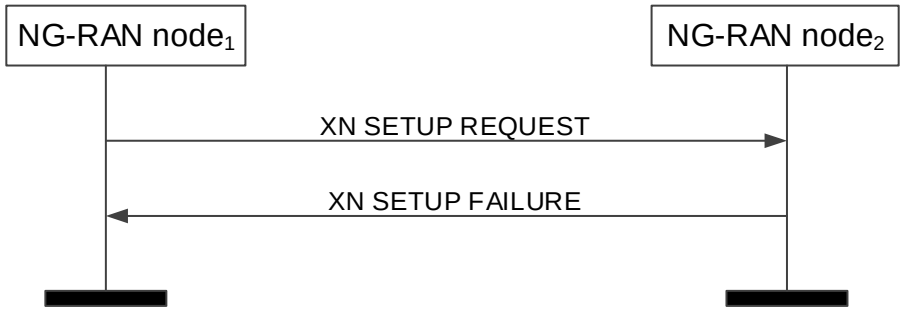

Figure 8.4.1.3-1: Xn Setup, unsuccessful operation

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.

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

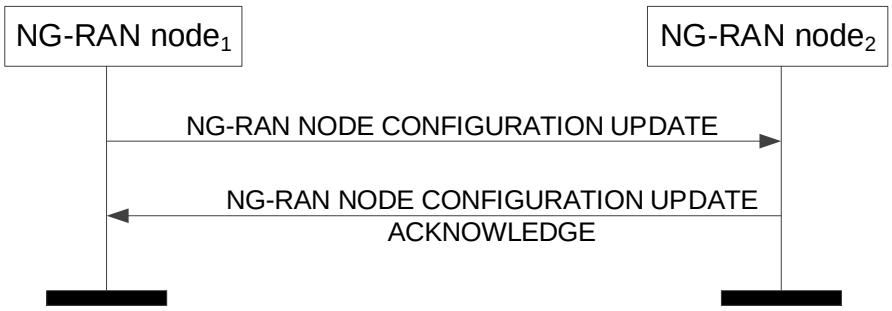

Figure 8.4.2.2-1: NG-RAN node Configuration Update, successful operation

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.

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. 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 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.

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. 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 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 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).

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

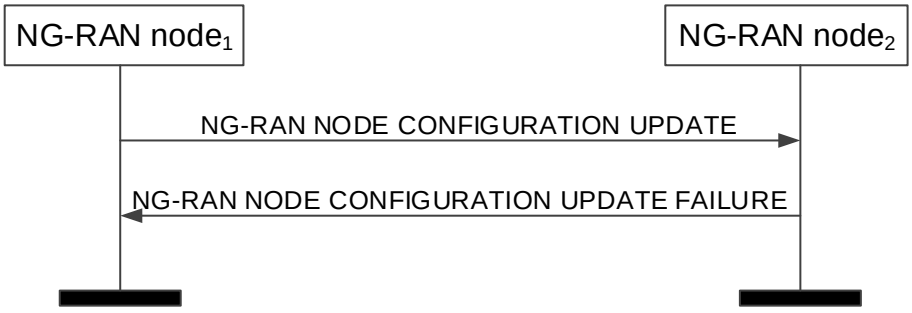

Figure 8.4.2.3-1: NG-RAN node Configuration Update, unsuccessful operation

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.

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 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

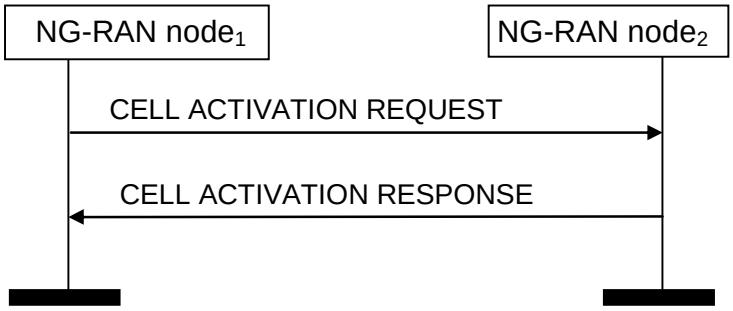

Figure 8.4.3.2-1: Cell Activation, successful operation

The NG-RAN $node_1$ initiates the procedure by sending the CELL ACTIVATION REQUEST message to the peer NG-RAN $node_2$.

Upon receipt of this 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.

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 indicated in the CELL ACTIVATION REQUEST message changing cell 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 $node_2$ cells in the NG-RAN $node_1$.

8.4.3.3 Unsuccessful Operation

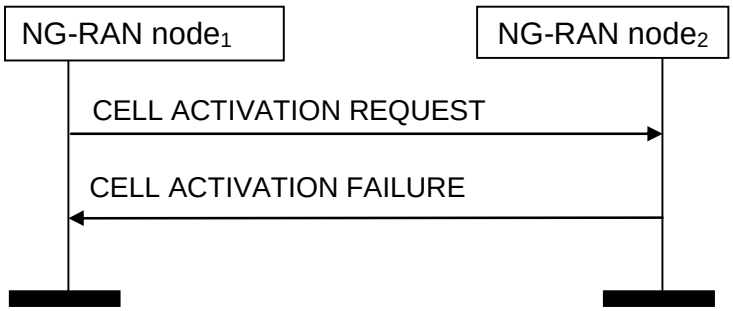

Figure 8.4.3.3-1: Cell Activation, unsuccessful operation

If the NG-RAN node$_2$ cannot activate any of the cells 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

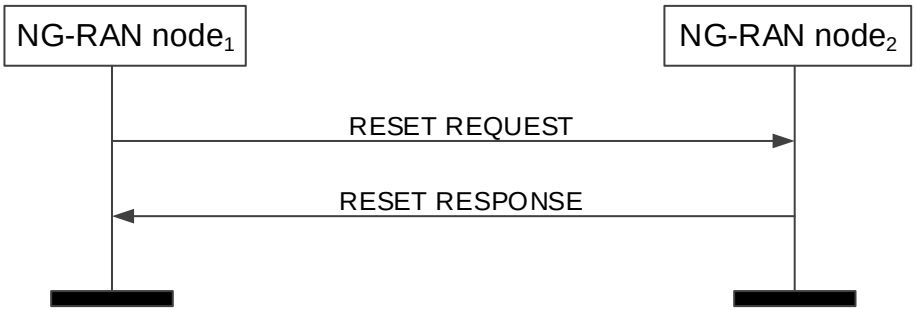

Figure 8.4.4.2-1: Reset, successful operation

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

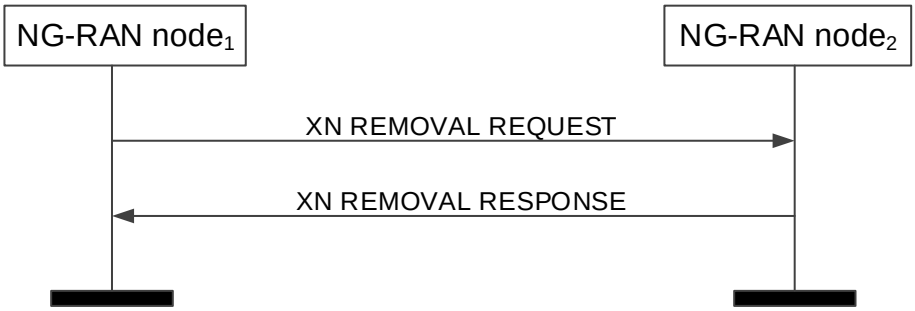

Figure 8.4.6.2-1: Xn Removal, successful operation

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

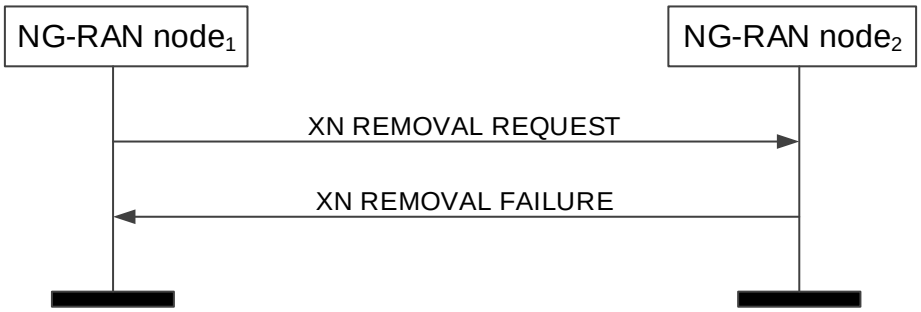

Figure 8.4.6.3-1: Xn Removal, unsuccessful operation

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].

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).

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

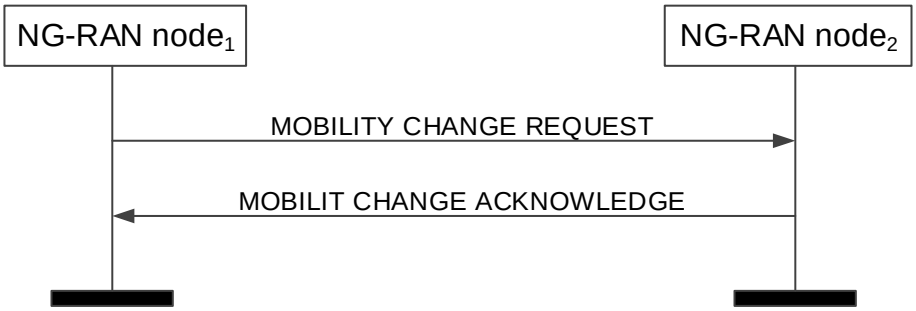

Figure 8.4.9.2-1: Mobility Settings Change, successful operation

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 Offsets* IE is included in the MOBILITY CHANGE REQUEST, the NG-RAN node$_2$ should take into account the value of *SSB Offset* IE for UE measurements received for the SSB Area indicated by the *SSB Index* IE.

If the *NG-RAN node2 Proposed SSB Offsets* 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

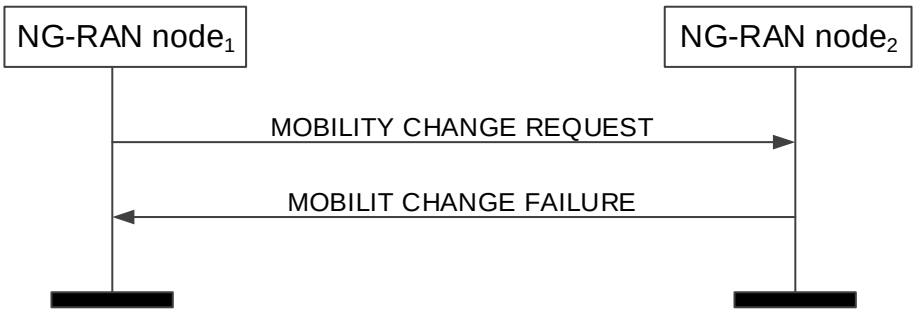

Figure 8.4.9.3-1: Mobility Settings Change, unsuccessful operation

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

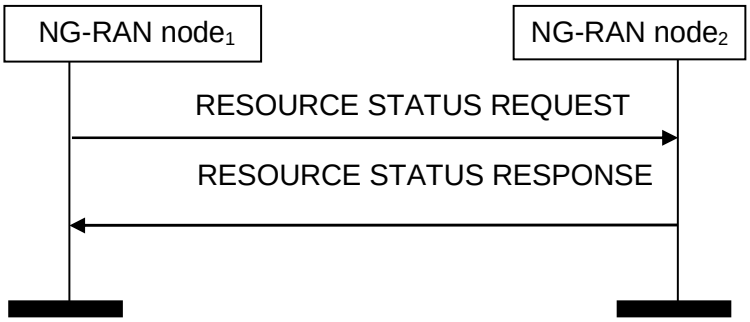

Figure 8.4.10.2-1: Resource Status Reporting Initiation, successful operation

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;
- 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

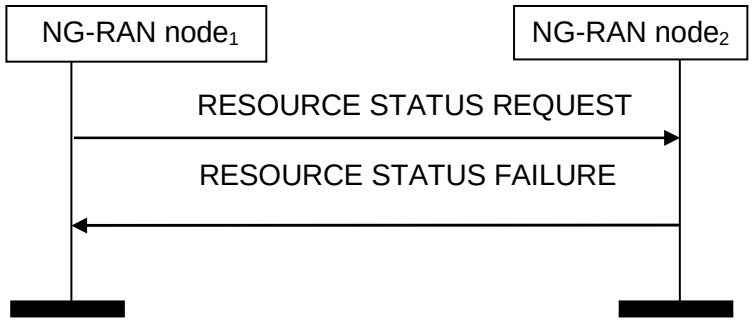

Figure 8.4.10.3-1: Resource Status Reporting Initiation, unsuccessful operation

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

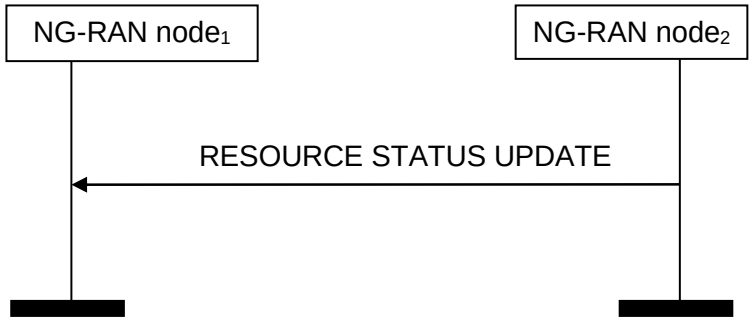

Figure 8.4.11.2-1: Resource Status Reporting, successful operation

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

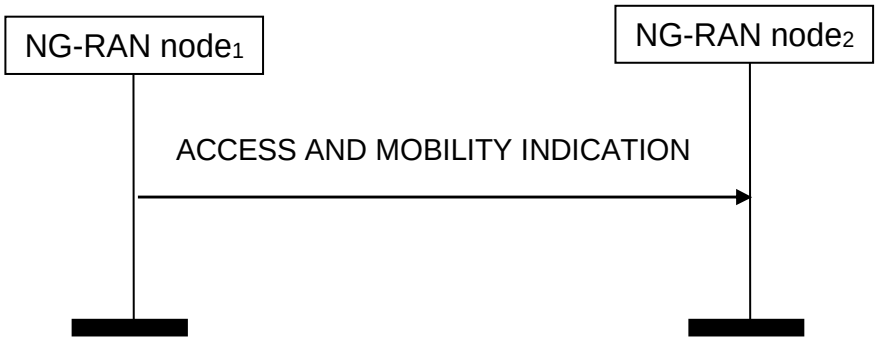

Figure 8.4.12.2-1: Access And Mobility Indication, successful operation

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* IE is included in the ACCESS AND MOBILITY INDICATION message, NG-RAN node$_2$ may use it to optimize handover configurations.

8.4.12.3 Abnormal Conditions

Not applicable.

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 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

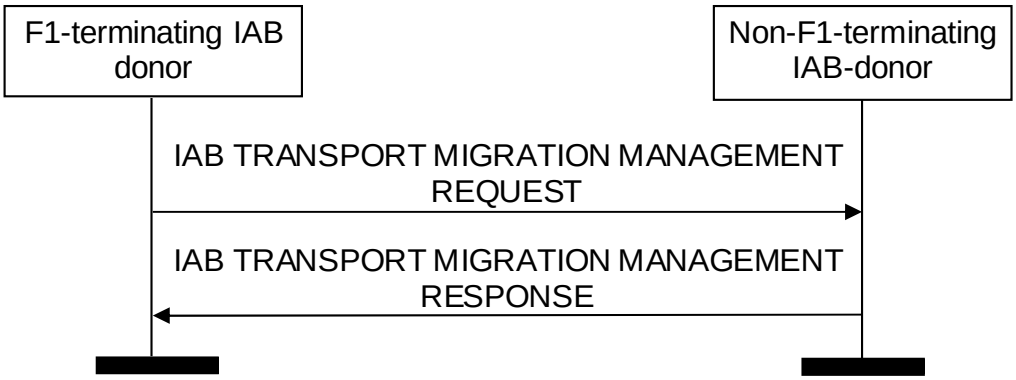

Figure 8.5.2.2-1: IAB Transport Migration Management triggered by the F1-terminating IAB-donor, successful operation

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.

8.5.2.3 Unsuccessful Operation

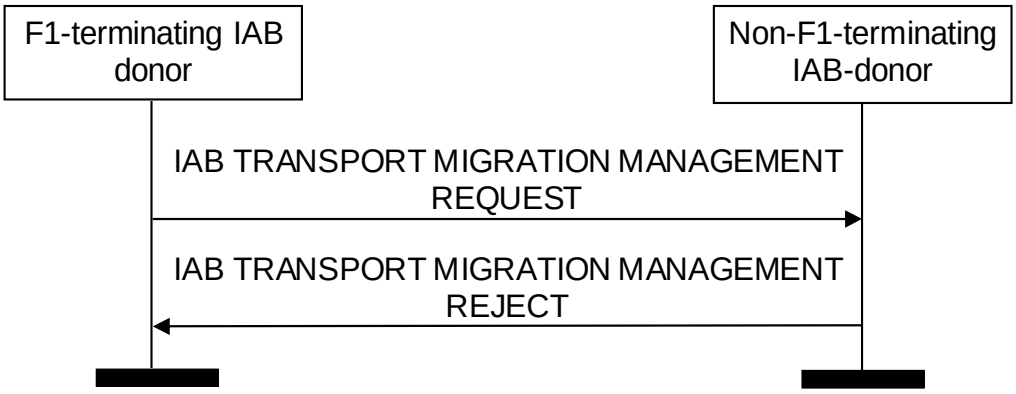

Figure 8.5.2.3-1: IAB Transport Migration Management triggered by the F1-terminating IAB-donor, unsuccessful operation

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 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

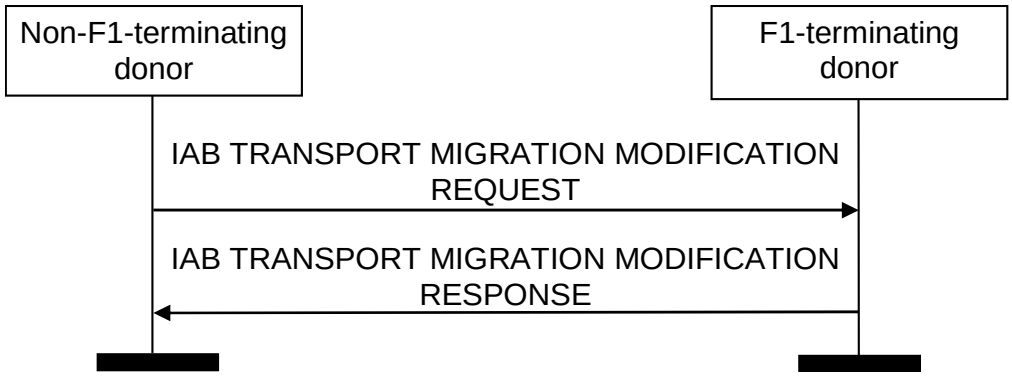

Figure 8.5.3.2-1: IAB Transport Migration Modification, successful operation

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* 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].

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 uses UE-associated signalling.

8.5.4.2 Successful Operation

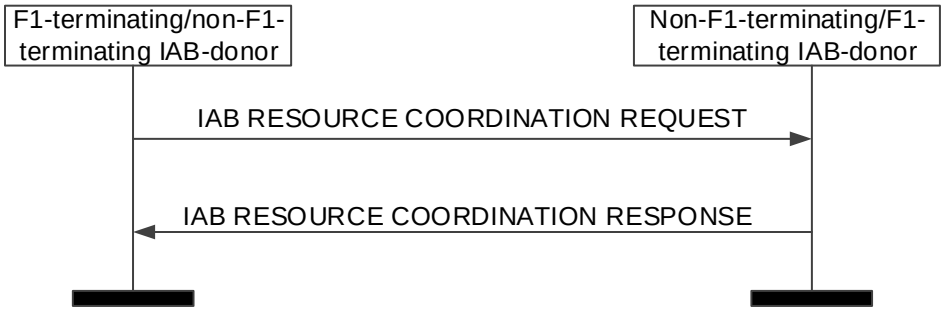

Figure 8.5.4.2-1: IAB Resource Coordination triggered by the F1-terminating/non-F1-terminating IAB-donor, successful operation

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.

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
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)		–	
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	O		ENUMERATED	This IE indicates	YES	ignore

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Status			(authorized, not authorized, ...)	the authorization status of the IAB-node.		

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		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.	YES	ignore
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	O		9.2.1.34		YES	reject

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Information						
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		–	
MBS Session Information Response List	O		9.2.1.38		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	YES	reject

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				node and for dual connectivity at the NG-RAN node to which the DRB context is transferred.		
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 9.2.3.16	Allocated at the target NG-RAN node.	YES	ignore
Cause	M		9.2.3.2		YES	ignore
Candidate Cells To Be Cancelled List		0 .. <maxnoof CellsinCHO>			YES	reject
>Target Cell ID	M		Target Cell Global ID 9.2.3.25		–	

Range bound	Explanation
maxnoofCellsinCHO	Maximum no. cells that can be prepared for a conditional handover.

Range bound	Explanation
	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 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 38.304 [33].	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 38.304 [33].	YES	ignore
NR Paging eDRX Information	O		9.2.3.161		YES	ignore
NR Paging eDRX Information for RRC INACTIVE	O		9.2.3.162		YES	ignore
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

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

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	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 *RRC ResumeRequest* or the *RRCResumeRequest1* message as defined in TS 38.331 [10]) or in the *shortResumeMAC-I* in the *RRCConnection ResumeRequest* message as defined in TS 36.331 [14]) **RRC Reestablishment:** Corresponds to information provided either in the *shortMAC-I* contained in the *RRCReestablishmentRequest* message as defined in TS 38.331 [10]) or in the *shortMAC-I* in the *RRCConnection ReestablishmentRequest* message as defined in TS 36.331 [14]). **RRC Resume for UP CIoT Optimization:** Corresponds to information provided in the *shortResumeMAC-I* in the *RRCConnection ResumeRequest* message or the *RRCConnection ResumeRequest-NB* message as defined in TS 36.331 [14].	YES	reject
New Cell Identifier	M		NG-RAN Cell Identity 9.2.2.9	**RRC Resume:** Corresponds to information provided either in	YES	reject

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				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* 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

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 only if the UE is authorized for NR V2X services.	YES	ignore
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

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

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	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
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		Data Forwarding Info from target NG-		–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
			RAN node 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
>>PDU Session Resource Setup Complete Info – SN terminated	O		9.2.1.30		–	
>>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

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

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
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	YES	reject

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.

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 .. <maxnoof CellsinCHO>			YES	reject
>Target Cell ID	M		Target Cell Global ID 9.2.3.25		–	

Range bound	Explanation
maxnoofCellsinCHO	Maximum no. cells that can be prepared for a conditional handover. Value is 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						
>>>>>> 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						

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
>>>>>> 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, …)	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

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

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
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		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	O		9.2.3.23		YES	reject

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
RAT/Frequency Selection Priority						
PDU Session Resources To Be Added List		*1*			YES	reject
>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	YES	reject

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				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 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.	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-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
IAB Authorization Status	O		ENUMERATED (authorized, not authorized, …)	Indicates the IAB node´s authorization status.	YES	ignore

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 .. <maxnoofPDUSessions>*		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 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 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

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
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.	YES	ignore
SCG Activation Status	O		9.2.3.155		YES	ignore
Conditional PSCell Addition Information Acknowledge	O				YES	ignore
>Candidate PSCell List		*1*			–	
>>Candidate PSCell Item		*1 .. <maxnoofPSCellCandidate>*			–	
>>>PSCell ID	M		NR CGI 9.2.2.7		–	

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

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 defined in subclause 6.2.2 of TS 36.331 [14].	–	
>>*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

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
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		–	
>S-NG-RAN node UE Aggregate Maximum Bit Rate	O		UE Aggregate Maximum Bit Rate 9.2.3.17		–	
>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	Expected UE Activity Behaviour for the PDU	YES	ignore

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
			9.2.3.82	Session.		
>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, 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
>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	YES	reject

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				S-NG-RAN node may use for SN-terminated bearers.		
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 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.	YES	reject
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

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
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 Reconfiguration	M		ENUMERATED (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 target SN.	YES	ignore
>Maximum Number of PSCells To Prepare	O		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.		
Conditional PSCell Change Information Update	O			This IE may be sent to the source SN.	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
IAB Authorization Status	O		ENUMERATED (authorized, not authorized, …)	Indicates the IAB node´s authorization status.	YES	ignore

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 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		–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
>PDU Session Resources Admitted To Be Modified List		*0..1*			–	
>>PDU Session Resources Admitted To Be Modified Item		*1 .. <maxnoofPDUSessions>*		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 to be released List – MN terminated	O		PDU session List with data Cause 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	YES	ignore

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				subclause 11.2.2 of TS 38.331 [10].		
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 isenabled.	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 Acknowledge	O			This IE may be sent from the target SN.	YES	ignore
>Candidate PSCell List		*1*			–	
>>Candidate PSCell Item		*1 .. <maxnoofPSCellCandidate>*			–	
>>>PSCell ID	M		NR CGI 9.2.2.7		–	

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 DRBs 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 target 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 target S-NG-RAN node.		
>>Candidate PSCell Item		*1 .. <maxnoofPSCellCandidate>*			–	
>>>PSCell ID	M		NR CGI 9.2.2.7		–	
SCG Reconfiguration Notification	O		ENUMERATED (executed, ..., executed-deleted, deleted)		YES	ignore

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 .. <maxnoofPDUsessions>*		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	O		9.2.1.21		–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Info – SN terminated						
>>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* 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].	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
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

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	M		NG-RAN node	Allocated at the S-	YES	ignore

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		
Cause	M		9.2.3.2		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
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.	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 is	YES	reject

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				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].	–	

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.	–	
>>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.	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		–	
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].		

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	YES	ignore

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				the listed DRBs as MN-terminated bearers.		

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

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

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

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.

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	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
Split SRB		*0..1*			YES	reject
>RRC Container	O		OCTET STRING	Contains a PDCP-C PDU encapsulating an RRC message as defined in 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	–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
>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 *MCGFailureInformation* 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	–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				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", and "4" are not set by the sender and ignored by the receiver.	–	

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..<maxnoofPDUSes*			–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
		sions>				
>>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 → 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
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 in NR Coordination		*0..1*		List of applicable NR cells	–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Response						
>>>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 XnAP ID	M		NG-RAN node UE XnAP ID 9.2.3.16	Allocated at the M-NG-RAN node.	YES	reject

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
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		OCTET STRING (SIZE(8))	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		OCTET STRING (SIZE(8))	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, ...)		YES	ignore
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

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	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

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	M		NG-RAN node	Allocated at the S-	YES	ignore

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.		

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

9.1.3 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	O		9.2.2.14		–	

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
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 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
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		–	

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 .. <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	This IE is not used in this version of the specification.	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 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

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
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		–	

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

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
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 Information E-UTRA	O		9.2.2.43		YES	ignore
>>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 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		–	
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$_1$	–	
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		*0 ..*			–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Modification Item		*<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 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	–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				the concerned SSB beam.		
>>Coverage Modification Cause	O		ENUMERATED (coverage, cell edge capacity, ...)	Indicates the reason for the coverage modification in NG-RAN node$_1$.	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	O		Local NG-RAN Node Identifier 9.2.2.101		YES	ignore

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-UTRA	M		9.2.2.12		–	
>>>Neighbour Information NR	O		9.2.2.13	NR neighbours.	–	
>>>Neighbour Information E-UTRA	O		9.2.2.14	E-UTRA neighbours	–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
>>>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
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		*0..<maxno*			YES	ignore

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Node List		*ofNeighbourNG-RAN nodes>*				
>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

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 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*			–	
>>>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*			–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
		>				
>>>>E-UTRA CGI	M		9.2.2.8		–	
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.

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 .. < maxnoffCellsinNG-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		–	
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.

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

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
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>*			–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
>>>>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

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
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		9.2.2.10	Physical Cell Identifier	–	
>>>>Re-	M		Global NG-RAN		–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
establishment cell CGI			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 *RRCRe-establishment Request* message (TS 38.331 [10]) or in the *RRCConnectionReestablishmentRequest* message (TS 36.331 [14])	–	
>>>>ShortMAC-I	M		BIT STRING (SIZE (16))	Corresponds to information provided in the *shortMAC-I* contained either in the *RRCRe-establishment Request* 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		9.2.2.59		–	
>RRC Setup						
>>CHOICE *RRC Setup Initiated Reporting*	M				–	
>>>RRC Setup Reporting with RLF Report						
>>>>UE RLF Report Container	M		9.2.2.59		–	
>>UE RLF Report Container	O		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-system ping-pong. …)		YES	ignore
Handover Cause	M		Cause 9.2.3.2	Indicates handover cause employed for handover from NG-RAN node $_2$	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	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 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 SN STATUS TRANSFER message from	YES	ignore

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				NG-RAN node 2.		
UE RLF Report Container	O		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

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$_1$ → 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		BITSTRING (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 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	YES	reject

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				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		S-NSSAI 9.2.3.21		–	
Reporting Periodicity	O		ENUMERATED (500ms, 1000ms, 2000ms, 5000ms, 10000ms, …)	Periodicity that can be used for reporting ofindicated 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

Range bound	Explanation
	cell. Value is 64.
maxnoofSliceItems	Maximum no. of signalled slice support items. Value is 1024.

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 Result		*1*			YES	ignore
>Cell Measurement Result Item		*1 .. < maxnoofCellsinNG-RANnode >*			YES	ignore
>>Cell ID	M		Global NG-RAN Cell Identity 9.2.2.27		–	
>>Radio Resource	O		9.2.2.50		–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Status						
>>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.	–	

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	reject
SSB Offsets List		*0..1*			YES	ignore
>SSB Offsets Item		*1 .. < maxnoofSSBAreas>*			–	
>>NG-RAN node1 SSB Offset Information	O		SSB Offset Information 9.2.2.77	Configuration 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		9.2.3.2		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

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
NG-RAN node1 Cell ID	M		Global NG-RAN Cell Identity 9.2.2.27		YES	ignore
NG-RAN node2 Cell ID	M		Global NG-RAN Cell Identity 9.2.2.27		YES	ignore
Cause	M		9.2.3.2		YES	ignore
Mobility Parameters Modification Range	O		9.2.2.61		YES	ignore
Criticality Diagnostics	O		9.2.3.2		YES	ignore
NG-RAN node2 SSB Offsets Modification Range		0 .. < maxnoofSSBAreas>			YES	ignore
>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
RACH Report List		*0..1*			YES	ignore
>RACH Report List Item		*1 .. <maxnoofRACHReports>*			EACH	ignore
>>RACH Report Container	M		OCTET STRING	Includes the *RA-ReportList* IE as defined in subclause 6.2.2 in TS 38.331 [10].	YES	ignore
>>UE Assistant Identifier	O		NG-RAN node UE XnAP ID 9.2.3.16		YES	ignore
Successful HO Report List		*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].	–	

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.

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

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 BH Information	M		9.2.2.83		–	
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 .. <maxnoofTrafficInde*			–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
		xEntries>				
>>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 .. <maxnoof TrafficIndexEntries>*			–	
>>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 .. <maxnoof TrafficInde*			–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
		xEntries>				
>>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

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 Modified List		*0..1*			YES	reject
>**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 >*			EACH	reject
>>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 >			EACH	reject
>>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

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
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 >*			EACH	reject
>>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 >			EACH	reject
>>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].

9.2 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		*1*			–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Setup List						
>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		YES	ignore
>>>>Redundant QoS Flow Indicator	O		9.2.3.118		YES	ignore
>>Data Forwarding and Offloading Info from source NG-RAN node	O		9.2.1.17		–	
>>Additional UL NG-U UP TNL Information at UPF List	O		Additional UP Transport Layer Information 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	YES	ignore

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				redundant transmission		
>>Additional Redundant UL NG-U UP TNL Information at UPF List	O		Additional UP Transport Layer Information 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	–	
>>>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		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	O		9.2.1.16		–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Forwarding Info from target NG-RAN node						
>>>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 a list of QoS flows.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
QoS Flow Item		*1..<maxnoofQoSFlows>*		

IE/Group Name	Presence	Range	IE type and reference	Semantics description
>QoS Flow Identifier	M		9.2.3.10	

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 .. <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		YES	ignore
>>Redundant QoS Flow Indicator	O		9.2.3.118		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	UPF endpoint of the NG-U transport bearer.	YES	ignore

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
			9.2.3.30	For delivery of UL PDUs for the redundant transmission.		
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 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.	–	
>>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	–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				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 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.	–	
>>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 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	.	–	

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		–	
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

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	–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				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		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	–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				duplication.		
>>RLC Duplication Information	O		9.2.3.111		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	–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				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		–	
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 .. <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		YES	ignore
>>Redundant QoS	O		9.2.3.118		YES	ignore

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Flow Indicator						
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*			–	
>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		YES	ignore
>>Redundant QoS Flow Indicator	O		9.2.3.118		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		–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
>>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 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 .. <maxnoofDRBs>*			–	
>>DRB ID	M		9.2.3.33		–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
>>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 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.	–	
>>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 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.	–	
>>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		–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
>>>>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 .. <maxnoof AdditionalPDCPDuplicationTNL>*			–	
>>>>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
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 .. <maxnoof DRBs>*			–	
>>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 .. <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	O		9.2.3.79		–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Mapping Indication						
>>>>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
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 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

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
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

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 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	O		UP Transport Parameters	M-NG-RAN node endpoint(s) of a	–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Information			9.2.3.76	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		–	
>>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
DRBs To Be Modified List		*0..1*			–	
>DRBs to Be Modified Item		*1 .. <maxnoofDRBs>*			–	
>>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		–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
			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		–	
>>>>QoS Flow Mapping Indication	O		9.2.3.79		–	
>>Additional PDCP Duplication TNL List		*0..1*			YES	ignore
>>>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 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
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 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		*0..1*			YES	ignore

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Mapped To DRB List						
>>>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		–	
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	–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				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 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

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				–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
>>12 bits						
>>>Receive Status Of PDCP SDU	O		BIT STRING (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 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 (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				–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
>>12 bits						
>>>Receive Status Of PDCP SDU	O		BIT STRING (1.. 2048)	This IE is not used in this version of the specification.	–	
>>>DL COUNT Value	M		COUNT Value for PDCP SN Length 12 9.2.3.36	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 12-bit long PDCP-SN.	–	
>>18 bits						
>>>Receive Status Of PDCP SDU	O		BIT STRING (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].	YES	reject

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 .. <maxnoof DRBs>*			–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
>DRB ID	M		9.2.3.33		–	
>QoS Flows List		*1*			–	
>>QoS Flow Item		*1..<maxnoofQoSFlows>*			–	
>>>QoS Flow Identifier	M		9.2.3.10		–	
>>>QoS Flow Mapping Indication	O		9.2.3.79		–	
>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
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	

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 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 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	–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				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 .. <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		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 .. <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
DRBs To Be Modified List		*0..1*			–	
>DRBs to Be Modified Item		*1 .. <maxnoofDRBs>*			–	
>>DRB ID	M		9.2.3.33		–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
>>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>*			–	
>>>>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	–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				Duplication.		
>>RLC Duplication Information	O		9.2.3.111		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. 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 PDUs	–	
DRBs Admitted to be Setup or Modified List		*1*			–	
>DRBs Admitted to be Setup or Modified Item		*1 .. <maxnoof DRBs>*			–	
>>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 .. <maxnoof Additional PDCPDuplicationTNL>*			–	
>>>>Additional PDCP Duplication	M		UP Transport Layer	M-NG-RAN node endpoint(s) of the	–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
UP TNL Information			Information 9.2.3.30	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		*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 of a DRB's Xn transport bearer. 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		–	

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		–	
>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.
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
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	

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 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>*		

IE/Group Name	Presence	Range	IE type and reference	Semantics description
>>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.
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.

9.2.2 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			

IE/Group Name	Presence	Range	IE type and reference	Semantics description
>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	

IE/Group Name	Presence	Range	IE type and reference	Semantics description
			(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 9.2.2.8).

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			

IE/Group Name	Presence	Range	IE type and reference	Semantics description
>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
>>>gNB-DU Cell Resource	O		gNB-DU Cell Resource	Contains FDD UL resource	YES	ignore

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Configuration-FDD-UL			Configuration 9.2.2.95	configuration of gNB-DU's cell. Only applicable if the gNB-DU is an IAB-DU or an IAB-donor-DU.		
>>>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		–	
Measurement Timing Configuration	M		OCTET STRING	Includes the *MeasurementTimingConfiguration* inter-node message for the served cell, as defined in TS	–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				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
>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*	YES	reject

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				NR IE is ignored.		
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
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
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
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 resource blocks (RBs) on which a channel access procedure is performed in shared spectrum.	–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				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.	–	
>**CSI- RS MTC Configuration List**	M	1 .. *<maxnoof CSIRSconfigurations >*		This list explicitly expresses the CSI-RS configurations contained in the MTC	–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
>>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

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	M		E-UTRA Transmission		–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Bandwidth			Bandwidth 9.2.2.22			
>>>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
>>>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,		–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
			n16, n32, …)			
>Radioframe Allocation Offset	M		INTEGER (0..7, ...)		–	
>MBSFN Subframe Allocation E-UTRA	M		9.2.2.26		–	
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 *freqBandIndicationPriority*, 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 *SystemInformation*	–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				BlockType1 message (SIB1) associated to the *E-UTRA Cell Identity* IE.		
>>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		NPRACH Configuration 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
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].

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.	GLOBAL	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
Served Cells To Modify NR		*0 .. < maxnoofCellsinNG-RAN node>*		List of modified cells served by the NG-RAN node.	YES	reject
>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 Indication	O		ENUMERATED (deactivated, ...)	Indicates that the concerned cell is switched off for energy saving reasons.	–	
Served Cells To Delete NR		*0 .. < maxnoofCellsinNG*		List of deleted cells served by the NG-RAN node.	YES	reject

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
		-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.	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
Served Cells To Modify E-UTRA		*0 .. < maxnoofCellsinNG-RAN node>*		List of modified cells served by the NG-RAN node.	YES	reject
>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 .. < maxnoofCellsinNG-RAN node >*		List of deleted cells served by the NG-RAN node.	YES	reject
>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 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	YES	ignore

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
				$F_{REF,shift}$ as defined in Section 5.4.2.1 of TS 38.104 [24].		

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 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 table 5.2-1. The value 80 corresponds to NR	–	

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
				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)	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]

IE/Group Name	Presence	Range	IE type and reference	Semantics description
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		BITSTRING (SIZE(6))	
>fourframes				
>>Fourframes Info	M		BITSTRING (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

IE/Group Name	Presence	Range	IE type and reference	Semantics description
				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 (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(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 Time-periodicity	M		INTEGER(1..320, ...)	Periodicity with which the 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

IE/Group Name	Presence	Range	IE type and reference	Semantics description
				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 (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"

IE/Group Name	Presence	Range	IE type and reference	Semantics description
				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 (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 (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 (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

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
				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 (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 multiple contiguous subframes (maximum 40). The first position of the *UL Coordination Information* corresponds to the receiving node's subframe 0 in a

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
				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 (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		ECGI 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 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 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		9.2.2.7	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

IE/Group Name	Presence	Range	IE type and reference	Semantics description
				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 DL non-GBR PRB usage	M		INTEGER (0..100)	Per SSB area DL non-GBR PRB usage in percentage of the cell total PRB number.	–	
>>>>SSB Area UL non-GBR PRB usage	M		INTEGER (0..100)	Per SSB area UL non-GBR PRB usage in percentage of the cell total PRB number.	–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
>>>>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 DL Total PRB allocation	M		INTEGER (0..100)	Total amount of 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	–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				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	For the Downlink	–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
			Capacity 9.2.2.52			
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 List		*0..1*		
>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 .

IE/Group Name	Presence	Range	IE type and reference	Semantics description
				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	M	*1 .. < maxnoofSliceItems>*		
>>>S-NSSAI			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 Capacity Value	M		9.2.2.58	

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 *UEInformationResponse* 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 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.

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	
>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*				

IE/Group Name	Presence	Range	IE type and reference	Semantics description
>>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 (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

IE/Group Name	Presence	Range	IE type and reference	Semantics description
				[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

IE/Group Name	Presence	Range	IE type and reference	Semantics description
				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* 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* 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		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	

IE/Group Name	Presence	Range	IE type and reference	Semantics description
>>>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>*		
>>>>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 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 (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	The IPv6 address prefix

IE/Group Name	Presence	Range	IE type and reference	Semantics description
			(SIZE(64))	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	
>>>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	

IE/Group Name	Presence	Range	IE type and reference	Semantics description
>>>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-r16* 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*				

IE/Group Name	Presence	Range	IE type and reference	Semantics description
>>>>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*		
>>>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.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
>**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)	
>>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*				

IE/Group Name	Presence	Range	IE type and reference	Semantics description
>>>>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 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		*1..<*		

IE/Group Name	Presence	Range	IE type and reference	Semantics description
IEs		*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*				
>non-UP Traffic Type				
>>Non-UP Traffic Type	M		ENUMERATED(UE-associated F1AP, non-UE-associated F1AP, non-F1, ...)	
>control Plane Traffic Type				
>>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				–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
>>>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-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	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						

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
>>>>>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.

9.2.3 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 (	

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
			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, 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,	

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
			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 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	

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
			range, SCG activation deactivation failure, SCG deactivation failure due to data transmission)	
>*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, 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

Radio Network Layer cause	Meaning
	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 $TXn_{DCoverall}$.
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.

Radio Network Layer cause	Meaning
	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 possible	The PDU session cannot be accepted according to the 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.

Radio Network Layer cause	Meaning
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.

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.

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	M		9.2.3.7		–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Retention Priority						
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 associated QoS flow.	YES	ignore
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

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	–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				specified in TS 23.501 [7].		
Guaranteed Flow Bit Rate Uplink	M		Bit Rate 9.2.3.4	Guaranteed Bit Rate (provided 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

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

IE/Group Name	Presence	Range	IE type and reference	Semantics description
				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.	–	
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	YES	ignore

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				present in case of GBR QoS flows and is ignored otherwise.		
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 critical, ...)	This IE indicates whether the GBR QoS flow is delay 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	YES	ignore

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				present in case of GBR QoS flows and is ignored otherwise.		
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.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
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	Semantics description

			reference	
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

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))	
>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} -	

IE/Group Name	Presence	Range	IE type and reference	Semantics description
			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 (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 (4)	The Tunnel Endpoint Identifier (TEID) is specified	–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				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 (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 [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 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	M		INTEGER (1..16,…)	Intended number of RAN paging

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Attempts				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

IE/Group Name	Presence	Range	IE type and reference	Semantics description
				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)		–	
Report Area	M		ENUMERATED (Cell, …)		–	
Area of Interest Information	O		9.2.3.48		–	
Additional Location Information	O		ENUMERATED (Include PSCell, ...)		YES	ignore

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	

IE/Group Name	Presence	Range	IE type and reference	Semantics description
>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,

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description
				"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 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 (256)	$K_{NG\text{-}RAN}$* 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 $S\text{-}K_{SN}$ 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	–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				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 (6)} (SIZE(8, …))	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", 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		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	YES	ignore

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				mobility to EPS.		
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 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:	–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				other bits reserved for future use. Value '1' indicates 'should be traced'. Value '0' indicates 'should not be traced'.		
Trace Depth	M		ENUMERATED (minimum, medium, maximum, MinimumWithoutVendorSpecificExtension, MediumWithoutVendorSpecificExtension, MaximumWithoutVendorSpecificExtension, …)	Defined in TS 32.422 [23].	–	
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	M		9.2.3.10		–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Identifier						
>>Notification Information	M		ENUMERATED (fulfilled, not fulfilled, …)		–	
>>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. Value 0 indicates that NG-RAN cannot even fulfil the lowest alternative parameter set.	YES	ignore

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 active state prior to the target cell. The overall mechanism is described in TS 36.300 [12].

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				

IE/Group Name	Presence	Range	IE type and reference	Semantics description
>>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].
>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	M		Bit Rate 9.2.3.4	This IE indicates the PDU session Aggregate Maximum Bit

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Downlink				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	YES	ignore

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				DRBs supported by the UE in the DL.		

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

IE/Group Name	Presence	Range	IE type and reference	Semantics description
				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	O		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 Trajectory		*0..1*		Indicates the UE's expected 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

IE/Group Name	Presence	Range	IE type and reference	Semantics description
				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>*		
>>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	O		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	
QoS Flows Usage Report List		*0..1*		
>**QoS Flows Usage Report Item**		*1..<maxnoofQoSflows>*		
>>QoS Flow Indicator	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 reference	Semantics description
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 9.3.2.29	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 9.2.3.2	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 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
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	

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	M		INTEGER (0..8, ...)	Indicates the index of the item within the *Alternative QoS*

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Index				*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 (	This IE is present when DC

IE/Group Name	Presence	Range	IE type and reference	Semantics description
			True, False, …)	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 [9]. 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	
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	–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
				as specified in TS 23.501 [7].		
Survival Time	O		9.2.3.152		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
CHOICE *NPN Mobility Information*	M			
>SNPN Mobility Information				
>>Serving NID	M		NID 9.2.2.65	
>PNI-NPN Mobility Information				
>>Allowed PNI-NPN ID List	M		9.2.3.120	

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
MDT Configuration-NR	O		9.2.3.126	
MDT Configuration-EUTRA	O		9.2.3.127	

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
MDT Activation	M		ENUMERATED (Immediate MDT only, Immediate MDT and Trace, Logged MDT only, ...)	
CHOICE *Area Scope of MDT-NR*	O			
>Cell based				
>>**Cell ID List for MDT-NR**		*1 .. <maxnoofCellIDforMDT>*		
>>>NR CGI	M		9.2.2.7	
>TA based				
>>**TA List for MDT**		*1 .. <maxnoofTAforMDT>*		
>>>TAC	M		OCTET STRING (SIZE (3))	The TAI is derived using the current serving PLMN.
>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	
CHOICE *MDT Mode*	M			
>Immediate MDT-NR				
>>Measurements to Activate	M		BITSTRING (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		BITSTRING(SIZE(8))	Each position in the bitmap represents requested location information as defined in TS 37.320 [43].

IE/Group Name	Presence	Range	IE type and reference	Semantics description
				First Bit = GNSS Other bits are 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		9.2.3.11	
>>WLAN Measurement Configuration	O		9.2.3.12	
>>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 Neighbour Cells	O		9.2.3.140	
>>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	

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.

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

Condition	Explanation
	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		OCTET STRING (SIZE (3))	The TAI is derived using the current serving PLMN.
>*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	O		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-			Included in case of	–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
	ifM1A2trigger			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 (ms120, ms240, ms480, ms640, ms1024, ms2048, ms5120, ms10240, min1, min6, min12, min30, min60)	Corresponds to 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

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
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, 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, …)		–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
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 Configuration Name List		*0..1*		This IE is present if the *Bluetooth 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 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>*		

IE/Group Name	Presence	Range	IE type and reference	Semantics description
>>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 37.320 [43].
WLAN RTT	O		ENUMERATED (True, …)	In case of Immediate MDT, it corresponds to M9 as defined in 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 Configuration	O		ENUMERATED (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			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].

IE/Group Name	Presence	Range	IE type and reference	Semantics description
>>Hysteresis			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			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 reference	Semantics description
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		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 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 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>*		

IE/Group Name	Presence	Range	IE type and reference	Semantics description
>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 an active 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
Time Distribution indication	M		ENUMERATED (enabled, disabled, …)	
Uu Time Synchronization Error Budget	C-ifEnabled		INTEGER (0..1000000, …)	Expressed in units of 1 ns.

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				
>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
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 coming with the QMC activation request from the management system to identify one PLMN containing the management system, and QMC ID is a 3 bytes 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 (QMC for DASH streaming, QMC for MTSI, QMC for VR, ...)	This IE indicates 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	The included NG-RAN Cell Identity IE can only indicate the NR Cell Identity.
>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				

IE/Group Name	Presence	Range	IE type and reference	Semantics description
>>PLMN List for QMC		*1 .. <maxnoofPLMNforQMC>*		
>>>PLMN Identity	M		9.2.2.4	
S-NSSAI List	O	*0..1*		
>S-NSSAI Item		*1 .. <maxnoofSNSSAIforQMC>*		
>>S-NSSAI	M		S-NSSAI 9.2.3.21	
Available RAN Visible QoE Metrics	O		9.2.3.158	Present in case of signalling-based QoE.

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
5G ProSe Direct Discovery	O		ENUMERATED (authorized, not authorized, ...)	Indicates whether the UE is authorized for 5G ProSe Direct Discovery.
5G ProSe Direct Communication	O		ENUMERATED (authorized, not authorized, ...)	Indicates whether the UE is authorized for 5G ProSe Direct Communication.
5G ProSe Layer-2 UE-to-Network Relay	O		ENUMERATED (authorized, not authorized, ...)	Indicates whether the UE is authorized for 5G ProSe Layer-2 UE-to-Network Relay.
5G ProSe Layer-3 UE-to-Network Relay	O		ENUMERATED (authorized, not authorized, ...)	Indicates whether the UE is authorized for 5G ProSe Layer-3 UE-to-Network Relay.
5G ProSe Layer-2 Remote UE	O		ENUMERATED (authorized, not authorized, ...)	Indicates whether the UE is authorized for 5G ProSe Layer-2 Remote UE.

9.2.3.160 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, 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]

9.2.3.162 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		–	
>>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 .. <maxnoof QoSFlows>*			–	
>>>>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 .. <maxnoof SRBs>*			–	

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
>>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		9.3.1.24	
>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 List Modification* IE is to provide the modified list of PLMN allowed for MDT.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
MDT PLMN Modification List		*0..<maxnoofMDTPLMNs>*		An empty list indicates there is no PLMN allowed for MDT.
>PLMN Identity	M		9.2.2.4	

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

IE/Group Name	Presence	Range	IE type and reference	Semantics description
			…)	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.

9.3 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,
    ResourceStatusRequest,
    ResourceStatusResponse,
    ResourceStatusFailure,
    ResourceStatusUpdate,
    MobilityChangeRequest,
    MobilityChangeAcknowledge,
    MobilityChangeFailure,
    AccessAndMobilityIndication,
    CellTrafficTrace,
    RANMulticastGroupPaging,
    ScgFailureInformationReport,
    ScgFailureTransfer,
    F1CTrafficTransfer,
    IABTransportMigrationManagementRequest,
    IABTransportMigrationManagementResponse,
    IABTransportMigrationManagementReject,
    IABTransportMigrationModificationRequest,
    IABTransportMigrationModificationResponse,
    IABResourceCoordinationRequest,
    IABResourceCoordinationResponse,
    CPCCancel,
    PartialUEContextTransfer,
```

```
    PartialUEContextTransferAcknowledge,
    PartialUEContextTransferFailure


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-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

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                                 ,
    ...
}

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                          |
    resourceStatusReporting                 |
    accessAndMobilityIndication             |
    cellTrafficTrace                        |
    rANMulticastGroupPaging                 |
    scgFailureInformationReport             |
    scgFailureTransfer                      |
    f1CTrafficTransfer                      |
    retrieveUEContextConfirm                |
    cPCCancel                              ,
    ...

}

-- **************************************************************
--
-- 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
}

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
}
```

```
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,
    BitRate,
    Cause,
    CellAndCapacityAssistanceInfo-EUTRA,
    CellAndCapacityAssistanceInfo-NR,
    CellAssistanceInfo-EUTRA,
    CellAssistanceInfo-NR,
    CHOinformation-Req,
    CHOinformation-Ack,
    CHOinformation-AddReq,
    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,
    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,
    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,
    RACHReportInformation,
    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


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-ActivatedServedCells,
    id-ActivationIDforCellActivation,
    id-AdditionalDRBIDs,
    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-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-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-RACHReportInformation,
    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-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,



    maxnoofCellsinNG-RANnode,
    maxnoofDRBs,
    maxnoofPDUSessions,
    maxnoofQoSFlows,
    maxnoofServedCellsIAB,
    maxnoofTrafficIndexEntries,
    maxnoofTLAsIAB,
    maxnoofBAPControlPDURLCCHs,
    maxnoofServingCells

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 },
    ...
}

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 },
    ...
}

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 },
    ...
}

-- **************************************************************
--
-- 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},
    ...
}

-- **************************************************************
--
-- 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},
    ...
}

-- **************************************************************
```

```
--
-- 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},
    ...
}

-- **************************************************************
--
-- 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 },
    ...
}

-- **************************************************************
--
-- 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 },
    ...
}

-- **************************************************************
--
-- 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 },
    ...
}

-- **************************************************************
--
-- 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 },
    ...
}

-- **************************************************************
--
-- 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 },
    ...
}

-- **************************************************************
--
```

```
-- 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}
 -- The IE shall be present if there is at least one PDUSessionResourceSetupInfo-SNterminated included --|
    { 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-IABAuthorizationStatus              CRITICALITY ignore      TYPE IABAuthorizationStatus                 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 },
    ...
}

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 },
    ...
}

-- ************************************************************
--
-- 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 ::= {
    ...
}

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-IABAuthorizationStatus                  CRITICALITY ignore      TYPE IABAuthorizationStatus                 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},
    ...
}

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, ...}

-- **************************************************************
--
-- 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 },
    ...
}
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 },
    ...
}
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 },
```

```
    ...
}

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 },
    ...
}

-- **************************************************************
--
-- 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 },
    ...
}

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 },
    ...
}

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 },
    ...
}

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 },
    ...
}

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 },
    ...
}
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 },
    ...
}

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 ::= {
    ...
}

-- **************************************************************
--
-- 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 },
    ...
}

-- **************************************************************
--
-- 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 },
    ...
}

-- **************************************************************
--
-- 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 },
    ...
}

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 },
    ...
}
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 ::= {
    ...
}


-- **************************************************************
--
-- 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 ::= {
    ...
}


-- **************************************************************
--
-- 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},
    ...
}

-- **************************************************************
--
-- 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 reject  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 reject  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-RACHReportInformation               CRITICALITY ignore      TYPE RACHReportInformation              PRESENCE optional}|
    { ID id-SuccessfulHOReportInformation       CRITICALITY ignore      TYPE SuccessfulHOReportInformation      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 },
    ...
}

-- **************************************************************
--
-- 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 },
    ...
}

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 },
    ...
}

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},
    ...
}

-- **************************************************************
--
-- 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 },
    ...
}

-- **************************************************************
--
-- 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 },
    ...
}


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-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-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-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-Transmission-Bandwidth-asymmetric,
    maxEARFCN,
    maxnoofAllowedAreas,
    maxnoofAMFRegions,
    maxnoofAoIs,
    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,
    maxnoofRACHReports,
    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

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

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 ::= {
    ...
}

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 ::= {
    ...
}


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 ::= {
    ...
}


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 ::= {
    ...

}
```

```
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 },
    ...
}

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 {
    bufferLevel                     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 ::= {
    ...
}


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 },
```

```
    ...
}


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))


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,
    unknown-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
}

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 ::= {
    ...
}


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 ::= {
    ...
}

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 ::= {
    ...
}

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.a, it’s used to distinguish the
"CapacityValue" in 9.2.2.c
    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 ::={
    ...
}


CHOinformation-Ack ::= SEQUENCE {
    requestedTargetCellGlobalID     Target-CGI,
    maxCHOoperations                MaxCHOpreparations                                      OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { { CHOinformation-Ack-ExtIEs} } OPTIONAL,
    ...
}

CHOinformation-Ack-ExtIEs XNAP-PROTOCOL-EXTENSION ::={
    ...
}


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-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-Probability ::= INTEGER (1..100)

CNsubgroupID ::= INTEGER (0..7, ...)


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,
    ...}

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,
-- Included in case 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 ::= {
    ...
}

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 ::= {
    ...
}

CPAInformationAck ::= SEQUENCE {
    candidate-pscells                   CPACcandidatePSCells-list,
    iE-Extensions       ProtocolExtensionContainer { { CPAInformationAck-ExtIEs} } OPTIONAL,
    ...
}

CPAInformationAck-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

CPCInformationRequired::= SEQUENCE {
    cpc-target-sn-required-list     CPC-target-SN-required-list,
    iE-Extensions                   ProtocolExtensionContainer { {CPCInformationRequired-ExtIEs} } OPTIONAL,
    ...
}

CPCInformationRequired-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

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 ::= {
    ...
}

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 ::= {
    ...
}

CPAInformationModReqAck ::= SEQUENCE {
    candidate-pscells                   CPACcandidatePSCells-list,
    iE-Extensions                       ProtocolExtensionContainer { { CPAInformationModReqAck-ExtIEs} } OPTIONAL,
    ...
}

CPAInformationModReqAck-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

CPC-DataForwarding-Indicator ::= ENUMERATED {triggered, early-data-transmission-stop, ..., coordination-only}


CPACInformationModRequired ::= SEQUENCE {
    candidate-pscells   CPACcandidatePSCells-list,
    iE-Extensions       ProtocolExtensionContainer { { CPACInformationModRequired-ExtIEs} } OPTIONAL,
    ...
}

CPACInformationModRequired-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

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,
    ...
}


-- 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 ::= {
    ...
}


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, ...}


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 ::= {
    ...
}

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 },
    ...
}


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 ::= {
    ...
}


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},
    ...
}


-- E

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


E-RAB-ID        ::= INTEGER (0..15, ...)


E-UTRAARFCN ::= INTEGER (0..maxEARFCN)


E-UTRA-Cell-Identity            ::= BIT STRING (SIZE(28))


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 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
}


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 ::= {
    ...
}

-- F

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 ::= {
    ...
}

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,
    ...
}

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, ...}

-- 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 },
    ...
}

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,
    ...
}

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,
    m4Configuration             M4Configuration             OPTIONAL,
    m5Configuration             M5Configuration             OPTIONAL,
    mDT-Location-Info           MDT-Location-Info           OPTIONAL,
    m6Configuration             M6Configuration             OPTIONAL,
    m7Configuration             M7Configuration             OPTIONAL,
    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 ::= {
    ...
}


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
```

```
-- 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},
    ...
```

```
}

LoggedEventTriggeredConfig ::= SEQUENCE {
    eventTypeTrigger                    EventTypeTrigger,
    iE-Extensions       ProtocolExtensionContainer { { LoggedEventTriggeredConfig-ExtIEs} } OPTIONAL,
    ...
}

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
}

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 ::= {
    ...
}


-- M

MaxNrofRS-IndexesToReport::= INTEGER (1..64, ...)


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,
-- Included in case of event-triggered, or event-triggered periodic reporting for measurement M1
    m1periodicReporting         M1PeriodicReporting             OPTIONAL,
-- Included in case of periodic or event-triggered periodic reporting
    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   },
-- The above IE shall be present if the BeamMeasurementIndicationM1 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-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 ::= {
    ...
}


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 ::= {
    ...
}

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 ::= {
    ...
}

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 ::= {
    ...
}

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    },
    ...
}

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, ...)

MultiplexingInfo    ::= SEQUENCE{
    iAB-MT-Cell-List    IAB-MT-Cell-List,
    iE-Extensions       ProtocolExtensionContainer { {MultiplexingInfo-ExtIEs} } OPTIONAL,
    ...
}

MultiplexingInfo-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}


-- N

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 ::={
    ...
```

```
}


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 ::= {
    ...
}


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, ...)


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 ::= {
    ...
}

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,
    energyDetectionThreshold            EnergyDetectionThreshold,
    iE-Extension        ProtocolExtensionContainer { {NR-U-Channel-Item-ExtIEs} }   OPTIONAL,
    ...
}

NR-U-Channel-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

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}


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 },
    ...
}


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}


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,
    ...
}

NRPCI ::= INTEGER (0..1007, ...)

NRSCS ::= ENUMERATED { scs15, scs30, scs60, scs120, ..., scs480, scs960}


NRTransmissionBandwidth ::= SEQUENCE {
    nRSCS   NRSCS,
    nRNRB   NRNRB,
    iE-Extensions               ProtocolExtensionContainer { {NRTransmissionBandwidth-ExtIEs} } OPTIONAL,
    ...
}

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, ...)


-- 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

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 ::= {
    ...
}



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},
...
}



-- **************************************************************
--
-- 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-ListPRESENCE 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},
    ...
}

-- **************************************************************
--
-- PDU Session Resource Setup Response Info - SN terminated
--
-- **************************************************************


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},
```

```
    ...
}

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},
    ...
}

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
--
-- ************************************************************


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},
    ...
}

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
--
-- **************************************************************


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},
    ...
}

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
--
-- **************************************************************


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},
    ...
}

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
```

```
--
-- **************************************************************


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},
    ...
}

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},
    ...
}


-- **************************************************************
--
-- PDU Session Resource Modification Info - MN terminated
--
-- **************************************************************


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},
    ...
}


-- **************************************************************
--
-- PDU Session Resource Modification Response Info - MN terminated
--
-- **************************************************************


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},
    ...
}


-- **************************************************************
--
-- PDU Session Resource Change Required Info - SN terminated
--
-- **************************************************************


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
--
-- **************************************************************


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 ::= {
    ...
}

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},
    ...
}

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},
    ...
}

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},
    ...
}


-- **************************************************************
--
-- 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))

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, ...}


-- 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 ::= {
    ...
}

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},
    ...
}


QoSFlowMappingIndication ::= ENUMERATED {
    ul,
    dl,
    ...
}


QoSFlowNotificationControlIndicationInfo ::= SEQUENCE (SIZE (1..maxnoofQoSFlows)) OF QoSFlowNotify-Item

QoSFlowNotify-Item ::= SEQUENCE {
    qosFlowIdentifier           QoSFlowIdentifier,
    notificationInformation     ENUMERATED {fulfilled, not-fulfilled, ...},
    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},
    ...
}

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

RACHReportInformation   ::= SEQUENCE (SIZE(1.. maxnoofRACHReports)) OF RACHReportList-Item
RACHReportList-Item ::= SEQUENCE {
    rACHReport              RACHReportContainer,
    iE-Extensions                       ProtocolExtensionContainer { { RACHReportList-Item-ExtIEs} } OPTIONAL,
    ...
}

RACHReportList-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    { ID id-UEAssistantIdentifier   CRITICALITY ignore  EXTENSION NG-RANnodeUEXnAPID    PRESENCE optional},
    ...
}

RACHReportContainer ::= 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))


ReportingPeriodicity ::= ENUMERATED {
    half-thousand-ms,
    one-thousand-ms,
    two-thousand-ms,
    five-thousand-ms,
    ten-thousand-ms,
    ...
}


RegistrationRequest ::= ENUMERATED {start, stop, add, ... }

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,
    ...
}


-- S

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 ::= {
    ...
}

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, ...}

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 },
    ...
}

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 ::= {
    ...
}

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 ::= {
    ...
}

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 ::= {
    ...
}

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))


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, ...}

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

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 },
    ...
}


SubcarrierSpacing ::= ENUMERATED {kHz15, kHz30, kHz120, kHz240, spare3, spare2, spare1, ..., kHz60}

-- T

TABasedMDT ::= SEQUENCE {
```

```
    tAListforMDT        TAListforMDT,
    iE-Extensions       ProtocolExtensionContainer { {TABasedMDT-ExtIEs} } OPTIONAL,
    ...
}

TABasedMDT-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 ::= {
    ...
}

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 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)

TimeSynchronizationAssistanceInformation ::= SEQUENCE {
    timeDistributionIndication                  ENUMERATED {enabled, disabled, ...},
    uuTimeSynchronizationErrorBudget            INTEGER (0..1000000, ...)               OPTIONAL,
    -- The above IE shall be present if the Time Distribution Indication IE is set to the value “enabled”
    ie-Extension                                ProtocolExtensionContainer { { TimeSynchronizationAssistanceInformation-ExtIEs} } OPTIONAL,
    ...
}

TimeSynchronizationAssistanceInformation-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {
    ...
}

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,
    ...
}

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},
    ...
}


TypeOfError ::= ENUMERATED {
    not-understood,
    missing,
    ...
}


-- 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 ::= {
    ...
}


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 },
    ...
}


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 IE 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-r16 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 ::= {
        ...
}


UserPlaneTrafficActivityReport ::= ENUMERATED {inactive, re-activated, ...}

URIaddress ::= VisibleString

-- 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

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, ...)


-- 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


-- ************************************************************
--
-- Lists
--
-- ************************************************************

maxEARFCN                                INTEGER ::= 262143
maxnoofAllowedAreas                      INTEGER ::= 16
maxnoofAMFRegions                        INTEGER ::= 16
maxnoofAoIs                              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
maxnoofRACHReports                      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

-- ************************************************************
--
-- 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
id-OffsetOfNbiotChannelNumberToDL-EARFCN                ProtocolIE-ID ::= 166
id-OffsetOfNbiotChannelNumberToUL-EARFCN                ProtocolIE-ID ::= 167
id-NBIoT-UL-DL-AlignmentOffset                          ProtocolIE-ID ::= 168
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
id-MobilityInformation                                      ProtocolIE-ID ::= 176
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
id-ReportingPeriodicity                                     ProtocolIE-ID ::= 192
id-CellMeasurementResult                                    ProtocolIE-ID ::= 193
id-NG-RANnode1CellID                                        ProtocolIE-ID ::= 194
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-RACHReportInformation                                    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
id-duplicationActivation                                        ProtocolIE-ID ::= 236
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
id-SFN-Offset                                                   ProtocolIE-ID ::= 242
id-QoSMonitoringDisabled                                        ProtocolIE-ID ::= 243
id-ExtendedUEIdentityIndexValue                                 ProtocolIE-ID ::= 244
id-EUTRAPagingeDRXInformation                                   ProtocolIE-ID ::= 245
id-CHO-MRDC-EarlyDataForwarding                                 ProtocolIE-ID ::= 246
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
id-IAB-MT-Cell-List                                             ProtocolIE-ID ::= 297
id-NoPDUSessionIndication                                       ProtocolIE-ID ::= 298
id-IAB-TNL-Address-Request                                      ProtocolIE-ID ::= 299
id-IAB-TNL-Address-Response                                     ProtocolIE-ID ::= 300
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
id-TrafficRequiredToBeModifiedList                              ProtocolIE-ID ::= 308
id-TrafficRequiredModifiedList                                  ProtocolIE-ID ::= 309
id-TrafficReleasedList                                          ProtocolIE-ID ::= 310
id-IABTNLAddressToBeAdded                                       ProtocolIE-ID ::= 311
id-IABTNLAddressToBeReleasedList                                ProtocolIE-ID ::= 312
id-nonF1-Terminating-IAB-DonorUEXnAPID                          ProtocolIE-ID ::= 313
id-F1-Terminating-IAB-DonorUEXnAPID                             ProtocolIE-ID ::= 314
id-BoundaryNodeCellsList                                        ProtocolIE-ID ::= 315
id-ParentNodeCellsList                                          ProtocolIE-ID ::= 316
id-tdd-GNB-DU-Cell-Resource-Configuration                       ProtocolIE-ID ::= 317
id-UL-GNB-DU-Cell-Resource-Configuration                        ProtocolIE-ID ::= 318
id-DL-GNB-DU-Cell-Resource-Configuration                        ProtocolIE-ID ::= 319
id-permutation                                                  ProtocolIE-ID ::= 320
id-IABTNLAddressException                                       ProtocolIE-ID ::= 321
id-CHOinformation-AddReq                                        ProtocolIE-ID ::= 322
id-CHOinformation-ModReq                                        ProtocolIE-ID ::= 323
id-SurvivalTime                                                 ProtocolIE-ID ::= 324
id-TimeSynchronizationAssistanceInformation                     ProtocolIE-ID ::= 325
id-SCGActivationRequest                                         ProtocolIE-ID ::= 326
id-SCGActivationStatus                                          ProtocolIE-ID ::= 327
id-CPAInformationRequest                                        ProtocolIE-ID ::= 328
id-CPAInformationAck                                            ProtocolIE-ID ::= 329
id-CPCInformationRequired                                       ProtocolIE-ID ::= 330
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
```

```
id-CPACInformationModRequired                                                   ProtocolIE-ID ::= 336
id-QMCConfigInfo                                                                ProtocolIE-ID ::= 337
id-ProtocolIE-ID338-NotToBeUsed                                                 ProtocolIE-ID ::= 338
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
id-SDT-Termination-Request                                                      ProtocolIE-ID ::= 353
id-SDTPartialUEContextInfo                                                      ProtocolIE-ID ::= 354
id-SDTDataForwardingDRBList                                                     ProtocolIE-ID ::= 355
id-PagingCause                                                                  ProtocolIE-ID ::= 356
id-PEIPSassistanceInformation                                                   ProtocolIE-ID ::= 357
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
id-AdditionalListofPDUSessionResourceChangeConfirmInfo-SNterminated             ProtocolIE-ID ::= 369
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
id-MBS-DataForwarding-Indicator                                                 ProtocolIE-ID ::= 375
id-IABAuthorizationStatus                                                       ProtocolIE-ID ::= 376
id-Transmission-Bandwidth-asymmetric                                            ProtocolIE-ID ::= 472


END
-- ASN1STOP
```

9.3.8 Container definitions

```
-- 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

Change history							
Date	Meeting	TDoc	CR	Rev	Cat	Subject/Comment	New version
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

Change history							
Date	Meeting	TDoc	CR	Rev	Cat	Subject/Comment	New version
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

Change history							
Date	Meeting	TDoc	CR	Rev	Cat	Subject/Comment	New version
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

Change history							
Date	Meeting	TDoc	CR	Rev	Cat	Subject/Comment	New version
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
2024-03	RAN#103	RP-240643	1114	1	F	Handling of IAB authorization status during MT migration	17.8.0
2024-03	RAN#103	RP-240642	1144	1	F	Correction on UE history information and SCG UE History Information	17.8.0
2024-03	RAN#103	RP-240646	1151	1	F	Correction of DRBs Subject To Status Transfer List	17.8.0
2024-03	RAN#103	RP-240643	1166	-	F	Correction on IAB authorization status transfer for NR-DC	17.8.0
2024-03	RAN#103	RP-240644	1201	2	F	Mobility Restrictions with NR NTN - XnAP Impacts	17.8.0
2024-03	RAN#103	RP-240646	1206	1	A	Correction on PDU Session Resources Not Admitted	17.8.0
2024-03	RAN#103	RP-240644	1211	2	A	Correction on handover procedure	17.8.0
2024-03	RAN#103	RP-240642	1231	1	F	Xn correction for NR-U	17.8.0
2024-06	RAN#104	RP-241121	1154	3	A	Correction of IP-Sec Transport Layer Address	17.9.0
2024-06	RAN#104	RP-241117	1290	1	F	Correcting IE referenced in Coverage Modification	17.9.0
2024-09	RAN#105	RP-241873	1327	3	A	Correction on asymmetric UL and DL for TDD Carrier	17.10.0
2024-09	RAN#105	RP-241873	1335	1	F	Correction of Served Cell Specific Info Request in NG-RAN node configuration update procedure	17.10.0
2024-09	RAN#105	RP-241870	1347	1	F	Correction on SSB transmission periodicity for IAB	17.10.0
2024-12	RAN#106	RP-243103	1357	2	F	Correction on Retrieve UE Context Confirm	17.11.0
2024-12	RAN#106	RP-243100	1364	2	F	Correction for the semantics description	17.11.0
2024-12	RAN#106	RP-243099	1374	1	F	Correcting IE reference in Cell Replacing Info	17.11.0
2024-12	RAN#106	RP-243100	1416	-	F	Correction on IAB RESOURCE COORDINATION	17.11.0
2025-03	RAN#107	RP-250137	1438	1	F	Correction on UE XnAP ID in IAB procedures	17.12.0
2025-03	RAN#107	RP-250136	1453	-	F	Correction on reference in SCG failure information reporting	17.12.0
2025-06	RAN#108	RP-251150	1493	1	F	Correction on Subcarrier Spacing for IAB	17.13.0
2026-03	RAN#111	RP-260276	1612	2	A	Correction on prioritized alternative QoS profile	17.14.0
2026-03	RAN#111	RP-260273	1673	-	F	Beam measurement report quantity	17.14.0

History

Version	Date	Status
V17.0.0	May 2022	Publication
V17.1.0	July 2022	Publication
V17.2.0	October 2022	Publication
V17.3.0	January 2023	Publication
V17.4.0	May 2023	Publication
V17.5.0	July 2023	Publication
V17.6.0	October 2023	Publication
V17.7.0	February 2024	Publication
V17.8.0	April 2024	Publication
V17.9.0	August 2024	Publication
V17.10.0	September 2024	Publication
V17.11.0	January 2025	Publication
V17.12.0	April 2025	Publication
V17.13.0	July 2025	Publication
V17.14.0	April 2026	Publication