

ETSI TS 129 413 V17.3.0 (2023-04)



**5G;
Application of the NG Application Protocol (NGAP)
to non-3GPP access
(3GPP TS 29.413 version 17.3.0 Release 17)**



Reference

RTS/TSGR-0329413vh30

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:

<https://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/CommitteeSupportStaff.aspx>

If you find a security vulnerability in the present document, please report it through our
Coordinated Vulnerability Disclosure Program:

<https://www.etsi.org/standards/coordinated-vulnerability-disclosure>

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 2023.
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 Web server (<https://ipr.etsi.org/>).

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™** 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.

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 <https://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.....	4
1 Scope	5
2 References	5
3 Abbreviations	5
4 Principles for the use of NGAP for non-3GPP access	5
4.1 General	5
5 Non-3GPP access	6
5.1 Use of the NGAP for non-3GPP access	6
5.2 NGAP messages used for non-3GPP access	7
5.3 Exceptions for NGAP message contents and information element coding when used for non-3GPP access.....	8
5.4 Handling of NGAP messages not specified to be applicable between the Non-3GPP access network node and AMF.....	12
Annex A (informative): Change history	13
History	14

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 describes the applicability of NG Application Protocol (NGAP) messages and procedures, defined in 3GPP TS 38.413 [2], to non-3GPP access. A general description for non-3GPP access can be found in 3GPP TS 23.501 [3], 3GPP TS 23.502 [4], and 3GPP TS 23.316 [6].

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 38.413: "NG-RAN; NG Application Protocol (NGAP)".
- [3] 3GPP TS 23.501: "System Architecture for the 5G System".
- [4] 3GPP TS 23.502: "Procedures for the 5G System".
- [5] 3GPP TS 33.501: "Security architecture and procedures for 5G system".
- [6] 3GPP TS 23.316: "Wireless and wireline convergence access support for the 5G System (5GS)".
- [7] 3GPP TS 24.502: "Access to the 3GPP 5G Core Network (5GCN) via Non-3GPP Access Networks (N3AN)".

3 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].

5G-RG	5G Residential Gateway
FN-RG	Fixed Network Residential Gateway
N3IWF	Non-3GPP InterWorking Function
TNAP	Trusted Non-3GPP Access Point
TNGF	Trusted Non-3GPP Gateway Function
TWIF	Trusted WLAN Interworking Function
W-AGF	Wireline Access Gateway Function

4 Principles for the use of NGAP for non-3GPP access

4.1 General

TS 23.501 [3] specifies the NGAP used between the Non-3GPP access network node and the AMF. The Non-3GPP access network node is either a Non-3GPP InterWorking Function (N3IWF), or a Trusted Non-3GPP Gateway Function (TNGF), or a Trusted WLAN Interworking Function (TWIF), or a Wireline Access Gateway Function (W-AGF). NGAP is used as specified in TS 38.413 [2] with clarifications or additions as specified in Clause 5.

5 Non-3GPP access

5.1 Use of the NGAP for non-3GPP access

The following NGAP procedures are used between the Non-3GPP access network node and the AMF:

- PDU Session Management Procedures
 - PDU Session Resource Setup
 - PDU Session Resource Release
 - PDU Session Resource Modify
 - PDU Session Resource Notify
- UE Context Management Procedures
 - Initial Context Setup
 - UE Context Release Request
 - UE Context Release
 - UE Context Modification
- Transport of NAS Messages Procedures
 - Initial UE Message
 - Downlink NAS Transport
 - Uplink NAS Transport
 - NAS Non Delivery Indication
 - Reroute NAS Request
- Interface Management Procedures
 - NG Setup
 - RAN Configuration Update
 - AMF Configuration Update
 - NG Reset
 - Error Indication
 - AMF Status Indication
 - Overload Start
 - Overload Stop
- UE TNLA Binding Procedures
 - UE TNLA Binding Release

For the NGAP procedures used between the Non-3GPP access network node and the AMF, the Non-3GPP access network node fulfils the behaviour of the NG-RAN node as specified in clause 8 of TS 38.413 [2], with clarifications as specified in Clause 5.3. The text in clause 8 of TS 38.413 [2] referring to Uu should be understood as referring to the Y2 reference point as specified in TS 23.501 [3].

5.2 NGAP messages used for non-3GPP access

The list given below shows the NGAP messages, as specified in TS 38.413 [2] subclause 9.2 (tabular format) and 9.4 (ASN.1 notation) that are used between the Non-3GPP access network node and the AMF.

- PDU SESSION RESOURCE SETUP REQUEST
- PDU SESSION RESOURCE SETUP RESPONSE
- PDU SESSION RESOURCE RELEASE COMMAND
- PDU SESSION RESOURCE RELEASE RESPONSE
- PDU SESSION RESOURCE MODIFY REQUEST
- PDU SESSION RESOURCE MODIFY RESPONSE
- PDU SESSION RESOURCE NOTIFY
- INITIAL CONTEXT SETUP REQUEST
- INITIAL CONTEXT SETUP RESPONSE
- INITIAL CONTEXT SETUP FAILURE
- UE CONTEXT RELEASE REQUEST
- UE CONTEXT RELEASE COMMAND
- UE CONTEXT RELEASE COMPLETE
- UE CONTEXT MODIFICATION REQUEST
- UE CONTEXT MODIFICATION RESPONSE
- UE CONTEXT MODIFICATION FAILURE
- INITIAL UE MESSAGE
- DOWNLINK NAS TRANSPORT
- UPLINK NAS TRANSPORT
- NAS NON DELIVERY INDICATION
- REROUTE NAS REQUEST
- NG SETUP REQUEST
- NG SETUP RESPONSE
- NG SETUP FAILURE
- RAN CONFIGURATION UPDATE
- RAN CONFIGURATION UPDATE ACKNOWLEDGE
- RAN CONFIGURATION UPDATE FAILURE
- AMF CONFIGURATION UPDATE
- AMF CONFIGURATION UPDATE ACKNOWLEDGE
- AMF CONFIGURATION UPDATE FAILURE
- NG RESET
- NG RESET ACKNOWLEDGE

- ERROR INDICATION
- AMF STATUS INDICATION
- OVERLOAD START
- OVERLOAD STOP
- UE TNLA BINDING RELEASE REQUEST

5.3 Exceptions for NGAP message contents and information element coding when used for non-3GPP access

For the NGAP messages transferred between the Non-3GPP access network node and the AMF, the following exceptions to the specification in TS 38.413 [2] shall be applied:

PDU SESSION RESOURCE SETUP REQUEST message:

- the following IEs shall be ignored, when received:
 - *RAN Paging Priority IE*
 - *UE Aggregate Maximum Bit Rate IE* (except for non-trusted non-3GPP access, trusted non-3GPP access and trusted WLAN access as specified in TS 23.501 [3]).
 - *Notification Control IE* included in the *QoS Flow Level QoS Parameters IE*
 - *Alternative QoS Parameters Set List IE* included in the *QoS Flow Level QoS Parameters IE*
 - *UE Slice Maximum Bit Rate List IE*

PDU SESSION RESOURCE RELEASE COMMAND message:

- the following IEs shall be ignored, when received:
 - *RAN Paging Priority IE*

PDU SESSION RESOURCE MODIFY REQUEST message:

- the following IEs shall be ignored, when received:
 - *RAN Paging Priority IE*
 - *Notification Control IE* included in the *QoS Flow Level QoS Parameters IE*
 - *Alternative QoS Parameters Set List IE* included in the *QoS Flow Level QoS Parameters IE*

INITIAL CONTEXT SETUP REQUEST message:

- the following IEs shall be ignored, when received:
 - *Core Network Assistance Information for RRC INACTIVE IE*
 - *Trace Activation IE*
 - *Mobility Restriction List IE*
 - *UE Radio Capability IE*
 - *Index to RAT/Frequency Selection Priority IE*
 - *Emergency Fallback Indicator IE*
 - *RRC Inactive Transition Report Request IE*
 - *UE Radio Capability for Paging IE*

- *Redirection for Voice EPS Fallback IE*
- *Location Reporting Request Type IE*
- *CN Assisted RAN Parameters Tuning IE*
- *SRVCC Operation Possible IE*
- *IAB Authorized IE*
- *Enhanced Coverage Restriction IE*
- *Extended Connected Time IE*
- *UE Differentiation Information IE*
- *NR V2X Services Authorized IE*
- *LTE V2X Services Authorized IE*
- *NR UE Sidelink Aggregate Maximum Bit Rate IE*
- *LTE UE Sidelink Aggregate Maximum Bit Rate IE*
- *PC5 QoS Parameters IE*
- *CE-mode-B Restricted IE*
- *UE User Plane CIoT Support Indicator IE*
- *Management Based MDT PLMN List IE*
- *UE Radio Capability ID IE*
- *UE Aggregate Maximum Bit Rate IE* (except for non-trusted non-3GPP access, trusted non-3GPP access and trusted WLAN access as specified in TS 23.501 [3])
- *UE Security Capabilities IE*
- *Time Synchronisation Assistance Information IE*
- *QMC Configuration Information IE*
- *Target NSSAI Information IE*
- *UE Slice Maximum Bit Rate List IE*
- *5G ProSe Authorized IE*
- *5G ProSe UE PC5 Aggregate Maximum Bit Rate IE*
- *5G ProSe PC5 QoS Parameters IE*- *RG Level Wireline Access Characteristics IE*: the information given within this IE between the W-AGF and the AMF shall be stored in the UE context by the W-AGF as specified in TS 23.316 [6].
- *Notification Control IE* included in the *QoS Flow Level QoS Parameters IE*
- *Alternative QoS Parameters Set List IE* included in the *QoS Flow Level QoS Parameters IE*

UE CONTEXT RELEASE COMPLETE message:

- the following IEs shall be ignored, when received:
 - *Information on Recommended Cells and RAN Nodes for Paging IE*
 - *Paging Assistance Data for CE Capable UE IE*

UE CONTEXT MODIFICATION REQUEST message:

- the following IEs shall be ignored, when received:
 - *RAN Paging Priority IE*
 - *Index to RAT/Frequency Selection Priority IE*
 - *Core Network Assistance Information IE*
 - *Emergency Fallback Indicator IE*
 - *RRC Inactive Transition Report Request IE*
 - *CN Assisted RAN Parameters Tuning IE*
 - *SRVCC Operation Possible IE*
 - *IAB Authorized IE*
 - *NR V2X Services Authorized IE*
 - *LTE V2X Services Authorized IE*
 - *NR UE Sidelink Aggregate Maximum Bit Rate IE*
 - *LTE UE Sidelink Aggregate Maximum Bit Rate IE*
 - *PC5 QoS Parameters IE*
 - *UE Radio Capability ID IE*
 - *UE Aggregate Maximum Bit Rate IE* (except for non-trusted non-3GPP access, trusted non-3GPP access and trusted WLAN access as specified in TS 23.501 [3])
 - *UE Security Capabilities IE*
 - *Time Synchronisation Assistance Information IE*
 - *QMC Configuration Information IE*
 - *QMC Deactivation IE*
 - *UE Slice Maximum Bit Rate List IE*
 - *Management Based MDT PLMN Modification List IE*
 - *5G ProSe Authorized IE*
 - *5G ProSe UE PC5 Aggregate Maximum Bit Rate IE*
 - *5G ProSe PC5 QoS Parameters IE*
- if this is the first message received from a new AMF, the N3IWF shall identify the old AMF and the UE using the received *RAN UE NGAP ID*, release the UE-associated logical NG-connection to the old AMF and create a new UE-associated logical NG-connection to the new AMF.
- *RG Level Wireline Access Characteristics IE*: the information given within this IE between the W-AGF and the AMF shall be stored in the UE context by the W-AGF as specified in TS 23.316 [6].

UE CONTEXT MODIFICATION RESPONSE message:

- the following IEs shall be ignored, when received:
 - *RRC State IE*

INITIAL UE MESSAGE message:

- the following IEs shall be ignored, when received:
 - *IAB Node Indication IE*

- *CE-mode-B Support Indicator IE*
- *LTE-M Indication IE*
- *EDT Session IE*
- *NPN Access Information IE*
- *RedCap Indication IE*
- *RRC Establishment Cause IE*: the information given within this IE is to indicate the Establishment cause for non-3GPP access as specified in TS 24.502 [7].
- *Selected PLMN Identity IE*: the information given within this IE provides the selected PLMN ID for untrusted non-3GPP access as specified in TS 23.502 [4].
- *Authenticated Indication IE*: the information given within this IE between the W-AGF and the AMF is to indicate that the FN-RG has been authenticated by the wireline 5G access network as specified in TS 23.316 [6].
- *Selected PLMN Identity IE*: the information given within this IE contains the PLMN Identity for wireline access as specified in TS 23.316 [6], or for trusted non-3GPP access as specified in TS 23.502 [4].

DOWNLINK NAS TRANSPORT message:

- the following IEs shall be ignored, when received:
 - *RAN Paging Priority IE*
 - *Mobility Restriction List IE*
 - *Index to RAT/Frequency Selection Priority IE*
 - *SRVCC Operation Possible IE*
 - *Enhanced Coverage Restriction IE*
 - *Extended Connected Time IE*
 - *UE Differentiation Information IE*
 - *CE-mode-B Restricted IE*
 - *UE Radio Capability IE*
 - *UE Capability Info Request IE*
 - *End Indication IE*
 - *UE Radio Capability ID IE*
 - *UE Aggregate Maximum Bit Rate IE* (except for non-trusted non-3GPP access, trusted non-3GPP access and trusted WLAN access as specified in TS 23.501 [3])
 - *Target NSSAI Information IE*

UPLINK NAS TRANSPORT message:

- *TNGF Identity Information IE*: the information given within this IE between the TNGF and the AMF contains a list of identifiers of NG-U terminations at TNGF as specified in TS 23.502 [4].
- *TWIF Identity Information IE*: the information given within this IE between the TWIF and the AMF contains a list of identifiers of NG-U terminations at TWIF as specified in TS 23.502 [4].
- *W-AGF Identity Information IE*: the information given within this IE between the W-AGF and the AMF contains a list of identifiers of NG-U terminations at W-AGF as specified in TS 23.316 [6].

NG SETUP REQUEST message:

- the following IEs shall be ignored, when received:
 - *Default Paging DRX IE*
 - *NB-IoT Default Paging DRX IE*

NG SETUP RESPONSE message:

- the following IEs shall be ignored, when received:
 - *IAB Supported IE*

RAN CONFIGURATION UPDATE message:

- the following IEs shall be ignored, when received:
 - *Default Paging DRX IE*
 - *NB-IoT Default Paging DRX IE*

OVERLOAD START message:

- *AMF Overload Response IE*: if the *Overload Action IE* is included, the contained information is used to identify the related signalling traffic corresponding to the Establishment cause for non-3GPP access as specified in TS 24.502 [7].
- *Slice Overload Response IE*: if the *Overload Action IE* is included, the contained information is used to identify the related signalling traffic corresponding to the Establishment cause for non-3GPP access as specified in TS 24.502 [7].

The *Global RAN Node ID IE* in the applicable NGAP messages includes the following IEs as specified in TS 38.413 [2]:

- *Global N3IWF ID IE* for the untrusted non-3GPP access.
- *Global TNGF ID IE* for the trusted non-3GPP access.
- *Global TWIF ID IE* for the trusted WLAN access.
- *Global W-AGF ID IE* for the wireline 5G access.

The *User Location Information IE* in the applicable NGAP messages includes the following IEs as specified in TS 38.413 [2]:

- *N3IWF User Location Information IE* for the untrusted non-3GPP access.
- *TNGF User Location Information IE* for the trusted non-3GPP access.
- *TWIF User Location Information IE* for the trusted WLAN access.
- *W-AGF User Location Information IE* for the wireline 5G access.

The *Security Key IE* in the applicable NGAP messages includes the K_{N3IWF} , or the K_{TNGF} , or the K_{TWIF} , or the K_{WAGF} as specified in TS 33.501 [5].

The *RAN UE NGAP ID IE* in the applicable NGAP messages identifies the UE association over the NG interface within the N3IWF node, or the TNGF node, or the TWIF node, or the W-AGF node, as specified in TS 38.413 [2].

5.4 Handling of NGAP messages not specified to be applicable between the Non-3GPP access network node and AMF

If the Non-3GPP access network node or the AMF receive an NGAP message not listed in section 5.2 as being applicable between the Non-3GPP access network node and AMF, the receiving node shall act according to the criticality defined for the elementary procedure and ignore the message or discard the message and send an ERROR INDICATION message indicating that the procedure is not supported, as specified in in TS 38.413 [2].

Annex A (informative): Change history

Change history							
Date	Meeting	TDoc	CR	Rev	Cat	Subject/Comment	New version
2018-04	R3#99bis	R3-181817	-	-	-	TS skeleton	0.0.1
2018-04	R3#99bis	R3-182522	-	-	-	covering agreements of RAN3#99Bis	0.1.0
2018-05	RAN#100	R3-183589	-	-	-	covering agreements of RAN3#100	0.2.0
2018-06	RAN#80	RP-180755	-	-	-	For approval	1.0.0
2018-06	RAN#80		-	-	-	Specification approved at TSG-RAN and placed under change control	15.0.0
2018-12	RP-82	RP-182447	0001	-	F	Add the UE TNLA Binding release and overload control procedures	15.1.0
2019-07	RP-84	RP-191394	0002	1	F	N2 AMF mobility	15.2.0
2019-09	RP-85	RP-192166	0004	1	F	Correction of N3IWF key	15.3.0
2020-07	RP-88-e	RP-201092	0005	-	F	Selected PLMN ID for untrusted non-3GPP access	15.4.0
2020-07	RP-88-e	RP-201081	0003	11	B	CR for introducing WWC in RAN	16.0.0
2020-09	RP-89-e	RP-201954	0007	1	A	Update the list of IEs that is not applicable to non-3GPP access	16.1.0
2020-12	RP-90-e	RP-202310	0008	1	F	Add the support for updating RG Level Wireline Access Characteristics	16.2.0
2020-12	RP-90-e	RP-202313	0010	1	F	Handling OVERLOAD START message in the N3IWF	16.2.0
2021-09	RP-93-e	RP-211872	0011	1	F	Ignoring the notification control for WWC	16.3.0
2022-03	SA#95-e					Promotion to Release 17 without technical change	17.0.0
2022-06	RAN#96	RP-221150	0013		A	Clarify the UE Security Capabilities IE not applicable to non-3GPP access	17.1.0
2022-09	RAN#97-e	RP-222201	0014	1	F	Update for Rel-17 NGAP IEs not applicable to non-3GPP access	17.2.0
2023-03	RAN#99	RP-230593	0015	-	F	Correction of ULI for non-3GPP access	17.3.0

History

Document history		
V17.0.0	April 2022	Publication
V17.1.0	July 2022	Publication
V17.2.0	October 2022	Publication
V17.3.0	April 2023	Publication