3GPP TSG-RAN WG3 Meeting #126 R3-247800

**Orlando, USA, 18 - 22 November, 2024**

Agenda Item: 12.3

Source: Huawei, Nokia

Title: (TP for TS 38.413) Functional split for NR Femto

Document for: Discussion

# 1 Introduction

This contribution provides NGAP change to support the functional split for NR Femto.

# Annex——TP for TS 38.413

*Start of Change*

#### 8.3.1.2 Successful Operation

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If the *PNI-NPN Area Scope of MDT* IE is included in the *MDT Configuration-NR* IE included in the INITIAL CONTEXT SETUP REQUEST message, the NG-RAN node shall, if supported, use it to derive the MDT area scope for MDT measurement collection in PNI-NPN areas. Upon reception of the *PNI-NPN Area Scope of MDT* IE, the NG-RAN node shall consider that the area scope for MDT measurement collection in PNI-NPN areas is defined only by the areas included in the *PNI-NPN Area Scope of MDT* IE.

If the *AMF UE NGAP ID 2* IE is contained in the INITIAL CONTEXT SETUP REQUEST message, the gNB shall, if supported, store this information in the UE context and use it for subsequent Xn handovers.

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#### 8.4.2.2 Successful Operation

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If the *Partially Allowed NSSAI* IE is contained in the HANDOVER REQUEST message, the NG-RAN node shall, if supported, deduce from it the partially allowed network slices for the UE, store and replace any previously received Partially Allowed NSSAI and use it as specified in TS 23.501 [9].

If the *MBS Support Indicator* IE is included in the *Handover Request Acknowledge Transfer* IE in the HANDOVER REQUEST ACKNOWLEDGE message, the SMF shall, if supported, handle this information as specified in TS 23.247 [44].

The *AMF UE NGAP ID 2* IE shall only be contained in the HANDOVER REQUEST message according to subclause 4.X.2 of TS 38.300 [8].If the *AMF UE NGAP ID 2* IE is present, the target gNB shall store this information in the UE context and use it for subsequent Xn handovers.

If the *ECN Marking or Congestion Information Reporting Status* IE is included in the *Handover Request Acknowledge Transfer* IE, the SMF shall, if supported, use it to deduce if ECN marking at NG-RAN or ECN marking at UPF or congestion information reporting is active or not active as described in TS 23.501 [9].

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#### 8.4.4.2 Successful Operation



Figure 8.4.4.2-1: Path switch request: successful operation

The NG-RAN node initiates the procedure by sending the PATH SWITCH REQUEST message to the AMF. Upon reception of the PATH SWITCH REQUEST message the AMF shall, for each PDU session indicated in the *PDU Session ID* IE, transparently transfer the *Path Switch Request Transfer* IE to the SMF associated with the concerned PDU session.

Upon reception of the PATH SWITCH REQUEST message the AMF shall deactivate MT communication handling if already activated, as specified in TS 23.502 [10].

If the *RRC Resume Cause* IE is included in the PATH SWITCH REQUEST message, the AMF shall, if supported, use it as described in TS 23.502 [10] for User Plane CIoT 5GS Optimisation when the NG-RAN node is an ng-eNB.

If the *RedCap Indication* IE or the *eRedCap Indication* IE is included in the PATH SWITCH REQUEST message, the AMF shall, if supported, consider the UE respectively as a RedCap UE or an eRedCap UE that was previously served by a E-UTRA cell, and use the IE according to TS 23.501 [9].

After all necessary updates including the UP path switch have been successfully completed in the 5GC for at least one of the PDU session resources included in the PATH SWITCH REQUEST, the AMF shall send the PATH SWITCH REQUEST ACKNOWLEDGE message to the NG-RAN node and the procedure ends.

The list of accepted QoS flows shall be included in the PATH SWITCH REQUEST message within the *Path Switch Request Transfer* IE. The SMF shall handle this information as specified in TS 23.502 [10].

If the GUAMI of the AMF currently serving the UE is available at the gNB (see TS 38.300 [8]) the gNB shall include the *Source AMF GUAMI* IE within the PATH SWITCH REQUEST message.

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If the *Ranging and Sidelink Positioning Service Information* IE is contained in the PATH SWITCH REQUEST ACKNOWLEDGE message, the NG-RAN node shall, if supported, update the Ranging and Sidelink Positioning service information for the UE accordingly. If the *Ranging and Sidelink Positioning Authorized* IEwithin the *Ranging and Sidelink Positioning Service Information* IE is set to "not authorized", the NG-RAN node shall, if supported, initiate actions to ensure that the UE is no longer accessing the Ranging and Sidelink Positioning service.

If the *AMF UE NGAP ID 2* IE is contained in the PATH SWITCH REQUEST ACKNOWLEDGE message, the gNB shall store this information in the UE context and use it for subsequent Xn handovers.

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#### 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, or by the *Serving PLMN* IE within the *NR NTN TAI Information* IE included in the same message for NTN.

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 gNB does not support NNSF and the gNB has received from the radio interface the *GUAMI* IE, the gNB may include it in the INITIAL UE MESSAGE message. If the gNB does not support NNSF and the gNB has received from the radio interface the *GUAMI Type* IE, the gNB may include it in the INITIAL UE MESSAGE message. If the gNB does not support NNSF and the gNB has received from the radio interface the *Requested S-NSSAI* IE, the gNB may include it in the INITIAL UE MESSAGE message.

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#### 8.7.7.2 Successful Operation



Figure 8.7.7.2-1: Overload start

The NG-RAN node receiving the OVERLOAD START message shall assume the AMF from which it receives the message as being in an overloaded state.

If the *Overload Action* IE is included the *AMF* *Overload Response* IE within the OVERLOAD START message, the NG-RAN node shall use it to identify the related signalling traffic. When the *Overload Action* IE is set to

- "reject RRC connection establishments for non-emergency mobile originated data transfer" (i.e., reject traffic corresponding to RRC cause "mo-data", "mo-SMS", "mo-VideoCall" and "mo-VoiceCall" in TS 38.331 [18] or "mo-data" and "mo-VoiceCall" in TS 36.331 [21]), or

- "reject RRC connection establishments for signalling" (i.e., reject traffic corresponding to RRC cause "mo-data", "mo-SMS", "mo-signalling", "mo-VideoCall" and "mo-VoiceCall" in TS 38.331 [18] or "mo-data", "mo-signalling" and "mo-VoiceCall" in TS 36.331 [21]), or

- "only permit RRC connection establishments for emergency sessions and mobile terminated services" (i.e., only permit traffic corresponding to RRC cause "emergency" and "mt-Access" in TS 38.331 [18] or in TS 36.331 [21]), or

- "only permit RRC connection establishments for high priority sessions and mobile terminated services" (i.e., only permit traffic corresponding to RRC cause "highPriorityAccess", "mps-PriorityAccess", "mcs-PriorityAccess" and "mt-Access" in TS 38.331 [18] or "highPriorityAccess", "mo-ExceptionData" and "mt-Access" in TS 36.331 [21]),

the NG-RAN node shall:

- if the *AMF Traffic Load Reduction Indication* IE is included in the OVERLOAD START message, reduce the signalling traffic by the indicated percentage,

- otherwise ensure that only the signalling traffic not indicated as to be rejected is sent to the AMF.

If the *Overload Start NSSAI List* IE is included in the OVERLOAD START message, the NG-RAN node shall:

- if the *Slice Traffic Load Reduction Indication* IE is present, reduce the signalling traffic by the indicated percentage for the UE(s) whose requested NSSAI only include S-NSSAI(s) contained in the *Overload Start NSSAI List* IE, and the signalling traffic indicated as to be reduced by the *Overload Action* IE in the *Slice Overload Response* IE if the IE is present,

- otherwise ensure that only the signalling traffic from UE(s) whose requested NSSAI includes S-NSSAI(s) other than the ones contained in the *Overload Start NSSAI List* IE, or the signalling traffic not indicated as to be reduced by the *Overload Action* IE in the *Slice Overload Response* IE for the UE(s) if the requested NSSAI matched, is sent to the AMF.

If the *GUAMI List* IE is present, the gNB shall, if supported, use this information to identify to which traffic the above defined rejections shall be applied.

If an overload action is ongoing and the gNB receives a further OVERLOAD START message, the gNB shall replace the ongoing overload action with the newly requested one. If the *GUAMI List* IE is present, the gNB replaces applicable ongoing actions according to TS 38.300 [8], clause 4.X.2.

If an overload control is ongoing and the NG-RAN node receives a further OVERLOAD START message, the NG-RAN node shall replace the contents of the previously received information with the new one.

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#### 8.7.8.2 Successful Operation



Figure 8.7.8.2-1: Overload stop

The NG-RAN node receiving the OVERLOAD STOP message shall assume that the overload situation at the AMF from which it receives the message has ended and shall resume normal operation for the applicable traffic towards this AMF.

If the *GUAMI List* IE is present, the gNB shall, if supported, use this information to identify which traffic to cease rejecting, and proceed according to TS 38.300 [8], clauses 4.X.2. If no particular overload action is ongoing for a particular GUAMI value, the gNB shall ignore this value.

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#### 9.2.2.1 INITIAL CONTEXT SETUP REQUEST

This message is sent by the AMF to request the setup of a UE context.

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 | reject |
| RAN UE NGAP ID | M |  | 9.3.3.2 |  | YES | reject |
| Old AMF | O |  | AMF Name  9.3.3.21 |  | YES | reject |
| UE Aggregate Maximum Bit Rate | C-ifPDUsessionResourceSetup |  | 9.3.1.58 |  | YES | reject |
| Core Network Assistance Information for RRC INACTIVE | O |  | 9.3.1.15 |  | YES | ignore |
| GUAMI | M |  | 9.3.3.3 |  | YES | reject |
| **PDU Session Resource Setup Request List** |  | *0..1* |  |  | YES | reject |
| **>PDU Session Resource Setup Request Item** |  | *1..<maxnoofPDUSessions>* |  |  | - |  |
| >>PDU Session ID | M |  | 9.3.1.50 |  | - |  |
| >>PDU Session NAS-PDU | O |  | NAS-PDU  9.3.3.4 |  | - |  |
| >>S-NSSAI | M |  | 9.3.1.24 |  | - |  |
| >>PDU Session Resource Setup Request Transfer | M |  | OCTET STRING | Containing the *PDU Session Resource Setup Request Transfer* IE specified in subclause 9.3.4.1. | - |  |
| >>PDU Session Expected UE Activity Behaviour | O |  | Expected UE Activity Behaviour  9.3.1.94 | Expected UE Activity Behaviour for the PDU Session. | YES | ignore |
| Allowed NSSAI | M |  | 9.3.1.31 | Indicates the S-NSSAIs permitted by the network | YES | reject |
| UE Security Capabilities | M |  | 9.3.1.86 |  | YES | reject |
| Security Key | M |  | 9.3.1.87 |  | YES | reject |
| Trace Activation | O |  | 9.3.1.14 |  | YES | ignore |
| Mobility Restriction List | O |  | 9.3.1.85 |  | YES | ignore |
| UE Radio Capability | O |  | 9.3.1.74 |  | YES | ignore |
| Index to RAT/Frequency Selection Priority | O |  | 9.3.1.61 |  | YES | ignore |
| Masked IMEISV | O |  | 9.3.1.54 |  | YES | ignore |
| NAS-PDU | O |  | 9.3.3.4 |  | YES | ignore |
| Emergency Fallback Indicator | O |  | 9.3.1.26 |  | YES | reject |
| RRC Inactive Transition Report Request | O |  | 9.3.1.91 |  | YES | ignore |
| UE Radio Capability for Paging | O |  | 9.3.1.68 |  | YES | ignore |
| Redirection for Voice EPS Fallback | O |  | 9.3.1.116 |  | YES | ignore |
| Location Reporting Request Type | O |  | 9.3.1.65 |  | YES | ignore |
| CN Assisted RAN Parameters Tuning | O |  | 9.3.1.119 |  | YES | ignore |
| SRVCC Operation Possible | O |  | 9.3.1.128 |  | YES | ignore |
| IAB Authorized | O |  | 9.3.1.129 |  | YES | ignore |
| Enhanced Coverage Restriction | O |  | 9.3.1.140 |  | YES | ignore |
| Extended Connected Time | O |  | 9.3.3.31 |  | YES | ignore |
| UE Differentiation Information | O |  | 9.3.1.144 |  | YES | ignore |
| NR V2X Services Authorized | O |  | 9.3.1.146 |  | YES | ignore |
| LTE V2X Services Authorized | O |  | 9.3.1.147 |  | YES | ignore |
| NR UE Sidelink Aggregate Maximum Bit Rate | O |  | 9.3.1.148 | This IE applies only if the UE is authorized for NR V2X services. | YES | ignore |
| LTE UE Sidelink Aggregate Maximum Bit Rate | O |  | 9.3.1.149 | This IE applies only if the UE is authorized for LTE V2X services. | YES | ignore |
| PC5 QoS Parameters | O |  | 9.3.1.150 | This IE applies only if the UE is authorized for NR V2X services. | YES | ignore |
| CE-mode-B Restricted | O |  | 9.3.1.155 |  | YES | ignore |
| UE User Plane CIoT Support Indicator | O |  | 9.3.1.160 |  | YES | ignore |
| RG Level Wireline Access Characteristics | O |  | OCTET STRING | Specified in TS 23.316 [34]. Indicates the wireline access technology specific QoS information corresponding to a specific wireline access subscription. | YES | ignore |
| Management Based MDT PLMN List | O |  | MDT PLMN List  9.3.1.168 |  | YES | ignore |
| UE Radio Capability ID | O |  | 9.3.1.142 |  | YES | reject |
| Time Synchronisation Assistance Information | O |  | 9.3.1.220 |  | YES | ignore |
| QMC Configuration Information | O |  | 9.3.1.223 |  | YES | ignore |
| Target NSSAI Information | O |  | 9.3.1.229 |  | YES | ignore |
| UE Slice Maximum Bit Rate List | O |  | 9.3.1.231 |  | YES | ignore |
| 5G ProSe Authorized | O |  | 9.3.1.233 |  | YES | ignore |
| 5G ProSe UE PC5 Aggregate Maximum Bit Rate | O |  | NR UE Sidelink Aggregate Maximum Bit Rate  9.3.1.148 | This IE applies only if the UE is authorized for 5G ProSe services. | YES | ignore |
| 5G ProSe PC5 QoS Parameters | O |  | 9.3.1.234 | This IE applies only if the UE is authorized for 5G ProSe services. | YES | ignore |
| Network Controlled Repeater Authorized | O |  | 9.3.1.245 |  | YES | ignore |
| Aerial UE Subscription Information | O |  | 9.3.1.246 |  | YES | ignore |
| NR A2X Services Authorized | O |  | 9.3.1.247 |  | YES | ignore |
| LTE A2X Services Authorized | O |  | 9.3.1.248 |  | YES | ignore |
| NR A2X UE PC5 Aggregate Maximum Bit Rate | O |  | NR UE Sidelink Aggregate Maximum Bit Rate 9.3.1.148 | 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 9.3.1.149 | This IE applies only if the UE is authorized for LTE A2X services. | YES | ignore |
| A2X PC5 QoS Parameters | O |  | 9.3.1.249 | This IE applies only if the UE is authorized for A2X services. | YES | ignore |
| Mobile IAB Authorized | O |  | 9.3.1.259 |  | YES | ignore |
| Partially Allowed NSSAI | O |  | 9.3.1.261 | Indicates the S-NSSAIs partially permitted by the network. | YES | ignore |
| Ranging and Sidelink Positioning Service Information | O |  | 9.3.1.269 | This IE applies only if the UE is authorized for NR V2X services and/or 5G ProSe services. | YES | ignore |
| AMF UE NGAP ID 2 | O |  | AMF UE NGAP ID 9.3.3.1 | This IE indicates the AMF UE NGAP ID assigned by the AMF. | YES | ignore |

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#### 9.2.2.4 UE CONTEXT RELEASE REQUEST

This message is sent by the NG-RAN node to request the release of the UE-associated logical NG-connection 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 |
| AMF UE NGAP ID | M |  | 9.3.3.1 |  | YES | reject |
| RAN UE NGAP ID | M |  | 9.3.3.2 |  | YES | reject |
| **PDU Session Resource List** |  | *0..1* |  |  | YES | reject |
| **>PDU Session Resource Item** |  | *1..<maxnoofPDUSessions>* |  |  | - |  |
| >>PDU Session ID | M |  | 9.3.1.50 |  | - |  |
| Cause | M |  | 9.3.1.2 |  | YES | ignore |
| GW Context Release Indication | O |  | 9.3.1.x |  | YES | reject |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofPDUSessions | Maximum no. of PDU sessions allowed towards one UE. Value is 256. |

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#### 9.2.3.4 HANDOVER REQUEST

This message is sent by the AMF to the target NG-RAN node to request the preparation of resources.

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 | reject |
| Handover Type | M |  | 9.3.1.22 |  | YES | reject |
| Cause | M |  | 9.3.1.2 |  | YES | ignore |
| UE Aggregate Maximum Bit Rate | M |  | 9.3.1.58 |  | YES | reject |
| Core Network Assistance Information for RRC INACTIVE | O |  | 9.3.1.15 |  | YES | ignore |
| UE Security Capabilities | M |  | 9.3.1.86 |  | YES | reject |
| Security Context | M |  | 9.3.1.88 |  | YES | reject |
| New Security Context Indicator | O |  | 9.3.1.55 |  | YES | reject |
| NASC | O |  | NAS-PDU  9.3.3.4 | Refers to either the “Intra N1 mode NAS transparent container” or the “S1 mode to N1 mode NAS transparent container”, the details of the IE definition and the encoding arespecified in TS 24.501 [26]. | YES | reject |
| **PDU Session Resource Setup List** |  | *1* |  |  | YES | reject |
| **>PDU Session Resource Setup Item** |  | *1..<maxnoofPDUSessions>* |  |  | - |  |
| >>PDU Session ID | M |  | 9.3.1.50 |  | - |  |
| >>S-NSSAI | M |  | 9.3.1.24 |  | - |  |
| >>Handover Request Transfer | M |  | OCTET STRING | Containing the *PDU Session Resource Setup Request Transfer* IE specified in subclause 9.3.4.1. | - |  |
| >>PDU Session Expected UE Activity Behaviour | O |  | Expected UE Activity Behaviour  9.3.1.94 | Expected UE Activity Behaviour for the PDU Session. | YES | ignore |
| Allowed NSSAI | M |  | 9.3.1.31 | Indicates the S-NSSAIs permitted by the network. | YES | reject |
| Trace Activation | O |  | 9.3.1.14 |  | YES | ignore |
| Masked IMEISV | O |  | 9.3.1.54 |  | YES | ignore |
| Source to Target Transparent Container | M |  | 9.3.1.20 |  | YES | reject |
| Mobility Restriction List | O |  | 9.3.1.85 |  | YES | ignore |
| Location Reporting Request Type | O |  | 9.3.1.65 |  | YES | ignore |
| RRC Inactive Transition Report Request | O |  | 9.3.1.91 |  | YES | ignore |
| GUAMI | M |  | 9.3.3.3 |  | YES | reject |
| Redirection for Voice EPS Fallback | O |  | 9.3.1.116 |  | YES | ignore |
| CN Assisted RAN Parameters Tuning | O |  | 9.3.1.119 |  | YES | ignore |
| SRVCC Operation Possible | O |  | 9.3.1.128 |  | YES | ignore |
| IAB Authorized | O |  | 9.3.1.129 |  | YES | reject |
| Enhanced Coverage Restriction | O |  | 9.3.1.140 |  | YES | ignore |
| UE Differentiation Information | O |  | 9.3.1.144 |  | YES | ignore |
| NR V2X Services Authorized | O |  | 9.3.1.146 |  | YES | ignore |
| LTE V2X Services Authorized | O |  | 9.3.1.147 |  | YES | ignore |
| NR UE Sidelink Aggregate Maximum Bit Rate | O |  | 9.3.1.148 | This IE applies only if the UE is authorized for NR V2X services. | YES | ignore |
| LTE UE Sidelink Aggregate Maximum Bit Rate | O |  | 9.3.1.149 | This IE applies only if the UE is authorized for LTE V2X services. | YES | ignore |
| PC5 QoS Parameters | O |  | 9.3.1.150 | This IE applies only if the UE is authorized for NR V2X services. | YES | ignore |
| CE-mode-B Restricted | O |  | 9.3.1.155 |  | YES | ignore |
| UE User Plane CIoT Support Indicator | O |  | 9.3.1.160 |  | YES | ignore |
| Management Based MDT PLMN List | O |  | MDT PLMN List  9.3.1.168 |  | YES | ignore |
| UE Radio Capability ID | O |  | 9.3.1.142 |  | YES | reject |
| Extended Connected Time | O |  | 9.3.3.31 |  | YES | ignore |
| Time Synchronisation Assistance Information | O |  | 9.3.1.220 |  | YES | ignore |
| UE Slice Maximum Bit Rate List | O |  | 9.3.1.231 |  | YES | ignore |
| 5G ProSe Authorized | O |  | 9.3.1.233 |  | YES | ignore |
| 5G ProSe UE PC5 Aggregate Maximum Bit Rate | O |  | NR UE Sidelink Aggregate Maximum Bit Rate  9.3.1.148 | This IE applies only if the UE is authorized for 5G ProSe services. | YES | ignore |
| 5G ProSe PC5 QoS Parameters | O |  | 9.3.1.234 | This IE applies only if the UE is authorized for 5G ProSe services. | YES | ignore |
| Aerial UE Subscription Information | O |  | 9.3.1.246 |  | YES | ignore |
| NR A2X Services Authorized | O |  | 9.3.1.247 |  | YES | ignore |
| LTE A2X Services Authorized | O |  | 9.3.1.248 |  | YES | ignore |
| NR A2X UE PC5 Aggregate Maximum Bit Rate | O |  | NR UE Sidelink Aggregate Maximum Bit Rate 9.3.1.148 | 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 9.3.1.149 | This IE applies only if the UE is authorized for LTE A2X services. | YES | ignore |
| A2X PC5 QoS Parameters | O |  | 9.3.1.249 | This IE applies only if the UE is authorized for A2X services. | YES | ignore |
| Mobile IAB Authorized | O |  | 9.3.1.259 |  | YES | ignore |
| No PDU Session Indication | O |  | ENUMERATED (true, ...) | This IE applies only if the UE is a mobile IAB-MT. | YES | ignore |
| Partially Allowed NSSAI | O |  | 9.3.1.261 | Indicates the S-NSSAIs partially permitted by the network. | YES | ignore |
| Ranging and Sidelink Positioning Service Information | O |  | 9.3.1.269 | This IE applies only if the UE is authorized for NR V2X services and/or 5G ProSe services. | YES | ignore |
| AMF UE NGAP ID 2 | O |  | AMF UE NGAP ID 9.3.3.1 | This IE indicates the AMF UE NGAP ID assigned by the AMF. | YES | ignore |

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#### 9.2.3.8 PATH SWITCH REQUEST

This message is sent by the NG-RAN node to inform the AMF of the new serving NG-RAN node and to transfer some NG-U DL tunnel termination point(s) to the SMF via the AMF for one or multiple PDU session resources.

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 UE NGAP ID | M |  | 9.3.3.2 |  | YES | reject |
| Source AMF UE NGAP ID | M |  | AMF UE NGAP ID  9.3.3.1 |  | YES | reject |
| User Location Information | M |  | 9.3.1.16 |  | YES | ignore |
| UE Security Capabilities | M |  | 9.3.1.86 |  | YES | ignore |
| **PDU Session Resource to be Switched in Downlink List** |  | *1* |  |  | YES | reject |
| **>PDU Session Resource to be Switched in Downlink Item** |  | *1..<maxnoofPDUSessions>* |  |  | - |  |
| >>PDU Session ID | M |  | 9.3.1.50 |  | - |  |
| >>Path Switch Request Transfer | M |  | OCTET STRING | Containing the *Path Switch Request Transfer* IE specified in subclause 9.3.4.8. | - |  |
| **PDU Session Resource Failed to Setup List** |  | *0..1* |  |  | YES | ignore |
| **>PDU Session Resource Failed to Setup Item** |  | *1..<maxnoofPDUSessions>* |  |  | - |  |
| >>PDU Session ID | M |  | 9.3.1.50 |  | - |  |
| >>Path Switch Request Setup Failed Transfer | M |  | OCTET STRING | Containing the *Path Switch Request Setup Failed Transfer* IE specified in subclause 9.3.4.15. | - |  |
| RRC Resume Cause | O |  | RRC Establishment Cause  9.3.1.111 |  | YES | ignore |
| RedCap Indication | O |  | 9.3.1.228 |  | YES | ignore |
| eRedCap Indication | O |  | ENUMERATED (true, ...) |  | YES | ignore |
| Source AMF GUAMI | O |  | GUAMI  9.3.3.3 | This IE indicates the source AMF. | YES | ignore |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofPDUSessions | Maximum no. of PDU sessions allowed towards one UE. Value is 256. |

<<<<<<<<<<<<<<<<<<<< Unmodified Text Omitted >>>>>>>>>>>>>>>>>>>>

#### 9.2.3.9 PATH SWITCH REQUEST ACKNOWLEDGE

This message is sent by the AMF to inform the NG-RAN node that the path switch has been successfully completed in the 5GC.

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 |
| UE Security Capabilities | O |  | 9.3.1.86 |  | YES | reject |
| Security Context | M |  | 9.3.1.88 |  | YES | reject |
| New Security Context Indicator | O |  | 9.3.1.55 |  | YES | reject |
| **PDU Session Resource Switched List** |  | *1* |  |  | YES | ignore |
| **>PDU Session Resource Switched Item** |  | *1..<maxnoofPDUSessions>* |  |  | - |  |
| >>PDU Session ID | M |  | 9.3.1.50 |  | - |  |
| >>Path Switch Request Acknowledge Transfer | M |  | OCTET STRING | Containing the *Path Switch Request Acknowledge Transfer* IE specified in subclause 9.3.4.9. | - |  |
| >>PDU Session Expected UE Activity Behaviour | O |  | Expected UE Activity Behaviour  9.3.1.94 | Expected UE Activity Behaviour for the PDU Session. | YES | ignore |
| **PDU Session Resource Released List** |  | *0..1* |  |  | YES | ignore |
| **>PDU Session Resource Released Item** |  | *1..<maxnoofPDUSessions>* |  |  | - |  |
| >>PDU Session ID | M |  | 9.3.1.50 |  | - |  |
| >>Path Switch Request Unsuccessful Transfer | M |  | OCTET STRING | Containing the *Path Switch Request Unsuccessful Transfer* IE specified in subclause 9.3.4.20. | - |  |
| Allowed NSSAI | M |  | 9.3.1.31 | Indicates the S-NSSAIs permitted by the network. | YES | reject |
| Core Network Assistance Information for RRC INACTIVE | O |  | 9.3.1.15 |  | YES | ignore |
| RRC Inactive Transition Report Request | O |  | 9.3.1.91 |  | YES | ignore |
| Criticality Diagnostics | O |  | 9.3.1.3 |  | YES | ignore |
| Redirection for Voice EPS Fallback | O |  | 9.3.1.116 |  | YES | ignore |
| CN Assisted RAN Parameters Tuning | O |  | 9.3.1.119 |  | YES | ignore |
| SRVCC Operation Possible | O |  | 9.3.1.128 |  | YES | ignore |
| Enhanced Coverage Restriction | O |  | 9.3.1.140 |  | YES | ignore |
| Extended Connected Time | O |  | 9.3.3.31 |  | YES | ignore |
| UE Differentiation Information | O |  | 9.3.1.144 |  | YES | ignore |
| NR V2X Services Authorized | O |  | 9.3.1.146 |  | YES | ignore |
| LTE V2X Services Authorized | O |  | 9.3.1.147 |  | YES | ignore |
| NR UE Sidelink Aggregate Maximum Bit Rate | O |  | 9.3.1.148 | This IE applies only if the UE is authorized for NR V2X services. | YES | ignore |
| LTE UE Sidelink Aggregate Maximum Bit Rate | O |  | 9.3.1.149 | This IE applies only if the UE is authorized for LTE V2X services. | YES | ignore |
| PC5 QoS Parameters | O |  | 9.3.1.150 | This IE applies only if the UE is authorized for NR V2X services. | YES | ignore |
| CE-mode-B Restricted | O |  | 9.3.1.155 |  | YES | ignore |
| UE User Plane CIoT Support Indicator | O |  | 9.3.1.160 |  | YES | ignore |
| UE Radio Capability ID | O |  | 9.3.1.142 |  | YES | reject |
| Management Based MDT PLMN List | O |  | MDT PLMN List  9.3.1.168 | This IE is ignored if the *Management Based MDT PLMN Modification List* IE is present. | YES | ignore |
| Time Synchronisation Assistance Information | O |  | 9.3.1.220 |  | YES | ignore |
| 5G ProSe Authorized | O |  | 9.3.1.233 |  | YES | ignore |
| 5G ProSe UE PC5 Aggregate Maximum Bit Rate | O |  | NR UE Sidelink Aggregate Maximum Bit Rate  9.3.1.148 | This IE applies only if the UE is authorized for 5G ProSe services. | YES | ignore |
| 5G ProSe PC5 QoS Parameters | O |  | 9.3.1.234 | This IE applies only if the UE is authorized for 5G ProSe services. | YES | ignore |
| Management Based MDT PLMN Modification List | O |  | MDT PLMN Modification List  9.3.1.243 |  | YES | ignore |
| IAB Authorized | O |  | 9.3.1.129 |  | YES | ignore |
| Aerial UE Subscription Information | O |  | 9.3.1.246 |  | YES | ignore |
| NR A2X Services Authorized | O |  | 9.3.1.247 |  | YES | ignore |
| LTE A2X Services Authorized | O |  | 9.3.1.248 |  | YES | ignore |
| NR A2X UE PC5 Aggregate Maximum Bit Rate | O |  | NR UE Sidelink Aggregate Maximum Bit Rate 9.3.1.148 | 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 9.3.1.149 | This IE applies only if the UE is authorized for LTE A2X services. | YES | ignore |
| A2X PC5 QoS Parameters | O |  | 9.3.1.249 | This IE applies only if the UE is authorized for A2X services. | YES | ignore |
| Mobile IAB Authorized | O |  | 9.3.1.259 |  | YES | ignore |
| Partially Allowed NSSAI | O |  | 9.3.1.261 | Indicates the S-NSSAIs partially permitted by the network. | YES | ignore |
| Ranging and Sidelink Positioning Service Information | O |  | 9.3.1.269 | This IE applies only if the UE is authorized for NR V2X services and/or 5G ProSe services. | YES | ignore |
| AMF UE NGAP ID 2 | O |  | AMF UE NGAP ID 9.3.3.1 | This IE indicates the AMF UE NGAP ID assigned by the AMF. | YES | ignore |

<<<<<<<<<<<<<<<<<<<< Unmodified Text Omitted >>>>>>>>>>>>>>>>>>>>

#### 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 |
| Selected PLMN Identity | O |  | PLMN Identity  9.3.3.5 | Indicates the selected PLMN id for the non-3GPP access. | YES | ignore |
| IAB Node Indication | O |  | ENUMERATED (true, ...) | Indication of an IAB node | YES | reject |
| CE-mode-B Support Indicator | O |  | 9.3.1.156 |  | YES | reject |
| LTE-M Indication | O |  | 9.3.1.157 |  | YES | ignore |
| EDT Session | O |  | ENUMERATED (true, …) |  | YES | ignore |
| Authenticated Indication | O |  | ENUMERATED (true, …) | Indicates the FN-RG has been authenticated by the access network. | YES | ignore |
| NPN Access Information | O |  | 9.3.3.46 |  | YES | reject |
| RedCap Indication | O |  | 9.3.1.228 |  | YES | ignore |
| Selected NID | O |  | NID  9.3.3.42 | Indicates together with the *Selected PLMN Identity* IE, the selected SNPN Identity for the non-3GPP access. | YES | ignore |
| Mobile IAB Node Indication | O |  | ENUMERATED (true, ...) | Indicates that the UE is a mobile IAB-node | YES | reject |
| Partially Allowed NSSAI | O |  | 9.3.1.261 | Indicates the S-NSSAIs partially permitted by the network. | YES | ignore |
| eRedCap Indication | O |  | ENUMERATED (true, ...) |  | YES | ignore |
| GUAMI | O |  | GUAMI  9.3.3.3 |  | YES | ignore |
| GUAMI Type | O |  | ENUMERATED (native, mapped, …) |  | YES | ignore |
| Requested S-NSSAI | O |  | 9.3.1.y | Indicates the S-NSSAIs requested by the UE. | YES | ignore |

<<<<<<<<<<<<<<<<<<<< Unmodified Text Omitted >>>>>>>>>>>>>>>>>>>>

#### 9.2.6.14 OVERLOAD START

This message is sent by the AMF and is used to indicate to the NG-RAN node that the AMF is overloaded.

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 Overload Response | O |  | Overload Response  9.3.1.104 |  | YES | reject |
| AMF Traffic Load Reduction Indication | O |  | Traffic Load Reduction Indication 9.3.1.106 |  | YES | ignore |
| **Overload Start NSSAI List** |  | *0..1* |  |  | YES | ignore |
| **>Overload Start NSSAI Item** |  | *1..<maxnoofSliceItems>* |  |  | - |  |
| >>Slice Overload List | M |  | 9.3.1.107 |  | - |  |
| >>Slice Overload Response | O |  | Overload Response  9.3.1.104 |  | - |  |
| >>Slice Traffic Load Reduction Indication | O |  | Traffic Load Reduction Indication 9.3.1.106 |  | - |  |
| **GUAMI List** |  | *0..1* |  |  | YES | ignore |
| **>GUAMI List Item** |  | *1..<maxnoofGUAMIs>* |  |  | - |  |
| >>GUAMI | M |  | 9.3.3.3 |  | - |  |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofSliceItems | Maximum no. of signalled slice support items. Value is 1024. |
| maxnoofGUAMIs | Maximum no. of GUAMIs. Value is 1024. |

#### 9.2.6.15 OVERLOAD STOP

This message is sent by the AMF and is used to indicate that the AMF is no longer overloaded.

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 |
| **GUAMI List** |  | *0..1* |  |  | YES | ignore |
| **>GUAMI List Item** |  | *1..<maxnoofGUAMIs>* |  |  | - |  |
| >>GUAMI | M |  | 9.3.3.3 |  | - |  |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofGUAMIs | Maximum no. of GUAMIs. Value is 1024. |

<<<<<<<<<<<<<<<<<<<< Unmodified Text Omitted >>>>>>>>>>>>>>>>>>>>

#### 9.3.1.x GW Context Release Indication

This information element is set by the gNB to provide an indication that the AMF may release any resources related to the signalled NG UE context (see TS 38.300 [8]).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| GW Context Release Indication | M |  | ENUMERATED (true, …) | This IE indicates to the AMF that the gNB has successfully performed an Xn HO for the UE to a target gNB. |

<<<<<<<<<<<<<<<<<<<< Unmodified Text Omitted >>>>>>>>>>>>>>>>>>>>

#### 9.3.1.y Requested S-NSSAI

This IE indicates the S-NSSAI requested by the UE.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| **Requested S-NSSAI Item** |  | *1..<maxnoofRequestedS-NSSAIs>* |  |  |
| >S-NSSAI | M |  | 9.3.1.24 |  |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofRequestedS-NSSAIs | Maximum no. of S-NSSAIs requested by the UE. Value is 8. |

*End of Change*