ETSI TS 138 413 V15.7.0 (2020-04)

5G;
NG-RAN;
NG Application Protocol (NGAP)
(3GPP TS 38.413 version 15.7.0 Release 15)

iTeh STANDARD PREVIEW
(standards.iteh.ai)
Full standard:
https://standards.iteh.ai/catalog/standards/sist/aa1fdc34-1e23-4ea5-bbd4-43e01e7c3928/etsi-ts-138-413-v15.7.0-2020-04

Reference
RTS/TSGR-0338413vf70

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 - NAF 742 C
Association à but non lucratif enregistrée à la
Sous-Préfecture de Grasse (06) N° 7803/88

Important notice

The present document can be downloaded from:
http://www.etsi.org/standards-search

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 at www.etsi.org/deliver.

Users of the present document should be aware that the document may be subject to revision or change of status.
Information on the current status of this and other ETSI documents is available at
https://portal.etsi.org/TB/ETSIDeliverableStatus.aspx

If you find errors in the present document, please send your comment to one of the following services:
https://portal.etsi.org/People/CommiteeSupportStaff.aspx

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 2020.
All rights reserved.

DECT™, **PLUGTESTS™**, **UMTS™** and the ETSI logo are trademarks of ETSI registered for the benefit of its Members.
3GPP™ and **LTE™** 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.

Intellectual Property Rights

Essential patents

IPRs essential or potentially essential to normative deliverables may have been declared to ETSI. The information pertaining to these essential IPRs, if any, is 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 Web server (https://ipr.etsi.org/).

Pursuant to the ETSI IPR Policy, no investigation, 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.

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 under http://webapp.etsi.org/key/queryform.asp.

iTeh STANDARD PREVIEW
(standards.iteh.ai)
Full standard:
https://standards.iteh.ai/catalog/standards/sist/4a1fdc34-1e23-4ea5-bbd1-43e01e7c3928/etsi-ts-138-413-v15.7.0-2020-04

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 13
1 Scope 14
2 References 14
3 Definitions and abbreviations 15
3.1 Definitions 15
3.2 Abbreviations 16
4 General 16
4.1 Procedure Specification Principles 16
4.2 Forwards and Backwards Compatibility 17
4.3 Specification Notations 17
5 NGAP Services 17
6 Services Expected from Signalling Transport 17
7 Functions of NGAP 18
8 NGAP Procedures 18
8.1 List of NGAP Elementary Procedures 18
8.2 PDU Session Management Procedures 19
8.2.1 PDU Session Resource Setup 19
8.2.1.1 General 19
8.2.1.2 Successful Operation 20
8.2.1.3 Unsuccessful Operation 22
8.2.1.4 Abnormal Conditions 22
8.2.2 PDU Session Resource Release 23
8.2.2.1 General 23
8.2.2.2 Successful Operation 23
8.2.2.3 Unsuccessful Operation 24
8.2.2.4 Abnormal Conditions 24
8.2.3 PDU Session Resource Modify 24
8.2.3.1 General 24
8.2.3.2 Successful Operation 24
8.2.3.3 Unsuccessful Operation 26
8.2.3.4 Abnormal Conditions 26
8.2.4 PDU Session Resource Notify 27
8.2.4.1 General 27
8.2.4.2 Successful Operation 27
8.2.4.3 Abnormal Conditions 28
8.2.5 PDU Session Resource Modify Indication 28
8.2.5.1 General 28
8.2.5.2 Successful Operation 28
8.2.5.3 Unsuccessful Operation 29
8.2.5.4 Abnormal Conditions 29
8.3 UE Context Management Procedures 29
8.3.1 Initial Context Setup 29
8.3.1.1 General 29
8.3.1.2 Successful Operation 30
8.3.1.3 Unsuccessful Operation 32
8.3.1.4 Abnormal Conditions 32
8.3.2 UE Context Release Request (NG-RAN node initiated) 32
8.3.2.1 General 32

iTeh STANDARD PREVIEW
(standards.iteh.ai)
Full standard:
https://standards.iteh.ai/catalog/standards/sist/aa1fdc34-1e23-4ea5-bbd4-43e01e7c3928/etsi-ts-138-413-v15.7.0-2020-04

8.3.2.2 Successful Operation....33
8.3.2.3 Abnormal Conditions....33
8.3.3 UE Context Release (AMF initiated)....33
8.3.3.1 General....33
8.3.3.2 Successful Operation....33
8.3.3.3 Unsuccessful Operation....34
8.3.3.4 Abnormal Conditions....34
8.3.4 UE Context Modification....34
8.3.4.1 General....34
8.3.4.2 Successful Operation....34
8.3.4.3 Unsuccessful Operation....36
8.3.4.4 Abnormal Conditions....36
8.3.5 RRC Inactive Transition Report....36
8.3.5.1 General....36
8.3.5.2 Successful Operation....36
8.3.5.3 Abnormal Conditions....36
8.4 UE Mobility Management Procedures....37
8.4.1 Handover Preparation....37
8.4.1.1 General....37
8.4.1.2 Successful Operation....37
8.4.1.3 Unsuccessful Operation....39
8.4.1.4 Abnormal Conditions....39
8.4.2 Handover Resource Allocation....39
8.4.2.1 General....39
8.4.2.2 Successful Operation....39
8.4.2.3 Unsuccessful Operation....42
8.4.2.4 Abnormal Conditions....42
8.4.3 Handover Notification....42
8.4.3.1 General....42
8.4.3.2 Successful Operation....43
8.4.3.3 Abnormal Conditions....43
8.4.4 Path Switch Request....43
8.4.4.1 General....43
8.4.4.2 Successful Operation....43
8.4.4.3 Unsuccessful Operation....45
8.4.4.4 Abnormal Conditions....45
8.4.5 Handover Cancellation....45
8.4.5.1 General....45
8.4.5.2 Successful Operation....46
8.4.5.3 Unsuccessful Operation....46
8.4.5.4 Abnormal Conditions....46
8.4.6 Uplink RAN Status Transfer....46
8.4.6.1 General....46
8.4.6.2 Successful Operation....46
8.4.6.3 Abnormal Conditions....47
8.4.7 Downlink RAN Status Transfer....47
8.4.7.1 General....47
8.4.7.2 Successful Operation....47
8.4.7.3 Abnormal Conditions....47
8.5 Paging Procedures....47
8.5.1 Paging....47
8.5.1.1 General....47
8.5.1.2 Successful Operation....48
8.5.1.3 Abnormal Conditions....48
8.6 Transport of NAS Messages Procedures....48
8.6.1 Initial UE Message....48
8.6.1.1 General....48
8.6.1.2 Successful Operation....49
8.6.1.3 Abnormal Conditions....49
8.6.2 Downlink NAS Transport....49
8.6.2.1 General....49
8.6.2.2 Successful Operation....50

iTeh STANDARD PREVIEW
(standards.iteh.ai)
Full standard:
https://standards.iteh.ai/catalog/standards/sist/aa1fdc34-1e23-4ee5-bbd4-43e01e7c3928/etsi-ts-138-413-v15.7.0-2020-04

8.6.2.3 Abnormal Conditions 50
8.6.3 Uplink NAS Transport 51
8.6.3.1 General 51
8.6.3.2 Successful Operation 51
8.6.3.3 Abnormal Conditions 51
8.6.4 NAS Non Delivery Indication 51
8.6.4.1 General 51
8.6.4.2 Successful Operation 51
8.6.4.3 Abnormal Conditions 52
8.6.5 Reroute NAS Request 52
8.6.5.1 General 52
8.6.5.2 Successful Operation 52
8.6.5.3 Abnormal Conditions 52
8.7 Interface Management Procedures 52
8.7.1 NG Setup 52
8.7.1.1 General 52
8.7.1.2 Successful Operation 53
8.7.1.3 Unsuccessful Operation 53
8.7.1.4 Abnormal Conditions 53
8.7.2 RAN Configuration Update 53
8.7.2.1 General 53
8.7.2.2 Successful Operation 54
8.7.2.3 Unsuccessful Operation 54
8.7.2.4 Abnormal Conditions 55
8.7.3 AMF Configuration Update 55
8.7.3.1 General 55
8.7.3.2 Successful Operation 55
8.7.3.3 Unsuccessful Operation 56
8.7.3.4 Abnormal Conditions 56
8.7.4 NG Reset 56
8.7.4.1 General 56
8.7.4.2 Successful Operation 57
8.7.4.2.1 NG Reset initiated by the AMF 57
8.7.4.2.2 NG Reset initiated by the NG-RAN node 58
8.7.4.3 Unsuccessful Operation 58
8.7.4.4 Abnormal Conditions 58
8.7.4.4.1 Abnormal Condition at the 5GC 58
8.7.4.4.2 Abnormal Condition at the NG-RAN 59
8.7.4.4.3 Crossing of NG RESET Messages 59
8.7.5 Error Indication 59
8.7.5.1 General 59
8.7.5.2 Successful Operation 59
8.7.5.3 Abnormal Conditions 60
8.7.6 AMF Status Indication 60
8.7.6.1 General 60
8.7.6.2 Successful Operation 60
8.7.6.3 Abnormal Conditions 61
8.7.7 Overload Start 61
8.7.7.1 General 61
8.7.7.2 Successful Operation 61
8.7.7.3 Abnormal Conditions 62
8.7.8 Overload Stop 62
8.7.8.1 General 62
8.7.8.2 Successful Operation 62
8.7.8.3 Abnormal Conditions 62
8.8 Configuration Transfer Procedures 62
8.8.1 Uplink RAN Configuration Transfer 62
8.8.1.1 General 62
8.8.1.2 Successful Operation 63
8.8.1.3 Abnormal Conditions 63
8.8.2 Downlink RAN Configuration Transfer 63
8.8.2.1 General 63

iTeh STANDARD PREVIEW
(standards.iteh.ai)
Full standard:
https://standards.iteh.ai/catalog/standards/sist/aa1fdc34-1e23-4e45-b9d5-43e01e7c3c9b/etsi-ts-138-413-v15.7.0-2020-04

8.8.2.2 Successful Operation....63
8.8.2.3 Abnormal Conditions....64
8.9 Warning Message Transmission Procedures....64
8.9.1 Write-Replace Warning....64
8.9.1.1 General....64
8.9.1.2 Successful Operation....64
8.9.1.3 Unsuccessful Operation....65
8.9.1.4 Abnormal Conditions....65
8.9.2 PWS Cancel....66
8.9.2.1 General....66
8.9.2.2 Successful Operation....66
8.9.2.3 Unsuccessful Operation....66
8.9.2.4 Abnormal Conditions....66
8.9.3 PWS Restart Indication....67
8.9.3.1 General....67
8.9.3.2 Successful Operation....67
8.9.3.3 Abnormal Conditions....67
8.9.4 PWS Failure Indication....67
8.9.4.1 General....67
8.9.4.2 Successful Operation....67
8.9.4.3 Abnormal Conditions....68
8.10 NRPPa Transport Procedures....68
8.10.1 General....68
8.10.2 Successful Operations....68
8.10.2.1 DOWNLINK UE ASSOCIATED NRPPA TRANSPORT....68
8.10.2.2 UPLINK UE ASSOCIATED NRPPA TRANSPORT....68
8.10.2.3 DOWNLINK NON UE ASSOCIATED NRPPA TRANSPORT....69
8.10.2.4 UPLINK NON UE ASSOCIATED NRPPA TRANSPORT....69
8.10.3 Unsuccessful Operations....69
8.10.4 Abnormal Conditions....69
8.11 Trace Procedures....69
8.11.1 Trace Start....69
8.11.1.1 General....69
8.11.1.2 Successful Operation....70
8.11.1.3 Abnormal Conditions....70
8.11.2 Trace Failure Indication....70
8.11.2.1 General....70
8.11.2.2 Successful Operation....70
8.11.2.3 Abnormal Conditions....70
8.11.3 Deactivate Trace....71
8.11.3.1 General....71
8.11.3.2 Successful Operation....71
8.11.3.3 Abnormal Conditions....71
8.11.4 Cell Traffic Trace....71
8.11.4.1 General....71
8.11.4.2 Successful Operation....71
8.11.4.3 Abnormal Conditions....72
8.12 Location Reporting Procedures....72
8.12.1 Location Reporting Control....72
8.12.1.1 General....72
8.12.1.2 Successful Operation....72
8.12.1.3 Abnormal Conditions....73
8.12.2 Location Reporting Failure Indication....73
8.12.2.1 General....73
8.12.2.2 Successful Operation....73
8.12.2.3 Abnormal Conditions....73
8.12.3 Location Report....73
8.12.3.1 General....73
8.12.3.2 Successful Operation....73
8.12.3.3 Abnormal Conditions....74
8.13 UE TNLA Binding Procedures....74
8.13.1 UE TNLA Binding Release....74

iTeh STANDARD PREVIEW
(standards.iteh.ai)
Full standard:
https://standards.iteh.ai/catalog/standards/sist/4ec54-1e23-4ee5-bbd4-43e01e7c3928/etsi-ts-138-413-v15.7.0-2020-04

8.13.1.1 General 74
8.13.1.2 Successful Operation 74
8.13.1.3 Abnormal Conditions 74
8.14 UE Radio Capability Management Procedures 74
8.14.1 UE Radio Capability Info Indication 74
8.14.1.1 General 74
8.14.1.2 Successful Operation 75
8.14.1.3 Abnormal Conditions 75
8.14.2 UE Radio Capability Check 75
8.14.2.1 General 75
8.14.2.2 Successful Operation 75
8.14.2.3 Unsuccessful Operation 76
8.14.2.4 Abnormal Conditions 76
8.15 Data Usage Reporting Procedures 76
8.15.1 Secondary RAT Data Usage Report 76
8.15.1.1 General 76
8.15.1.2 Successful Operation 76
8.15.1.3 Abnormal Conditions 76

9 Elements for NGAP Communication 77
9.0 General 77
9.1 Tabular Format Contents 77
9.1.1 Presence 77
9.1.2 Criticality 77
9.1.3 Range 77
9.1.4 Assigned Criticality 78
9.2 Message Functional Definition and Content 78
9.2.1 PDU Session Management Messages 78
9.2.1.1 PDU SESSION RESOURCE SETUP REQUEST 78
9.2.1.2 PDU SESSION RESOURCE SETUP RESPONSE 78
9.2.1.3 PDU SESSION RESOURCE RELEASE COMMAND 79
9.2.1.4 PDU SESSION RESOURCE RELEASE RESPONSE 80
9.2.1.5 PDU SESSION RESOURCE MODIFY REQUEST 80
9.2.1.6 PDU SESSION RESOURCE MODIFY RESPONSE 82
9.2.1.7 PDU SESSION RESOURCE NOTIFY 82
9.2.1.8 PDU SESSION RESOURCE MODIFY INDICATION 83
9.2.1.9 PDU SESSION RESOURCE MODIFY CONFIRM 84
9.2.2 UE Context Management Messages 84
9.2.2.1 INITIAL CONTEXT SETUP REQUEST 84
9.2.2.2 INITIAL CONTEXT SETUP RESPONSE 86
9.2.2.3 INITIAL CONTEXT SETUP FAILURE 86
9.2.2.4 UE CONTEXT RELEASE REQUEST 87
9.2.2.5 UE CONTEXT RELEASE COMMAND 87
9.2.2.6 UE CONTEXT RELEASE COMPLETE 88
9.2.2.7 UE CONTEXT MODIFICATION REQUEST 88
9.2.2.8 UE CONTEXT MODIFICATION RESPONSE 89
9.2.2.9 UE CONTEXT MODIFICATION FAILURE 89
9.2.2.10 RRC INACTIVE TRANSITION REPORT 89
9.2.3 UE Mobility Management Messages 90
9.2.3.1 HANDOVER REQUIRED 90
9.2.3.2 HANDOVER COMMAND 90
9.2.3.3 HANDOVER PREPARATION FAILURE 91
9.2.3.4 HANDOVER REQUEST 92
9.2.3.5 HANDOVER REQUEST ACKNOWLEDGE 93
9.2.3.6 HANDOVER FAILURE 93
9.2.3.7 HANDOVER NOTIFY 94
9.2.3.8 PATH SWITCH REQUEST 95
9.2.3.9 PATH SWITCH REQUEST ACKNOWLEDGE 96
9.2.3.10 PATH SWITCH REQUEST FAILURE 97
9.2.3.11 HANDOVER CANCEL 97
9.2.3.12 HANDOVER CANCEL ACKNOWLEDGE 97
9.2.3.13 UPLINK RAN STATUS TRANSFER 98

ETSI ND/RD PREVIEW
https://standards.iteh.ai/catalog/standards/sist/aa1f0c34-1e23-4e04-9ae7-c3...-ts-138-413-v15.7.0-2020-04

9.2.3.14 DOWNLINK RAN STATUS TRANSFER 98
9.2.4 Paging Messages 98
9.2.4.1 PAGING 98
9.2.5 NAS Transport Messages 99
9.2.5.1 INITIAL UE MESSAGE 99
9.2.5.2 DOWNLINK NAS TRANSPORT 99
9.2.5.3 UPLINK NAS TRANSPORT 99
9.2.5.4 NAS NON DELIVERY INDICATION 100
9.2.5.5 REROUTE NAS REQUEST 100
9.2.6 Interface Management Messages 100
9.2.6.1 NG SETUP REQUEST 100
9.2.6.2 NG SETUP RESPONSE 101
9.2.6.3 NG SETUP FAILURE 102
9.2.6.4 RAN CONFIGURATION UPDATE 102
9.2.6.5 RAN CONFIGURATION UPDATE ACKNOWLEDGE 103
9.2.6.6 RAN CONFIGURATION UPDATE FAILURE 103
9.2.6.7 AMF CONFIGURATION UPDATE 103
9.2.6.8 AMF CONFIGURATION UPDATE ACKNOWLEDGE 105
9.2.6.9 AMF CONFIGURATION UPDATE FAILURE 105
9.2.6.10 AMF STATUS INDICATION 105
9.2.6.11 NG RESET 106
9.2.6.12 NG RESET ACKNOWLEDGE 106
9.2.6.13 ERROR INDICATION 106
9.2.6.14 OVERLOAD START 107
9.2.6.15 OVERLOAD STOP 107
9.2.7 Configuration Transfer Messages 107
9.2.7.1 UPLINK RAN CONFIGURATION TRANSFER 107
9.2.7.2 DOWNLINK RAN CONFIGURATION TRANSFER 108
9.2.8 Warning Message Transmission Messages 108
9.2.8.1 WRITE-REPLACE WARNING REQUEST 108
9.2.8.2 WRITE-REPLACE WARNING RESPONSE 109
9.2.8.3 PWS CANCEL REQUEST 109
9.2.8.4 PWS CANCEL RESPONSE 109
9.2.8.5 PWS RESTART INDICATION 109
9.2.8.6 PWS FAILURE INDICATION 110
9.2.9 NRPPa Transport Messages 111
9.2.9.1 DOWNLINK UE ASSOCIATED NRPPA TRANSPORT 111
9.2.9.2 UPLINK UE ASSOCIATED NRPPA TRANSPORT 111
9.2.9.3 DOWNLINK NON UE ASSOCIATED NRPPA TRANSPORT 111
9.2.9.4 UPLINK NON UE ASSOCIATED NRPPA TRANSPORT 111
9.2.10 Trace Messages 112
9.2.10.1 TRACE START 112
9.2.10.2 TRACE FAILURE INDICATION 112
9.2.10.3 DEACTIVATE TRACE 112
9.2.10.4 CELL TRAFFIC TRACE 112
9.2.11 Location Reporting Messages 113
9.2.11.1 LOCATION REPORTING CONTROL 113
9.2.11.2 LOCATION REPORTING FAILURE INDICATION 113
9.2.11.3 LOCATION REPORT 113
9.2.12 UE TNLA Binding Messages 114
9.2.12.1 UE TNLA BINDING RELEASE REQUEST 114
9.2.13 UE Radio Capability Management Messages 114
9.2.13.1 UE RADIO CAPABILITY INFO INDICATION 114
9.2.13.2 UE RADIO CAPABILITY CHECK REQUEST 114
9.2.13.3 UE RADIO CAPABILITY CHECK RESPONSE 115
9.2.14 Data Usage Reporting Messages 115
9.2.14.1 SECONDARY RAT DATA USAGE REPORT 115
9.3 Information Element Definitions 116
9.3.1 Radio Network Layer Related IEs 116
9.3.1.1 Message Type 116
9.3.1.2 Cause 116
9.3.1.3 Criticality Diagnostics 120

ETSI STANDARD PREVIEW
(standards.iteh.ai)
Full standard:
https://standards.iteh.ai/catalog/standards/sist/aa1fdc34-1e23-4e5b-b4b4-43e01e7c392b/etsi-ts-138-413-v15.7.0-2020-04

9.3.1.4 Bit Rate 121
9.3.1.5 Global RAN Node ID....121
9.3.1.6 Global gNB ID 122
9.3.1.7 NR CGI 122
9.3.1.8 Global ng-eNB ID 122
9.3.1.9 E-UTRA CGI 123
9.3.1.10 GBR QoS Flow Information 123
9.3.1.11 Void....123
9.3.1.12 QoS Flow Level QoS Parameters....123
9.3.1.13 QoS Flow List with Cause 124
9.3.1.14 Trace Activation....124
9.3.1.15 Core Network Assistance Information for RRC INACTIVE....125
9.3.1.16 User Location Information 125
9.3.1.17 Slice Support List....126
9.3.1.18 Dynamic 5QI Descriptor 126
9.3.1.19 Allocation and Retention Priority 127
9.3.1.20 Source to Target Transparent Container 128
9.3.1.21 Target to Source Transparent Container 129
9.3.1.22 Handover Type....129
9.3.1.23 MICO Mode Indication....129
9.3.1.24 S-NSSAI 129
9.3.1.25 Target ID....129
9.3.1.26 Emergency Fallback Indicator 130
9.3.1.27 Security Indication 130
9.3.1.28 Non Dynamic 5QI Descriptor 131
9.3.1.29 Source NG-RAN Node to Target NG-RAN Node Transparent Container 132
9.3.1.30 Target NG-RAN Node to Source NG-RAN Node Transparent Container 133
9.3.1.31 Allowed NSSAI 133
9.3.1.32 Relative AMF Capacity....133
9.3.1.33 DL Forwarding....133
9.3.1.34 DRBs to QoS Flows Mapping List....133
9.3.1.35 Message Identifier....134
9.3.1.36 Serial Number 134
9.3.1.37 Warning Area List....134
9.3.1.38 Number of Broadcasts Requested....135
9.3.1.39 Warning Type 135
9.3.1.40 Void....135
9.3.1.41 Data Coding Scheme....135
9.3.1.42 Warning Message Contents....135
9.3.1.43 Broadcast Completed Area List 135
9.3.1.44 Broadcast Cancelled Area List....136
9.3.1.45 Number of Broadcasts....138
9.3.1.46 Concurrent Warning Message Indicator....138
9.3.1.47 Cancel-All Warning Messages Indicator 138
9.3.1.48 Emergency Area ID....138
9.3.1.49 Repetition Period....138
9.3.1.50 PDU Session ID 139
9.3.1.51 QoS Flow Identifier....139
9.3.1.52 PDU Session Type 139
9.3.1.53 DRB ID 139
9.3.1.54 Masked IMEISV 139
9.3.1.55 New Security Context Indicator....140
9.3.1.56 Time to Wait 140
9.3.1.57 Global N3IWF ID 140
9.3.1.58 UE Aggregate Maximum Bit Rate....140
9.3.1.59 Security Result 141
9.3.1.60 User Plane Security Information....141
9.3.1.61 Index to RAT/Frequency Selection Priority....141
9.3.1.62 Data Forwarding Accepted....141
9.3.1.63 Data Forwarding Not Possible 141
9.3.1.64 Direct Forwarding Path Availability....142
9.3.1.65 Location Reporting Request Type....142

iTeh STANDARD PREVIEW
(standards.iteh.ai)
Full standard:
https://standards.iteh.ai/catalog/standards/sist/a11ec34-1e23-45c5-bbd4-43e01e7c3928/etsi-ts-138-413-v15.7.0-2020-04

9.3.1.66 Area of Interest 143
9.3.1.67 UE Presence in Area of Interest List 143
9.3.1.68 UE Radio Capability for Paging 143
9.3.1.69 Assistance Data for Paging 143
9.3.1.70 Assistance Data for Recommended Cells 144
9.3.1.71 Recommended Cells for Paging 144
9.3.1.72 Paging Attempt Information 144
9.3.1.73 NG-RAN CGI 145
9.3.1.74 UE Radio Capability 145
9.3.1.75 Time Stamp 145
9.3.1.76 Location Reporting Reference ID 145
9.3.1.77 Data Forwarding Response DRB List 145
9.3.1.78 Paging Priority 146
9.3.1.79 Packet Loss Rate 146
9.3.1.80 Packet Delay Budget 146
9.3.1.81 Packet Error Rate 146
9.3.1.82 Averaging Window 146
9.3.1.83 Maximum Data Burst Volume 147
9.3.1.84 Priority Level 147
9.3.1.85 Mobility Restriction List 147
9.3.1.86 UE Security Capabilities 149
9.3.1.87 Security Key 150
9.3.1.88 Security Context 151
9.3.1.89 IMS Voice Support Indicator 151
9.3.1.90 Paging DRX 151
9.3.1.91 RRC Inactive Transition Report Request 151
9.3.1.92 RRC State 151
9.3.1.93 Expected UE Behaviour 152
9.3.1.94 Expected UE Activity Behaviour 152
9.3.1.95 UE History Information 153
9.3.1.96 Last Visited Cell Information 153
9.3.1.97 Last Visited NG-RAN Cell Information 154
9.3.1.98 Cell Type 154
9.3.1.99 Associated QoS Flow List 154
9.3.1.100 Information on Recommended Cells and RAN Nodes for Paging 154
9.3.1.101 Recommended RAN Nodes for Paging 155
9.3.1.102 PDU Session Aggregate Maximum Bit Rate 155
9.3.1.103 Maximum Integrity Protected Data Rate 155
9.3.1.104 Overload Response 156
9.3.1.105 Overload Action 156
9.3.1.106 Traffic Load Reduction Indication 156
9.3.1.107 Slice Overload List 156
9.3.1.108 RAN Status Transfer Transparent Container 157
9.3.1.109 COUNT Value for PDCP SN Length 12 160
9.3.1.110 COUNT Value for PDCP SN Length 18 160
9.3.1.111 RRC Establishment Cause 160
9.3.1.112 Warning Area Coordinates 160
9.3.1.113 Network Instance 160
9.3.1.114 Secondary RAT Usage Information 161
9.3.1.115 Volume Timed Report List 161
9.3.1.116 Redirection for Voice EPS Fallback 162
9.3.1.117 UE Retention Information 162
9.3.1.118 UL Forwarding 162
9.3.1.119 CN Assisted RAN Parameters Tuning 162
9.3.1.120 Common Network Instance 162
9.3.2 Transport Network Layer Related IEs 162
9.3.2.1 QoS Flow per TNL Information List 162
9.3.2.2 UP Transport Layer Information 163
9.3.2.3 E-RAB ID 163
9.3.2.4 Transport Layer Address 163
9.3.2.5 GTP-TEID 163
9.3.2.6 CP Transport Layer Information 164

iTeh STANDARD PREVIEW
(standards.iteh.ai)
Full standard:
https://standards.iteh.ai/catalog/standards/sist/aa1fdc34-1e23-4ec5-bd4d-e0017c3928/etsi-ts-138-413-v15.7.0-2020-04

9.3.2.7 TNL Association List 164
9.3.2.8 QoS Flow per TNL Information 164
9.3.2.9 TNL Association Usage 164
9.3.2.10 TNL Address Weight Factor 165
9.3.2.11 UP Transport Layer Information Pair List 165
9.3.2.12 UP Transport Layer Information List 165
9.3.2.13 QoS Flow List with Data Forwarding 165
9.3.3 NAS Related IEs 166
9.3.3.1 AMF UE NGAP ID 166
9.3.3.2 RAN UE NGAP ID 166
9.3.3.3 GUAMI 166
9.3.3.4 NAS-PDU 166
9.3.3.5 PLMN Identity 166
9.3.3.6 SON Configuration Transfer 167
9.3.3.7 SON Information 167
9.3.3.8 SON Information Reply 168
9.3.3.9 Xn TNL Configuration Info 168
9.3.3.10 TAC 168
9.3.3.11 TAI 169
9.3.3.12 AMF Set ID 169
9.3.3.13 Routing ID 169
9.3.3.14 NRPPa-PDU 169
9.3.3.15 RAN Paging Priority 169
9.3.3.16 EPS TAC 169
9.3.3.17 EPS TAI 170
9.3.3.18 UE Paging Identity 170
9.3.3.19 AMF Pointer 170
9.3.3.20 5G-S-TMSI 170
9.3.3.21 AMF Name 170
9.3.3.22 Paging Origin 171
9.3.3.23 UE Identity Index Value 171
9.3.3.24 Periodic Registration Update Timer 171
9.3.3.25 UE-associated Logical NG-connection List 172
9.3.3.26 NAS Security Parameters from NG-RAN 172
9.3.3.27 Source to Target AMF Information Reroute 172
9.3.4 SMF Related IEs 173
9.3.4.1 PDU Session Resource Setup Request Transfer 173
9.3.4.2 PDU Session Resource Setup Response Transfer 174
9.3.4.3 PDU Session Resource Modify Request Transfer 175
9.3.4.4 PDU Session Resource Modify Response Transfer 176
9.3.4.5 PDU Session Resource Notify Transfer 176
9.3.4.6 PDU Session Resource Modify Indication Transfer 177
9.3.4.7 PDU Session Resource Modify Confirm Transfer 177
9.3.4.8 Path Switch Request Transfer 178
9.3.4.9 Path Switch Request Acknowledge Transfer 179
9.3.4.10 Handover Command Transfer 179
9.3.4.11 Handover Request Acknowledge Transfer 180
9.3.4.12 PDU Session Resource Release Command Transfer 182
9.3.4.13 PDU Session Resource Notify Released Transfer 182
9.3.4.14 Handover Required Transfer 182
9.3.4.15 Path Switch Request Setup Failed Transfer 182
9.3.4.16 PDU Session Resource Setup Unsuccessful Transfer 182
9.3.4.17 PDU Session Resource Modify Unsuccessful Transfer 182
9.3.4.18 Handover Preparation Unsuccessful Transfer 183
9.3.4.19 Handover Resource Allocation Unsuccessful Transfer 183
9.3.4.20 Path Switch Request Unsuccessful Transfer 183
9.3.4.21 PDU Session Resource Release Response Transfer 183
9.3.4.22 PDU Session Resource Modify Indication Unsuccessful Transfer 183
9.3.4.23 Secondary RAT Data Usage Report Transfer 183
9.4 Message and Information Element Abstract Syntax (with ASN.1) 184
9.4.1 General 184
9.4.2 Usage of private message mechanism for non-standard use 184

iTeh STANDARD PREVIEW
(standards.iteh.ai)
Full standard:
https://standards.iteh.ai/catalog/standards/sist/aa1fdc34-1e23-4ed4-b643-e01f7c3792fc/etsi-ts-138-413-v15.7.0-2020-04

9.4.3 Elementary Procedure Definitions 185
9.4.4 PDU Definitions 196
9.4.5 Information Element Definitions 237
9.4.6 Common Definitions 302
9.4.7 Constant Definitions 303
9.4.8 Container Definitions 309
9.5 Message Transfer Syntax 314
9.6 Timers 314

10 Handling of Unknown, Unforeseen and Erroneous Protocol Data 315
10.1 General 315
10.2 Transfer Syntax Error 315
10.3 Abstract Syntax Error 315
10.3.1 General 315
10.3.2 Criticality Information 316
10.3.3 Presence Information 316
10.3.4 Not comprehended IE/IE group 317
10.3.4.1 Procedure Code 317
10.3.4.1A Type of Message 317
10.3.4.2 IEs other than the Procedure Code and Type of Message 317
10.3.5 Missing IE or IE group 318
10.3.6 IEs or IE groups received in wrong order or with too many occurrences or erroneously present 319
10.4 Logical Error 320
10.5 Exceptions 320
10.6 Handling of AP ID 321

Annex A (informative): Change history 322

History 325

iTeh STANDARD PREVIEW
(standards.iteh.ai)
Full standard:
https://standards.iteh.ai/catalog/standards/sist/aa1fdc34-1e23-4ea5-bbd4-43e01e7c3928/etsi-ts-138-413-v15.7.0-2020-04