**3GPP TSG-RAN WG3 Meeting #107-e *R3-201336***

**24th – 28th February 2020**

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| *CR-Form-v12.0* |
| **CHANGE REQUEST** |
|  |
|  | **38.413** | **CR** |  **0290** | **rev** | **4** | **Current version:** | **16.0.0** |  |
|  |
| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* |
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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Proposed change affects:*** | UICC apps |  | ME |  | Radio Access Network | **x** | Core Network | **x** |

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|  |
| ***Title:***  | Introduction of Non-Public Networks |
|  |  |
| ***Source to WG:*** | Qualcomm Incorporated |
| ***Source to TSG:*** | R3 |
|  |  |
| ***Work item code:*** |  NG\_RAN\_PRN  |  | ***Date:*** | 2020-02-01 |
|  |  |  |  |  |
| ***Category:*** | **B** |  | ***Release:*** | Rel-16 |
|  | *Use one of the following categories:****F*** *(correction)****A*** *(mirror corresponding to a change in an earlier release)****B*** *(addition of feature),* ***C*** *(functional modification of feature)****D*** *(editorial modification)*Detailed explanations of the above categories canbe found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | *Use one of the following releases:Rel-8 (Release 8)Rel-9 (Release 9)Rel-10 (Release 10)Rel-11 (Release 11)Rel-12 (Release 12)**Rel-13 (Release 13)Rel-14 (Release 14)Rel-15 (Release 15)Rel-16 (Release 16)* |
|  |  |
| ***Reason for change:*** | Introduction of support for Non-Public Networks in NGAP  |
|  |  |
| ***Summary of change:*** | * NG Configuration exchange including SNPN IDs
* Support for access control (cell CAG support provided to AMF at access)
* Support for mobility restrictions (including serving SNPN, or allowed CAG IDs)
* Support for paging filtering at RAN
* Support for NGAP handover failure due to CAG “mis-match” (feeding back to the source the current list of CAGs supported by the target cell)
 |
|  |  |
| ***Consequences if not approved:*** | No support for Non-Public Networks in NGAP |
|  |  |
| ***Clauses affected:*** |  |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** | **x** |  |  Other core specifications  | TS/TR ... CR . TBD..  |
| ***affected:*** |  | **x** |  Test specifications | TS/TR ... CR ...  |
| ***(show related CRs)*** |  | **x** |  O&M Specifications | TS/TR ... CR ...  |
|  |  |
| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** | Rev1: clean-up to include only section 3 changes Rev 2: Add following TPs: R3-197587, R3-197592, R3-197596, R3-197776Rev 3: Rebaselining to v16.0.0 plus ASN addition. Some editorial alignments including* Changes in text/tabular due to ASN.1 (particularly introduction of NPN support in configuration update messages)
* Missing references or presence in tabular
* Improved IE names
* Simplification of list structures where “item” is not required
* One section (8.6.2) was placed out of order

Rev4: Correct IE name in procedural text (NPN Restriction Information > NPN Mobility Information) |

# 3 Definitions and abbreviations

## 3.1 Definitions

Editor’s Note: Definitions / abbreviations to be checked before CR approval.

For the purposes of the present document, the terms and definitions given in 3GPP TR 21.905 [1] and the following apply. A term defined in the present document takes precedence over the definition of the same term, if any, in 3GPP TR 21.905 [1].

**Elementary Procedure:** NGAP consists of Elementary Procedures (EPs). An Elementary Procedure is a unit of interaction between the NG-RAN node and the AMF. These Elementary Procedures are defined separately and are intended to be used to build up complete sequences in a flexible manner. If the independence between some EPs is restricted, it is described under the relevant EP description. Unless otherwise stated by the restrictions, the EPs may be invoked independently of each other as standalone procedures, which can be active in parallel. The usage of several NGAP EPs together or together with EPs from other interfaces is specified in stage 2 specifications (e.g., TS 38.401 [2], TS 38.410 [3] and TS 38.300 [8]).

An EP consists of an initiating message and possibly a response message. Two kinds of EPs are used:

- **Class 1:** Elementary Procedures with response (success and/or failure).

- **Class 2:** Elementary Procedures without response.

For Class 1 EPs, the types of responses can be as follows:

Successful:

- A signalling message explicitly indicates that the elementary procedure successfully completed with the receipt of the response.

Unsuccessful:

- A signalling message explicitly indicates that the EP failed.

- On time supervision expiry (i.e., absence of expected response).

Successful and Unsuccessful:

- One signalling message reports both successful and unsuccessful outcome for the different included requests. The response message used is the one defined for successful outcome.

Class 2 EPs are considered always successful.

**gNB:** as defined in TS 38.300 [8].

**ng-eNB:** as defined in TS 38.300 [8].

**NG-RAN node:** as defined in TS 38.300 [8].

**PDU session resource:** as defined in TS 38.401 [2].

**Public Network Integrated NPN:** as defined in TS 23.501 [9].

**Stand-Alone Non-Public Network:** as defined in TS 23.501 [9].

## 3.2 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].

5GC 5G Core Network

5QI 5G QoS Identifier

AMF Access and Mobility Management Function

CAG Closed Access Group

CGI Cell Global Identifier

CP Control Plane

DL Downlink

EPC Evolved Packet Core

GUAMI Globally Unique AMF Identifier

IMEISV International Mobile station Equipment Identity and Software Version number

LMF Location Management Function

N3IWF Non 3GPP InterWorking Function

NID Network IdentifierNPN Non-Public Network

NGAP NG Application Protocol

NRPPa NR Positioning Protocol Annex

NSCI New Security Context Indicator

NSSAI Network Slice Selection Assistance Information

OTDOA Observed Time Difference of Arrival

PSCell Primary SCG Cell

RIM Remote Interference Management

RIM-RS RIM Reference Signal

SCG Secondary Cell Group

SCTP Stream Control Transmission Protocol

SMF Session Management Function

S-NG-RAN node Secondary NG-RAN node

SNPN Stand-Alone Non-Public Network

S-NSSAI Single Network Slice Selection Assistance Information

TAC Tracking Area Code

TAI Tracking Area Identity

TNLA Transport Network Layer Association

UP User Plane

UPF User Plane Function

**>>>> NEXT CHANGE <<<<**

### 8.3.1 Initial Context Setup

/\*\*\*unchanged text omitted\*\*\*/

The NG-RAN node shall use the information in the *Mobility Restriction List* IE if present in the INITIAL CONTEXT SETUP REQUEST message to

- determine a target for subsequent mobility action for which the NG-RAN node provides information about the target of the mobility action towards the UE;

- select a proper SCG during dual connectivity operation;

- assign proper RNA(s) for the UE when moving the UE to RRC\_INACTIVE state.

If the *NPN Mobility Information* IE is included in the *Mobility Restriction List* IE in the INITIAL CONTEXT SETUP REQUEST message, the NG-RAN node may use it as described in TS 23.501 [9].

**>>>> NEXT CHANGE <<<<**

### 8.4.2 Handover Resource Allocation

#### 8.4.2.1 General

The purpose of the Handover Resource Allocation procedure is to reserve resources at the target NG-RAN node for the handover of a UE.

#### 8.4.2.2 Successful Operation

/\*\*\*unchanged text omitted\*\*\*/

The target NG-RAN node shall use the information in the *Mobility Restriction List* IE if present in the HANDOVER REQUEST message to

- determine a target for subsequent mobility action for which the target NG-RAN node provides information about the target of the mobility action towards the UE;

- select a proper SCG during dual connectivity operation;

- assign proper RNA(s) for the UE when moving the UE to RRC\_INACTIVE state.

If the *NPN Mobility Information* IE is included in the *Mobility Restriction List* IE in the HANDOVER REQUEST message, the NG-RAN node may use it as described in TS 23.501 [9].

**>>>> NEXT CHANGE <<<<**

#### 8.4.2.4 Abnormal Conditions

If the supported algorithms for encryption defined in the *Encryption Algorithms* IE in the *UE Security Capabilities* IE, plus the mandated support of EEA0 and NEA0 in all UEs (TS 33.501 [13]), do not match any allowed algorithms defined in the configured list of allowed encryption algorithms in the NG-RAN node (TS 33.501 [13]), the target NG-RAN node shall reject the procedure using the HANDOVER FAILURE message.

If the supported algorithms for integrity defined in the *Integrity Protection Algorithms* IE in the *UE Security Capabilities* IE, plus the mandated support of the EIA0 and NIA0 algorithm in all UEs (TS 33.501 [13]), do not match any allowed algorithms defined in the configured list of allowed integrity protection algorithms in the NG-RAN node (TS 33.501 [13]), the target NG-RAN node shall reject the procedure using the HANDOVER FAILURE message.

If the target NG-RAN node receives a HANDOVER REQUEST message which does not contain the *Mobility Restriction List* IE, and the serving PLMN cannot be determined otherwise by the NG-RAN node, the target NG-RAN node shall reject the procedure using the HANDOVER FAILURE message.

If the target NG-RAN node receives a HANDOVER REQUEST message containing the *Mobility Restriction List* IE, and the serving PLMN indicated is not supported by the target cell, the target NG-RAN node shall reject the procedure using the HANDOVER FAILURE message.

If the target NG-RAN node receives a HANDOVER REQUEST message containing an *Allowed PNI-NPN List* IE in the *Mobility Restriction List* IE which does not allow access to the cell indicated in the *Target Cell ID* IE, the target NG-RAN node shall reject the procedure using the HANDOVER FAILURE message with an appropriate cause value and may include the *Cell CAG Information* IE corresponding to this cell and the selected PLMN.

If the target NG-RAN node receives a HANDOVER REQUEST message containing a *Serving PLMN* IE and *Serving NID* IE in the *Mobility Restriction List* IE which does not allow access to the cell indicated in the *Target Cell ID* IE, the target NG-RAN node shall reject the procedure using the HANDOVER FAILURE message with an appropriate cause value.

**>>>> NEXT CHANGE <<<<**

## 8.5 Paging Procedures

### 8.5.1 Paging

#### 8.5.1.1 General

The purpose of the Paging procedure is to enable the AMF to page a UE in the specific NG-RAN node.

#### 8.5.1.2 Successful Operation



Figure 8.5.1.2-1: Paging

The AMF initiates the Paging procedure by sending the PAGING message to the NG-RAN node.

At the reception of the PAGING message, the NG-RAN node shall perform paging of the UE in cells which belong to tracking areas as indicated in the *TAI List for Paging* IE.

If the *Paging DRX* IE is included in the PAGING message, the NG-RAN node shall use it according to TS 38.304 [12] and TS 36.304 [29].

For each cell that belongs to any of the tracking areas indicated in the *TAI List for Paging* IE, the NG-RAN node shall generate one page on the radio interface.

If the *Paging Priority* IE is included in the PAGING message, the NG-RAN node may use it according to TS 23.501 [9].

If the *UE Radio Capability for Paging* IE is included in the PAGING message, the NG-RAN node may use it to apply specific paging schemes.

If the *Assistance Data for Recommended Cells* IE is included in the *Assistance Data for Paging* IE it may be used, together with the *Paging Attempt Information* IE if also present, according to TS 38.300 [8].

If the *Next Paging Area Scope* IE is included in the *Paging Attempt Information* IE it may be used for paging the UE according to TS 38.300 [8].

If the *Paging Origin* IE is included in the PAGING message, the NG-RAN node shall transfer it to the UE according to TS 38.331 [18] and TS 36.331 [21].

If the *NPN Paging Assistance Information* IE is included in the *Assistance Data for Paging* IE, the NG-RAN node may take it into account when determining the cells where paging will be performed.

#### 8.5.1.3 Abnormal Conditions

Void.

## 8.6 Transport of NAS Messages Procedures

### 8.6.1 Initial UE Message

#### 8.6.1.1 General

The Initial UE Message procedure is used when the NG-RAN node has received from the radio interface the first uplink NAS message transmitted on an RRC connection to be forwarded to an AMF.

#### 8.6.1.2 Successful Operation



Figure 8.6.1.2-1: Initial UE message

The NG-RAN node initiates the procedure by sending an INITIAL UE MESSAGE message to the AMF. The NG-RAN node shall allocate a unique RAN UE NGAP ID to be used for the UE and the NG-RAN node shall include this identity in the INITIAL UE MESSAGE message.

The *NAS-PDU* IE contains a UE – AMF message that is transferred without interpretation in the NG-RAN node.

In case of network sharing, the selected PLMN is indicated by the *PLMN Identity* IE within the *TAI* IE included in the INITIAL UE MESSAGE message.

When the NG-RAN node has received from the radio interface the *5G-S-TMSI* IE, it shall include it in the INITIAL UE MESSAGE message.

If the *AMF Set ID* IE is included in the INITIAL UE MESSAGE message this indicates that the message is a rerouted message and the AMF shall, if supported, use the IE as described in TS 23.502 [10].

If the *UE Context Request* IE is included in the INITIAL UE MESSAGE message the AMF shall trigger an Initial Context Setup procedure towards the NG-RAN node.

If the *Allowed NSSAI* IE is included in the INITIAL UE MESSAGE message the AMF shall use the IE as defined in TS 23.502 [10].

If the *Source to Target AMF Information Reroute* IE is included in the INITIAL UE MESSAGE message the AMF shall use the IE as defined in TS 23.502 [10].

If the *NPN Access Information* IE is included in the INITIAL UE MESSAGE message, the AMF shall, if supported, consider that the included PNI-NPN related information is associated to the selected PLMN and use the contained information as specified in TS 23.501 [9].

#### 8.6.1.3 Abnormal Conditions

If the 5G-S-TMSI is not received by the AMF in the INITIAL UE MESSAGE message whereas expected, the AMF shall consider the procedure as failed.

If the INITIAL UE MESSAGE message is received over an NG interface instance corresponding to an SNPN which is not allowed for the UE, the AMF shall consider the procedure as failed.

If the INITIAL UE MESSAGE message contains the *Cell CAG List* IE and none of the listed CAG IDs is allowed for the UE, the AMF shall consider the procedure as failed.

If the INITIAL UE MESSAGE message does not contain the *Cell CAG List* IE and the UE is not allowed to access a PLMN cell, the AMF shall consider the procedure as failed.

[Editor’s Note: Above statements concerning AMF checks need further discussions and re-wording using reference to TS 23.501.]

**>>>> NEXT CHANGE <<<<**

### 8.6.2 Downlink NAS Transport

/\*\*\*unchanged text omitted\*\*\*/

If the *Mobility Restriction List* IE is contained in the DOWNLINK NAS TRANSPORT message, the NG-RAN node shall overwrite any previously stored mobility restriction information in the UE context. The NG-RAN node shall use the information in the *Mobility Restriction List* IE if present in the DOWNLINK NAS TRANSPORT message to:

- determine a target for subsequent mobility action for which the NG-RAN node provides information about the target of the mobility action towards the UE;

- select a proper SCG during dual connectivity operation;

- assign proper RNA(s) for the UE when moving the UE to RRC\_INACTIVE state.

If the *NPN Mobility Information* IE is included in the *Mobility Restriction List* IE in the DOWNLINK NAS TRANSPORT message, the NG-RAN node may use it as described in TS 23.501 [9].

**>>>> NEXT CHANGE <<<<**

## 8.7 Interface Management Procedures

### 8.7.1 NG Setup

#### 8.7.1.1 General

The purpose of the NG Setup procedure is to exchange application level data needed for the NG-RAN node and the AMF to correctly interoperate on the NG-C interface. This procedure shall be the first NGAP procedure triggered after the TNL association has become operational. The procedure uses non-UE associated signalling.

This procedure erases any existing application level configuration data in the two nodes, replaces it by the one received and clears AMF overload state information at the NG-RAN node. If the NG-RAN node and AMF do not agree on retaining the UE contexts this procedure also re-initialises the NGAP UE-related contexts (if any) and erases all related signalling connections in the two nodes like an NG Reset procedure would do.

#### 8.7.1.2 Successful Operation



Figure 8.7.1.2-1: NG setup: successful operation

The NG-RAN node initiates the procedure by sending an NG SETUP REQUEST message including the appropriate data to the AMF. The AMF responds with an NG SETUP RESPONSE message including the appropriate data.

If the *UE Retention Information* IE set to “ues-retained“ is included in the NG SETUP REQUEST message, the AMF may accept the proposal to retain the existing UE related contexts and signalling connections by including the *UE Retention Information* IE set to “ues-retained“ in the NG SETUP RESPONSE message.

The AMF shall include the *Backup AMF Name* IE, if available, in the *Served GUAMI List* IE in the NG SETUP RESPONSE message. The NG-RAN node shall, if supported, consider the AMF as indicated by the *Backup AMF Name* IE when performing AMF reselection, as specified in TS 23.501 [9].

If the *GUAMI Type* IE is included in the NG SETUP RESPONSE message, the NG-RAN node shall store the received value and use it for further AMF selection as defined in TS 23.501 [9].

If the *NPN Support* IE is included within a *Broadcast PLMN Item* IE in the NG SETUP REQUEST message, the AMF shall consider that the NG-RAN node supports the indicated NPNs in the corresponding tracking area.

[Editor’s note: it is not clear that the choice structure is useful here; if not, text could be simplified]

If the *NPN Support* IE is included within a *PLMN Support Item* IE in the NG SETUP RESPONSE message, the NG-RAN shall consider that the AMF supports the corresponding SNPN.

[Editor’s note: whether to include the restriction to one SNPN here or in the semantics or in stage 2 is FFS]

**>>>> NEXT CHANGE <<<<**

### 8.7.2 RAN Configuration Update

#### 8.7.2.1 General

The purpose of the RAN Configuration Update procedure is to update application level configuration data needed for the NG-RAN node and the AMF to interoperate correctly on the NG-C interface. This procedure does not affect existing UE-related contexts, if any.

#### 8.7.2.2 Successful Operation

/\*\*\*unchanged text omitted\*\*\*/

If the RAN CONFIGURATION UPDATE message includes *NG-RAN TNL Association to Remove List* IE, and the *Endpoint IP Address* IE and the *Port Number* IE for both TNL endpoints of the TNL association(s) are included in the *NG-RAN TNL Association to Remove List* IE, the AMF shall, if supported, consider that the TNL association(s) indicated by both received TNL endpoints will be removed by the NG-RAN node. If the *Endpoint IP Address* IE, or the *Endpoint IP Address* IE and the *Port Number* IE for one or both of the TNL endpoints is included in the *NG-RAN TNL Association to Remove List* IE in RAN CONFIGURATION UPDATE message, the AMF shall, if supported, consider that the TNL association(s) indicated by the received endpoint IP address(es) will be removed by the NG-RAN node.

If the *NPN Support* IE is included within a *Broadcast PLMN Item* IE in the RAN CONFIGURATION UPDATE message, the AMF shall consider that the NG-RAN node supports the indicated NPNs in the corresponding tracking area.

**>>>> NEXT CHANGE <<<<**

### 8.7.3 AMF Configuration Update

#### 8.7.3.1 General

The purpose of the AMF Configuration Update procedure is to update application level configuration data needed for the NG-RAN node and AMF to interoperate correctly on the NG-C interface. This procedure does not affect existing UE-related contexts, if any.

#### 8.7.3.2 Successful Operation

/\*\*\*unchanged text omitted\*\*\*/

If the *AMF TNL Association to Update List* IE is included in the AMF CONFIGURATION UPDATE message the NG-RAN node shall, if supported, update the TNL association(s) indicated by the received AMF Transport Layer information towards the AMF.

If the *TNL Association Usage* IE or the *TNL Address Weight Factor* IE is included in the *AMF TNL Association to Add List* IE or the *AMF TNL Association to Update List* IE, the NG-RAN node shall, if supported, consider it as defined in TS 23.502 [10].

If the *NPN Support* IE is included within a *PLMN Support Item* IE in the AMF CONFIGURATION UPDATE message, the NG-RAN shall consider that the AMF supports the corresponding SNPN.

**>>>> NEXT CHANGE <<<<**

#### 9.2.3.3 HANDOVER PREPARATION FAILURE

This message is sent by the AMF to inform the source NG-RAN node that the Handover Preparation has failed.

Direction: AMF → NG-RAN node.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| Message Type | M |  | 9.3.1.1 |  | YES | reject |
| AMF UE NGAP ID | M |  | 9.3.3.1 |  | YES | ignore |
| RAN UE NGAP ID | M |  | 9.3.3.2 |  | YES | ignore |
| Cause | M |  | 9.3.1.2 |  | YES | ignore |
| Criticality Diagnostics | O |  | 9.3.1.3 |  | YES | ignore |
| Cell CAG Information | O |  | 9.3.1.X3 |  | YES | ignore |

**>>>> NEXT CHANGE <<<<**

#### 9.2.3.6 HANDOVER FAILURE

This message is sent by the target NG-RAN node to inform the AMF that the preparation of resources has failed.

Direction: NG-RAN node → AMF.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| Message Type | M |  | 9.3.1.1 |  | YES | reject |
| AMF UE NGAP ID | M |  | 9.3.3.1 |  | YES | ignore |
| Cause | M |  | 9.3.1.2 |  | YES | ignore |
| Criticality Diagnostics | O |  | 9.3.1.3 |  | YES | ignore |
| Cell CAG Information | O |  | 9.3.1.X3 |  | YES | ignore |

**>>>> NEXT CHANGE <<<<**

#### 9.2.5.1 INITIAL UE MESSAGE

This message is sent by the NG-RAN node to transfer the initial layer 3 message to the AMF over the NG interface.

Direction: NG-RAN node → AMF

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| Message Type | M |  | 9.3.1.1 |  | YES | ignore |
| RAN UE NGAP ID | M |  | 9.3.3.2 |  | YES | reject |
| NAS-PDU | M |  | 9.3.3.4 |  | YES | reject |
| User Location Information | M |  | 9.3.1.16 |  | YES | reject |
| RRC Establishment Cause | M |  | 9.3.1.111 |  | YES | ignore |
| 5G-S-TMSI | O |  | 9.3.3.20 |  | YES | reject |
| AMF Set ID | O |  | 9.3.3.12 |  | YES | ignore |
| UE Context Request | O |  | ENUMERATED (requested, ...) |  | YES | ignore |
| Allowed NSSAI | O |  | 9.3.1.31 |  | YES | reject |
| Source to Target AMF Information Reroute | O |  | 9.3.3.27 |  | YES | ignore |
| NPN Access Information | O |  | 9.3.3.Y5 |  | YES | reject |

**>>>> NEXT CHANGE <<<<**

#### 9.2.6.1 NG SETUP REQUEST

This message is sent by the NG-RAN node to transfer application layer information for an NG-C interface instance.

Direction: NG-RAN node → AMF

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| Message Type | M |  | 9.3.1.1 |  | YES | reject |
| Global RAN Node ID | M |  | 9.3.1.5 |  | YES | reject |
| RAN Node Name | O |  | PrintableString(SIZE(1..150, …)) |  | YES | ignore |
| **Supported TA List** |  | *1* |  | Supported TAs in the NG-RAN node. | YES | reject |
| **>Supported TA Item** |  | *1..<maxnoofTACs>* |  |  | - |  |
| >>TAC | M |  | 9.3.3.10 | Broadcast TAC | - |  |
| **>>Broadcast PLMN List** |  | *1* |  |  | - |  |
| **>>>Broadcast PLMN Item** |  | *1..<maxnoofBPLMNs>* |  |  | - |  |
| >>>>PLMN Identity | M |  | 9.3.3.5 | Broadcast PLMN | - |  |
| >>>>TAI Slice Support List | M |  | Slice Support List9.3.1.17 | Supported S-NSSAIs per TA. | - |  |
| >>>>NPN Support | O |  | 9.3.3.Y3 | Together with the PLMN, identifies a SNPN supported in the TAI. | YES | reject |
| Default Paging DRX | M |  | Paging DRX9.3.1.90 |  | YES | ignore |
| UE Retention Information | O |  | 9.3.1.117 |  | YES | ignore |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofTACs | Maximum no. of TACs. Value is 256. |
| maxnoofBPLMNs | Maximum no. of Broadcast PLMNs. Value is 12. |

#### 9.2.6.2 NG SETUP RESPONSE

This message is sent by the AMF to transfer application layer information for an NG-C interface instance.

Direction: AMF → NG-RAN node

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| Message Type | M |  | 9.3.1.1 |  | YES | reject |
| AMF Name | M |  | 9.3.3.21  |  | YES | reject |
| **Served GUAMI List** |  | *1* |  |  | YES | reject |
| >**Served GUAMI Item** |  | *1..<maxnoofServedGUAMIs>* |  |  | - |  |
| >>GUAMI | M |  | 9.3.3.3 |  | - |  |
| >>Backup AMF Name | O |  | AMF Name9.3.3.21 |  | - |  |
| >>GUAMI Type | O |  | ENUMERATED (native, mapped, …) |  | YES | ignore |
| Relative AMF Capacity | M |  | 9.3.1.32 |  | YES | ignore |
| **PLMN Support List** |  | *1* |  |  | YES | reject |
| **>PLMN Support Item** |  | *1..<maxnoofPLMNs>* |  |  | - |  |
| >>PLMN Identity | M |  | 9.3.3.5 |  | - |  |
| >>Slice Support List | M |  | 9.3.1.17 | Supported S-NSSAIs per PLMN | - |  |
| >>NPN Support | O |  | 9.3.3.Y3 | Together with the PLMN, identifies a SNPN supported by the AMF. In this version of the specification, a single SNPN is contained in this message. | YES | reject |
| Criticality Diagnostics | O |  | 9.3.1.3 |  | YES | ignore |
| UE Retention Information | O |  | 9.3.1.117 |  | YES | ignore |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofServedGUAMIs | Maximum no. of GUAMIs served by an AMF. Value is 256. |
| maxnoofPLMNs | Maximum no. of PLMNs per message. Value is 12. |

**>>>> NEXT CHANGE <<<<**

#### 9.2.6.4 RAN CONFIGURATION UPDATE

This message is sent by the NG-RAN node to transfer updated application layer information for an NG-C interface instance.

Direction: NG-RAN node → AMF

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| Message Type | M |  | 9.3.1.1 |  | YES | reject |
| RAN Node Name | O |  | PrintableString(SIZE(1..150, …)) |  | YES | ignore |
| **Supported TA List** |  | *0..1* |  | Supported TAs in the NG-RAN node. | YES | reject |
| **>Supported TA Item** |  | *1..<maxnoofTACs>* |  |  | - |  |
| >>TAC | M |  | 9.3.3.10 | Broadcast TAC | - |  |
| **>>Broadcast PLMN List** |  | *1* |  |  | - |  |
| **>>>Broadcast PLMN Item** |  | *1..<maxnoofBPLMNs>* |  |  | - |  |
| >>>>PLMN Identity | M |  | 9.3.3.5 | Broadcast PLMN | - |  |
| >>>>TAI Slice Support List | M |  | Slice Support List9.3.1.17 | Supported S-NSSAIs per TA. | - |  |
| >>>>NPN Support | O |  | 9.3.3.Y3 | Together with the PLMN, identifies a SNPN supported in the TAI. In this version of the specification, this IE shall be ignored if present. | YES | reject |
| Default Paging DRX | O |  | Paging DRX9.3.1.90 |  | YES | ignore |
| Global RAN Node ID | O |  | 9.3.1.5 |  | YES | ignore |
| **NG-RAN TNL Association to Remove List**  |  | *0..1* |  |  | YES | reject |
| **>NG-RAN TNL Association to Remove Item** |  | *1..<maxnoofTNLAssociations>* |  |  | - |  |
| >>TNL Association Transport Layer Address  | M |  | CP Transport Layer Information9.3.2.6 | Transport layer address of the NG-RAN node. | - |  |
| >>TNL Association Transport Layer Address at AMF | O |  | CP Transport Layer Information9.3.2.6 | Transport layer address of the AMF. | - |  |

**>>>> NEXT CHANGE <<<<**

#### 9.2.6.7 AMF CONFIGURATION UPDATE

This message is sent by the AMF to transfer updated information for an NG-C interface instance.

Direction: AMF → NG-RAN node

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| Message Type | M |  | 9.3.1.1 |  | YES | reject |
| AMF Name | O |  | 9.3.3.21 |  | YES | reject |
| **Served GUAMI List** |  | *0..1* |  |  | YES | reject |
| >**Served GUAMI Item** |  | *1..<maxnoofServedGUAMIs>* |  |  | - |  |
| >>GUAMI | M |  | 9.3.3.3 |  | - |  |
| >>Backup AMF Name | O |  | AMF Name9.3.3.21 |  | - |  |
| >>GUAMI Type | O |  | ENUMERATED (native, mapped, …) |  | YES | ignore |
| Relative AMF Capacity | O |  | 9.3.1.32 |  | YES | ignore |
| **PLMN Support List** |  | *0..1* |  |  | YES | reject |
| **>PLMN Support Item** |  | *1..<maxnoofPLMNs>* |  |  | - |  |
| >>PLMN Identity | M |  | 9.3.3.5 |  | - |  |
| >>Slice Support List | M |  | 9.3.1.17 | Supported S-NSSAIs per PLMN | - |  |
| >>NPN Support | O |  | 9.3.3.Y3 | Together with the PLMN, identifies a SNPN supported by the AMF. In this version of the specification, this IE shall be ignored if present. | YES | reject |
| **AMF TNL Association to Add List**  |  | *0..1* |  |  | YES | ignore |
| **>AMF TNL Association to Add Item** |  | *1..<maxnoofTNLAssociations>* |  |  | - |  |
| >>AMF TNL Association Address | M |  | CP Transport Layer Information9.3.2.6 | AMF Transport Layer information used to set up the new TNL association. | - |  |
| >>TNL Association Usage | O |  | 9.3.2.9 |  | - |  |
| >>TNL Address Weight Factor | M |  | 9.3.2.10 |  | - |  |
| **AMF TNL Association to Remove List**  |  | *0..1* |  |  | YES | ignore |
| **>AMF TNL Association to Remove Item** |  | *1..<maxnoofTNLAssociations>* |  |  | - |  |
| >>AMF TNL Association Address | M |  | CP Transport Layer Information9.3.2.6 | Transport Layer Address of the AMF. | - |  |
| >>TNL Association Transport Layer Address NG-RAN | O |  | CP Transport Layer Address9.3.2.6 | Transport Layer Address of the NG-RAN node. | YES | reject |
| **AMF TNL Association to Update List**  |  | *0..1* |  |  | YES | ignore |
| **>AMF TNL Association to Update Item** |  | *1..<maxnoofTNLAssociations>* |  |  | - |  |
| >>AMF TNL Association Address | M |  | CP Transport Layer Information9.3.2.6 | AMF Transport Layer information used to identify the TNL association to be updated. | - |  |
| >>TNL Association Usage | O |  | 9.3.2.9 |  | - |  |
| >>TNL Address Weight Factor | O |  | 9.3.2.10 |  | - |  |

**>>>> NEXT CHANGE <<<<**

#### 9.3.1.69 Assistance Data for Paging

This IE provides assistance information for paging optimisation.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| Assistance Data for Recommended Cells | O |  | 9.3.1.70 |  | - |  |
| Paging Attempt Information  | O |  | 9.3.1.72 |  | - |  |
| NPN Paging Assistance Information | O |  | 9.3.1.X1 |  | YES | ignore |

**>>>> NEXT CHANGE <<<<**

#### 9.3.1.85 Mobility Restriction List

This IE defines roaming or access restrictions for subsequent mobility action for which the NG-RAN provides information about the target of the mobility action towards the UE, e.g., handover, or for SCG selection during dual connectivity operation or for assigning proper RNAs. NG-RAN behaviour upon receiving this IE is specified in TS 23.501 [9].

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| Serving PLMN | M |  | PLMN Identity9.3.3.5 |  | - |  |
| **Equivalent PLMNs** |  | *0..<maxnoofEPLMNs>* |  | Allowed PLMNs in addition to Serving PLMN.This list corresponds to the list of "equivalent PLMNs" as defined in TS 24.501 [26].This list is part of the roaming restriction information. Roaming restrictions apply to PLMNs other than the Serving PLMN and Equivalent PLMNs. | - |  |
| >PLMN Identity | M |  | 9.3.3.5 |  | - |  |
| **RAT Restrictions** |  | *0..<maxnoofEPLMNsPlusOne>* |  | This IE contains RAT restriction related information as specified in TS 23.501 [9]. | - |  |
| >PLMN Identity | M |  | 9.3.3.5 |  | - |  |
| >RAT Restriction Information | M |  | BIT STRING {e-UTRA (0),nR (1) }(SIZE(8, …)) | Each position in the bitmap represents a RAT.If a bit is set to "1", the respective RAT is restricted for the UE.If a bit is set to "0", the respective RAT is not restricted for the UE.Bits 2-7 reserved for future use. | - |  |
| **Forbidden Area Information** |  | *0..<maxnoofEPLMNsPlusOne>* |  | This IE contains Forbidden Area information as specified in TS 23.501 [9]. | - |  |
| >PLMN Identity | M |  | 9.3.3.5 |  | - |  |
| **>Forbidden TACs** |  | *1..<maxnoofForbTACs>* |  |  | - |  |
| >>TAC | M |  | 9.3.3.10 | The TAC of the forbidden TAI. | - |  |
| **Service Area Information** |  | *0..<maxnoofEPLMNsPlusOne>* |  | This IE contains Service Area Restriction information as specified in TS 23.501 [9]. | - |  |
| >PLMN Identity | M |  | 9.3.3.5 |  | - |  |
| **>Allowed TACs** |  | *0..<maxnoofAllowedAreas>* |  |  | - |  |
| >>TAC | M |  | 9.3.3.10 | The TAC of the allowed TAI. | - |  |
| **>Not Allowed TACs** |  | *0..<maxnoofAllowedAreas>* |  |  | - |  |
| >>TAC | M |  | 9.3.3.10 | The TAC of the not-allowed TAI. | - |  |
| Last E-UTRAN PLMN Identity | O |  | PLMN Identity9.3.3.5 | Indicates the E-UTRAN PLMN ID from where the UE formerly handed over to 5GS and which is preferred in case of subsequent mobility to EPS. | YES | ignore |
| Core Network Type Restriction for Serving PLMN | O |  | ENUMERATED( EPCForbidden,…) | Indicates whether the UE is restricted to connect to EPC for the Serving PLMN as specified in TS 23.501 [9]. | YES | ignore |
| **Core Network Type Restriction for Equivalent PLMNs** |  | *0..<maxnoofEPLMNs>* |  |  | YES | ignore |
| >PLMN Identity | M |  | 9.3.3.5 | Includes any of the Equivalent PLMNs listed in the *Mobility Restriction List* IE for which CN Type restriction applies as specified in TS 23.501 [9]. | - |  |
| >Core Network Type Restriction | M |  | ENUMERATED( EPCForbidden, 5GCForbidden,…) | Indicates whether the UE is restricted to connect to EPC or to 5GC for this PLMN. |  |  |
| NPN Mobility Information | O |  | 9.3.1.X2 |  | YES | reject |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofEPLMNs | Maximum no. of equivalent PLMNs. Value is 15. |
| maxnoofEPLMNsPlusOne | Maximum no. of allowed PLMNs. Value is 16. |
| maxnoofForbTACs | Maximum no. of forbidden Tracking Area Codes. Value is 4096. |
| maxnoofAllowedAreas | Maximum no. of allowed or not allowed Tracking Areas. Value is 16. |

**>>>> NEXT CHANGE <<<<**

#### 9.3.1.X1 NPN Paging Assistance Information

This IE contains NPN Paging Assistance Information.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| CHOICE *NPN Paging Assistance Information* | M |  |  |  |
| *>PNI-NPN Paging Assistance* |  |  |  |  |
| >>PNI-NPN Paging Assistance | M |  | Allowed PNI-NPN List9.3.3.Y4 |  |

####

#### 9.3.1.X2 NPN Mobility Information

This information element indicates the access restrictions related to an NPN.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **IE/Group Name** | **Presence** | **Range** | **IE type and reference** | **Semantics description** |
| CHOICE *NPN Mobility Information* | M |  |  |  |
| >*SNPN Mobility Information* |  |  |  |  |
| >>Serving NID | M |  | 9.3.3.Y1NID |  |
| >*PNI-NPN Mobility Information* |  |  |  |  |
| >>Allowed PNI-NPN List | M |  | 9.3.3.Y4 |  |

#### 9.3.1.X3 Cell CAG Information

This IE provides information about support of closed access groups for a designated cell.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **IE/Group Name** | **Presence** | **Range** | **IE type and reference** | **Semantics description** |
| NG-RAN CGI  | M |  | 9.3.1.73 |  |
| Cell CAG List | M |  | 9.3.3.Y6 |  |

**>>>> NEXT CHANGE <<<<**

#### 9.3.3.Y1 NID

This IE is used to identify (together with a PLMN identifier) a Stand-Alone Non-Public Network.

[Editor’s Note: This is based on current CTx status]

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| NID | M |  | OCTET STRING (SIZE(7))[FFS Coding and semantics] | Digits 0 to 9 encoded 0000 to 1001, 1111 used as filler digit.Two digits per octet:- bits 4 to 1 of octet n encoding digit 2n-1- bits 8 to 5 of octet n encoding digit 2nNID consists of 1 Assignment Model Indication digit, followed by 8 digits from the NID private enterprise number and 4 digits from the NID code. The last digit is not used. |

#### 9.3.3.Y2 CAG ID

This IE is used to identify (together with a PLMN identifier) a Public Network Integrated NPN.

[Editor’s Note: This is based on current CTx status]

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| CAG ID | M |  | BIT STRING (SIZE(32))[FFS] | Defined in TS 23.003. |

#### 9.3.3.Y3 NPN Support

This IE lists the Non-Public Networks supported by a node (in e.g. a TAI or a PLMN).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| CHOICE *NPN Support* | M |  |  |  |
| >*SNPN* |  |  |  |  |
| >>**NID Support List** | M | *1..<maxnoofNIDsupported>* |  |  |
|  |  |  |  |  |
| >>>NID | M |  | 9.3.3.Y1 |  |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofNIDsupported | Maximum no. of NIDs supported. Value is FFS. |

#### 9.3.3.Y4 Allowed PNI-NPN List

This IE contains information on allowed UE mobility in PNI-NPN including allowed PNI-NPNs and whether the UE is allowed to access PLMN cells for each PLMN.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| **Allowed PNI-NPN List** |  | *1* |  |  |
| **>Allowed PNI-NPN Item** |  | *1..<maxnoofEPLMNs+1>* |  |  |
| >>PLMN Identity | M |  | 9.3.3.5 |  |
| >>PNI-NPN restricted | M |  | ENUMERATED(restricted, not-restricted, …) | If set to “restricted”, indicates that the UE may not access public (non-CAG) cells for this PLMN. |
| **>>Allowed CAG list per PLMN** |  | *1..<maxnoofCAGsperPLMN>* |  |  |
|  |  |  |  |  |
| >>>>CAG ID | M |  | 9.3.3.Y2 |  |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofEPLMNs+1 | Maximum no. of equivalent PLMNs plus one serving PLMN. Value is 16. |
| maxnoofAllowedCAGsperPLMN | Maximum number of CAGs per PLMN in UE’s Allowed PNI-NPN list. Value is FFS. |

#### 9.3.3.Y5 NPN Access Information

This IE contains information to perform access control for NPN.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **IE/Group Name** | **Presence** | **Range** | **IE type and reference** | **Semantics description** |
| CHOICE *NPN Access Information* | M |  |  |  |
| >*PNI-NPN Access Information* |  |  |  |  |
| >>Cell CAG List | M |  | 9.3.3.Y6 |  |

#### 9.3.3.Y6 Cell CAG List

This IE indicates the list of CAG IDs supported by a cell.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **IE/Group Name** | **Presence** | **Range** | **IE type and reference** | **Semantics description** |
| **Cell CAG List** |  | *1..<maxnoofCAGsperCell>* |  |  |
| >CAG ID | M |  | 9.3.3.Y2 |  |

|  |  |
| --- | --- |
| **Range bound** | **Explanation** |
| maxnoofCAGsperCell | Maximum no. of CAGs per cell. Value is 64. Max is 12 in this release.  |

Editor note: Value 64 is FFS.

**>>>> NEXT CHANGE <<<<**

### 9.4.4 PDU Definitions

-- ASN1START

-- \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

--

-- PDU definitions for NGAP.

--

-- \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

NGAP-PDU-Contents {

itu-t (0) identified-organization (4) etsi (0) mobileDomain (0)

ngran-Access (22) modules (3) ngap (1) version1 (1) ngap-PDU-Contents (1) }

DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

-- \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

--

-- IE parameter types from other modules.

--

-- \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

IMPORTS

 AllowedNSSAI,

 AMFName,

 AMFSetID,

 AMF-TNLAssociationSetupList,

 AMF-TNLAssociationToAddList,

 AMF-TNLAssociationToRemoveList,

 AMF-TNLAssociationToUpdateList,

 AMF-UE-NGAP-ID,

 AssistanceDataForPaging,

 BroadcastCancelledAreaList,

 BroadcastCompletedAreaList,

 CancelAllWarningMessages,

 Cause,

 Cell-CAGInformation,

 CellIDListForRestart,

 CNAssistedRANTuning,

 ConcurrentWarningMessageInd,

 CoreNetworkAssistanceInformationForInactive,

 CPTransportLayerInformation,

 CriticalityDiagnostics,

 DataCodingScheme,

 DirectForwardingPathAvailability,

 EmergencyAreaIDListForRestart,

 EmergencyFallbackIndicator,

 EN-DCSONConfigurationTransfer,

 EUTRA-CGI,

 FiveG-S-TMSI,

 GlobalRANNodeID,

 GUAMI,

 HandoverFlag,

 HandoverType,

 IMSVoiceSupportIndicator,

 IndexToRFSP,

 InfoOnRecommendedCellsAndRANNodesForPaging,

 LocationReportingRequestType,

 MaskedIMEISV,

 MessageIdentifier,

 MobilityRestrictionList,

 NAS-PDU,

 NASSecurityParametersFromNGRAN,

 NewSecurityContextInd,

 NGRAN-CGI,

 NGRAN-TNLAssociationToRemoveList,

 NGRANTraceID,

 NPN-AccessInformation,

 NR-CGI,

 NRPPa-PDU,

 NumberOfBroadcastsRequested,

 OverloadResponse,

 OverloadStartNSSAIList,

 PagingDRX,

 PagingOrigin,

 PagingPriority,

 PDUSessionAggregateMaximumBitRate,

 PDUSessionResourceAdmittedList,

 PDUSessionResourceFailedToModifyListModCfm,

 PDUSessionResourceFailedToModifyListModRes,

 PDUSessionResourceFailedToSetupListCxtFail,

 PDUSessionResourceFailedToSetupListCxtRes,

 PDUSessionResourceFailedToSetupListHOAck,

 PDUSessionResourceFailedToSetupListPSReq,

 PDUSessionResourceFailedToSetupListSURes,

 PDUSessionResourceHandoverList,

 PDUSessionResourceListCxtRelCpl,

 PDUSessionResourceListCxtRelReq,

 PDUSessionResourceListHORqd,

 PDUSessionResourceModifyListModCfm,

 PDUSessionResourceModifyListModInd,

 PDUSessionResourceModifyListModReq,

 PDUSessionResourceModifyListModRes,

 PDUSessionResourceNotifyList,

 PDUSessionResourceReleasedListNot,

 PDUSessionResourceReleasedListPSAck,

 PDUSessionResourceReleasedListPSFail,

 PDUSessionResourceReleasedListRelRes,

 PDUSessionResourceSecondaryRATUsageList,

 PDUSessionResourceSetupListCxtReq,

 PDUSessionResourceSetupListCxtRes,

 PDUSessionResourceSetupListHOReq,

 PDUSessionResourceSetupListSUReq,

 PDUSessionResourceSetupListSURes,

 PDUSessionResourceSwitchedList,

 PDUSessionResourceToBeSwitchedDLList,

 PDUSessionResourceToReleaseListHOCmd,

 PDUSessionResourceToReleaseListRelCmd,

 PLMNSupportList,

 PWSFailedCellIDList,

 RANNodeName,

 RANPagingPriority,

 RANStatusTransfer-TransparentContainer,

 RAN-UE-NGAP-ID,

 RedirectionVoiceFallback,

 RelativeAMFCapacity,

 RepetitionPeriod,

 ResetType,

 RoutingID,

 RRCEstablishmentCause,

 RRCInactiveTransitionReportRequest,

 RRCState,

 SecurityContext,

 SecurityKey,

 SerialNumber,

 ServedGUAMIList,

 SliceSupportList,

 S-NSSAI,

 SONConfigurationTransfer,

 SourceToTarget-TransparentContainer,

 SourceToTarget-AMFInformationReroute,

 SupportedTAList,

 TAIListForPaging,

 TAIListForRestart,

 TargetID,

 TargetToSource-TransparentContainer,

 TimeToWait,

 TNLAssociationList,

 TraceActivation,

 TrafficLoadReductionIndication,

 TransportLayerAddress,

 UEAggregateMaximumBitRate,

 UE-associatedLogicalNG-connectionList,

 UEContextRequest,

 UE-NGAP-IDs,

 UEPagingIdentity,

 UEPresenceInAreaOfInterestList,

 UERadioCapability,

 UERadioCapabilityForPaging,

 UERetentionInformation,

 UESecurityCapabilities,

 UnavailableGUAMIList,

 UserLocationInformation,

 WarningAreaCoordinates,

 WarningAreaList,

 WarningMessageContents,

 WarningSecurityInfo,

 WarningType,

 RIMInformationTransfer

FROM NGAP-IEs

 PrivateIE-Container{},

 ProtocolExtensionContainer{},

 ProtocolIE-Container{},

 ProtocolIE-ContainerList{},

 ProtocolIE-ContainerPair{},

 ProtocolIE-SingleContainer{},

 NGAP-PRIVATE-IES,

 NGAP-PROTOCOL-EXTENSION,

 NGAP-PROTOCOL-IES,

 NGAP-PROTOCOL-IES-PAIR

FROM NGAP-Containers

 id-AllowedNSSAI,

 id-AMFName,

 id-AMFOverloadResponse,

 id-AMFSetID,

 id-AMF-TNLAssociationFailedToSetupList,

 id-AMF-TNLAssociationSetupList,

 id-AMF-TNLAssociationToAddList,

 id-AMF-TNLAssociationToRemoveList,

 id-AMF-TNLAssociationToUpdateList,

 id-AMFTrafficLoadReductionIndication,

 id-AMF-UE-NGAP-ID,

 id-AssistanceDataForPaging,

 id-BroadcastCancelledAreaList,

 id-BroadcastCompletedAreaList,

 id-CancelAllWarningMessages,

 id-Cause,

 id-Cell-CAGInformation,

 id-CellIDListForRestart,

 id-CNAssistedRANTuning,

 id-ConcurrentWarningMessageInd,

 id-CoreNetworkAssistanceInformationForInactive,

 id-CriticalityDiagnostics,

 id-DataCodingScheme,

 id-DefaultPagingDRX,

 id-DirectForwardingPathAvailability,

 id-EmergencyAreaIDListForRestart,

 id-EmergencyFallbackIndicator,

 id-ENDC-SONConfigurationTransferDL,

 id-ENDC-SONConfigurationTransferUL,

 id-EUTRA-CGI,

 id-FiveG-S-TMSI,

 id-GlobalRANNodeID,

 id-GUAMI,

 id-HandoverFlag,

 id-HandoverType,

 id-IMSVoiceSupportIndicator,

 id-IndexToRFSP,

 id-InfoOnRecommendedCellsAndRANNodesForPaging,

 id-LocationReportingRequestType,

 id-MaskedIMEISV,

 id-MessageIdentifier,

 id-MobilityRestrictionList,

 id-NAS-PDU,

 id-NASC,

 id-NASSecurityParametersFromNGRAN,

 id-NewAMF-UE-NGAP-ID,

 id-NewGUAMI,

 id-NewSecurityContextInd,

 id-NGAP-Message,

 id-NGRAN-CGI,

 id-NGRAN-TNLAssociationToRemoveList,

 id-NGRANTraceID,

 id-NPN-AccessInformation,

 id-NR-CGI,

 id-NRPPa-PDU,

 id-NumberOfBroadcastsRequested,

 id-OldAMF,

 id-OverloadStartNSSAIList,

 id-PagingDRX,

 id-PagingOrigin,

 id-PagingPriority,

 id-PDUSessionResourceAdmittedList,

 id-PDUSessionResourceFailedToModifyListModCfm,

 id-PDUSessionResourceFailedToModifyListModRes,

 id-PDUSessionResourceFailedToSetupListCxtFail,

 id-PDUSessionResourceFailedToSetupListCxtRes,

 id-PDUSessionResourceFailedToSetupListHOAck,

 id-PDUSessionResourceFailedToSetupListPSReq,

 id-PDUSessionResourceFailedToSetupListSURes,

 id-PDUSessionResourceHandoverList,

 id-PDUSessionResourceListCxtRelCpl,

 id-PDUSessionResourceListCxtRelReq,

 id-PDUSessionResourceListHORqd,

 id-PDUSessionResourceModifyListModCfm,

 id-PDUSessionResourceModifyListModInd,

 id-PDUSessionResourceModifyListModReq,

 id-PDUSessionResourceModifyListModRes,

 id-PDUSessionResourceNotifyList,

 id-PDUSessionResourceReleasedListNot,

 id-PDUSessionResourceReleasedListPSAck,

 id-PDUSessionResourceReleasedListPSFail,

 id-PDUSessionResourceReleasedListRelRes,

 id-PDUSessionResourceSecondaryRATUsageList,

 id-PDUSessionResourceSetupListCxtReq,

 id-PDUSessionResourceSetupListCxtRes,

 id-PDUSessionResourceSetupListHOReq,

 id-PDUSessionResourceSetupListSUReq,

 id-PDUSessionResourceSetupListSURes,

 id-PDUSessionResourceSwitchedList,

 id-PDUSessionResourceToBeSwitchedDLList,

 id-PDUSessionResourceToReleaseListHOCmd,

 id-PDUSessionResourceToReleaseListRelCmd,

 id-PLMNSupportList,

 id-PWSFailedCellIDList,

 id-RANNodeName,

 id-RANPagingPriority,

 id-RANStatusTransfer-TransparentContainer,

 id-RAN-UE-NGAP-ID,

 id-RedirectionVoiceFallback,

 id-RelativeAMFCapacity,

 id-RepetitionPeriod,

 id-ResetType,

 id-RoutingID,

 id-RRCEstablishmentCause,

 id-RRCInactiveTransitionReportRequest,

 id-RRCState,

 id-SecurityContext,

 id-SecurityKey,

 id-SerialNumber,

 id-ServedGUAMIList,

 id-SliceSupportList,

 id-SONConfigurationTransferDL,

 id-SONConfigurationTransferUL,

 id-SourceAMF-UE-NGAP-ID,

 id-SourceToTarget-TransparentContainer,

 id-SourceToTarget-AMFInformationReroute,

 id-SupportedTAList,

 id-TAIListForPaging,

 id-TAIListForRestart,

 id-TargetID,

 id-TargetToSource-TransparentContainer,

 id-TimeToWait,

 id-TraceActivation,

 id-TraceCollectionEntityIPAddress,

 id-UEAggregateMaximumBitRate,

 id-UE-associatedLogicalNG-connectionList,

 id-UEContextRequest,

 id-UE-NGAP-IDs,

 id-UEPagingIdentity,

 id-UEPresenceInAreaOfInterestList,

 id-UERadioCapability,

 id-UERadioCapabilityForPaging,

 id-UERetentionInformation,

 id-UESecurityCapabilities,

 id-UnavailableGUAMIList,

 id-UserLocationInformation,

 id-WarningAreaCoordinates,

 id-WarningAreaList,

 id-WarningMessageContents,

 id-WarningSecurityInfo,

 id-WarningType,

 id-RIMInformationTransfer

**// skip unchanged text same section //**

-- \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

--

-- HANDOVER PREPARATION FAILURE

--

-- \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

HandoverPreparationFailure ::= SEQUENCE {

 protocolIEs ProtocolIE-Container { {HandoverPreparationFailureIEs} },

 ...

}

HandoverPreparationFailureIEs NGAP-PROTOCOL-IES ::= {

 { ID id-AMF-UE-NGAP-ID CRITICALITY ignore TYPE AMF-UE-NGAP-ID PRESENCE mandatory }|

 { ID id-RAN-UE-NGAP-ID CRITICALITY ignore TYPE RAN-UE-NGAP-ID PRESENCE mandatory }|

 { ID id-Cause CRITICALITY ignore TYPE Cause PRESENCE mandatory }|

 { ID id-CriticalityDiagnostics CRITICALITY ignore TYPE CriticalityDiagnostics PRESENCE optional }|

 { ID id-Cell-CAGInformation CRITICALITY ignore TYPE Cell-CAGInformation PRESENCE optional },

 ...

}

**// skip unchanged text same section //**

-- \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

--

-- HANDOVER FAILURE

--

-- \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

HandoverFailure ::= SEQUENCE {

 protocolIEs ProtocolIE-Container { { HandoverFailureIEs} },

 ...

}

HandoverFailureIEs NGAP-PROTOCOL-IES ::= {

 { ID id-AMF-UE-NGAP-ID CRITICALITY ignore TYPE AMF-UE-NGAP-ID PRESENCE mandatory }|

 { ID id-Cause CRITICALITY ignore TYPE Cause PRESENCE mandatory }|

 { ID id-CriticalityDiagnostics CRITICALITY ignore TYPE CriticalityDiagnostics PRESENCE optional }|

 { ID id-Cell-CAGInformation CRITICALITY ignore TYPE Cell-CAGInformation PRESENCE optional },

 ...

}

**// skip unchanged text same section //**

-- \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

--

-- NAS TRANSPORT ELEMENTARY PROCEDURES

--

-- \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

-- \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

--

-- INITIAL UE MESSAGE

--

-- \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

InitialUEMessage ::= SEQUENCE {

 protocolIEs ProtocolIE-Container { {InitialUEMessage-IEs} },

 ...

}

InitialUEMessage-IEs NGAP-PROTOCOL-IES ::= {

 { ID id-RAN-UE-NGAP-ID CRITICALITY reject TYPE RAN-UE-NGAP-ID PRESENCE mandatory }|

 { ID id-NAS-PDU CRITICALITY reject TYPE NAS-PDU PRESENCE mandatory }|

 { ID id-UserLocationInformation CRITICALITY reject TYPE UserLocationInformation PRESENCE mandatory }|

 { ID id-RRCEstablishmentCause CRITICALITY ignore TYPE RRCEstablishmentCause PRESENCE mandatory }|

 { ID id-FiveG-S-TMSI CRITICALITY reject TYPE FiveG-S-TMSI PRESENCE optional }|

 { ID id-AMFSetID CRITICALITY ignore TYPE AMFSetID PRESENCE optional }|

 { ID id-UEContextRequest CRITICALITY ignore TYPE UEContextRequest PRESENCE optional }|

 { ID id-AllowedNSSAI CRITICALITY reject TYPE AllowedNSSAI PRESENCE optional }|

 { ID id-SourceToTarget-AMFInformationReroute CRITICALITY ignore TYPE SourceToTarget-AMFInformationReroute PRESENCE optional }|

 { ID id-NPN-AccessInformation CRITICALITY reject TYPE NPN-AccessInformation PRESENCE optional },

 ...

}

**>>>> NEXT CHANGE <<<<**

### 9.4.5 Information Element Definitions

-- ASN1START

-- \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

--

-- Information Element Definitions

--

-- \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

NGAP-IEs {

itu-t (0) identified-organization (4) etsi (0) mobileDomain (0)

ngran-Access (22) modules (3) ngap (1) version1 (1) ngap-IEs (2) }

DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

IMPORTS

 id-AdditionalDLForwardingUPTNLInformation,

 id-AdditionalULForwardingUPTNLInformation,

 id-AdditionalDLQosFlowPerTNLInformation,

 id-AdditionalDLUPTNLInformationForHOList,

 id-AdditionalNGU-UP-TNLInformation,

 id-AdditionalUL-NGU-UP-TNLInformation,

 id-Cause,

 id-CNTypeRestrictionsForEquivalent,

 id-CNTypeRestrictionsForServing,

 id-CommonNetworkInstance,

 id-DataForwardingNotPossible,

 id-DataForwardingResponseERABList,

 id-DirectForwardingPathAvailability,

 id-DL-NGU-UP-TNLInformation,

 id-EndpointIPAddressAndPort,

 id-GUAMIType,

 id-LastEUTRAN-PLMNIdentity,

 id-LocationReportingAdditionalInfo,

 id-MaximumIntegrityProtectedDataRate-DL,

 id-NetworkInstance,

 id-NPN-MobilityInformation,

 id-NPN-PagingAssistanceInformation,

 id-NPN-Support,

 id-OldAssociatedQosFlowList-ULendmarkerexpected,

 id-PDUSessionAggregateMaximumBitRate,

 id-PDUSessionResourceFailedToSetupListCxtFail,

 id-PDUSessionResourceReleaseResponseTransfer,

 id-PDUSessionType,

 id-PSCellInformation,

 id-QosFlowAddOrModifyRequestList,

 id-QosFlowSetupRequestList,

 id-QosFlowToReleaseList,

 id-SCTP-TLAs,

 id-SecondaryRATUsageInformation,

 id-SecurityIndication,

 id-SecurityResult,

 id-S-NSSAI,

 id-TNLAssociationTransportLayerAddressNGRAN,

 id-UL-NGU-UP-TNLInformation,

 id-UL-NGU-UP-TNLModifyList,

 id-ULForwarding,

 id-ULForwardingUP-TNLInformation,

 maxnoofAllowedAreas,

 maxnoofAllowedCAGsperPLMN,

 maxnoofAllowedS-NSSAIs,

 maxnoofBPLMNs,

 maxnoofCAGSperCell,

 maxnoofCellIDforWarning,

 maxnoofCellinAoI,

 maxnoofCellinEAI,

 maxnoofCellsingNB,

 maxnoofCellsinngeNB,

 maxnoofCellinTAI,

 maxnoofCellsinUEHistoryInfo,

 maxnoofCellsUEMovingTrajectory,

 maxnoofDRBs,

 maxnoofEmergencyAreaID,

 maxnoofEAIforRestart,

 maxnoofEPLMNs,

 maxnoofEPLMNsPlusOne,

 maxnoofE-RABs,

 maxnoofErrors,

 maxnoofForbTACs,

 maxnoofMultiConnectivity,

 maxnoofMultiConnectivityMinusOne,

 maxnoofNGConnectionsToReset,

 maxnoofNIDsupported,

 maxnoofPDUSessions,

 maxnoofPLMNs,

 maxnoofQosFlows,

 maxnoofRANNodeinAoI,

 maxnoofRecommendedCells,

 maxnoofRecommendedRANNodes,

 maxnoofAoI,

 maxnoofServedGUAMIs,

 maxnoofSliceItems,

 maxnoofTACs,

 maxnoofTAIforInactive,

 maxnoofTAIforPaging,

 maxnoofTAIforRestart,

 maxnoofTAIforWarning,

 maxnoofTAIinAoI,

 maxnoofTimePeriods,

 maxnoofTNLAssociations,

 maxnoofXnExtTLAs,

 maxnoofXnGTP-TLAs,

 maxnoofXnTLAs

FROM NGAP-Constants

**// skip unchanged text same section //**

AllocationAndRetentionPriority-ExtIEs NGAP-PROTOCOL-EXTENSION ::= {

 ...

}

Allowed-CAG-List-per-PLMN ::= SEQUENCE (SIZE(1..maxnoofAllowedCAGsperPLMN)) OF CAG-ID

AllowedNSSAI ::= SEQUENCE (SIZE(1..maxnoofAllowedS-NSSAIs)) OF AllowedNSSAI-Item

AllowedNSSAI-Item ::= SEQUENCE {

 s-NSSAI S-NSSAI,

 iE-Extensions ProtocolExtensionContainer { {AllowedNSSAI-Item-ExtIEs} } OPTIONAL,

 ...

}

AllowedNSSAI-Item-ExtIEs NGAP-PROTOCOL-EXTENSION ::= {

 ...

}

Allowed-PNI-NPN-List ::= SEQUENCE (SIZE(1..maxnoofEPLMNsPlusOne)) OF Allowed-PNI-NPN-Item

Allowed-PNI-NPN-Item ::= SEQUENCE {

 pLMNIdentity PLMNIdentity,

 pNI-NPN-restricted ENUMERATED {restricted, not-restricted, ...},

 allowed-CAG-List-per-PLMN Allowed-CAG-List-per-PLMN,

 iE-Extensions ProtocolExtensionContainer { {Allowed-PNI-NPN-Item-ExtIEs} } OPTIONAL,

 ...

}

Allowed-PNI-NPN-Item-ExtIEs NGAP-PROTOCOL-EXTENSION ::= {

 ...

}

AllowedTACs ::= SEQUENCE (SIZE(1..maxnoofAllowedAreas)) OF TAC

**// skip unchanged text same section //**

AssistanceDataForPaging ::= SEQUENCE {

 assistanceDataForRecommendedCells AssistanceDataForRecommendedCells OPTIONAL,

 pagingAttemptInformation PagingAttemptInformation OPTIONAL,

 iE-Extensions ProtocolExtensionContainer { {AssistanceDataForPaging-ExtIEs} } OPTIONAL,

 ...

}

AssistanceDataForPaging-ExtIEs NGAP-PROTOCOL-EXTENSION ::= {

 {ID id-NPN-PagingAssistanceInformation CRITICALITY ignore EXTENSION NPN-PagingAssistanceInformation PRESENCE optional},

 ...

}

**// skip unchanged text same section //**

BroadcastPLMNItem ::= SEQUENCE {

 pLMNIdentity PLMNIdentity,

 tAISliceSupportList SliceSupportList,

 iE-Extensions ProtocolExtensionContainer { {BroadcastPLMNItem-ExtIEs} } OPTIONAL,

 ...

}

BroadcastPLMNItem-ExtIEs NGAP-PROTOCOL-EXTENSION ::= {

 {ID id-NPN-Support CRITICALITY reject EXTENSION NPN-Support PRESENCE optional},

 ...

}

-- C

CAG-ID ::= BIT STRING (SIZE(32))

CancelAllWarningMessages ::= ENUMERATED {

 true,

 ...

}

**// skip unchanged text same section //**

CauseTransport ::= ENUMERATED {

 transport-resource-unavailable,

 unspecified,

 ...

}

Cell-CAGInformation ::= SEQUENCE {

 nR-CGI NR-CGI,

 cellCAGList CellCAGList,

 iE-Extensions ProtocolExtensionContainer { {Cell-CAGInformation-ExtIEs} } OPTIONAL,

 ...

}

Cell-CAGInformation-ExtIEs NGAP-PROTOCOL-EXTENSION ::= {

 ...

}

CellCAGList ::= SEQUENCE (SIZE(1..maxnoofCAGSperCell)) OF CAG-ID

CellIDBroadcastEUTRA ::= SEQUENCE (SIZE(1..maxnoofCellIDforWarning)) OF CellIDBroadcastEUTRA-Item

**// skip unchanged text same section //**

MobilityRestrictionList ::= SEQUENCE {

 servingPLMN PLMNIdentity,

 equivalentPLMNs EquivalentPLMNs OPTIONAL,

 rATRestrictions RATRestrictions OPTIONAL,

 forbiddenAreaInformation ForbiddenAreaInformation OPTIONAL,

 serviceAreaInformation ServiceAreaInformation OPTIONAL,

 iE-Extensions ProtocolExtensionContainer { {MobilityRestrictionList-ExtIEs} } OPTIONAL,

 ...

}

MobilityRestrictionList-ExtIEs NGAP-PROTOCOL-EXTENSION ::= {

 { ID id-LastEUTRAN-PLMNIdentity CRITICALITY ignore EXTENSION PLMNIdentity PRESENCE optional }|

 { ID id-CNTypeRestrictionsForServing CRITICALITY ignore EXTENSION CNTypeRestrictionsForServing PRESENCE optional}|

 { ID id-CNTypeRestrictionsForEquivalent CRITICALITY ignore EXTENSION CNTypeRestrictionsForEquivalent PRESENCE optional}|

 { ID id-NPN-MobilityInformation CRITICALITY reject EXTENSION NPN-MobilityInformation PRESENCE optional},

 ...

}

**// skip unchanged text same section //**

NGRANTraceID ::= OCTET STRING (SIZE(8))

NID ::= OCTET STRING (SIZE(7))

NID-SupportList ::= SEQUENCE (SIZE(1..maxnoofNIDsupported)) OF NID

NonDynamic5QIDescriptor ::= SEQUENCE {

 fiveQI FiveQI,

 priorityLevelQos PriorityLevelQos OPTIONAL,

 averagingWindow AveragingWindow OPTIONAL,

 maximumDataBurstVolume MaximumDataBurstVolume OPTIONAL,

 iE-Extensions ProtocolExtensionContainer { {NonDynamic5QIDescriptor-ExtIEs} } OPTIONAL,

 ...

}

NonDynamic5QIDescriptor-ExtIEs NGAP-PROTOCOL-EXTENSION ::= {

 ...

}

NotAllowedTACs ::= SEQUENCE (SIZE(1..maxnoofAllowedAreas)) OF TAC

NotificationCause ::= ENUMERATED {

 fulfilled,

 not-fulfilled,

 ...

}

NotificationControl ::= ENUMERATED {

 notification-requested,

 ...

}

NPN-AccessInformation ::= CHOICE {

 pNI-NPN-Access-Information CellCAGList,

 choice-Extensions ProtocolIE-SingleContainer { {NPN-AccessInformation-ExtIEs} }

}

NPN-AccessInformation-ExtIEs NGAP-PROTOCOL-IES ::= {

 ...

}

NPN-MobilityInformation ::= CHOICE {

 sNPN-MobilityInformation SNPN-MobilityInformation,

 pNI-NPN-MobilityInformation PNI-NPN-MobilityInformation,

 choice-Extensions ProtocolIE-SingleContainer { {NPN-MobilityInformation-ExtIEs} }

}

NPN-MobilityInformation-ExtIEs NGAP-PROTOCOL-IES ::= {

 ...

}

NPN-PagingAssistanceInformation ::= CHOICE {

 pNI-NPN-PagingAssistance Allowed-PNI-NPN-List,

 choice-Extensions ProtocolIE-SingleContainer { {NPN-PagingAssistanceInformation-ExtIEs} }

}

NPN-PagingAssistanceInformation-ExtIEs NGAP-PROTOCOL-IES ::= {

 ...

}

NPN-Support ::= CHOICE {

 sNPN NID-SupportList,

 choice-Extensions ProtocolIE-SingleContainer { {NPN-Support-ExtIEs} }

}

NPN-Support-ExtIEs NGAP-PROTOCOL-IES ::= {

 ...

}

NRCellIdentity ::= BIT STRING (SIZE(36))

**// skip unchanged text same section //**

PLMNSupportItem ::= SEQUENCE {

 pLMNIdentity PLMNIdentity,

 sliceSupportList SliceSupportList,

 iE-Extensions ProtocolExtensionContainer { {PLMNSupportItem-ExtIEs} } OPTIONAL,

 ...

}

PLMNSupportItem-ExtIEs NGAP-PROTOCOL-EXTENSION ::= {

-- This IE (NPN-Support) may include one SNPN (NID) only in this version of the specification --

 {ID id-NPN-Support CRITICALITY reject EXTENSION NPN-Support PRESENCE optional},

 ...

}

PNI-NPN-MobilityInformation ::= SEQUENCE {

 allowed-PNI-NPI-List Allowed-PNI-NPN-List,

 iE-Extensions ProtocolExtensionContainer { {PNI-NPN-MobilityInformation-ExtIEs} } OPTIONAL,

 ...

}

PNI-NPN-MobilityInformation-ExtIEs NGAP-PROTOCOL-EXTENSION ::= {

 ...

}

S-NSSAI ::= SEQUENCE {

 sST SST,

 sD SD OPTIONAL,

 iE-Extensions ProtocolExtensionContainer { { S-NSSAI-ExtIEs} } OPTIONAL,

 ...

}

PortNumber ::= OCTET STRING (SIZE(2))

**// skip unchanged text same section //**

SliceSupportItem ::= SEQUENCE {

 s-NSSAI S-NSSAI,

 iE-Extensions ProtocolExtensionContainer { {SliceSupportItem-ExtIEs} } OPTIONAL,

 ...

}

SliceSupportItem-ExtIEs NGAP-PROTOCOL-EXTENSION ::= {

 ...

}

SNPN-MobilityInformation ::= SEQUENCE {

 serving-NID NID,

 iE-Extensions ProtocolExtensionContainer { {SNPN-MobilityInformation-ExtIEs} } OPTIONAL,

 ...

}

SNPN-MobilityInformation-ExtIEs NGAP-PROTOCOL-EXTENSION ::= {

 ...

}

**>>>> NEXT CHANGE <<<<**

### 9.4.7 Constant Definitions

-- ASN1START

-- \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

--

-- Constant definitions

--

-- \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

**// skip unchanged text same section //**

-- \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

--

-- Lists

--

-- \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

 maxnoofAllowedAreas INTEGER ::= 16

 maxnoofAllowedCAGsperPLMN INTEGER ::= X1 maxnoofAllowedS-NSSAIs INTEGER ::= 8

 maxnoofBPLMNs INTEGER ::= 12

 maxnoofCAGSperCell INTEGER ::= X2

 maxnoofCellIDforWarning INTEGER ::= 65535

 maxnoofCellinAoI INTEGER ::= 256

 maxnoofCellinEAI INTEGER ::= 65535

 maxnoofCellinTAI INTEGER ::= 65535

 maxnoofCellsingNB INTEGER ::= 16384

 maxnoofCellsinngeNB INTEGER ::= 256

 maxnoofCellsinUEHistoryInfo INTEGER ::= 16

 maxnoofCellsUEMovingTrajectory INTEGER ::= 16

 maxnoofDRBs INTEGER ::= 32

 maxnoofEmergencyAreaID INTEGER ::= 65535

 maxnoofEAIforRestart INTEGER ::= 256

 maxnoofEPLMNs INTEGER ::= 15

 maxnoofEPLMNsPlusOne INTEGER ::= 16

 maxnoofE-RABs INTEGER ::= 256

 maxnoofErrors INTEGER ::= 256

 maxnoofForbTACs INTEGER ::= 4096

 maxnoofMultiConnectivity INTEGER ::= 4

 maxnoofMultiConnectivityMinusOne INTEGER ::= 3

 maxnoofNGConnectionsToReset INTEGER ::= 65536

 maxnoofNIDsupported INTEGER ::= X3

 maxnoofPDUSessions INTEGER ::= 256

 maxnoofPLMNs INTEGER ::= 12

 maxnoofQosFlows INTEGER ::= 64

 maxnoofRANNodeinAoI INTEGER ::= 64

 maxnoofRecommendedCells INTEGER ::= 16

 maxnoofRecommendedRANNodes INTEGER ::= 16

 maxnoofAoI INTEGER ::= 64

 maxnoofServedGUAMIs INTEGER ::= 256

 maxnoofSliceItems INTEGER ::= 1024

 maxnoofTACs INTEGER ::= 256

 maxnoofTAIforInactive INTEGER ::= 16

 maxnoofTAIforPaging INTEGER ::= 16

 maxnoofTAIforRestart INTEGER ::= 2048

 maxnoofTAIforWarning INTEGER ::= 65535

 maxnoofTAIinAoI INTEGER ::= 16

 maxnoofTimePeriods INTEGER ::= 2

 maxnoofTNLAssociations INTEGER ::= 32

 maxnoofXnExtTLAs INTEGER ::= 16

 maxnoofXnGTP-TLAs INTEGER ::= 16

 maxnoofXnTLAs INTEGER ::= 2

-- \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

--

-- IEs

--

-- \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

 id-AllowedNSSAI ProtocolIE-ID ::= 0

 id-AMFName ProtocolIE-ID ::= 1

 id-AMFOverloadResponse ProtocolIE-ID ::= 2

 id-AMFSetID ProtocolIE-ID ::= 3

**// skip unchanged text same section //**

id-LocationReportingAdditionalInfo ProtocolIE-ID ::= 170

 id-SourceToTarget-AMFInformationReroute ProtocolIE-ID ::= 171

 id-AdditionalULForwardingUPTNLInformation ProtocolIE-ID ::= 172

 id-SCTP-TLAs ProtocolIE-ID ::= 173

 id-DataForwardingResponseERABList ProtocolIE-ID ::= 174

 id-RIMInformationTransfer ProtocolIE-ID ::= 175

 id-GUAMIType ProtocolIE-ID ::= 176

 id-NPN-Support ProtocolIE-ID ::= XX1

 id-NPN-AccessInformation ProtocolIE-ID ::= XX2

 id-NPN-PagingAssistanceInformation ProtocolIE-ID ::= XX3

 id-NPN-MobilityInformation ProtocolIE-ID ::= XX4

 id-Cell-CAGInformation ProtocolIE-ID ::= XX5

END

-- ASN1STOP

**>>>> END OF CHANGES <<<<**