**3GPP TSG-CT WG1 Meeting #131-eC1-21xxyz**

**Electronic meeting, 19-27 August 2021**

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| *CR-Form-v12.0* |
| **CHANGE REQUEST** |
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|  | **24.501** | **CR** | 3521 | **rev** | **1** | **Current version:** | **17.3.1** |  |
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| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* |
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| ***Proposed change affects:*** | UICC apps |  | ME | **X** | Radio Access Network |  | Core Network | **X** |

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|  |
| ***Title:***  | Multiple round-trip of AA messages duringUUAA-MM |
|  |  |
| ***Source to WG:*** | Qualcomm Incorporated |
| ***Source to TSG:*** | C1 |
|  |  |
| ***Work item code:*** | ID\_UAS |  | ***Date:*** | 2021-07-28 |
|  |  |  |  |  |
| ***Category:*** | **B** |  | ***Release:*** | Rel-17 |
|  | *Use one of the following categories:****F*** *(correction)****A*** *(mirror corresponding to a change in an earlier release)****B*** *(addition of feature),* ***C*** *(functional modification of feature)****D*** *(editorial modification)*Detailed explanations of the above categories canbe found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | *Use one of the following releases:Rel-8 (Release 8)Rel-9 (Release 9)Rel-10 (Release 10)Rel-11 (Release 11)Rel-12 (Release 12)**Rel-13 (Release 13)Rel-14 (Release 14)Rel-15 (Release 15)Rel-16 (Release 16)Rel-17 (Release 17)* |
|  |  |
| ***Reason for change:*** | During the UUAA-MM procedure, the UE and the USS need to exchange the payload for authentication/authorization multiple round-trip via MM NAS procedure. It is performed after registration procedure. In the UL NAS TRANSPORT message and DL NAS TRANSPORT message, payload container can carry the service-level-AA container and the payload container type needs to be set to "service-level-AA container". In other words, extension of payload container type and payload container in the UL NAS TRANSPORT/DL NAS TRANSPORT message can support the multiple round-trip messages for authentication procedure for UUAA.UUAA is one of service-level AA procedure, so the UE and the AMF shall be able to determine the received service-level-AA container is for UUAA. If CAA-level UAV ID is included as an additional information in the UL/DL NAS TRANSPORT, the UE ad the AMF can determine the entity where the payload to be forwarded. |
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| ***Summary of change:*** |  Adding service-level-AA container case in UL NAS TRANSPORT and DL NAS TRANSPORT.Adding service-level device ID IE in UL NAS TRANSPORT and DL NAS TRANSPORT for routing to appropriate entity.Adding new payload container type to 'service-level-AA container |
|  |  |
| ***Consequences if not approved:*** | UUAA-MM procedure cannot be supported |
|  |  |
| ***Clauses affected:*** | 5.4.5.1, 5.4.5.2.1, 5.4.5.2.2, 5.4.5.3.1, 5.4.5.3.2, 5.4.5.3.3, 8.2.10.1, 8.2.10.X(new), 8.2.11.1, 8.2.11.X(new),9.11.3.39, 9.11.3.40 |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **X** |  Other core specifications  | TS/TR ... 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:*** |  |

### \*\*\*\*\* 1st change \*\*\*\*\*

#### 5.4.5.1 General

The purpose of the NAS transport procedures is to provide a transport of payload between the UE and the AMF. The type of the payload is identified by the Payload container type IE and includes one of the following:

a) a single 5GSM message;

b) SMS;

c) an LPP message (see 3GPP TS 36.355 [26]);

d) an SOR transparent container;

e) a UE policy container;

f) a UE parameters update transparent container;

g) a location services message (see 3GPP TS 24.080 [13A]);

h) a CIoT user data container;

i) a Service-level-AA container; or

j) Multiple payloads.

For payload type a) to e), g) and h), along with the payload, the NAS transport procedure may transport the associated information (e.g. PDU session information for 5GSM message payload).

For payload type j), the Payload container IE consists a list of payload container entries, where each of payload container entry contains the payload and optional associated information (e.g. PDU session information for 5GSM message payload).

NOTE: Payload type can be set to "Multiple payloads" if there are more than one payloads to be transported using the NAS transport procedures.

### \*\*\*\*\* 2nd change \*\*\*\*\*

##### 5.4.5.2.1 General

The purpose of the UE-initiated NAS transport procedure is to provide a transport of:

a) a single 5GSM message as defined in subclause 8.3;

b) SMS (see 3GPP TS 24.011 [13]);

c) an LPP message;

d) an SOR transparent container;

e) a UE policy container; or

f) a UE parameters update transparent container;

g) a location services message;

h) a CIoT user data container;

i) a Service-level-AA container; or

j) multiple of the above types.

and:

- for a) to e), g) and h), optional associated payload routing information from the UE to the AMF in a 5GMM message; and

- for j), the Payload container IE consists a list of payload container entries, where each of the payload container entry contains the payload and optional associated payload routing information (e.g. PDU session information for 5GSM message payload).

### \*\*\*\*\* 3rd change \*\*\*\*\*

##### 5.4.5.2.2 UE-initiated NAS transport procedure initiation

In the connected mode, the UE initiates the NAS transport procedure by sending the UL NAS TRANSPORT message to the AMF, as shown in figure 5.4.5.2.2.1.

In case a) in subclause 5.4.5.2.1, the UE shall:

- include the PDU session information (PDU session ID, old PDU session ID, S-NSSAI, mapped S-NSSAI (if available in roaming scenarios), DNN, request type), if available;

- set the Payload container type IE to "N1 SM information"; and

- set the Payload container IE to the 5GSM message.

The UE shall set the PDU session ID IE to the PDU session ID. If an old PDU session ID is to be included, the UE shall set the Old PDU session ID IE to the old PDU session ID.

If an S-NSSAI is to be included, the UE shall set the S-NSSAI IE to the S-NSSAI selected for the PDU session from the allowed NSSAI for the current PLMN, associated with the mapped S-NSSAI (if available in roaming scenarios).

If a DNN is to be included, the UE shall set the DNN IE to the DNN. 5GSM procedures specified in clause 6 describe conditions for inclusion of the S-NSSAI, mapped S-NSSAI (if available in roaming scenarios), and the DNN.

If a request type is to be included, the UE shall set the Request type IE to the request type. The request type is not provided along 5GSM messages other than the PDU SESSION ESTABLISHMENT REQUEST message and the PDU SESSION MODIFICATION REQUEST message.

If an MA PDU session information is to be included, the UE shall set the MA PDU session information IE to the MA PDU session information. The MA PDU session information is not provided along 5GSM messages other than the PDU SESSION ESTABLISHMENT REQUEST message and the PDU SESSION MODIFICATION REQUEST message as specified in 3GPP TS 24.193 [13B].

In case b) in subclause 5.4.5.2.1, the UE shall:

- set the Payload container type IE to "SMS"; and

- set the Payload container IE to the SMS payload.

Based on the UE preferences regarding access selection for mobile originated (MO) transmission of SMS over NAS as described in 3GPP TS 23.501 [8]:

- when SMS over NAS is preferred to be sent over 3GPP access: the UE attempts to deliver MO SMS over NAS via the 3GPP access if the UE is registered over both 3GPP access and non-3GPP access. If the delivery of SMS over NAS via the 3GPP access is not available, the UE attempts to deliver MO SMS over NAS via the non-3GPP access; and

- when SMS over NAS is preferred to be sent over non-3GPP access: the UE attempts to deliver MO SMS over NAS via the non-3GPP access if the UE is registered over both 3GPP access and non-3GPP access. If the delivery of SMS over NAS via the non-3GPP access is not available, the UE attempts to deliver MO SMS over NAS via the 3GPP access.

In case c) in subclause 5.4.5.2.1, the UE shall:

- set the Payload container type IE to "LTE Positioning Protocol (LPP) message container";

- set the Payload container IE to the LPP message payload; and

- set the Additional information IE to the routing information provided by the upper layer location services application.

In case d) in subclause 5.4.5.2.1, the UE shall:

- set the Payload container type IE to "SOR transparent container"; and

- set the Payload container IE to the UE acknowledgement due to successful reception of steering of roaming information (see 3GPP TS 23.122 [5]).

In case e) in subclause 5.4.5.2.1, the UE shall:

- set the Payload container type IE to "UE policy container"; and

- set the contents of the Payload container IE as specified in Annex D.

In case f) in subclause 5.4.5.2.1, the UE shall:

- set the Payload container type IE to "UE parameters update transparent container"; and

- set the contents of the Payload container IE to the UE acknowledgement due to successful reception of UE parameters update data (see 3GPP TS 23.502 [9]).

In case g) in subclause 5.4.5.2.1, the UE shall:

- set the Payload container type IE to "Location services message container";

- set the Payload container IE to the Location services message payload; and

- set the Additional information IE to the routing information, if provided by the upper layer location services application.

In case h) in subclause 5.4.5.2.1, the UE shall:

- include the PDU session ID, and Release assistance indication (if available);

- set the Payload container type IE to "CIoT user data container"; and

- set the Payload container IE to the user data container.

In case i) in subclause 5.4.5.2.1, the UE shall:

- include the Service-level device ID IE, if provided by the upper layer application;

- set the Payload container type IE to "Service-level-AA container"; and

- set the Payload container IE to the Service-level-AA container without including the Service-level device ID.

In case j) in subclause 5.4.5.2.1, the UE shall:

- set the Payload container type IE to "Multiple payloads"; and

- set each payload container entry of the Payload container IE (see subclause 9.11.3.39), as follows:

i) set the payload container type field of the payload container entry to a payload container type value set in the Payload container type IE as specified in cases a) to i) above;

ii) set the payload container entry contents field of the payload container entry to the payload container contents set in the Payload container IE as specified in cases a) to i) above, and

iii) set the optional IE fields, if any, to the optional associated payload routing information as specified in cases a) to h) above.



Figure 5.4.5.2.2.1: UE-initiated NAS transport procedure

### \*\*\*\*\* 4th change \*\*\*\*\*

##### 5.4.5.2.3 UE-initiated NAS transport of messages accepted by the network

Upon reception of a UL NAS TRANSPORT message, if the Payload container type IE is set to:

a) "N1 SM information", the AMF looks up a PDU session routing context for:

1) the UE and the PDU session ID IE in case the Old PDU session ID IE is not included, and:

NOTE 1: If the Old PDU session ID IE is not included in the UL NAS TRANSPORT message and the AMF has received a reallocation requested indication from the SMF, the AMF needs to ignore the reallocation requested indication.

i) if the AMF has a PDU session routing context for the PDU session ID and the UE, and the Request type IE is either not included or is included but set to other value than "initial request", "existing PDU session", "initial emergency request", "existing emergency PDU session" or "MA PDU request", the AMF shall forward the 5GSM message, and the PDU session ID IE towards the SMF identified by the SMF ID of the PDU session routing context;

ii) if the AMF has a PDU session routing context for the PDU session ID and the UE, the PDU session routing context indicates that the PDU session is not an emergency PDU session, the Request type IE is included and is set to "existing PDU session" or "MA PDU request", and the S-NSSAI associated with the PDU session identified by the PDU session ID is allowed for the target access type, the AMF shall forward the 5GSM message, the PDU session ID, the S-NSSAI, the mapped S-NSSAI (if available in roaming scenarios), the DNN (if received) and the request type towards the SMF identified by the SMF ID of the PDU session routing context;

iii) if the AMF does not have a PDU session routing context for the PDU session ID and the UE, and the Request type IE is included and is set to "initial request" or "MA PDU request":

A) the AMF shall select an SMF with following handlings in case the UE is not registered for onboarding services in SNPN:

 If the S-NSSAI IE is not included and the allowed NSSAI contains:

- one S-NSSAI, the AMF shall use the S-NSSAI in the allowed NSSAI as the S-NSSAI;

- two or more S-NSSAIs and the user's subscription context obtained from UDM contains only one default S-NSSAI that is included in the allowed NSSAI, the AMF shall use the S-NSSAI in the allowed NSSAI that matches the default S-NSSAI as the S-NSSAI; or

- two or more S-NSSAIs and the user's subscription context obtained from UDM contains zero, two or more default S-NSSAI(s) included in the allowed NSSAI, the AMF shall use an S-NSSAI in the allowed NSSAI selected based on operator policy as the S-NSSAI.

 If the DNN IE is included, the AMF shall use the UE requested DNN as the DNN determined by the AMF; and

 If the DNN IE is not included, and the user's subscription context obtained from UDM:

- contains the default DNN for the S-NSSAI, the AMF shall use the default DNN as the DNN determined by the AMF; and

- does not contain the default DNN for the S-NSSAI, the AMF shall use a locally configured DNN as the DNN determined by the AMF; and

A1) the AMF shall select an SMF with following handlings in case the UE is registered for onboarding services in SNPN:

- if the AMF onboarding configuration data contains only one S-NSSAI used for onboarding services in SNPN, the AMF shall use the S-NSSAI used for onboarding services in SNPN as the S-NSSAI;

- if the AMF onboarding configuration data contains two or more S-NSSAI(s) used for onboarding services in SNPN, the AMF shall use an S-NSSAI selected based on operator policy as the S-NSSAI;

- if the AMF onboarding configuration data contains the DNN for the S-NSSAI used for onboarding services in SNPN, the AMF shall use the DNN as the DNN determined by the AMF; and

- if the AMF onboarding configuration data does not contain the S-NSSAI used for onboarding services in SNPN, the AMF shall select the configured SMF for the DNN used for onboarding services in SNPN; and

NOTE 2: SMF selection is outside the scope of the present document.

NOTE 3: As part of SMF selection, the PCF can provide the AMF with a DNN selected by the network different from the DNN determined by the AMF.

B) if the SMF selection is successful:

- if the DNN selected by the network is a LADN DNN, the AMF shall determine the UE presence in LADN service area;

- the AMF shall store a PDU session routing context for the PDU session ID and the UE, shall set the SMF ID in the stored PDU session routing context to the SMF ID corresponding to the DNN in the user's subscription context obtained from the UDM; and

- the AMF shall forward the 5GSM message, the PDU session ID, the S-NSSAI, the mapped S-NSSAI (if available in roaming scenarios), the DNN determined by the AMF, DNN selected by the network (if different from DNN determined by the AMF), the request type, the MA PDU session information and UE presence in LADN service area (if DNN received corresponds to an LADN DNN) towards the SMF identified by the SMF ID of the PDU session routing context;

NOTE 4: The MA PDU session information is not forwarded towards the SMF if the DNN received corresponds to an LADN DNN.

iv) if the AMF does not have a PDU session routing context for the PDU session ID and the UE, the Request type IE is included and is set to "existing PDU session" or "MA PDU request", and the AMF retrieves an SMF ID associated with:

A) the PDU session ID matching the PDU session ID received from the UE, if any; or

B) the DNN matching the DNN received from the UE, otherwise;

 such that the SMF ID includes a PLMN identity corresponding to the UE's HPLMN or the current PLMN, then:

A) the AMF shall store a PDU session routing context for the PDU session ID and the UE, shall set the SMF ID in the stored PDU session routing context to the retrieved SMF ID; and

B) the AMF shall forward the 5GSM message, the PDU session ID, the S-NSSAI, the mapped S-NSSAI (if available in roaming scenarios), the DNN (if received) and the request type towards the SMF identified by the SMF ID of the PDU session routing context;

v) if the AMF does not have a PDU session routing context for the PDU session ID and the UE, the Request type IE is included and is set to "initial emergency request", and the AMF does not have a PDU session routing context for another PDU session ID of the UE indicating that the PDU session is an emergency PDU session:

A) the AMF shall select an SMF. The AMF shall use the emergency DNN from the AMF emergency configuration data as the DNN, if configured. The AMF shall derive the SMF from the emergency DNN or use the statically configured SMF from the AMF emergency configuration data, if configured; and

B) if the SMF selection is successful:

- the AMF shall store a PDU session routing context for the PDU session ID and the UE, shall set the SMF ID in the stored PDU session routing context to the SMF ID of the selected SMF, and shall store an indication that the PDU session is an emergency PDU session in the stored PDU session routing context; and

- the AMF shall forward the 5GSM message, the PDU session ID, the S-NSSAI (if configured in the AMF emergency configuration data), the DNN (if configured in the AMF emergency configuration data), and the request type towards the SMF identified by the SMF ID of the PDU session routing context; and

vi) if the AMF does not have a PDU session routing context for the PDU session ID and the UE, the Request type IE is included and is set to "initial emergency request", and the AMF has a PDU session routing context indicating that the PDU session is an emergency PDU session for another PDU session ID of the UE:

A) the AMF shall store a PDU session routing context for the PDU session ID and the UE and shall set the SMF ID in the stored PDU session routing context to the SMF ID of the PDU session routing context for the other PDU session ID of the UE; and

B) the AMF shall forward the 5GSM message, the PDU session ID, the S-NSSAI (if configured in the AMF emergency configuration data), the DNN (if configured in the AMF emergency configuration data) and the request type towards the SMF identified by the SMF ID of the PDU session routing context; or

vii) if the AMF has a PDU session routing context for the PDU session ID and the UE, the PDU session routing context indicates that the PDU session is an emergency PDU session, and the Request type IE is included and is set to "existing emergency PDU session", the AMF shall forward the 5GSM message, the PDU session ID, the S-NSSAI (if configured in the AMF emergency configuration data), the DNN (if configured in the AMF emergency configuration data), and the request type towards the SMF identified by the SMF ID of the PDU session routing context; and

viii) if the AMF does not have a PDU session routing context for the PDU session ID and the UE, the Request type IE is included and is set to "existing emergency PDU session", and the AMF retrieves an SMF ID associated with emergency services such that the SMF ID includes a PLMN identity corresponding to the current PLMN, then:

A) the AMF shall store a PDU session routing context for the PDU session ID and the UE, shall set the SMF ID in the stored PDU session routing context to the retrieved SMF ID; and

B) the AMF shall forward the 5GSM message, the PDU session ID, the S-NSSAI (if configured in the AMF emergency configuration data), the DNN (if configured in the AMF emergency configuration data), and the request type towards the SMF identified by the SMF ID of the PDU session routing context; or

2) the UE and the Old PDU session ID IE in case the Old PDU session ID IE is included, and:

i) the AMF has a PDU session routing context for the old PDU session ID and the UE and does not have a PDU session routing context for the PDU session ID and the UE, the Request type IE is included and is set to "initial request", and the AMF received a reallocation requested indication from the SMF indicating that the SMF is to be reused, the AMF shall store a PDU session routing context for the PDU session ID and the UE, set the SMF ID in the stored PDU session routing context to the SMF ID of the PDU session routing context for the old PDU session ID and the UE. If the DNN is a LADN DNN, the AMF shall determine the UE presence in LADN service area. The AMF shall forward the 5GSM message, the PDU session ID, the old PDU session ID, the S-NSSAI (if received), the mapped S-NSSAI (if available in roaming scenarios), the DNN, the request type and UE presence in LADN service area (if DNN received corresponds to an LADN DNN) towards the SMF identified by the SMF ID of the PDU session routing context;

ii) the AMF has a PDU session routing context for the old PDU session ID and the UE and does not have a PDU session routing context for the PDU session ID and the UE, the Request type IE is included and is set to "initial request", and the AMF received a reallocation requested indication from the SMF indicating that the SMF is to be reallocated:

A) the AMF shall select an SMF with the following handling;

 If the S-NSSAI IE is not included and the allowed NSSAI contains:

- one S-NSSAI, the AMF shall use the S-NSSAI in the allowed NSSAI as the S-NSSAI;

- two or more S-NSSAIs and the user's subscription context obtained from UDM contains only one default S-NSSAI that is included in the allowed NSSAI, the AMF shall use the S-NSSAI in the allowed NSSAI that matches the default S-NSSAI; or

- two or more S-NSSAIs and the user's subscription context obtained from UDM contains zero, two or more default S-NSSAI(s) included in the allowed NSSAI, the AMF shall use an S-NSSAI in the allowed NSSAI selected based on operator policy as the S-NSSAI.

 If the DNN is a LADN DNN, the AMF shall determine the UE presence in LADN service area.

B) if the SMF selection is successful:

- the AMF shall store a PDU session routing context for the PDU session ID and the UE and set the SMF ID of the PDU session routing context to the SMF ID of the selected SMF; and

- the AMF shall forward the 5GSM message, the PDU session ID, the old PDU session ID, the S-NSSAI, the mapped S-NSSAI (if available in roaming scenarios), the DNN, the request type, the MA PDU session information and UE presence in LADN service area (if DNN received corresponds to an LADN DNN) towards the SMF identified by the SMF ID of the PDU session routing context for the PDU session ID and the UE;

NOTE 5: The MA PDU session information is not forwarded towards the SMF if the DNN received corresponds to an LADN DNN.

b) "SMS", the AMF shall forward the content of the Payload container IE to the SMSF associated with the UE;

c) "LTE Positioning Protocol (LPP) message container", the AMF shall forward the Payload container type and the content of the Payload container IE to the LMF associated with the routing information included in the Additional information IE of the UL NAS TRANSPORT message;

d) "SOR transparent container", the AMF shall forward the content of the Payload container IE to the UDM;

e) "UE policy container", the AMF shall forward the content of the Payload container IE to the PCF.

f) "UE parameters update transparent container", the AMF shall forward the content of the Payload container IE to the UDM.

g) "Location services message container":

1) if the Additional information IE is not included in the UL NAS TRANSPORT message, the AMF shall provide the Payload container type and the content of the Payload container IE to the location services application; and

2) if the Additional information IE is included in the UL NAS TRANSPORT message, the AMF shall forward the Payload container type and the content of the Payload container IE to an LMF associated with routing information included in the Additional information IE of the UL NAS TRANSPORT message.

h) "CIoT user data container", the AMF shall look up a PDU session routing context for the UE and the PDU session ID, and

1) forward the content of the Payload container IE towards the SMF identified by the SMF ID of the PDU session routing context; and

2) initiate the release of the N1 NAS signalling connection:

i) if the Release assistance indication IE is included in the UL NAS TRANSPORT message and the DDX field of the Release assistance indication IE indicates "No further uplink and no further downlink data transmission subsequent to the uplink data transmission is expected" and if there is no downlink signalling or downlink data for the UE; or

ii) upon subsequent delivery of the next received downlink data transmission to the UE if the Release assistance indication IE is included in the UL NAS TRANSPORT message and the DDX field of the Release assistance indication IE indicates "Only a single downlink data transmission and no further uplink data transmission subsequent to the uplink data transmission is expected" and if there is no additional downlink signalling or downlink data for the UE.

i) "Service-level-AA container":

1) if the CAA-level UAV ID is included in the Service-level device ID IE of the UL NAS TRANSPORT message, the AMF shall forward both the CAA-level UAV ID and the content of the Payload container IE to the UAS-NF corresponding to the CAA-level UAV ID.

j) "Multiple payloads", the AMF shall first decode the content of the Payload container IE (see subclause 9.11.3.39) to obtain the number of payload container entries and for each payload container entry, the AMF shall:

i) decode the payload container type field;

ii) decode the optional IE fields and the payload container contents field in the payload container entry; and

iii) handle the content of each payload container entry the same as the content of the Payload container IE and the associated optional IEs as specified in bullets a) to i) above according to the payload container type field.

### \*\*\*\*\* 5th change \*\*\*\*\*

##### 5.4.5.3.1 General

The purpose of the network-initiated NAS transport procedure is to provide a transport of:

a) a single 5GSM message;

b) SMS;

c) an LPP message;

d) an SOR transparent container;

e) a single uplink 5GSM message which was not forwarded due to routing failure;

f) a single uplink 5GSM message which was not forwarded due to congestion control;

g) a UE policy container;

h) a single uplink 5GSM message which was not forwarded, because the PLMN's maximum number of PDU sessions has been reached;

h1) a single uplink 5GSM message which was not forwarded, because the maximum number of PDU sessions with active user-plane resources has been reached;

h2) a single uplink 5GSM message which was not forwarded, because of ongoing network slice-specific authentication and authorization procedure for the S-NSSAI that is requested;

h3) a single uplink 5GSM message which was not forwarded, because the UE requested to establish an MA PDU session for LADN DNN;

i) a single uplink 5GSM message which was not forwarded due to service area restrictions;

i1) a single uplink 5GSM message which was not forwarded because the UE is registered to a PLMN via a satellite NG-RAN cell that is not allowed to operate at the present UE location;

j) a UE parameters update transparent container;

k) a location services message;

l) a CIoT user data container;

l1) a single uplink CIoT user data container or control plane user data which was not forwarded due to routing failure;

l2) a single uplink CIoT user data container which was not forwarded due to congestion control;

m) a Service-level-AA container; or

n) multiple of the above types.

from the AMF to the UE in a 5GMM message.

### \*\*\*\*\* 6th change \*\*\*\*\*

##### 5.4.5.3.2 Network-initiated NAS transport procedure initiation

In 5GMM-CONNECTED mode, the AMF initiates the NAS transport procedure by sending the DL NAS TRANSPORT message, as shown in figure 5.4.5.3.2.1.

In case a) in subclause 5.4.5.3.1, i.e. upon reception from an SMF of a 5GSM message without an N1 SM delivery skip allowed indication for a UE or a 5GSM message with an N1 SM delivery skip allowed indication for a UE in the 5GMM-CONNECTED mode, the AMF shall:

a) include the PDU session information (PDU session ID) in the PDU session ID IE;

b) set the Payload container type IE to "N1 SM information"; and

c) set the Payload container IE to the 5GSM message.

In case b) in subclause 5.4.5.3.1, i.e. upon reception from an SMSF of an SMS payload, the AMF shall:

a) set the Payload container type IE to "SMS";

b) set the Payload container IE to the SMS payload; and

c) select the access type to deliver the DL NAS TRANSPORT message as follows in case the access type selection is required:

1) if the UE to receive the DL NAS TRANSPORT message is registered to the network via both 3GPP access and non-3GPP access, the 5GMM context of the UE indicates that SMS over NAS is allowed, the UE is in MICO mode, and the UE is in 5GMM-IDLE mode for 3GPP access and in 5GMM-CONNECTED mode for non-3GPP access, then the AMF selects non-3GPP access. Otherwise, the AMF selects either 3GPP access or non-3GPP access.

 If the delivery of the DL NAS TRANSPORT message over 3GPP access has failed, the AMF may re-send the DL NAS TRANSPORT message over the non-3GPP access.

 If the delivery of the DL NAS TRANSPORT message over non-3GPP access has failed, the AMF may re-send the DL NAS TRANSPORT message over the 3GPP access; and

2) otherwise, the AMF selects 3GPP access.

NOTE 1: The AMF selects an access type between 3GPP access and non-3GPP access based on operator policy.

In case c) in subclause 5.4.5.3.1 i.e. upon reception from an LMF of an LPP message payload, the AMF shall:

a) set the Payload container type IE to "LTE Positioning Protocol (LPP) message container";

b) set the Payload container IE to the LPP message payload received from the LMF;

c) set the Additional information IE to an LCS correlation identifier received from the LMF from which the LPP message was received.

NOTE 2: The LCS Correlation Identifier is assigned originally by the AMF except for LPP message transfer associated with event reporting for periodic or triggered location as described in subclause 6.3.1 of 3GPP TS 23.273 [6B], where the LMF assigns the correlation identifier. AMF and LMF assigned correlation identifiers can be distinguished by an implementation specific convention (e.g. use of a different number of octets) to enable an AMF to distinguish one from the other when received in the Additional Information IE in an UL NAS Transport message.

In case d) in subclause 5.4.5.3.1 i.e. upon reception of a steering of roaming information (see 3GPP TS 23.122 [5]) from the UDM to be forwarded to the UE, the AMF shall:

a) set the Payload container type IE to "SOR transparent container"; and

b) set the Payload container IE to the steering of roaming information (see 3GPP TS 23.122 [5]) received from the UDM.

In case e) in subclause 5.4.5.3.1, i.e. upon sending a single uplink 5GSM message which was not forwarded due to routing failure, the AMF shall:

a) include the PDU session ID in the PDU session ID IE;

b) set the Payload container type IE to "N1 SM information";

c) set the Payload container IE to the 5GSM message which was not forwarded;

d) set the 5GMM cause IE to the 5GMM cause #90 "payload was not forwarded" or 5GMM cause #91 "DNN not supported or not subscribed in the slice".

 The AMF sets the 5GMM cause IE to the 5GMM cause #91 "DNN not supported or not subscribed in the slice", if the 5GSM message could not be forwarded since SMF selection fails because:

1) the DNN is not supported in the slice identified by the S-NSSAI used by the AMF; or

2) neither the DNN provided by the UE nor the wildcard DNN are in the subscribed DNN list of the UE for the S-NSSAI used by the AMF.

 Otherwise, the AMF sets the 5GMM cause IE to the 5GMM cause #90 "payload was not forwarded"; and

e) optionally include the Back-off timer value IE if the 5GMM cause IE is set to 5GMM cause #91 "DNN not supported or not subscribed in the slice" due to the DNN is not supported in the slice.

In case f) in subclause 5.4.5.3.1, i.e. upon sending a single uplink 5GSM message which was not forwarded due to congestion control, the AMF shall:

a) include the PDU session ID in the PDU session ID IE;

b) set the Payload container type IE to "N1 SM information";

c) set the Payload container IE to the 5GSM message which was not forwarded;

d) set the 5GMM cause IE to the 5GMM cause #22 "Congestion", the 5GMM cause #67 "insufficient resources for specific slice and DNN" or the 5GMM cause #69 "insufficient resources for specific slice"; and

e) include the Back-off timer value IE.

In case g) in subclause 5.4.5.3.1, i.e. upon reception of a UE policy container from the PCF to be forwarded to the UE, the AMF shall:

a) set the Payload container type IE to "UE policy container"; and

b) set the Payload container IE to the UE policy container received from the PCF.

In case h) in subclause 5.4.5.3.1, i.e. upon sending a single uplink 5GSM message which was not forwarded, because the PLMN's maximum number of PDU sessions has been reached, the AMF shall:

a) include the PDU session ID in the PDU session ID IE;

b) set the Payload container type IE to "N1 SM information";

c) set the Payload container IE to the 5GSM message which was not forwarded; and

d) set the 5GMM cause IE to the 5GMM cause #65 "maximum number of PDU sessions reached".

In case h1) in subclause 5.4.5.3.1, i.e. upon sending a single uplink 5GSM message which was not forwarded, because the maximum number of PDU sessions with active user-plane resources has been reached, the AMF shall:

a) include the PDU session ID in the PDU session ID IE;

b) set the Payload container type IE to "N1 SM information";

c) set the Payload container IE to the 5GSM message which was not forwarded; and

d) set the 5GMM cause IE to the 5GMM cause #92 "insufficient user-plane resources for the PDU session".

In case h2) in subclause 5.4.5.3.1, i.e. upon sending a single uplink 5GSM message which was not forwarded because the UE requested to establish a PDU session associated with an S-NSSAI or to modify a PDU session associated with an S-NSSAI for which:

a) the AMF is performing network slice-specific authentication and authorization and determined to reject the request based on local policy; or

b) the network slice-specific authentication and authorization has failed or the authorization has been revoked;

the AMF shall:

a) include the PDU session ID in the PDU session ID IE;

b) set the Payload container type IE to "N1 SM information";

c) set the Payload container IE to the 5GSM message which was not forwarded; and

d) set the 5GMM cause IE to the 5GMM cause #90 "payload was not forwarded".

In case h3) in subclause 5.4.5.3.1, i.e. upon sending a single uplink 5GSM message which was not forwarded because the UE requested to establish an MA PDU session for LADN DNN, the AMF shall:

a) include the PDU session ID in the PDU session ID IE;

b) set the Payload container type IE to "N1 SM information";

c) set the Payload container IE to the 5GSM message which was not forwarded; and

d) set the 5GMM cause IE to the 5GMM cause #90 "payload was not forwarded".

In case i) in subclause 5.4.5.3.1, i.e. upon sending a single uplink 5GSM message which was not forwarded due to service area restrictions, the AMF shall:

a) include the PDU session ID in the PDU session ID IE;

b) set the Payload container type IE to "N1 SM information";

c) set the Payload container IE to the 5GSM message which was not forwarded; and

d) set the 5GMM cause IE to the 5GMM cause #28 "Restricted service area".

In case i1) in subclause 5.4.5.3.1, i.e. upon sending a single uplink 5GSM message which was not forwarded because the UE is registered to a PLMN via a satellite NG-RAN cell that is not allowed to operate at the present UE location, the AMF shall:

a) include the PDU session ID in the PDU session ID IE;

b) set the Payload container type IE to "N1 SM information";

c) set the Payload container IE to the 5GSM message which was not forwarded; and

d) set the 5GMM cause IE to the 5GMM cause #78 "PLMN not allowed to operate at the present UE location".

In case j) in subclause 5.4.5.3.1 i.e. upon reception of UE parameters update data (see 3GPP TS 23.502 [9]) from the UDM to be forwarded to the UE, the AMF shall:

a) set the Payload container type IE to "UE parameters update transparent container"; and

b) set the contents of the Payload container IE to the UE parameters update data (see 3GPP TS 23.502 [9]) received from the UDM.

For case k) in subclause 5.4.5.3.1 upon reception from a location services application of a Location services message payload, the AMF shall:

a) set the Payload container type IE to "Location services message container"; and

b) set the Payload container IE to the Location services message payload.

For case k) in subclause 5.4.5.3.1 upon reception from an LMF of a Location services message payload, the AMF shall:

a) set the Payload container type IE to "Location services message container";

b) set the Payload container IE to the Location services message payload; and

c) set the Additional information IE to routing information associated with the LMF from which the Location services message payload was received.

NOTE 3: Case k) in subclause 5.4.5.3.1 supports transport of a Location services message container between a UE and an AMF and between a UE and an LMF. For transport between a UE and an LMF, the Additional information IE is included and provides routing information for the LMF. For transport between a UE and an AMF, the Additional information IE is not included.

In case l) in subclause 5.4.5.3.1, i.e. upon reception from an SMF of a user data container payload, the AMF shall:

a) include the PDU session ID in the PDU session ID IE;

b) set the Payload container type IE to "CIoT user data container"; and

c) set the Payload container IE to the user data container.

For case l1) in subclause 5.4.5.3.1, i.e. upon sending a single uplink CIoT user data container or control plane user data which was not forwarded due to routing failure, the AMF shall:

a) include the PDU session ID in the PDU session ID IE;

b) set the Payload container type IE to " CIoT user data container";

c) set the Payload container IE to the CIoT user data container or control plane user data which was not forwarded; and

d) set the 5GMM cause IE to the 5GMM cause #90 "payload was not forwarded".

NOTE 4: For case l1) in subclause 5.4.5.3.1, this is also applied for a single uplink CIoT user data container or control plane user data in the CONTRON PLANE SERVICE REQUEST message which was not forwarded due to routing failure.

For case l2) in subclause 5.4.5.3.1, i.e. upon sending a single uplink CIoT user data container which was not forwarded due to congestion control, the AMF shall:

a) include the PDU session ID in the PDU session ID IE;

b) set the Payload container type IE to " CIoT user data container";

c) set the Payload container IE to the CIoT user data container which was not forwarded;

d) set the 5GMM cause IE to the 5GMM cause #22 "Congestion" and include the Back-off timer value IE.

In case m) in subclause 5.4.5.3.1, the AMF shall:

a) include the Service-level device ID IE;

b) set the Payload container type IE to "Service-level-AA container";

c) set the Payload container IE to the Service-level-AA container without including the Service-level device ID;

In case n) in subclause 5.4.5.3.1, the AMF shall:

a) set the Payload container type IE to "Multiple payloads";

b) set each payload container entry of the Payload container IE (see subclause 9.11.3.39) as follows:

i) set the payload container type field of the payload container entry to a payload container type value set in the Payload container type IE as specified for cases a) to m) above;

ii) set the payload container entry contents field of the payload container entry to the payload container contents set in the Payload container IE as specified for cases a) to m) above;

iii) set the optional IE fields, if any, to the optional associated information as specified for cases a) to m) above.



Figure 5.4.5.3.2.1: Network-initiated NAS transport procedure

### \*\*\*\*\* 7th change \*\*\*\*\*

##### 5.4.5.3.3 Network-initiated NAS transport of messages

Upon reception of a DL NAS TRANSPORT message, the UE shall stop the timer T3346 if running.

Upon reception of a DL NAS TRANSPORT message, if the Payload container type IE is set to:

a) "N1 SM information" and the 5GMM cause IE is not included in the DL NAS TRANSPORT message, the 5GSM message in the Payload container IE and the PDU session ID are handled in the 5GSM procedures specified in clause 6;

b) "SMS", the UE shall forward the content of the Payload container IE to the SMS stack entity;

c) "LTE Positioning Protocol (LPP) message container", the UE shall forward the payload container type, the content of the Payload container IE and the routing information included in the Additional information IE to the upper layer location services application;

d) "SOR transparent container" and if the Payload container IE:

1) successfully passes the integrity check (see 3GPP TS 33.501 [24]), the ME shall store the received SOR counter as specified in annex C and proceed as follows: If the Payload container IE indicates a list of preferred PLMN/access technology combinations is provided and the list type indicates:

i) "PLMN ID and access technology list", then the ME shall replace the highest priority entries in the "Operator Controlled PLMN Selector with Access Technology" list stored in the ME; or

ii) "secured packet", then the ME shall behave as if a SMS is received with protocol identifier set to SIM data download, data coding scheme set to class 2 message and SMS payload as secured packet contents of SOR transparent container IE. The SMS payload is forwarded to UICC as specified in 3GPP TS 23.040 [4A]

 If the ACK bit of the SOR header for SOR data type in the SOR transparent container is set to "acknowledgement requested", the ME shall send an acknowledgement in the Payload container IE of an UL NAS TRANSPORT message with Payload type IE set to "SOR transparent container" as specified in subclause 5.4.5.2.2. In the Payload container IE carrying the acknowledgement, the UE shall set the ME support of SOR-CMCI indicator to "SOR-CMCI supported by the ME".

 The UE shall proceed with the behaviour as specified in 3GPP TS 23.122 [5] annex C; or

2) does not successfully pass the integrity check (see 3GPP TS 33.501 [24]) then the UE shall proceed with the behaviour as specified in 3GPP TS 23.122 [5] annex C.

e) Void;

f) Void;

g) "N1 SM information" and:

1) the 5GMM cause IE is set to the 5GMM cause #22 "Congestion", the UE passes to the 5GSM sublayer an indication that the 5GSM message was not forwarded due to DNN based congestion control along with the 5GSM message from the Payload container IE of the DL NAS TRANSPORT message, and the time value from the Back-off timer value IE;

2) the 5GMM cause IE is set to the 5GMM cause #28 "Restricted service area", the UE passes to the 5GSM sublayer an indication that the 5GSM message was not forwarded due to service area restrictions along with the 5GSM message from the Payload container IE of the DL NAS TRANSPORT message, enters the state 5GMM-REGISTERED.NON-ALLOWED-SERVICE and, if the DL NAS TRANSPORT message is received over 3GPP access, performs the registration procedure for mobility and periodic registration update without waiting for the release of the N1 NAS signalling connection (see subclauses 5.3.5 and 5.5.1.3);

3) the 5GMM cause IE is set to the 5GMM cause #65 "maximum number of PDU sessions reached", the UE passes to the 5GSM sublayer an indication that the 5GSM message was not forwarded because the PLMN's maximum number of PDU sessions has been reached, along with the 5GSM message from the Payload container IE of the DL NAS TRANSPORT message;

4) the 5GMM cause IE is set to the 5GMM cause #67 "insufficient resources for specific slice and DNN", the UE passes to the 5GSM sublayer an indication that the 5GSM message was not forwarded due to S-NSSAI and DNN based congestion control along with the 5GSM message from the Payload container IE of the DL NAS TRANSPORT message, and the time value from the Back-off timer value IE;

5) the 5GMM cause IE is set to the 5GMM cause #69 "insufficient resources for specific slice", the UE passes to the 5GSM sublayer an indication that the 5GSM message was not forwarded due to S-NSSAI only based congestion control along with the 5GSM message from the Payload container IE of the DL NAS TRANSPORT message, and the time value from the Back-off timer value IE;

5a) the 5GMM cause IE is set to the 5GMM cause #78 "PLMN not allowed to operate at the present UE location", the UE passes to the 5GSM sublayer an indication that the 5GSM message was not forwarded because the UE is registered to a PLMN via a satellite NG-RAN cell that is not allowed to operate at the present UE location along with the 5GSM message from the Payload container IE of the DL NAS TRANSPORT message;

6) the 5GMM cause IE is set to the 5GMM cause #90 "payload was not forwarded", the UE passes to the 5GSM sublayer an indication that the 5GSM message was not forwarded due to routing failure along with the 5GSM message from the Payload container IE of the DL NAS TRANSPORT message;

7) the 5GMM cause IE is set to the 5GMM cause #91 "DNN not supported or not subscribed in the slice", the UE passes to the 5GSM sublayer an indication that the 5GSM message was not forwarded because the DNN is not supported or not subscribed in a slice along with the 5GSM message from the Payload container IE of the DL NAS TRANSPORT message, and the time value from the Back-off timer value IE, if any;

8) the 5GMM cause IE is set to the 5GMM cause #92 "insufficient user-plane resources for the PDU session", the UE passes to the 5GSM sublayer an indication that the 5GSM message was not forwarded due to insufficient user-plane resources along with the 5GSM message from the Payload container IE of the DL NAS TRANSPORT message.

h) "UE policy container", the UE policy container in the Payload container IE is handled in the UE policy delivery procedures specified in Annex D;

i) "UE parameters update transparent container" and if the Payload container IE

1) successfully passes the integrity check (see 3GPP TS 33.501 [24]), the ME shall store the received UE parameter update counter as specified in annex C and proceed as follows:

i) if the UE parameters update list includes a UE parameters update data set with UE parameters update data set type indicating "Routing indicator update data",

A) the ME shall behave as if an SMS is received with protocol identifier set to SIM data download, data coding scheme set to class 2 message and SMS payload as secured packet contents of UE parameters update transparent container IE. The SMS payload is forwarded to UICC as specified in 3GPP TS 23.040 [4A]; and

B) if the ACK bit of the UE parameters update header in the UE parameters update transparent container is set to "acknowledgment requested" and if the ME receives status bytes from the UICC indicating that the UICC has received the secured packet successfully, the ME shall send an acknowledgement in the Payload container IE of an UL NAS TRANSPORT message with Payload type IE set to "UE parameters update transparent container" as specified in subclause 5.4.5.2.2; and

C) if the ME receives a REFRESH command from the UICC as specified in 3GPP TS 31.111 [22A] and if the REG bit of the UE parameters update header in the UE parameters update transparent container IE is set to "re-registration requested", and:

C1) the UE is registered over 3GPP access, then the UE shall wait until it enters 5GMM-IDLE mode over 3GPP access or 5GMM-CONNECTED mode with RRC inactive indication, and then perform a de-registration procedure, delete its 5G-GUTI and initiate a registration procedure for initial registration as specified in subclause 5.5.1.2;

C2) the UE is registered over non-3GPP access and does not have emergency services ongoing over non-3GPP access, then the UE shall locally release the N1 NAS signalling connection and enter 5GMM-IDLE mode over non-3GPP access, perform a de-registration procedure, delete its 5G-GUTI if the UE is registered to different PLMN on 3GPP access or the UE is not registered over 3GPP access, and then initiate a registration procedure for initial registration as specified in subclause 5.5.1.2; and

C3) the UE is registered over non-3GPP access and has an emergency services ongoing over non-3GPP access, then the UE shall wait until the emergency services are completed before locally releasing the N1 NAS signalling connection and enter 5GMM-IDLE mode over non-3GPP access, perform a de-registration procedure, delete its 5G-GUTI if the UE is registered to different PLMN on 3GPP access or if the UE is not registered over 3GPP access, and then initiate a registration procedure for initial registration as specified in subclause 5.5.1.2.

ii) if the UE parameters update list includes a UE parameters update data set with UE parameters update data set type indicating "Default configured NSSAI update data",

A) if the ACK bit of the UE parameters update header in the UE parameters update transparent container is set to "acknowledgment requested" and if the UE parameters update list does not include a UE parameters update data set with UE parameters update data set type indicating "Routing indicator update data", the ME shall send an acknowledgement in the Payload container IE of an UL NAS TRANSPORT message with Payload type IE set to "UE parameters update transparent container" as specified in subclause 5.4.5.2.2

B) the ME shall replace the stored default configured NSSAI with the default configured NSSAI included in the default configured NSSAI update data. In case of SNPN, the ME shall replace the stored default configured NSSAI associated with the selected entry of the "list of subscriber data" or the PLMN subscription with the default configured NSSAI included in the default configured NSSAI update data; and

C) if the REG bit of the UE parameters update header in the UE parameters update transparent container is set to "re-registration requested" and the UE parameters update list does not include a UE parameters update data set with UE parameters update data set type indicating "Routing indicator update data", the UE shall wait until it enters 5GMM-IDLE mode and then the UE shall initiate a registration procedure for mobility registration update as specified in subclause 5.5.1.3.

 if the UE parameters update list does not include a UE parameters update data set with UE parameters update data set type indicating "Routing indicator update data", the UE used the old default configured NSSAI to create the requested NSSAI in a REGISTRATION REQUEST message, the UE does not have a configured NSSAI for the current PLMN and the UE has an allowed NSSAI for the current PLMN which contains one or more S-NSSAIs that are not included in the new default configured NSSAI, the UE shall wait until it enters 5GMM-IDLE mode and then the UE shall initiate a registration procedure for mobility and periodic registration update as specified in subclause 5.5.1.3; and

2) does not successfully pass the integrity check (see 3GPP TS 33.501 [24]) then the UE shall discard the content of the payload container IE;

j) "Location services message container" and the 5GMM cause IE is not included in the DL NAS TRANSPORT message, the UE shall forward the payload container type, the content of the Payload container IE and the routing information in the Additional information IE if included to the upper layer location services application;

k) "CIoT user data container", the UE shall forward the content of the Payload container IE and the PDU session ID to the 5GSM sublayer;

l) "CIoT user data container" and:

1) the 5GMM cause IE is set to the 5GMM cause #22 "Congestion", the UE passes to the 5GSM sublayer an indication that the CIoT user data was not forwarded due to DNN based congestion control along with the CIoT user data from the Payload container IE of the DL NAS TRANSPORT message, and the time value from the Back-off timer value IE.

2) the 5GMM cause IE is set to the 5GMM cause #90 "payload was not forwarded", the UE passes to the 5GSM sublayer an indication that the user data container was not forwarded due to routing failure along with the user data container from the Payload container IE and the PDU session ID from the PDU session ID IE of the DL NAS TRANSPORT message.

m) "Service-level-AA container" and:

1) the Service-level device ID IE in the DL NAS TRANSPORT message is set to CAA-level UAV ID, the UE shall forward the content of the Payload container IE to the upper layer application for UAS corresponding to the CAA-level UAV ID; and

n) "Multiple payloads", the UE shall first decode the content of the Payload container IE (see subclause 9.11.3.39) to obtain the number of payload container entries and for each payload container entry, the UE shall:

1) decode the payload container type field;

2) decode the optional IE fields and the payload container contents field in the payload container entry; and

3) handle the content of each payload container entry the same as the content of the Payload container IE and the associated optional IEs as specified in bullets a) to l) above according to the payload container type field.

### \*\*\*\*\* 8th change \*\*\*\*\*

#### 8.2.10.1 Message definition

The UL NAS TRANSPORT message transports message payload and associated information to the AMF. See table 8.2.10.1.1.

Message type: UL NAS TRANSPORT

Significance: dual

Direction: UE to network

Table 8.2.10.1.1: UL NAS TRANSPORT message content

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| IEI | Information Element | Type/Reference | Presence | Format | Length |
|  | Extended protocol discriminator | Extended protocol discriminator9.2 | M | V | 1 |
|  | Security header type | Security header type9.3 | M | V | 1/2 |
|  | Spare half octet | Spare half octet9.5 | M | V | 1/2 |
|  | UL NAS TRANSPORT message identity | Message type9.7 | M | V | 1 |
|  | Payload container type | Payload container type9.11.3.40 | M | V | 1/2 |
|  | Spare half octet | Spare half octet9.5 | M | V | 1/2 |
|  | Payload container | Payload container9.11.3.39 | M | LV-E | 3-65537 |
| 12 | PDU session ID | PDU session identity 29.11.3.41 | C | TV | 2 |
| 59 | Old PDU session ID | PDU session identity 29.11.3.41 | O | TV | 2 |
| 8- | Request type | Request type9.11.3.47 | O | TV | 1 |
| 22 | S-NSSAI | S-NSSAI9.11.2.8 | O | TLV | 3-10 |
| 25 | DNN | DNN9.11.2.1B | O | TLV | 3-102 |
| 24 | Additional information | Additional information9.11.2.1 | O | TLV | 3-n |
| A- | MA PDU session information | MA PDU session information9.11.3.31A | O | TV | 1 |
| F- | Release assistance indication | Release assistance indication9.11.3.46A | O | TV | 1 |
| XX | Service-level device ID | Service-level device ID9.11.2.11 | O | TLV | 3-n |

### \*\*\*\*\* 9th change \*\*\*\*\*

#### 8.2.10.X Service-level device ID

The UE shall include this IE if it is provided by the upper layer application and the Payload container type IE is set to "Service-level AA container".

### \*\*\*\*\* 10th change \*\*\*\*\*

#### 8.2.11.1 Message definition

The DL NAS TRANSPORT message transports message payload and associated information to the UE. See table 8.2.11.1.1.

Message type: DL NAS TRANSPORT

Significance: dual

Direction: network to UE

Table 8.2.11.1.1: DL NAS TRANSPORT message content

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| IEI | Information Element | Type/Reference | Presence | Format | Length |
|  | Extended protocol discriminator | Extended protocol discriminator9.2 | M | V | 1 |
|  | Security header type | Security header type9.3 | M | V | 1/2 |
|  | Spare half octet | Spare half octet9.5 | M | V | 1/2 |
|  | DL NAS TRANSPORT message identity | Message type9.7 | M | V | 1 |
|  | Payload container type | Payload container type9.11.3.40 | M | V | 1/2 |
|  | Spare half octet | Spare half octet9.5 | M | V | 1/2 |
|  | Payload container | Payload container9.11.3.39 | M | LV-E | 3-65537 |
| 12 | PDU session ID | PDU session identity 29.11.3.41 | C | TV | 2 |
| 24 | Additional information | Additional information9.11.2.1 | O | TLV | 3-n |
| 58 | 5GMM cause | 5GMM cause9.11.3.2 | O | TV | 2 |
| 37 | Back-off timer value | GPRS timer 39.11.2.5 | O | TLV | 3 |
| XX | Service-level device ID | Service-level device ID9.11.2.11 | O | TLV | 3-n |

### \*\*\*\*\* 11th change \*\*\*\*\*

#### 8.2.11.X Service-level device ID

The AMF shall include this IE when the Payload container type IE is set to "Service-level AA container".

### \*\*\*\*\* 12th change \*\*\*\*\*

#### 9.11.3.39 Payload container

The purpose of the Payload container information element is to transport one or multiple payloads. If multiple payloads are transported, the associated information of each payload are also transported together with the payload.

The Payload container information element is coded as shown in figure 9.11.3.39.1, figure 9.11.3.39.2, figure 9.11.3.39.3, figure 9.11.3.39.4 and table 9.11.3.39.1.

The Payload container is a type 6 information element with a minimum length of 4 octets and a maximum length of 65538 octets.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| Payload container IEI | octet 1 |
| Length of payload container contents | octet 2 |
|  | octet 3 |
|  | octet 4 |
| Payload container contents |  |
|  | octet n |

Figure 9.11.3.39.1: Payload container information element

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| Number of entries | octet 4 |
| Payload container entry 1 | octet 5octet x2 |
| Payload container entry 2 | octet x2+1octet x3 |
| …… | … |
| Payload container entry i | octet xi +1octet n |

Figure 9.11.3.39.2: Payload container contents with Payload container type "Multiple payloads"

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| Length of Payload container entry | octet xi +1octet xi +2 |
| Number of optional IEs | Payload container type | octet xi +3 |
| Optional IE 1 | octet xi +4octet y2 |
| Optional IE 2 | octet y2+1octet y3 |
| … |  |
| Optional IE j | octet yj+1octet z |
| Payload container entry contents | octet z+1octet n |

Figure 9.11.3.39.3: Payload container entry

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| Type of optional IE | octet xi +4 |
| Length of optional IE | octet xi +5 |
| Value of optional IE | octet xi +6octet y2 |

Figure 9.11.3.39.4: Optional IE

Table 9.11.3.39.1: Payload container information element

|  |
| --- |
| Payload container contents (octet 4 to octet n); max value of 65535 octets |
| If the payload container type is set to "N1 SM information" and is included in the UL NAS TRANSPORT or DL NAS TRANSPORT message, the payload container contents contain a 5GSM message as defined in subclause 8.3.If the payload container type is set to "SOR transparent container" and is included in the DL NAS TRANSPORT message, the payload container contents are coded the same way as the contents of the SOR transparent container IE (see subclause 9.11.3.51) for SOR data type is set to value "0" except that the first three octets are not included.If the payload container type is set to "SOR transparent container" and is included in the UL NAS TRANSPORT message, the payload container contents are coded the same way as the contents of the SOR transparent container IE (see subclause 9.11.3.51) for SOR data type is set to value "1" except that the first three octets are not included.If the payload container type is set to "UE policy container" and is included in the DL NAS TRANSPORT, UL NAS TRANSPORT or REGISTRATION REQUEST message, the payload container contents are coded as defined in subclause Annex D.If the payload container type is set to "UE parameters update transparent container" and is included in the DL NAS TRANSPORT message, the payload container contents are coded the same way as the contents of the UE parameters update transparent container IE (see subclause 9.11.3.53A) for UE parameters update data type is set to value "0" except that the first three octets are not included.If the payload container type is set to "UE parameters update transparent container" and is included in the UL NAS TRANSPORT message, the payload container contents are coded the same way as the contents of the UE parameters update transparent container IE (see subclause 9.11.3.53A) for UE parameters update data type is set to value "1" except that the first three octets are not included.If the payload container type is set to "SMS" and is included in the UL NAS TRANSPORT or DL NAS TRANSPORT message, the payload container contents contain an SMS message (i.e. CP-DATA, CP-ACK or CP-ERROR) as defined in subclause 7.2 in 3GPP TS 24.011 [13].If the payload container type is set to "CIoT user data container" and is included in the UL NAS TRANSPORT, DL NAS TRANSPORT or CONTROL PLANE SERVICE REQUEST message, the payload container contents are coded the same way as the contents of the user data container IE (see subclause 9.9.4.24 in 3GPP TS 24.301 [15]) except that the first three octets are not included.If the payload container type is set to "SMS" and is included in the CONTROL PLANE SERVICE REQUEST message, the payload container contents are coded the same way as the contents of the NAS message container IE (see subclause 9.9.3.22 in 3GPP TS 24.301 [15]) except that the first two octets are not included.If the payload container type is set to "Location services message container" and is included in the UL NAS TRANSPORT, DL NAS TRANSPORT or CONTROL PLANE SERVICE REQUEST message, the payload container contents include location services message payload.If the payload container type is set to "LTE Positioning Protocol (LPP) message container" and is included in the UL NAS TRANSPORT or DL NAS TRANSPORT message, the payload container contents include LPP message payload.If the payload container type is set to "Service-level-AA container" and is included in the UL NAS TRANSPORT or DL NAS TRANSPORT message, the payload container contents are coded the same way as the contents of Service-level-AA container (see subclause 9.11.2.10).The coding of Payload container contents is dependent on the particular application.If the payload container type is set to "Multiple payloads", the number of entries field represents the total number of payload container entries, and the payload container entry contents field is coded as a list of payload container entry according to figure 9.11.3.39.2, with each payload container entry is coded according to figure 9.11.3.39.3 and figure 9.11.3.39.4. |
| Payload container entryFor each payload container entry, the payload container type field represents the payload container type value as described in subclause 9.11.3.40, the coding of payload container contents field is dependent on the particular application, and the number of optional IEs field represents the total number of optional IEs associated with the payload container entry contents field in the payload container entry. The error handlings for optional IEs specified in subclauses 7.6.1, 7.6.3 and 7.7.1 shall apply to the optional IEs included in the payload container entry. |
| Optional IEsType of optional IE (octet xi +4)This field contains the IEI of the optional IE.Length of optional IE (octet xi+5)This field indicates binary coded length of the value of the optional IE entry.Value of optional IE (octet xi+6 to octet y2)This field contains the value of the optional IE entry with the value part of the referred information element based on following optional IE reference. If the Request type is included, the value part of the Request type shall be encoded in the bits 1 to 4 and bits 5 to 8 shall be coded as zero. |
| IEI  | Optional IE name | Optional IE reference |
| 12 | PDU session ID | PDU session identity 2 (see subclause 9.11.3.41) |
| 24 | Additional information | Additional information (see subclause 9.11.2.1) |
| 58 | 5GMM cause | 5GMM cause (see subclause 9.11.3.2) |
| 37 | Back-off timer value | GPRS timer 3 (see subclause 9.11.2.5) |
| 59 | Old PDU session ID | PDU session identity 2 (see subclause 9.11.3.41) |
| 80 | Request type | Request type (see subclause 9.11.3.47) |
| 22 | S-NSSAI | S-NSSAI (see subclause 9.11.2.8) |
| 25 | DNN | DNN (see subclause 9.11.2.1B) |
| F0 | Release assistance indication | Release assistance indication (see subclause 9.11.3.46A) |
| A0 | MA PDU session information | MA PDU session information (see subclause 9.11.3.31A) |
| XX | Service-level device ID | Service-level device ID (see subclause 9.11.2.11) |

### \*\*\*\*\* 13th change \*\*\*\*\*

#### 9.11.3.40 Payload container type

The purpose of the Payload container type information element indicates type of payload included in the payload container information element.

The Payload container type information element is coded as shown in figure 9.11.3.40.1 and table 9.11.3.40.1.

The Payload container type is a type 1 information element.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| Payload container typeIEI | Payload container type value | octet 1 |

Figure 9.11.3.40.1: Payload container type information element

Table 9.11.3.40.1: Payload container type information element

|  |
| --- |
| Payload container type value (octet 1) |
| Bits |
| 4 | 3 | 2 | 1 |  |
| 0 | 0 | 0 | 1 | N1 SM information |
| 0 | 0 | 1 | 0 | SMS |
| 0 | 0 | 1 | 1 | LTE Positioning Protocol (LPP) message container |
| 0 | 1 | 0 | 0 | SOR transparent container |
| 0 | 1 | 0 | 1 | UE policy container |
| 0 | 1 | 1 | 0 | UE parameters update transparent container |
| 0 | 1 | 1 | 1 | Location services message container (see 3GPP TS 23.273 [6B]) |
| 1 | 0 | 0 | 0 | CIoT user data container |
| 1 | 0 | 0 | 1 | Service-level-AA container |
| 1 | 1 | 1 | 1 | Multiple payloads |
|  |
| All other values are reserved. |
|  |
| NOTE: The value "Multiple payloads" is only used when the Payload container contents in figure 9.11.3.39.1 contains multiple payloads as shown in figure 9.11.3.39.2. |

### \*\*\*\*\* End of change \*\*\*\*\*