**3GPP T****SG-RAN WG3 Meeting RAN3#122 R3-23xxxx**

**Chicago, US, 13 - 17 November, 2023**

**Agenda item:** 19.2

**Source:** ZTE, CMCC, CATT, China Telecom, Nokia, Nokia Shanghai Bell

**Title:** TP to TS 38.423 BLCR for A2X service supporting and flightpath information modification

Document for: Discussion and Approval

# Introduction

This contribution provides TP to BLCR TS 38.423 for A2X communication supporting and flightpath info modification.

# TP to BLCR TS 38.423

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# 2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non‑specific.

- For a specific reference, subsequent revisions do not apply.

- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[2] 3GPP TS 38.401: "NG-RAN; Architecture Description".

[3] 3GPP TS 38.420: "NG-RAN; Xn General Aspects and Principles".

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[55] 3GPP TS 28.405: "Telecommunication management; Quality of Experience (QoE) measurement collection; Control and configuration".

[X] 3GPP TS 23.256: "Support of Uncrewed Aerial Systems (UAS) connectivity, identification and tracking; Stage 2".

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8.2 Basic mobility procedures

8.2.1 Handover Preparation

8.2.1.1 General

This procedure is used to establish necessary resources in an NG-RAN node for an incoming handover. If the procedure concerns a conditional handover, parallel transactions are allowed. Possible parallel requests are identified by the target cell ID when the source UE AP IDs are the same.

The procedure uses UE-associated signalling.

8.2.1.2 Successful Operation



Figure 8.2.1.2-1: Handover Preparation, successful operation

The source NG-RAN node initiates the procedure by sending the HANDOVER REQUEST message to the target NG-RAN node. When the source NG-RAN node sends the HANDOVER REQUEST message, it shall start the timer TXnRELOCprep.

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V2X:

- If the *NR V2X Services Authorized* IE is included in the HANDOVER REQUEST message and it contains one or more IEs set to "authorized", the target NG-RAN node shall, if supported, consider that the UE is authorized for the relevant service(s).

- If the *LTE V2X Services Authorized* IE is included in the HANDOVER REQUEST message and it contains one or more IEs set to "authorized", the target NG-RAN node shall, if supported, consider that the UE is authorized for the relevant service(s).

- If the *NR UE Sidelink Aggregate Maximum Bit Rate* IE is included in the HANDOVER REQUEST message, the target NG-RAN node shall, if supported, use the received value for the concerned UE’s sidelink communication in network scheduled mode for NR V2X services.

- If the *LTE UE Sidelink Aggregate Maximum Bit Rate* IE is included in the HANDOVER REQUEST message, the target NG-RAN node shall, if supported, use the received value for the concerned UE’s sidelink communication in network scheduled mode for LTE V2X services.

A2X:

- If the *NR A2X Services Authorized* IE is included in the HANDOVER REQUEST message and it contains one or more IEs set to "authorized", the target NG-RAN node shall, if supported, consider that the UE is authorized for the relevant service(s).

- If the *LTE A2X Services Authorized* IE is included in the HANDOVER REQUEST message and it contains one or more IEs set to "authorized", the target NG-RAN node shall, if supported, consider that the UE is authorized for the relevant service(s).

- If the *NR A2X UE PC5 Aggregate Maximum Bit Rate* IE is included in the HANDOVER REQUEST message, the target NG-RAN node shall, if supported, use the received value for the concerned UE’s sidelink communication in network scheduled mode for NR A2X services.

- If the *LTE A2X UE PC5 Aggregate Maximum Bit Rate* IE is included in the HANDOVER REQUEST message, the target NG-RAN node shall, if supported, use the received value for the concerned UE’s sidelink communication in network scheduled mode for LTE A2X services.

- If the *A2X PC5 QoS Parameters* IE is included in theHANDOVER REQUEST message, the target NG-RAN node shall, if supported, use it as defined in TS 23.256 [x].

5G ProSe:

- If the *5G ProSe Authorized* IE is included in the HANDOVER REQUEST message and it contains one or more IEs set to "authorized", the target NG-RAN node shall, if supported, consider that the UE is authorized for the relevant service(s).

- If the *5G ProSe UE PC5 Aggregate Maximum Bit Rate* IE is included in the HANDOVER REQUEST message, the target NG-RAN node shall, if supported, use the received value for the concerned UE’s sidelink communication in network scheduled mode for 5G ProSe services.

- If the *5G ProSe PC5 QoS Parameters* IE is included in theHANDOVER REQUEST message, the target NG-RAN node shall, if supported, use it as defined in TS 23.304 [48].

If the *PC5 QoS Parameters* IE is included in theHANDOVER REQUEST message, the target NG-RAN node shall, if supported, use it as defined in TS 23.287 [38].

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If the *PC5 QoS Parameters* IE is included in theHANDOVER REQUEST message, the target NG-RAN node shall, if supported, use it as defined in TS 23.287 [38].

If the *Aerial UE Subscription Information* IE is included in the HANDOVER REQUEST message, the target NG-RAN node shall, if supported, store this information in the UE context and use it as defined in TS 38.300 [9].

If the *DAPS Request Information* IE is included for a given DRB in the HANDOVER REQUEST message, the target NG-RAN node shall consider that the request concerns a DAPS handover for that DRB, as described in TS 38.300 [9]. Accordingly, the target NG-RAN node shall include the *DAPS Response Information* IE in the HANDOVER REQUEST ACKNOWLEDGE message.

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8.2.4 Retrieve UE Context

8.2.4.1 General

The purpose of the Retrieve UE Context procedure is to either retrieve the UE context from the old NG-RAN node and transfer it to the NG-RAN node where the UE RRC Connection has been requested to be established, or to enable the old NG-RAN node to forward an RRC message to the UE via the new NG-RAN node without context transfer, or to request for small data transmission.

The procedure uses UE-associated signalling.

8.2.4.2 Successful Operation



Figure 8.2.4.2-1: Retrieve UE Context, successful operation

The new NG-RAN node initiates the procedure by sending the RETRIEVE UE CONTEXT REQUEST message to the old NG-RAN node.

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V2X:

- If the *NR V2X Services Authorized* IE is included in the RETRIEVE UE CONTEXT RESPONSE message and it contains one or more IEs set to "authorized", the new NG-RAN node shall, if supported, consider that the UE is authorized for the relevant service(s).

- If the *LTE V2X Services Authorized* IE is included in the RETRIEVE UE CONTEXT RESPONSE message and it contains one or more IEs set to "authorized", the new NG-RAN node shall, if supported, consider that the UE is authorized for the relevant service(s).

- If the *NR UE Sidelink Aggregate Maximum Bit Rate* IE is included in the *UE Context Information Retrieve UE Context Response* IE in the RETRIEVE UE CONTEXT RESPONSE message, the new NG-RAN node shall, if supported, use the received value for the concerned UE’s sidelink communication in network scheduled mode for NR V2X services.

- If the *LTE UE Sidelink Aggregate Maximum Bit Rate* IE is included in the *UE Context Information Retrieve UE Context Response* IE in the RETRIEVE UE CONTEXT RESPONSE message, the new NG-RAN node shall, if supported, use the received value for the concerned UE’s sidelink communication in network scheduled mode for LTE V2X services.

A2X:

- If the *NR A2X Services Authorized* IE is included in the HANDOVER REQUEST message and it contains one or more IEs set to "authorized", the target NG-RAN node shall, if supported, consider that the UE is authorized for the relevant service(s).

- If the *LTE A2X Services Authorized* IE is included in the HANDOVER REQUEST message and it contains one or more IEs set to "authorized", the target NG-RAN node shall, if supported, consider that the UE is authorized for the relevant service(s).

- If the *NR A2X UE PC5 Aggregate Maximum Bit Rate* IE is included in the HANDOVER REQUEST message, the target NG-RAN node shall, if supported, use the received value for the concerned UE’s sidelink communication in network scheduled mode for NR A2X services.

- If the *LTE A2X UE PC5 Aggregate Maximum Bit Rate* IE is included in the HANDOVER REQUEST message, the target NG-RAN node shall, if supported, use the received value for the concerned UE’s sidelink communication in network scheduled mode for LTE A2X services.

- If the *A2X PC5 QoS Parameters* IE is included in theHANDOVER REQUEST message, the target NG-RAN node shall, if supported, use it as defined in TS 23.256 [x].

5G ProSe:

- If the *5G ProSe Authorized* IE is included in the RETRIEVE UE CONTEXT RESPONSE message and it contains one or more IEs set to "authorized", the new NG-RAN node shall, if supported, consider that the UE is authorized for the relevant service(s).

- If the *5G ProSe UE PC5 Aggregate Maximum Bit Rate* IE is included in the *UE Context Information - Retrieve UE Context Response* IE in the RETRIEVE UE CONTEXT RESPONSE message, the new NG-RAN node shall, if supported, use the received value for the concerned UE’s sidelink communication in network scheduled mode for 5G ProSe services.

- If the 5G ProSe PC5 QoS Parameters IE is included in the RETRIEVE UE CONTEXT RESPONSE message, the new NG-RAN node shall, if supported, use it as defined in TS 23.304 [48].

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If the *UE Radio Capability ID* IE is contained in the RETRIEVE UE CONTEXT RESPONSE message, the new NG- RAN node shall, if supported store this information in the UE context and use it as defined in TS 23.501 [7] and TS 23.502 [13].

If the *Aerial UE Subscription Information* IE is included in the RETRIEVE UE CONTEXT RESPONSE message, the new NG- RAN node shall, if supported, store this information in the UE context and use it as defined in TS 38.300 [9].

If the *Management Based MDT PLMN List* IE is contained in the RETRIEVE UE CONTEXT RESPONSE message, the new NG-RAN node shall, if supported, store it in the UE context, and use this information to allow subsequent selection of the UE for management based MDT defined in TS 32.422 [23].

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## 9.1 Message Functional Definition and Content

### 9.1.1 Messages for Basic Mobility Procedures

#### 9.1.1.1 HANDOVER REQUEST

This message is sent by the source NG-RAN node to the target NG-RAN node to request the preparation of resources for a handover.

Direction: source NG-RAN node → target NG-RAN node.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| Message Type | M |  | 9.2.3.1 |  | YES | reject |
| Source NG-RAN node UE XnAP ID reference | M |  | NG-RAN node UE XnAP ID 9.2.3.16 | Allocated at the source NG-RAN node | YES | reject |
| Cause | M |  | 9.2.3.2 |  | YES | reject |
| Target Cell Global ID | M |  | 9.2.3.25 | Includes either an E-UTRA CGI or an NR CGI | YES | reject |
| GUAMI | M |  | 9.2.3.24 |  | YES | reject |
| **UE Context Information** |  | *1* |  |  | YES | reject |
| >NG-C UE associated Signalling reference | M |  | AMF UE NGAP ID  9.2.3.26 | Allocated at the AMF on the source NG-C connection. | – |  |
| >Signalling TNL association address at source NG-C side | M |  | CP Transport Layer Information  9.2.3.31 | This IE indicates the AMF’s IP address of the SCTP association used at the source NG-C interface instance.  Note: If no UE TNLA binding exists at the source NG-RAN node, the source NG-RAN node indicates the TNL association address it would have selected if it would have had to create a UE TNLA binding. | – |  |
| >UE Security Capabilities | M |  | 9.2.3.49 |  | – |  |
| >AS Security Information | M |  | 9.2.3.50 |  | – |  |
| >Index to RAT/Frequency Selection Priority | O |  | 9.2.3.23 |  | – |  |
| >UE Aggregate Maximum Bit Rate | M |  | 9.2.3.17 |  | – |  |
| >PDU Session Resources To Be Setup List |  | *1* | 9.2.1.1 | Similar to NG-C signalling, containing UL tunnel information per PDU Session Resource;  and in addition, the source side QoS flow ⇔ DRB mapping | – |  |
| >RRC Context | M |  | OCTET STRING | Either includes the *HandoverPreparationInformation* message as defined in subclause 10.2.2. of TS 36.331 [14], or the *HandoverPreparationInformation-NB* message as defined in subclause 10.6.2 of TS 36.331 [14], if the target NG-RAN node is an ng-eNB,  or the *HandoverPreparationInformation* message as defined in subclause 11.2.2 of TS 38.331 [10], if the target NG-RAN node is a gNB. | – |  |
| >Location Reporting Information | O |  | 9.2.3.47 | Includes the necessary parameters for location reporting. | – |  |
| >Mobility Restriction List | O |  | 9.2.3.53 |  | – |  |
| >5GC Mobility Restriction List Container | O |  | 9.2.3.100 |  | YES | ignore |
| >NR UE Sidelink Aggregate Maximum Bit Rate | O |  | 9.2.3.107 | This IE applies only if the UE is authorized for NR V2X services. | YES | ignore |
| >LTE UE Sidelink Aggregate Maximum Bit Rate | O |  | 9.2.3.108 | This IE applies only if the UE is authorized for LTE V2X services. | YES | ignore |
| >ManagementBasedMDT PLMN List | O |  | MDT PLMN List  9.2.3.133 |  | YES | ignore |
| >UE Radio Capability ID | O |  | 9.2.3.138 |  | YES | reject |
| >MBS Session Information List | O |  | 9.2.1.36 |  | YES | ignore |
| >5G ProSe UE PC5 Aggregate Maximum Bit Rate | O |  | NR UE Sidelink Aggregate Maximum Bit Rate  9.2.3.107 | This IE applies only if the UE is authorized for 5G ProSe services. | YES | ignore |
| >UE Slice Maximum Bit Rate List | O |  | 9.2.3.167 |  | YES | ignore |
| >NR A2X UE PC5 Aggregate Maximum Bit Rate | O |  | NR UE Sidelink Aggregate Maximum Bit Rate  9.2.3.107 | This IE applies only if the UE is authorized for NR A2X services. | YES | ignore |
| >LTE A2X UE PC5 Aggregate Maximum Bit Rate | O |  | LTE UE Sidelink Aggregate Maximum Bit Rate  9.2.3.108 | This IE applies only if the UE is authorized for LTE A2X services. | YES | ignore |
| Trace Activation | O |  | 9.2.3.55 |  | YES | ignore |
| Masked IMEISV | O |  | 9.2.3.32 |  | YES | ignore |
| UE History Information | M |  | 9.2.3.64 |  | YES | ignore |
| **UE Context Reference at the S-NG-RAN node** | O |  |  |  | YES | ignore |
| >Global NG-RAN Node ID | M |  | 9.2.2.3 |  | – |  |
| >S-NG-RAN node UE XnAP ID | M |  | NG-RAN node UE XnAP ID  9.2.3.16 |  | – |  |
| **Conditional Handover Information Request** | O |  |  |  | YES | reject |
| >CHO Trigger | M |  | ENUMERATED (CHO-initiation, CHO-replace, …) |  | – |  |
| >Target NG-RAN node UE XnAP ID | C-ifCHOmod |  | NG-RAN node UE XnAP ID 9.2.3.16 | Allocated at the target NG-RAN node | – |  |
| >Estimated Arrival Probability | O |  | INTEGER (1..100) |  | – |  |
| NR V2X Services Authorized | O |  | 9.2.3.105 |  | YES | ignore |
| LTE V2X Services Authorized | O |  | 9.2.3.106 |  | YES | ignore |
| PC5 QoS Parameters | O |  | 9.2.3.109 | This IE applies only if the UE is authorized for NR V2X services. | YES | ignore |
| Mobility Information | O |  | BIT STRING (SIZE (32)) | Information related to the handover; the source NG-RAN node provides it in order to enable later analysis of the conditions that led to a wrong HO. | YES | ignore |
| UE History Information from the UE | O |  | 9.2.3.110 |  | YES | ignore |
| IAB Node Indication | O |  | ENUMERATED (true, ...) |  | YES | reject |
| No PDU Session Indication | O |  | ENUMERATED (true, ...) | This IE applies only if the UE is an IAB-MT. | YES | ignore |
| Time Synchronisation Assistance Information | O |  | 9.2.3.153 |  | YES | ignore |
| QMC Configuration Information | O |  | 9.2.3.156 |  | YES | ignore |
| 5G ProSe Authorized | O |  | 9.2.3.159 |  | YES | ignore |
| 5G ProSe PC5 QoS Parameters | O |  | 9.2.3.160 | This IE applies only if the UE is authorized for 5G ProSe services. | YES | ignore |
| Aerial UE Subscription Information | O |  | 9.2.3.xxx |  | YES | ignore |
| NR A2X Services Authorized | O |  | 9.2.3.aaa |  | YES | ignore |
| LTE A2X Services Authorized | O |  | 9.2.3.bbb |  | YES | ignore |
| A2X PC5 QoS Parameters | O |  | 9.2.3.ccc | This IE applies only if the UE is authorized for NR A2X services. | YES | ignore |

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#### 9.1.1.9 RETRIEVE UE CONTEXT RESPONSE

This message is sent by the old NG-RAN node to transfer the UE context to the new NG-RAN node.

Direction: old NG-RAN node → new NG-RAN node.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| Message Type | M |  | 9.2.3.1 |  | YES | reject |
| New NG-RAN node UE XnAP ID reference | M |  | NG-RAN node UE XnAP ID 9.2.3.16 | Allocated at the new NG-RAN node | YES | ignore |
| Old NG-RAN node UE XnAP ID reference | M |  | NG-RAN node UE XnAP ID 9.2.3.16 | Allocated at the old NG-RAN node | YES | ignore |
| GUAMI | M |  | 9.2.3.24 |  | YES | reject |
| UE Context Information – Retrieve UE Context Response | M |  | 9.2.1.13 |  | YES | reject |
| Trace Activation | O |  | 9.2.3.55 |  | YES | ignore |
| Masked IMEISV | O |  | 9.2.3.32 |  | YES | ignore |
| Location Reporting Information | O |  | 9.2.3.47 | Includes the necessary parameters for location reporting. | YES | ignore |
| Criticality Diagnostics | O |  | 9.2.3.3 |  | YES | ignore |
| NR V2X Services Authorized | O |  | 9.2.3.105 |  | YES | ignore |
| LTE V2X Services Authorized | O |  | 9.2.3.106 |  | YES | ignore |
| PC5 QoS Parameters | O |  | 9.2.3.109 | This IE applies only if the UE is authorized for NR V2X services. | YES | ignore |
| UE History Information | O |  | 9.2.3.64 |  | YES | ignore |
| UE History Information from the UE | O |  | 9.2.3.110 |  | YES | ignore |
| ManagementBasedMDT PLMN List | O |  | MDT PLMN List  9.2.3.133 |  | YES | ignore |
| IAB Node Indication | O |  | ENUMERATED (true, ...) |  | YES | reject |
| **UE Context Reference at the S-NG-RAN node** | O |  |  |  | YES | ignore |
| >Global NG-RAN Node ID | M |  | 9.2.2.3 |  | – |  |
| >S-NG-RAN node UE XnAP ID | M |  | NG-RAN node UE XnAP ID  9.2.3.16 |  | – |  |
| Time Synchronisation Assistance Information | O |  | 9.2.3.153 |  | YES | ignore |
| QMC Configuration Information | O |  | 9.2.3.156 |  | YES | ignore |
| 5G ProSe Authorized | O |  | 9.2.3.159 |  | YES | ignore |
| 5G ProSe PC5 QoS Parameters | O |  | 9.2.3.160 | This IE applies only if the UE is authorized for 5G ProSe services. | YES | ignore |
| Aerial UE Subscription Information | O |  | 9.2.3.xxx |  | YES | ignore |
| NR A2X Services Authorized | | O |  | 9.2.3.aaa |  | YES | ignore |
| LTE A2X Services Authorized | | O |  | 9.2.3.bbb |  | YES | ignore |
| A2X PC5 QoS Parameters | | O |  | 9.2.3.ccc | This IE applies only if the UE is authorized for NR A2X services. | YES | ignore |

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#### 9.2.1.13 UE Context Information – Retrieve UE Context Response

This IE contains the UE context information within the RETRIEVE UE CONTEXT RESPONSE message.

| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| --- | --- | --- | --- | --- | --- | --- |
| NG-C UE associated Signalling reference | M |  | AMF UE NGAP ID  9.2.3.26 | Allocated at the AMF on the old NG-C connection. | – |  |
| Signalling TNL Association Address at source NG-C side | M |  | CP Transport Layer Information  9.2.3.31 | This IE indicates the AMF’s IP address of the SCTP association used at the source NG-C interface instance.  Note: If no UE TNLA binding exists at the source NG-RAN node, the source NG-RAN node indicates the TNL association address it would have selected if it would have had to create a UE TNLA binding. | – |  |
| UE Security Capabilities | M |  | 9.2.3.49 |  | – |  |
| AS Security Information | M |  | 9.2.3.50 |  | – |  |
| UE Aggregate Maximum Bit Rate | M |  | 9.2.3.17 |  | – |  |
| PDU Session Resources To Be Setup List | M |  | 9.2.1.1 |  | – |  |
| RRC Context | M |  | OCTET STRING | Includes the *HandoverPreparationInformation* message as defined in subclause 11.2.2 of TS 38.331[10] if the old and new serving NG-RAN nodes are gNBs.  Includes either the *HandoverPreparationInformation* message as defined in subclause 10.2.2 of TS 36.331 [14] or the *HandoverPreparationInformation-NB* message as defined in subclause 10.6.2 of TS 36.331 [14], if the old and new serving NG-RAN nodes are ng-eNBs. | – |  |
| Mobility Restriction List | O |  | 9.2.3.53 |  | – |  |
| Index to RAT/Frequency Selection Priority | O |  | 9.2.3.23 |  | – |  |
| 5GC Mobility Restriction List Container | O |  | 9.2.3.100 |  | YES | ignore |
| NR UE Sidelink Aggregate Maximum Bit Rate | O |  | 9.2.3.107 | This IE applies only if the UE is authorized for NR V2X services. | YES | ignore |
| LTE UE Sidelink Aggregate Maximum Bit Rate | O |  | 9.2.3.108 | This IE applies only if the UE is authorized for LTE V2X services. | YES | ignore |
| UE Radio Capability ID | O |  | 9.2.3.138 |  | YES | reject |
| MBS Session Information List | O |  | 9.2.1.36 |  | YES | ignore |
| No PDU Session Indication | O |  | ENUMERATED (true, ...) | This IE applies only if the UE is an IAB-MT. | YES | ignore |
| 5G ProSe UE PC5 Aggregate Maximum Bit Rate | O |  | NR UE Sidelink Aggregate Maximum Bit Rate  9.2.3.107 | This IE applies only if the UE is authorized for 5G ProSe services. | YES | ignore |
| UE Slice Maximum Bit Rate List | O |  | 9.2.3.167 |  | YES | ignore |
| Positioning Information | O |  | 9.2.3.168 |  | YES | ignore |
| NR A2X UE PC5 Aggregate Maximum Bit Rate | O |  | 9.2.3.107 | This IE applies only if the UE is authorized for NR A2X services. | YES | ignore |
| LTE A2X UE PC5 Aggregate Maximum Bit Rate | O |  | 9.2.3.108 | This IE applies only if the UE is authorized for LTE A2X services. | YES | ignore |

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## 9.2 Information Element definitions

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### 9.2.3 General IE definitions

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#### 9.2.3.xxx Aerial UE Subscription Information

This information element is used by the NG-RAN node to know if the UE is allowed to use aerial function, refer to TS 23.501 [7].

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| Aerial UE Subscription Information | M |  | ENUMERATED (allowed, not allowed,…) |  |

#### 9.2.3.aaa NR A2X Services Authorized

This IE provides information on the authorization status of the UE to use the NR A2X services.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| Aerial UE | O |  | ENUMERATED (authorized, not authorized, ...) | Indicates whether the UE is authorized as Aerial UE. |
| Aerial Controller UE | O |  | ENUMERATED (authorized, not authorized, ...) | Indicates whether the UE is authorized as Aerial Controller UE. |

#### 9.2.3.bbb LTE A2X Services Authorized

This IE provides information on the authorization status of the UE to use the LTE A2X services.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| Aerial UE | O |  | ENUMERATED (authorized, not authorized, ...) | Indicates whether the UE is authorized as Aerial UE. |
| Aerial Controller UE | O |  | ENUMERATED (authorized, not authorized, ...) | Indicates whether the UE is authorized as Aerial Controller UE. |

#### 9.2.3.ccc A2X PC5 QoS Parameters

This IE provides information on the A2X PC5 QoS parameters of the UE’s PC5 communication for A2X service.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| **A2X PC5 QoS Flow List** |  | *1* |  |  |
| **>A2X PC5 QoS Flow Item** |  | *1..<maxnoofPC5QoSFlows>* |  |  |
| >>PQI | M |  | INTEGER (0..255, …) | PQI is a special 5QI as specified in TS 23.501 [7]. |
| **>>A2X PC5 Flow Bit Rates** | O |  |  | Only applies for GBR QoS Flows. |
| >>>Guaranteed Flow Bit Rate | M |  | Bit Rate  9.2.3.4 | Guaranteed Bit Rate for the A2X PC5 QoS flow. Details in TS 23.501 [7]. |
| >>>Maximum Flow Bit Rate | M |  | Bit Rate  9.2.3.4 | Maximum Bit Rate for the A2Z PC5 QoS flow. Details in TS 23.501 [7]. |
| >>Range | O |  | ENUMERATED (m50, m80, m180, m200, m350, m400, m500, m700, m1000, …) | Only applies for groupcast. |
| A2X PC5 Link Aggregate Bit Rates | O |  | Bit Rate  9.2.3.4 | Only applies for non-GBR QoS Flows. |

|  |  |
| --- | --- |
| Range bound | Explanation |
| *maxnoofPC5QoSFlows* | Maximum no. of A2X PC5 QoS flows allowed towards one UE. Value is 2048. |

|  |
| --- |
| NEXT CHANGE |

## 9.3 Message and Information Element Abstract Syntax (with ASN.1)

<<<<<<<<<<<<<skipped>>>>>>>>>>>>>>>>

### 9.3.4 PDU Definitions

-- ASN1START

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

--

-- PDU definitions for XnAP.

--

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

XnAP-PDU-Contents {

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

ngran-access (22) modules (3) xnap (2) version1 (1) xnap-PDU-Contents (1) }

DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

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

--

-- IE parameter types from other modules.

--

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

IMPORTS

ActivationIDforCellActivation,

AMF-Region-Information,

AMF-UE-NGAP-ID,

AS-SecurityInformation,

AssistanceDataForRANPaging,

AerialUESubscriptionInformation,

NRA2XServicesAuthorized,

NRA2XUEPC5AggregateMaximumBitRate,

LTEA2XServicesAuthorized,

LTEA2XUEPC5AggregateMaximumBitRate,

A2XPC5QoSParameters,

BitRate,

Cause,

CellAndCapacityAssistanceInfo-EUTRA,

CellAndCapacityAssistanceInfo-NR,

<<<<<<<<<<<<<skipped>>>>>>>>>>>>>>>>

FROM XnAP-Containers

id-ActivatedServedCells,

id-ActivationIDforCellActivation,

id-AdditionalDRBIDs,

id-AMF-Region-Information,

id-AMF-Region-Information-To-Add,

id-AMF-Region-Information-To-Delete,

id-AssistanceDataForRANPaging,

id-AvailableDRBIDs,

id-AerialUESubscriptionInformation,

id-NRA2XServicesAuthorized,

id-NRA2XUEPC5AggregateMaximumBitRate,

id-LTEA2XServicesAuthorized,

id-LTEA2XUEPC5AggregateMaximumBitRate,

id-A2XPC5QoSParameters,

id-Cause,

<<<<<<<<<<<<<skipped>>>>>>>>>>>>>>>>

-- HANDOVER REQUEST

--

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

HandoverRequest ::= SEQUENCE {

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

...

}

HandoverRequest-IEs XNAP-PROTOCOL-IES ::= {

{ ID id-sourceNG-RANnodeUEXnAPID CRITICALITY reject TYPE NG-RANnodeUEXnAPID PRESENCE mandatory}|

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

{ ID id-targetCellGlobalID CRITICALITY reject TYPE Target-CGI PRESENCE mandatory}|

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

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

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

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

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

{ ID id-UEContextRefAtSN-HORequest CRITICALITY ignore TYPE UEContextRefAtSN-HORequest PRESENCE optional }|

{ ID id-CHOinformation-Req CRITICALITY reject TYPE CHOinformation-Req PRESENCE optional }|

{ ID id-NRV2XServicesAuthorized CRITICALITY ignore TYPE NRV2XServicesAuthorized PRESENCE optional }|

{ ID id-LTEV2XServicesAuthorized CRITICALITY ignore TYPE LTEV2XServicesAuthorized PRESENCE optional }|

{ ID id-PC5QoSParameters CRITICALITY ignore TYPE PC5QoSParameters PRESENCE optional }|

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

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

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

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

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

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

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

{ ID id-FiveGProSePC5QoSParameters CRITICALITY ignore TYPE FiveGProSePC5QoSParameters PRESENCE optional }|

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

{ ID id-NRA2XServicesAuthorized CRITICALITY ignore TYPE NRA2XServicesAuthorized PRESENCE optional }|

{ ID id-LTEA2XServicesAuthorized CRITICALITY ignore TYPE LTEA2XServicesAuthorized PRESENCE optional }|

{ ID id-A2XPC5QoSParameters CRITICALITY ignore TYPE A2XPC5QoSParameters PRESENCE optional },

...

}

UEContextInfoHORequest ::= SEQUENCE {

ng-c-UE-reference AMF-UE-NGAP-ID,

cp-TNL-info-source CPTransportLayerInformation,

ueSecurityCapabilities UESecurityCapabilities,

securityInformation AS-SecurityInformation,

indexToRatFrequencySelectionPriority RFSP-Index OPTIONAL,

ue-AMBR UEAggregateMaximumBitRate,

pduSessionResourcesToBeSetup-List PDUSessionResourcesToBeSetup-List,

rrc-Context OCTET STRING,

locationReportingInformation LocationReportingInformation OPTIONAL,

mrl MobilityRestrictionList OPTIONAL,

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

...

}

UEContextInfoHORequest-ExtIEs XNAP-PROTOCOL-EXTENSION ::={

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

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

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

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

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

{ ID id-MBS-SessionInformation-List CRITICALITY ignore EXTENSION MBS-SessionInformation-List PRESENCE optional }|

{ ID id-FiveGProSeUEPC5AggregateMaximumBitRate CRITICALITY ignore EXTENSION NRUESidelinkAggregateMaximumBitRate PRESENCE optional }|

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

{ ID id-NRA2XUEPC5AggregateMaximumBitRate CRITICALITY ignore EXTENSION NRUESidelinkAggregateMaximumBitRate PRESENCE optional }|

{ ID id-LTEA2XUEPC5AggregateMaximumBitRate CRITICALITY ignore EXTENSION LTEUESidelinkAggregateMaximumBitRate PRESENCE optional },

...

}

<<<<<<<<<<<<<skipped>>>>>>>>>>>>>>>>

-- RETRIEVE UE CONTEXT RESPONSE

--

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

RetrieveUEContextResponse ::= SEQUENCE {

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

...

}

RetrieveUEContextResponse-IEs XNAP-PROTOCOL-IES ::= {

{ ID id-newNG-RANnodeUEXnAPID CRITICALITY ignore TYPE NG-RANnodeUEXnAPID PRESENCE mandatory}|

{ ID id-oldNG-RANnodeUEXnAPID CRITICALITY ignore TYPE NG-RANnodeUEXnAPID PRESENCE mandatory}|

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

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

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

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

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

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

{ ID id-NRV2XServicesAuthorized CRITICALITY ignore TYPE NRV2XServicesAuthorized PRESENCE optional }|

{ ID id-LTEV2XServicesAuthorized CRITICALITY ignore TYPE LTEV2XServicesAuthorized PRESENCE optional }|

{ ID id-PC5QoSParameters CRITICALITY ignore TYPE PC5QoSParameters PRESENCE optional }|

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

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

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

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

{ ID id-UEContextRefAtSN-HORequest CRITICALITY ignore TYPE UEContextRefAtSN-HORequest PRESENCE optional }|

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

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

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

{ ID id-FiveGProSePC5QoSParameters CRITICALITY ignore TYPE FiveGProSePC5QoSParameters PRESENCE optional }|

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

{ ID id-NRA2XServicesAuthorized CRITICALITY ignore TYPE NRA2XServicesAuthorized PRESENCE optional }|

{ ID id-LTEA2XServicesAuthorized CRITICALITY ignore TYPE LTEA2XServicesAuthorized PRESENCE optional }|

{ ID id-A2XPC5QoSParameters CRITICALITY ignore TYPE A2XPC5QoSParameters PRESENCE optional },

...

}

<<<<<<<<<<<<<skipped>>>>>>>>>>>>>>>>

### 9.3.5 Information Element definitions

-- ASN1START

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

--

-- Information Element Definitions

--

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

XnAP-IEs {

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

ngran-access (22) modules (3) xnap (2) version1 (1) xnap-IEs (2) }

DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

IMPORTS

id-CNTypeRestrictionsForEquivalent,

id-CNTypeRestrictionsForServing,

id-Additional-UL-NG-U-TNLatUPF-List,

id-ConfiguredTACIndication,

id-NRA2XUEPC5AggregateMaximumBitRate,

id-LTEA2XUEPC5AggregateMaximumBitRate,

<<<<<<<<<<<<<skipped>>>>>>>>>>>>>>>>

-- A

<<<<<<<<<<<<<skipped>>>>>>>>>>>>>>>>

AveragingWindow ::= INTEGER (0..4095, ...)

AerialUESubscriptionInformation ::= ENUMERATED {

allowed,

not-allowed,

...

}

LTEA2XServicesAuthorized ::= SEQUENCE {

AerialUE AerialUE OPTIONAL,

AerialControllerUE AircraftControllerUE OPTIONAL,

iE-Extensions ProtocolExtensionContainer { {A2XServicesAuthorized-ExtIEs} } OPTIONAL,

...

}

LTEA2XServicesAuthorized-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {

...

}

NRA2XServicesAuthorized ::= SEQUENCE {

AerialUE AerialUE OPTIONAL,

AerialControllerUE AircraftControllerUE OPTIONAL,

iE-Extensions ProtocolExtensionContainer { {A2XServicesAuthorized-ExtIEs} } OPTIONAL,

...

}

NRA2XServicesAuthorized-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {

...

}

AerialUE ::= ENUMERATED {

authorized,

not-authorized,

...

}

AerialControllerUE ::= ENUMERATED {

authorized,

not-authorized,

...

}

A2XPC5QoSParameters ::= SEQUENCE {

A2XPC5QoSFlowList A2XPC5QoSFlowList,

A2XPC5LinkAggregateBitRates BitRate OPTIONAL,

iE-Extensions ProtocolExtensionContainer { { A2XPC5QoSParameters-ExtIEs} OPTIONAL,

...

}

A2XPC5QoSParameters-ExtIEs NGAP-PROTOCOL-EXTENSION ::= {

...

}

A2XPC5QoSFlowList ::= SEQUENCE (SIZE(1..maxnoofPC5QoSFlows)) OF A2XPC5QoSFlowItem

A2XPC5QoSFlowItem ::= SEQUENCE {

A2XpQI FiveQI,

A2Xpc5FlowBitRates PC5FlowBitRates OPTIONAL,

A2Xrange Range OPTIONAL,

iE-Extensions ProtocolExtensionContainer { { A2XPC5QoSFlowItem-ExtIEs} } OPTIONAL,

...

}

A2XPC5QoSFlowItem-ExtIEs NGAP-PROTOCOL-EXTENSION ::= {

...

}

A2XPC5FlowBitRates ::= SEQUENCE {

A2XguaranteedFlowBitRate BitRate,

A2XmaximumFlowBitRate BitRate,

iE-Extensions ProtocolExtensionContainer { { A2XPC5FlowBitRates-ExtIEs} } OPTIONAL,

...

}

A2XPC5FlowBitRates-ExtIEs NGAP-PROTOCOL-EXTENSION ::= {

...

}

<<<<<<<<<<<<<skipped>>>>>>>>>>>>>>>>

### 9.3.7 Constant definitions

-- ASN1START

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

--

-- Constant definitions

--

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

XnAP-Constants {

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

ngran-Access (22) modules (3) xnap (2) version1 (1) xnap-Constants (4) }

<<<<<<<<<<<<<skipped>>>>>>>>>>>>>>>>

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

--

-- IEs

--

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

<<<<<<<<<<<<<skipped>>>>>>>>>>>>>>>>

id-ManagementBasedMDTPLMNModificationList ProtocolIE-ID ::= 362

id-F1-terminatingIAB-donorIndicator ProtocolIE-ID ::= 363

id-AerialUESubscriptionInformation ProtocolIE-ID ::= xxx

id-LTEA2XServicesAuthorized ProcedureCode ::= aaa

id-NRA2XServicesAuthorized ProcedureCode ::= bbb

id-LTEA2XUEPC5AggregateMaximumBitRate ProcedureCode ::= ccc

id-NRA2XUEPC5AggregateMaximumBitRate ProcedureCode ::= ddd

id-A2XPC5QoSParameters ProcedureCode ::= eee

END

-- ASN1STOP

|  |
| --- |
| END OF CHANGE |