**3GPP TSG-RAN WG3 #128 *draft-R3-253873***

**St. Julien, Malta, 19th – 23rd May 2025**

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| *CR-Form-v12.3* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  |  | **CR** | **1247** | **rev** | **4** | **Current version:** |  |  |
|  | | | | | | | | |
| *For* [***HELP***](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:*** | Support Aerial UE Flight Information Reporting to CN | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | , CMCC, ZTE, CATT, Nokia, Huawei | | | | | | | | | |
| ***Source to TSG:*** | R3 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | UAS\_Ph3 | | | | |  | ***Date:*** | | | 2025-05-02 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | B |  | | | | | ***Release:*** | | | Rel-19 |
|  | *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 can be 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-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)  Rel-20 (Release 20)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | In the SA2 LS R3-250022 and SA2 reply LS R3-253020, SA2 is specifying a new feature “Pre-flight Planning and In-flight Monitoring for UAVs” and SA2 agrees that the UAV altitude can be received from NG-RAN, assuming to reuse the existing feature like eventH1/H2 reporting together with additional trigger from the core network as specified in Rel-19. Time Stamp on when altitude was reported from the UE is also useful. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Include in the Location Reporting procedure:   * Request and stop the Aerail UE reporting in the Location Reproting Control, introduce two new code points and the thresholds values in the *Location Reporting Request Type* IE * Aerial UE Flight information Reporting in the Location Report in the *User Location Information* IE; * ”Aerial UE flight information reporting failed” indication in the Location Reporting Failure message. (FFS Option 1 for Failure Handling) * Aerial UE flight information reporting failed” indication in the Location Report message and new cause value. (FFS Option 2 for Failure Handling)   Impact assessment towards the previous version of the specification (same release):  This CR has an isolated impact towards the previous version of the specification (same release). | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | No support for Aerial UE flight information reporting from NG-RAN to CN for the Aerial UE. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 8.12.1, 8.12.2, 8.12.3, 9.2.12, 9.3.1.16, 9.3.1.65. 9.3.1.xx, 9.3.1.yy, 9.3.1.zz, 9.4.4, 9.4.5, 9.4.7 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | | **X** |  | Other core specifications | | | | TS 38.423 CR 1460  TS 38.300 draft CR | | |
| ***affected:*** | |  | **X** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

## 8.12 Location Reporting Procedures

### 8.12.1 Location Reporting Control

#### 8.12.1.1 General

The purpose of the Location Reporting Control procedure is to allow the AMF to request the NG-RAN node to report the UE's current location, or the UE's last known location with time stamp, or the UE's presence in the area of interest while in CM-CONNECTED state, or the Aerial UE’s flight information as specified in TS 23.501 [9] and TS 23.502 [10]. The procedure uses UE-associated signalling.

#### 8.12.1.2 Successful Operation



Figure 8.12.1.2-1: Location reporting control

The AMF initiates the procedure by sending a LOCATION REPORTING CONTROL message to the NG-RAN node. On receipt of the LOCATION REPORTING CONTROL message the NG-RAN node shall perform the requested location reporting control action for the UE.

The *Location Reporting Request Type* IE indicates to the NG-RAN node whether:

- to report directly;

- to report upon change of serving cell;

- to report UE presence in the area of interest;

- to stop reporting at change of serving cell;

- to stop reporting UE presence in the area of interest;

- to cancel location reporting for the UE;

- to report upon change of serving cell and to report UE presence in the area of interest.

- to report flight information for the Aerial UE;

- to cancel flight information reporting for the Aerial UE;

If the *Area Of Interest List* IE is included in the *Location Reporting Request Type* IE in the LOCATION REPORTING CONTROL message, the NG-RAN node shall store this information and use it to track the UE's presence in the area of interest as defined in TS 23.502 [10].

NOTE: The NG-RAN reports the UE presence for all set of Location Reporting Reference IDs for inter-NG-RAN node handover.

If the *Additional Location Information* IE is included in the LOCATION REPORTING CONTROL message and set to "Include PSCell” then, if Dual Connectivity is activated, the NG-RAN node shall include the current PSCell in the report. If a report upon change of serving cell is requested, the NG-RAN node shall provide the report also whenever the UE changes the PSCell, and when Dual Connectivity is activated.

If reporting upon change of serving cell is requested, the NG-RAN node shall send a report immediately and shall send a report whenever the UE’s location changes.

If the *Event Type* IE is set to "stop UE presence in the area of interest", and if the *Additional Cancelled Location Reporting Reference ID List* IE is included in the *Location Reporting Request Type* IE within the LOCATION REPORTING CONTROL message, the NG-RAN node shall, if supported, stop reporting UE presence for all received Location Reporting Reference IDs.

If the *Event Type* IE is present as “report aerial UE flight information”, and the *Aerial UE Flight Information report control* IE is included in the *Location Reporting Request Type* IE in the LOCATION REPORTING CONTROL message, the NG-RAN node shall, if supported, store this information and use it to report the aerial UE flight information as defined in TS 23.502 [10].

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#### 8.12.1.3 Abnormal Conditions

**Interactions with Location Reporting Failure Indication procedure:**

If the NG-RAN node receives a LOCATION REPORTING CONTROL message containing several *Location Reporting Reference ID* IE set to the same value, the NG-RAN node shall send the LOCATION REPORTING FAILURE INDICATION message with an appropriate cause value.

If the *Location Reporting Request Type* IE in the received LOCATION REPORTING CONTROL message contains the *Event Type* IE set to neither "UE presence in the area of interest" nor "change of serving cell and UE presence in the area of interest", but the *Area of Interest List* IE is present, the NG-RAN node shall ignore the *Area of Interest List* IE. and proceed with the Location Reporting Procedure.

### 8.12.2 Location Reporting Failure Indication

#### 8.12.2.1 General

The purpose of the Location Reporting Failure Indication procedure is to allow the NG-RAN node to inform the AMF that the location reporting request contained in the Location Reporting Control procedure, the Handover Resource Allocation procedure or the Initial Context Setup procedure has failed. The procedure uses UE-associated signalling.

#### 8.12.2.2 Successful Operation



Figure 8.12.2.2-1: Location reporting failure indication

The NG-RAN node initiates the procedure by sending a LOCATION REPORTING FAILURE INDICATION message to the AMF. Upon reception of the LOCATION REPORTING FAILURE INDICATION message the AMF shall, based on the failure reason indicated by the *Cause* IE, take appropriate action.

If the aerial UE measurement is stopped, the NG-RAN node initiates the procedure by sending a LOCATION REPORTING FAILURE INDICATION message to the AMF. Upon reception of the LOCATION REPORTING FAILURE INDICATION message the AMF shall, based on the *Aerial UE flight information reporting failed* IE, take appropriate action. (FFS: This is Option 1 for the “failure handling”).

#### 8.12.2.3 Abnormal Conditions

Void.

### 8.12.3 Location Report

#### 8.12.3.1 General

The purpose of the Location Report procedure is to provide the UE's current location, the UE's last known location with time stamp, or the UE's presence in the area of interest to the AMF. The procedure uses UE-associated signalling. For Aerial UE, the Location Reporting procedure is to provide the UE’s flight formation.

#### 8.12.3.2 Successful Operation



Figure 8.12.3.2-1: Location report

The NG-RAN node initiates the procedure by sending a LOCATION REPORT message to the AMF. The LOCATION REPORT message may be used as a response to the LOCATION REPORTING CONTROL message.

If the aerial UE measurement is stopped, the NG-RAN node initiates the procedure by sending a LOCATION REPORT message to the AMF to indicate the Stop. The AMF shall take appropriate action. (FFS Option 2 for Failure handling).

#### 8.12.3.3 Abnormal Conditions

Void.

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### 9.2.11 Location Reporting Messages

#### 9.2.11.1 LOCATION REPORTING CONTROL

This message is used by the AMF to request the NG-RAN node to report the location of the UE.

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 | ignore |
| AMF UE NGAP ID | M |  | 9.3.3.1 |  | YES | reject |
| RAN UE NGAP ID | M |  | 9.3.3.2 |  | YES | reject |
| Location Reporting Request Type | M |  | 9.3.1.65 |  | YES | ignore |

#### 9.2.11.2 LOCATION REPORTING FAILURE INDICATION

This message is sent by the NG-RAN node and is used to indicate the failure of location reporting.

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 |
| AMF UE NGAP ID | M |  | 9.3.3.1 |  | YES | reject |
| RAN UE NGAP ID | M |  | 9.3.3.2 |  | YES | reject |
| Cause | M |  | 9.3.1.2 |  | YES | ignore |
| Aerial UE flight information reporting failed (FFS) | O |  | ENUMERATED(true, …) | This is Option 1 for the “failure handling”. | YES | ignore |

#### 9.2.11.3 LOCATION REPORT

This message is used to provide the UE's location.

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 |
| AMF UE NGAP ID | M |  | 9.3.3.1 |  | YES | reject |
| RAN UE NGAP ID | M |  | 9.3.3.2 |  | YES | reject |
| User Location Information | M |  | 9.3.1.16 |  | YES | ignore |
| UE Presence in Area of Interest List | O |  | 9.3.1.67 |  | YES | ignore |
| Location Reporting Request Type | M |  | 9.3.1.65 | Contains the Location Reporting Request Type to which the Location Report refers. | YES | ignore |

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Skip to Next Change \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

#### 9.3.1.16 User Location Information

This IE is used to provide location information of the UE and the flight information of the Aerial UE.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| IE/Group Name | | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| CHOICE *User Location Information* | | M |  |  |  | - |  |
| *>E-UTRA user location information* | |  |  |  |  |  |  |
| >>E-UTRA CGI | | M |  | 9.3.1.9 |  | - |  |
| >>TAI | | M |  | 9.3.3.11 |  | - |  |
| >>Age of Location | | O |  | Time Stamp  9.3.1.75 | Indicates the UTC time when the location information was generated. | - |  |
| >>PSCell Information | | O |  | NG-RAN CGI  9.3.1.73 |  | YES | ignore |
| *>NR user location information* | |  |  |  |  |  |  |
| >>NR CGI | | M |  | 9.3.1.7 |  | - |  |
| >>TAI | | M |  | 9.3.3.11 | This IE is ignored if the NR NTN TAI Information IE is present. | - |  |
| >>Age of Location | | O |  | Time Stamp  9.3.1.75 | Indicates the UTC time when the location information was generated. | - |  |
| >>PSCell Information | | O |  | NG-RAN CGI  9.3.1.73 |  | YES | ignore |
| >>NID | | O |  | 9.3.3.42 |  | YES | reject |
| >>NR NTN TAI Information | | O |  | 9.3.3.53 |  | YES | ignore |
| >>Mobile IAB-MT User Location Information | | O |  | 9.3.1.260 | Indicates the user location information of a mobile IAB-MT, which is co-located with the mobile IAB-DU which serves the UE. | YES | ignore |
| >> Aerial UE Flight information Reporting | O |  | 9.3.1.xx |  | YES | ignore |
| >> Aerial UE Flight information Reporting Stopped (FFS) | O |  | ENUMERATED (true, …) | This is Failure Reproting Option 2 | YES | ignore |
| *>N3IWF user location information with port number* | |  |  |  |  |  |  |
| >>IP Address | | M |  | Transport Layer Address  9.3.2.4 | UE's local IP address used to reach the N3IWF | - |  |
| >>Port Number | | M |  | OCTET STRING  (SIZE(2)) | UDP source port number if NAT is detected. | - |  |
| >>TAI | | O |  | 9.3.3.11 |  | YES | ignore |
| *>TNGF user location information* | |  |  |  |  | YES | ignore |
| >>TNAP ID | | M |  | OCTET STRING | TNAP Identifier used to identify the TNAP. Details in TS 29.571 [35]. | - |  |
| >>IP Address | | M |  | Transport Layer Address  9.3.2.4 | UE's local IP address used to reach the TNGF. | - |  |
| >>Port Number | | O |  | OCTET STRING  (SIZE(2)) | UDP source port number if NAT is detected. | - |  |
| >>TAI | | O |  | 9.3.3.11 |  | YES | ignore |
| *>TWIF user location information* | |  |  |  |  | YES | ignore |
| >>TWAP ID | | M |  | OCTET STRING | TWAP Identifier used to identify the TWAP. Details in TS 29.571 [35]. | - |  |
| >>IP Address | | M |  | Transport Layer Address  9.3.2.4 | Non-5G-Capable over WLAN device's local IP address used to reach the TWIF. | - |  |
| >>Port Number | | O |  | OCTET STRING  (SIZE(2)) | UDP source port number if NAT is detected. | - |  |
| >>TAI | | O |  | 9.3.3.11 |  | YES | ignore |
| *>W-AGF user location information* | |  |  |  | Indicates the location information via wireline access as specified in TS 23.316 [34]. | YES | ignore |
| >>W-AGF user location information | | M |  | 9.3.1.164 |  | - |  |
| *>N3IWF user location information without port number* | |  |  |  |  | YES | ignore |
| >>IP Address | | M |  | Transport Layer Address  9.3.2.4 | UE's local IP address used to reach the N3IWF. | - |  |
| >>TAI | | O |  | 9.3.3.11 |  | - |  |

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Skip to Next Change \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

#### 9.3.1.65 Location Reporting Request Type

This IE indicates the type of location request to be handled by the NG-RAN node.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| Event Type | M |  | ENUMERATED (direct, change of serving cell, UE presence in the area of interest, stop change of serving cell, stop UE presence in the area of interest, cancel location reporting for the UE, … change of serving cell and UE presence in the area of interest,  report the Aerial UE flight information, cancel the Aerial UE flight information reporting) |  | - |  |
| Report Area | M |  | ENUMERATED (cell, …) |  | - |  |
| **Area of Interest List** |  | *0..1* |  |  | - |  |
| **>Area of Interest Item** |  | *1..<maxnoofAoI>* |  |  | - |  |
| >>Area of Interest | M |  | 9.3.1.66 |  | - |  |
| >>Location Reporting Reference ID | M |  | 9.3.1.76 |  | - |  |
| Location Reporting Reference ID to be Cancelled | C- ifEventTypeisStopUEPresinAoI |  | Location Reporting Reference ID  9.3.1.76 |  | - |  |
| Additional Location Information | O |  | ENUMERATED (Include PSCell, ...) |  | YES | ignore |
| **Additional Cancelled Location Reporting Reference ID List** |  | *0..1* |  |  | YES | reject |
| **>Additional Cancelled Location Reporting Reference ID Item** |  | *1..<maxnoofAoIMinusOne>* |  |  | - |  |
| >>Location Reporting Reference ID to be Cancelled | M |  | Location Reporting Reference ID  9.3.1.76 |  | - |  |
| Aerial UE Flight Information Reporting Control | O |  | 9.3.1.yy | . | YES | ignore |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofAoI | Maximum no. of areas of interest. Value is 64. |
| maxnoofAoIMinusOne | Maximum no. of areas of interest minus one. Value is 63. |

|  |  |
| --- | --- |
| Condition | Explanation |
| ifEventTypeisStopUEPresinAoI | This IE shall be present if the *Event Type* IE is set to the value "stop UE presence in the area of interest". |

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Skip to Next Change \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

#### 9.3.1.2 Cause

The purpose of the *Cause* IE is to indicate the reason for a particular event for the NGAP protocol.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| CHOICE *Cause Group* | M |  |  |  |
| *>Radio Network Layer* |  |  |  |  |
| >>Radio Network Layer Cause | M |  | ENUMERATED (Unspecified,  TXnRELOCOverall expiry,  Successful handover,  Release due to NG-RAN generated reason,  Release due to 5GC generated reason,  Handover cancelled,  Partial handover,  Handover failure in target 5GC/NG-RAN node or target system,  Handover target not allowed,  TNGRELOCoverall expiry,  TNGRELOCprep expiry,  Cell not available,  Unknown target ID,  No radio resources available in target cell,  Unknown local UE NGAP ID,  Inconsistent remote UE NGAP ID,  Handover desirable for radio reasons,  Time critical handover,  Resource optimisation handover,  Reduce load in serving cell,  User inactivity,  Radio connection with UE lost,  Radio resources not available,  Invalid QoS combination,  Failure in the radio interface procedure,  Interaction with other procedure,  Unknown PDU Session ID,  Unknown QoS Flow ID,  Multiple PDU Session ID Instances,  Multiple QoS Flow ID Instances,  Encryption and/or integrity protection algorithms not supported,  NG intra-system handover triggered,  NG inter-system handover triggered,  Xn handover triggered,  Not supported 5QI value,  UE context transfer,  IMS voice EPS fallback or RAT fallback triggered,  UP integrity protection not possible,  UP confidentiality protection not possible,  Slice(s) not supported,  UE in RRC\_INACTIVE state not reachable,  Redirection,  Resources not available for the slice(s),  UE maximum integrity protected data rate reason,  Release due to CN-detected mobility,  …, N26 interface not available, Release due to pre-emption,Multiple Location Reporting Reference ID Instances,  RSN not available for the UP,  NPN access denied,  CAG only access denied, Insufficient UE Capabilities, RedCap UE not supported,  Unknown MBS Session ID,  Indicated MBS Session Area Information not served by the gNB,  Inconsistent slice info for the session,  Misaligned association for the multicast and unicast sessions or flows,  eRedCap UE not supported,  2Rx XR UE not supported, Aerial UE Flight Information Reporting Request failed) |  |
| *>Transport Layer* |  |  |  |  |
| >>Transport Layer Cause | M |  | ENUMERATED (Transport resource unavailable,  Unspecified, …) |  |
| *>NAS* |  |  |  |  |
| >>NAS Cause | M |  | ENUMERATED  (Normal release,  Authentication failure,  Deregister,  Unspecified,  …, UE not in PLMN serving area,  Mobile IAB not authorized,  IAB not authorized) |  |
| *>Protocol* |  |  |  |  |
| >>Protocol Cause | M |  | ENUMERATED (Transfer syntax error, Abstract syntax error (reject), Abstract syntax error (ignore and notify), Message not compatible with receiver state,  Semantic error,  Abstract syntax error (falsely constructed message),  Unspecified,  …) |  |
| *>Miscellaneous* |  |  |  |  |
| >>Miscellaneous Cause | M |  | ENUMERATED (Control processing overload,  Not enough user plane processing resources, Hardware failure, O&M intervention, Unknown PLMN or SNPN,  Unspecified,  …) |  |

The meaning of the different cause values is described in the following tables. In general, "not supported" cause values indicate that the related capability is missing. On the other hand, "not available" cause values indicate that the related capability is present, but insufficient resources were available to perform the requested action.

| Radio Network Layer cause | Meaning |
| --- | --- |
| Unspecified | Sent for radio network layer cause when none of the specified cause values applies. |
| TXnRELOCOverall expiry | The timer guarding the handover that takes place over Xn has abnormally expired. |
| Successful handover | Successful handover. |
| Release due to NG-RAN generated reason | Release is initiated due to NG-RAN generated reason. |
| Release due to 5GC generated reason | Release is initiated due to 5GC generated reason. |
| Handover cancelled | The reason for the action is cancellation of Handover. |
| Partial handover | Provides a reason for the handover cancellation. The HANDOVER COMMAND message from AMF contained *PDU Session Resource to Release List* IEor *QoS flow to Release List* and the source NG-RAN node estimated service continuity for the UE would be better by not proceeding with handover towards this particular target NG-RAN node. |
| Handover failure in target 5GC/ NG-RAN node or target system | The handover failed due to a failure in target 5GC/NG-RAN node or target system. |
| Handover target not allowed | Handover to the indicated target cell is not allowed for the UE in question. |
| TNGRELOCoverall expiry | The reason for the action is expiry of timer TNGRELOCoverall. |
| TNGRELOCprep expiry | Handover Preparation procedure is cancelled when timer TNGRELOCprep expires. |
| Cell not available | The concerned cell is not available. |
| Unknown target ID | Handover rejected because the target ID is not known to the AMF. |
| No radio resources available in target cell | Load on target cell is too high. |
| Unknown local UE NGAP ID | The action failed because the receiving node does not recognise the local UE NGAP ID. |
| Inconsistent remote UE NGAP ID | The action failed because the receiving node considers that the received remote UE NGAP ID is inconsistent. |
| Handover desirable for radio reasons | The reason for requesting handover is radio related. |
| Time critical handover | Handover is requested for time critical reason i.e., this cause value is reserved to represent all critical cases where the connection is likely to be dropped if handover is not performed. |
| Resource optimisation handover | The reason for requesting handover is to improve the load distribution with the neighbour cells. |
| Reduce load in serving cell | Load on serving cell needs to be reduced. When applied to handover preparation, it indicates the handover is triggered due to load balancing. |
| User inactivity | The action is requested due to inactivity on all user data radio bearers (i.e., DRBs and, if applicable, MRBs as per section 16.10.5.2 in TS 38.300 [8]), e.g., NG is requested to be released in order to optimise the radio resources. For L2 U2N Relay UE, this action is requested due to user inactivity on all PDU sessions of L2 U2N Relay UE and its served remote UE(s). |
| Radio connection with UE lost | The action is requested due to losing the radio connection to the UE. |
| Radio resources not available | No requested radio resources are available. |
| Invalid QoS combination | The action was failed because of invalid QoS combination. |
| Failure in the radio interface procedure | Radio interface procedure has failed. |
| Interaction with other procedure | The action is due to an ongoing interaction with another procedure. |
| Unknown PDU Session ID | The action failed because the PDU Session ID is unknown in the NG-RAN node. |
| Unknown QoS Flow ID | The action failed because the QoS Flow ID is unknown in the NG-RAN node. |
| Multiple PDU Session ID instances | The action failed because multiple instances of the same PDU Session had been provided to/from the NG-RAN node. |
| Multiple QoS Flow ID instances | The action failed because multiple instances of the same QoS flow had been provided to the NG-RAN node. |
| Encryption and/or integrity protection algorithms not supported | The NG-RAN node is unable to support any of the encryption and/or integrity protection algorithms supported by the UE. |
| NG intra-system handover triggered | The action is due to a NG intra-system handover that has been triggered. |
| NG inter-system handover triggered | The action is due to a NG inter-system handover that has been triggered. |
| Xn handover triggered | The action is due to an Xn handover that has been triggered. |
| Not supported 5QI value | The QoS flow setup failed because the requested 5QI is not supported. |
| UE context transfer | The action is due to a UE resumes from the NG-RAN node different from the one which sent the UE into RRC\_INACTIVE state. |
| IMS voice EPS fallback or RAT fallback triggered | The setup of QoS flow is failed due to EPS fallback or RAT fallback for IMS voice using handover or redirection. |
| UP integrity protection not possible | The PDU session cannot be accepted according to the required user plane integrity protection policy. |
| UP confidentiality protection not possible | The PDU session cannot be accepted according to the required user plane confidentiality protection policy. |
| Slice(s) not supported | Slice(s) not supported. |
| UE in RRC\_INACTIVE state not reachable | The action is requested due to RAN paging failure. |
| Redirection | The release is requested due to inter-system redirection or intra-system redirection. |
| Resources not available for the slice(s) | The requested resources are not available for the slice(s). |
| UE maximum integrity protected data rate reason | The request is not accepted in order to comply with the maximum data rate for integrity protection supported by the UE. |
| Release due to CN-detected mobility | The context release is requested by the AMF because the UE is already served by another CN node (same or different system), or another NG interface of the same CN node. |
| N26 interface not available | The action failed due to a temporary failure of the N26 interface. |
| Release due to pre-emption | Release is initiated due to pre-emption. |
| Multiple Location Reporting Reference ID Instances | The action failed because multiple areas of interest are set with the same Location Reporting Reference ID. |
| RSN not available for the UP | The redundant user plane resources indicated by RSN are not available. |
| NPN access denied | Access was denied, or release is requested, for NPN reasons. |
| CAG only access denied | Access was denied because the cell is a non-CAG cell and UE is only allowed to access CAG cells. |
| Insufficient UE Capabilities | The procedure can’t proceed due to insufficient UE capabilities. |
| RedCap UE not supported | The action failed because target NG-RAN node does not support RedCap UE. |
| Unknown MBS Session ID | The action failed because the MBS Session ID is unknown. |
| Indicated MBS Service Area Information not served by the gNB | The action failed because none of the cells in the indicated MBS Service Area Information are served by the NG-RAN node. |
| Inconsistent slice info for the session | The action failed because the slice info of the multicast session is inconsistent. |
| Misaligned association for the multicast and unicast sessions or flows | The action failed because the Associated Unicast QoS Flow ID has already been used, or the Associated Unicast QoS Flow ID is not defined, or the Associated Unicast QoS Flow ID is not released, or multiple MBS QoS flows associated to the same unicast QoS flow, or same multicast session associated to multiple PDU Sessions. |
| eRedCap UE not supported | The action failed because target NG-RAN node does not support eRedCap UE. |
| 2Rx XR UE not supported | The action failed because target NG-RAN node does not support 2Rx XR UE. |
| Aerial UE Flight Information Reporting Request failed | The action failed due to NG-RAN node failed to perform Aerial UE Flight Information Reporting. (FFS: Option 2 for Failure handling) |

|  |  |
| --- | --- |
| Transport Layer cause | Meaning |
| Transport resource unavailable | The required transport resources are not available. |
| Unspecified | Sent when none of the specified cause values applies but still the cause is Transport Network Layer related. |

|  |  |
| --- | --- |
| NAS cause | Meaning |
| Normal release | The release is normal. |
| Authentication failure | The action is due to authentication failure. |
| Deregister | The action is due to deregister. |
| Unspecified | Sent when none of the specified cause values applies but still the cause is NAS related. |
| UE not in PLMN serving area | The release is due to the UE not being within the serving area of its current PLMN (for NTN). |
| Mobile IAB not authorized | The release is due to the NG-RAN node having completed the operation for a non-authorized mobile IAB-node. |
| IAB not authorized | The action is requested due to the NG-RAN node having completed the operation for a non-authorized IAB-node. |

|  |  |
| --- | --- |
| Protocol cause | Meaning |
| Transfer syntax error | The received message included a transfer syntax error. |
| Abstract syntax error (reject) | The received message included an abstract syntax error and the concerning criticality indicated "reject". |
| Abstract syntax error (ignore and notify) | The received message included an abstract syntax error and the concerning criticality indicated "ignore and notify". |
| Message not compatible with receiver state | The received message was not compatible with the receiver state. |
| Semantic error | The received message included a semantic error. |
| Abstract syntax error (falsely constructed message) | The received message contained IEs or IE groups in wrong order or with too many occurrences. |
| Unspecified | Sent when none of the specified cause values applies but still the cause is Protocol related. |

|  |  |
| --- | --- |
| Miscellaneous cause | Meaning |
| Control processing overload | Control processing overload. |
| Not enoughuser plane processing resources | Not enough resources are available related to user plane processing. |
| Hardware failure | Action related to hardware failure. |
| O&M intervention | The action is due to O&M intervention. |
| Unknown PLMN or SNPN | The AMF does not identify any PLMN or SNPN provided by the NG-RAN node. |
| Unspecified failure | Sent when none of the specified cause values applies and the cause is not related to any of the categories Radio Network Layer, Transport Network Layer, NAS or Protocol. |

#### 9.3.1.xx Aerial UE Flight information Reporting

This IE contains the aerial UE altitude reporting information.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| Altitude | M |  | 9.3.1.ZZ |  |
| Time Stamp | M |  | 9.3.1.75 | Indicates the UTC time when the aerial UE flight information is received. |

#### 9.3.1.yy Aerial UE Flight Information Reporting Control

This IE indicates Aerial UE flight information reporting information.

| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| --- | --- | --- | --- | --- |
| Higher Altitude Threshold | M |  | Altitude  9.3.1.ZZ | Indicates the higher altitude threshold information for the Aerial UE reporting. |
| Lower Altitude Threshold | M |  | Altitude  9.3.1.ZZ | Indicates the lower altitude threshold information for the Aerial UE reporting. |
| Reporting Periodicity | O |  | ENUMERATED {ms120, ms240, ms480, ms640, ms1024, ms2048, ms5120, ms10240, ms20480, ms40960, min1, min6, min12, min30, …} | Indicates the periodicity of the Aerial UE reporting. |

#### 9.3.1.ZZ Altitude

This IE contains Altitude information.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| Altitude | M |  | INTEGER  (-420..10000, ...) | Aerial UE altitude information as specified in TS 38.331[18]. The unit of this IE is meter |

\*\*\*\*\*\*ASN.1 Code will be updated depends on if Option 1 or Option 2 for Failure handling is agreed. \*\*\*\*\*\*

### 

### 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

A2X-PC5-QoS-Parameters,

AerialUEsubscriptionInformation,

AllowedNSSAI,

AMFName,

AMFSetID,

AMF-TNLAssociationSetupList,

AMF-TNLAssociationToAddList,

AMF-TNLAssociationToRemoveList,

AMF-TNLAssociationToUpdateList,

AMF-UE-NGAP-ID,

AssistanceDataForPaging,

AssociatedSessionID,

AUN3DeviceAccessInfo,

AuthenticatedIndication,

BroadcastCancelledAreaList,

BroadcastCompletedAreaList,

BroadcastTransportFailureTransfer,

BroadcastTransportRequestTransfer,

BroadcastTransportResponseTransfer,

CancelAllWarningMessages,

Cause,

CellIDListForRestart,

CEmodeBrestricted,

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Skip to Next Change \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

id-ServedGUAMIList,

id-SliceSupportList,

id-S-NSSAI,

id-SONConfigurationTransferDL,

id-SONConfigurationTransferUL,

id-SourceAMF-UE-NGAP-ID,

id-SourceToTarget-AMFInformationReroute,

id-SourceToTarget-TransparentContainer,

id-SRVCCOperationPossible,

id-SupportedTAList,

id-Suspend-Request-Indication,

id-Suspend-Response-Indication,

id-TAI,

id-TAIListForPaging,

id-TAIListForRestart,

id-TargetID,

id-TargetNSSAIInformation,

id-TargettoSource-Failure-TransparentContainer,

id-TargetToSource-TransparentContainer,

id-TimeSyncAssistanceInfo,

id-TimeToWait,

id-TNGFIdentityInformation,

id-TraceActivation,

id-TraceCollectionEntityIPAddress,

id-TraceCollectionEntityURI,

id-TWIFIdentityInformation,

id-UEAggregateMaximumBitRate,

id-UE-associatedLogicalNG-connectionList,

id-UECapabilityInfoRequest,

id-UEContextRequest,

id-UE-DifferentiationInfo,

id-UE-NGAP-IDs,

id-UEPagingIdentity,

id-UEPresenceInAreaOfInterestList,

id-UERadioCapability,

id-UERadioCapability-EUTRA-Format,

id-UERadioCapabilityForPaging,

id-UERadioCapabilityID,

id-UERetentionInformation,

id-UESecurityCapabilities,

id-UESliceMaximumBitRateList,

id-UE-UP-CIoT-Support,

id-UL-CP-SecurityInformation,

id-UnavailableGUAMIList,

id-UserLocationInformation,

id-W-AGFIdentityInformation,

id-WarningAreaCoordinates,

id-WarningAreaList,

id-WarningMessageContents,

id-WarningSecurityInfo,

id-WarningType,

id-WUS-Assistance-Information,

id-XrDeviceWith2Rx,

id-SLPositioningRangingServiceInfo,

id-Aerial-UE-FlightInformationReporting-failed

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Skip to Next Change \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

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

--

-- LOCATION REPORTING FAILURE INDICATION

--

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

LocationReportingFailureIndication ::= SEQUENCE {

protocolIEs ProtocolIE-Container { {LocationReportingFailureIndicationIEs} },

...

}

LocationReportingFailureIndicationIEs NGAP-PROTOCOL-IES ::= {

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

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

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

{ ID id-Aerial-UE-FlightInformationReporting-failed CRITICALITY ignore TYPE Aerial-UE-FlightInformationReporting-failed PRESENCE optional}|,

...

}

Aerial-UE-FlightInformationReporting-failed::= ENUMERATED {

true,

...

}

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Skip to 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-AdditionalRedundantDL-NGU-UP-TNLInformation,

id-AdditionalRedundantDLQosFlowPerTNLInformation,

id-AdditionalRedundantNGU-UP-TNLInformation,

id-AdditionalRedundantUL-NGU-UP-TNLInformation,

id-AdditionalUL-NGU-UP-TNLInformation,

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Skip to Next Change \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

id-MN-only-MDT-collection,

id-XrDeviceWith2Rx,

id-MaximumDataBurstVolume,

id-MBS-NGUFailureIndication,

id-UserPlaneFailureIndication,

id-UserPlaneFailureIndicationReport,

id-QoERVQoEReportingPaths,

id-UserLocationInformationN3IWF-without-PortNumber,

id-Aerial-UE-FlightInformationReporting，

id-Aerial-UE-FlightInformationReportingContol，

maxnoofAllowedAreas,

maxnoofAllowedCAGsperPLMN,

maxnoofAllowedS-NSSAIs,

maxnoofAoIMinusOne,

maxnoofBluetoothName,

maxnoofBPLMNs,

maxnoofCAGforMDT,

maxnoofCAGSperCell,

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Skip to Next Change \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

EventType ::= ENUMERATED {

direct,

change-of-serve-cell,

ue-presence-in-area-of-interest,

stop-change-of-serve-cell,

stop-ue-presence-in-area-of-interest,

cancel-location-reporting-for-the-ue,

...,

change-of-serving-cell-and-UE-presence-in-the-Area-of-Interest,

report-the-Aerial-UE-flight-information,

cancel-the-Aerial-UE-flight-information-reporting

}

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Skip to Next Change \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

LocationReportingRequestType ::= SEQUENCE {

eventType EventType,

reportArea ReportArea,

areaOfInterestList AreaOfInterestList OPTIONAL,

locationReportingReferenceIDToBeCancelled LocationReportingReferenceID OPTIONAL,

-- The above IE shall be present if the Event Type IE is set to the value “stop UE presence in the area of interest”

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

...

}

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

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

{ ID id-AdditionalCancelledlocationReportingReferenceIDList CRITICALITY reject EXTENSION AdditionalCancelledlocationReportingReferenceIDList PRESENCE optional }|

{ ID id-Aerial-UE-FlightInformationReportingContol CRITICALITY ignore EXTENSION Aerial-UE-FlightInformationReportingContol PRESENCE optional},

...

}

Aerial-UE-FlightInformationReportingContol ::= SEQUENCE {

higher-Altitude-Threshold Altitude,

lower-Altitude-Threshold Altitude,

report-periodicity ReportingPeriodicity OPTIONAL,

iE-Extensions ProtocolExtensionContainer { {Aerial-UE-FlightInformationReportingContol-ExtIEs}} OPTIONAL,

...

}

Aerial-UE-FlightInformationReportingContol-ExtIEs NGAP-PROTOCOL-EXTENSION ::= {

...

}

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Skip to Next Change \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

UserLocationInformation ::= CHOICE {

userLocationInformationEUTRA UserLocationInformationEUTRA,

userLocationInformationNR UserLocationInformationNR,

userLocationInformationN3IWF-with-PortNumber UserLocationInformationN3IWF-with-PortNumber,

choice-Extensions ProtocolIE-SingleContainer { {UserLocationInformation-ExtIEs} }

}

UserLocationInformation-ExtIEs NGAP-PROTOCOL-IES ::= {

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

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

{ ID id-UserLocationInformationW-AGF CRITICALITY ignore TYPE UserLocationInformationW-AGF PRESENCE mandatory }|

{ ID id-UserLocationInformationN3IWF-without-PortNumber CRITICALITY ignore TYPE UserLocationInformationN3IWF-without-PortNumber PRESENCE mandatory },

...

}

UserLocationInformationEUTRA ::= SEQUENCE {

eUTRA-CGI EUTRA-CGI,

tAI TAI,

timeStamp TimeStamp OPTIONAL,

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

...

}

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

{ ID id-PSCellInformation CRITICALITY ignore EXTENSION NGRAN-CGI PRESENCE optional},

...

}

UserLocationInformationN3IWF-with-PortNumber ::= SEQUENCE {

iPAddress TransportLayerAddress,

portNumber PortNumber,

iE-Extensions ProtocolExtensionContainer { {UserLocationInformationN3IWF-with-PortNumber-ExtIEs} } OPTIONAL,

...

}

UserLocationInformationN3IWF-with-PortNumber-ExtIEs NGAP-PROTOCOL-EXTENSION ::= {

{ ID id-TAI CRITICALITY ignore EXTENSION TAI PRESENCE optional },

...

}

UserLocationInformationN3IWF-without-PortNumber ::= SEQUENCE {

iPAddress TransportLayerAddress,

tAI TAI OPTIONAL,

iE-Extensions ProtocolExtensionContainer { { UserLocationInformationN3IWF-without-PortNumber-ExtIEs} } OPTIONAL,

...

}

UserLocationInformationN3IWF-without-PortNumber-ExtIEs NGAP-PROTOCOL-EXTENSION ::= {

...

}

UserLocationInformationTNGF ::= SEQUENCE {

tNAP-ID TNAP-ID,

iPAddress TransportLayerAddress,

portNumber PortNumber OPTIONAL,

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

...

}

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

{ ID id-TAI CRITICALITY ignore EXTENSION TAI PRESENCE optional },

...

}

UserLocationInformationTWIF ::= SEQUENCE {

tWAP-ID TWAP-ID,

iPAddress TransportLayerAddress,

portNumber PortNumber OPTIONAL,

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

...

}

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

{ ID id-TAI CRITICALITY ignore EXTENSION TAI PRESENCE optional },

...

}

UserLocationInformationW-AGF ::= CHOICE {

globalLine-ID GlobalLine-ID,

hFCNode-ID HFCNode-ID,

choice-Extensions ProtocolIE-SingleContainer { { UserLocationInformationW-AGF-ExtIEs} }

}

UserLocationInformationW-AGF-ExtIEs NGAP-PROTOCOL-IES ::= {

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

{ ID id-HFCNode-ID-new CRITICALITY ignore TYPE HFCNode-ID-new PRESENCE mandatory }|

{ ID id-GlobalCable-ID-new CRITICALITY ignore TYPE GlobalCable-ID-new PRESENCE mandatory },

...

}

UserLocationInformationNR ::= SEQUENCE {

nR-CGI NR-CGI,

tAI TAI,

timeStamp TimeStamp OPTIONAL,

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

...

}

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

{ ID id-PSCellInformation CRITICALITY ignore EXTENSION NGRAN-CGI PRESENCE optional }|

{ ID id-NID CRITICALITY reject EXTENSION NID PRESENCE optional }|

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

{ ID id-MobileIAB-MTUserLocationInformation CRITICALITY ignore EXTENSION MobileIAB-MTUserLocationInformation PRESENCE optional }|

{ ID id-Aerial-UE-FlightInformationReporting CRITICALITY ignore EXTENSION Aerial-UE-FlightInformationReporting PRESENCE optional },

...

}

Aerial-UE-FlightInformationReporting ::= SEQUENCE {

altitude Altitude,

timeStamp TimeStamp,

iE-Extensions ProtocolExtensionContainer { {Aerial-UE-FlightInformationReporting -ExtIEs} } OPTIONAL,

...

}

Aerial-UE-FlightInformationReporting -ExtIEs NGAP-PROTOCOL-EXTENSION ::= {

...

}

Altitude ::= INTEGER (-420..10000, ...)

ReportingPeriodicity ::= ENUMERATED {ms120, ms240, ms480, ms640, ms1024, ms2048, ms5120, ms10240, ms20480, ms40960, min1, min6, min12, min30, ...}

### 9.4.7 Constant Definitions

-- ASN1START

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

--

-- Constant definitions

--

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

NGAP-Constants {

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

ngran-Access (22) modules (3) ngap (1) version1 (1) ngap-Constants (4) }

DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

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

--

-- IE parameter types from other modules.

--

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

IMPORTS

ProcedureCode,

ProtocolIE-ID

FROM NGAP-CommonDataTypes;

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Skip to Next Change \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

id-UserPlaneFailureIndication ProtocolIE-ID ::= 435

id-UserPlaneFailureIndicationReport ProtocolIE-ID ::= 436

id-SourceSN-to-TargetSN-QMCInfo ProtocolIE-ID ::= 437

id-QoERVQoEReportingPaths ProtocolIE-ID ::= 438

id-UserLocationInformationN3IWF-without-PortNumber ProtocolIE-ID ::= 439

id-AUN3DeviceAccessInfo ProtocolIE-ID ::= 440

id-Aerial-UE-FlightInformationReporting-failed ProtocolIE-ID ::= 4xx

id-Aerial-UE-FlightInformationReporting ProtocolIE-ID ::= 4xy

id-Aerial-UE-FlightInformationReportingContol ProtocolIE-ID ::= 4xz

END

-- ASN1STOP