

ETSI TS 138 413 V15.6.0 (2020-01)



**5G;
NG-RAN;
NG Application Protocol (NGAP)
(3GPP TS 38.413 version 15.6.0 Release 15)**

*Full Standards Catalogue
https://standards.iteh.ai/catalog/standards/sist/4efc3fd7-a5b3-4017-b46b-3a1fb5d5248c/etsi-ts-138-413-v15-6-0-2020-01*



Reference

RTS/TSGR-0338413vf60

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>.

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

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

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

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	67
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

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

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

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	Warning Security Information	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	136
9.3.1.44	Broadcast Cancelled Area List.....	137
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

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

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.....	168
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	169
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	170
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.....	171
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.....	172
9.3.4.1	PDU Session Resource Setup Request Transfer	172
9.3.4.2	PDU Session Resource Setup Response Transfer.....	173
9.3.4.3	PDU Session Resource Modify Request Transfer.....	174
9.3.4.4	PDU Session Resource Modify Response Transfer	175
9.3.4.5	PDU Session Resource Notify Transfer	175
9.3.4.6	PDU Session Resource Modify Indication Transfer	176
9.3.4.7	PDU Session Resource Modify Confirm Transfer	176
9.3.4.8	Path Switch Request Transfer	177
9.3.4.9	Path Switch Request Acknowledge Transfer	178
9.3.4.10	Handover Command Transfer.....	178
9.3.4.11	Handover Request Acknowledge Transfer.....	179
9.3.4.12	PDU Session Resource Release Command Transfer	181
9.3.4.13	PDU Session Resource Notify Released Transfer.....	181
9.3.4.14	Handover Required Transfer	181
9.3.4.15	Path Switch Request Setup Failed Transfer	181
9.3.4.16	PDU Session Resource Setup Unsuccessful Transfer	181
9.3.4.17	PDU Session Resource Modify Unsuccessful Transfer	181
9.3.4.18	Handover Preparation Unsuccessful Transfer	182
9.3.4.19	Handover Resource Allocation Unsuccessful Transfer.....	182
9.3.4.20	Path Switch Request Unsuccessful Transfer	182
9.3.4.21	PDU Session Resource Release Response Transfer.....	182
9.3.4.22	PDU Session Resource Modify Indication Unsuccessful Transfer	182
9.3.4.23	Secondary RAT Data Usage Report Transfer	182
9.4	Message and Information Element Abstract Syntax (with ASN.1).....	183
9.4.1	General.....	183
9.4.2	Usage of private message mechanism for non-standard use.....	183

9.4.3	Elementary Procedure Definitions	184
9.4.4	PDU Definitions	195
9.4.5	Information Element Definitions	236
9.4.6	Common Definitions	301
9.4.7	Constant Definitions	302
9.4.8	Container Definitions	308
9.5	Message Transfer Syntax	313
9.6	Timers	313
10	Handling of Unknown, Unforeseen and Erroneous Protocol Data	314
10.1	General	314
10.2	Transfer Syntax Error	314
10.3	Abstract Syntax Error	314
10.3.1	General	314
10.3.2	Criticality Information	315
10.3.3	Presence Information	315
10.3.4	Not comprehended IE/IE group	316
10.3.4.1	Procedure Code	316
10.3.4.1A	Type of Message	316
10.3.4.2	IEs other than the Procedure Code and Type of Message	316
10.3.5	Missing IE or IE group	317
10.3.6	IEs or IE groups received in wrong order or with too many occurrences or erroneously present	318
10.4	Logical Error	319
10.5	Exceptions	319
10.6	Handling of AP ID	320
Annex A (informative):	Change history	321
History		324

iTeh STANDARD PREVIEW
 (standards.iteh.ai)
 Full standard:
<https://standards.iteh.ai/catalog/standards/sist/48c3fd7-25b3-4017-b46b-3a1fb5d5248c/etsi-ts-138-413-v15.6.0-2020-01>