

ETSI TS 129 413 V15.4.0 (2020-08)



5G;
Application of the NG Application Protocol (NGAP)
to non-3GPP access
(3GPP TS 29.413 version 15.4.0 Release 15)



Reference

RTS/TSGR-0329413vf40

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/CommitteeSupportStaff.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.....	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	5
5.1 Use of the NGAP for non-3GPP access	5
5.2 NGAP messages used for non-3GPP access	6
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 N3IWF and AMF.....	9
Annex A (informative): Change history	10
History	11

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] and 3GPP TS 23.502 [4].

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".

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].

N3IWF	Non-3GPP InterWorking 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 InterWorking Function (N3IWF) and the AMF. 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 N3IWF 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 N3IWF and the AMF, the N3IWF 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 N3IWF 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 N3IWF 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*

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*

INITIAL CONTEXT SETUP REQUEST message:

- the following IEs shall be ignored, when received:
 - *Core Network Assistance Information IE*
 - *Trace Activation IE*
 - *MobilityRestriction 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*

UE CONTEXT RELEASE COMPLETE message:

- the following IEs shall be ignored, when received:
 - *Information on Recommended Cells and RAN Nodes for Paging 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*
- 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

UE CONTEXT MODIFICATION RESPONSE message:

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

INITIAL UE MESSAGE message:

- *RRC Establishment Cause IE*: the information given within this IE is to indicate the establishment cause as specified in TS 23.502 [4].
- *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].

DOWNLINK NAS TRANSPORT message:

- the following IEs shall be ignored, when received:
 - *RAN Paging Priority IE*
 - *MobilityRestriction List IE*
 - *Index to RAT/Frequency Selection Priority IE*

NG SETUP REQUEST message:

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

RAN CONFIGURATION UPDATE message:

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

The *Global RAN Node ID IE* in the applicable NGAP messages includes the Global N3IWF ID as specified in TS 38.413 [2].

The *User Location Information IE* in the applicable NGAP messages includes the IP address and port number as specified in TS 38.413 [2].

The *Security Key IE* in the applicable NGAP messages includes the N3IWF key 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 as specified in TS 38.413 [2].

5.4 Handling of NGAP messages not specified to be applicable between the N3IWF and AMF

If the N3IWF or the AMF receive an NGAP message not listed in section 5.2 as being applicable between the N3IWF 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

History

Document history		
V15.0.0	June 2018	Publication
V15.1.0	April 2019	Publication
V15.2.0	July 2019	Publication
V15.3.0	October 2019	Publication
V15.4.0	August 2020	Publication