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**5G;
Application of the NG Application Protocol (NGAP)
to non-3GPP access
(3GPP TS 29.413 version 15.3.0 Release 15)**



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Foreword

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 - 1 presented to TSG for information;
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- 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
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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].

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

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