**3GPP TSG-SA3 Meeting #81-LI-e-b *s3i210333***

**Online, , 19th May 2021 - 21st May 2021**

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| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
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|  | **33.128** | **CR** | **0204** | **rev** | 1 | **Current version:** | **17.0.0** |  |
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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 |  | Radio Access Network |  | Core Network | **X** |

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| ***Title:***  | Editorial improvements |
|  |  |
| ***Source to WG:*** | SA3LI (Softel Systems Pty Ltd) |
| ***Source to TSG:*** | SA3LI |
|  |  |
| ***Work item code:*** | LI17 |  | ***Date:*** | 2021-05-19 |
|  |  |  |  |  |
| ***Category:*** | **F** |  | ***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-15 (Release 15)Rel-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)* |
|  |  |
| ***Reason for change:*** | The table of interfaces is not ordered, so searching it is harder.Various references to other 3GPP standards have incorrect clauses.The ASN.1 annex name is not clear on first glance.Various ASN.1 fields have typos. |
|  |  |
| ***Summary of change:*** | Sort table 4.2-1 on interface name.Various references to other standards have incorrect clauses or names:* fiveGSTAIList is in 3GPP TS 24.501 clause 9.11.3.9 not 9.11.3.4.
* tAI is in 3GPP TS 24.501 clause 9.11.3.8 not 9.1.3.8.
* sNSSAI is in 3GPP TS 23.501 clause 5.15.2 not 5.12.2.2.
* readReport is in OMA-TS-MMS\_ENC clause 7.3.37 not 7.3.52.
* store is in OMA-TS-MMS\_ENC clause 7.3.56 not 7.3.52.
* dRMContent is in OMA-TS-MMS\_ENC clause 7.3.16 not 7.3.54.
* transactionID is in OMA-TS-MMS\_ENC clause 7.3.63 not 7.3.29.
* OMA-TS-MMS\_ENC not OMA-TS-MMA\_ENC or OMA-TS-MMS\_ENC.

Typos of "Yea" instead of "Yes".Rename Annex A to be consistent with Annexes C, E, and F.Typos in ASN.1 types:* hspeed instead of hSpeed.
* ageOfLocatonInfo instead of ageOfLocationInfo.
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| ***Consequences if not approved:*** | Incorrect references could confuse implementors. |
|  |  |
| ***Clauses affected:*** | 1. 4.2
2. 6.2.2.2.2
3. 6.2.2.2.5
4. 6.2.2.2.7
5. 6.2.2A.2.2
6. 6.2.3.2.2
7. 6.2.3.2.3
8. 6.2.3.2.5
9. 6.2.3.2.7.2
10. 6.2.3.2.7.3
11. 6.2.3.2.7.5
12. 6.2.3.2.8
13. 7.4.3.1, 7.4.3.2, 7.4.3.3, 7.4.3.4, 7.4.3.5, 7.4.3.6, 7.4.3.7, 7.4.3.8, 7.4.3.9, 7.4.3.10, 7.4.3.11, 7.4.3.12, 7.4.3.13, 7.4.3.14, 7.4.3.15, 7.4.3.16, 7.4.3.17, 7.4.3.18, 7.4.3.19, 7.4.3.20
14. Annex A
 |
|  |  |
|  | **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:*** | Should clause 6.2.3.2.8 be 6.2.3.2.7.7 with the other MA PDU sessions?Should Annex F be changed from "ASN.1 schema" to "ASN.1 Schema"?The CR highlights risks of copypasta. |
|  |  |
| ***This CR's revision history:*** | s3i210333 |

Change 1: 4.2

## 4.2 Basic principles for internal interfaces

This clause lists the internal interfaces shown in clause 4.1, indicates the protocol used to realise each interface, and gives a reference to the relevant clauses of the present document that specify how the protocol is to be used for the given interface.

Table 4.2-1: Internal interfaces and related protocols

|  |  |  |  |
| --- | --- | --- | --- |
| Interface | Description | Protocol used to realise interface | Usage |
| LI\_ADMF | Used to pass intercept provisioning information form the LICF to the LIPF. | Out of scope of the present document. |  |
| LI\_IQF | Used to pass information related to IEFs and ICF to IQF. | Out of scope of the present document. |  |
| LI\_MDF | Used by MDF2 and MDF3 in interactions necessary to correctly generate CC and IRI from xCC and xIRI. | Out of scope of the present document. |  |
| LI\_SI | Used to provide system information to the LIPF from the SIRF. | Out of scope of the present document. |  |
| LI\_T2 | Used to pass triggering information from the IRI-TF to a Triggered IRI-POI. | ETSI TS 103 221-1 [7]. | See clause 5.2.4 |
| LI\_T3 | Used to pass triggering information from a CC-TF to a Triggered CC-POI. | ETSI TS 103 221-1 [7]. | See clause 5.2.4 |
| LI\_X1 | Used to configure and audit Directly-provisioned POIs, TFs and MDFs. | ETSI TS 103 221-1 [7]. | See clause 5.2.2 |
| LI\_X1 (Management) | Used to audit Triggered POIs. | ETSI TS 103 221-1 [7]. | See clause 5.2.3 |
| LI\_X2 | Used to pass xIRI from IRI-POIs to the MDF2. | ETSI TS 103 221-2 [8]. | See clause 5.3.2 |
| LI\_X3 | Used to pass xCC from CC-POIs to the MDF3. | ETSI TS 103 221-2 [8]. | See clause 5.3.3 |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
| LI\_XEM1 | Used by the LICF/LIPF to manage IEFs and ICF. | ETSI TS 103 221-1 [7]. | See clause 5.2.7 |
| LI\_XER | Used to pass identifier association event records from IEFs to ICF. | See Clause 5.9. | See clause 5.9 |
| LI\_XQR | Used to pass queries from IQF to ICF and responses from ICF to IQF. | ETSI TS 103 221-1 [7]. | See clause 5.8 |
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|  |  |  |  |

Change 2: 6.2.2.2.2

##### 6.2.2.2.2 Registration

The IRI-POI in the AMF shall generate an xIRI containing an AMFRegistration record when the IRI-POI present in the AMF detects that a UE matching one of the target identifiers provided via LI\_X1 has successfully registered to the 5GS via 3GPP NG-RAN or non-3GPP access. Accordingly, the IRI-POI in the AMF generates the xIRI when the following event is detected:

- AMF sends a N1: REGISTRATION ACCEPT message to the target UE and the UE 5G Mobility Management (5GMM) state for the access type (3GPP NG-RAN or non-3GPP access) within the AMF is changed to 5GMM-REGISTERED.

Table 6.2.2-1: Payload for AMFRegistration record

|  |  |  |
| --- | --- | --- |
| Field name | Description | M/C/O |
| registrationType | Specifies the type of registration, see TS 24.501 [13] clause 9.11.3.7. This is derived from the information received from the UE in the REGISTRATION REQUEST message. | M |
| registrationResult | Specifies the result of registration, see TS 24.501 [13] clause 9.11.3.6. | M |
| slice | Provide, if available, one or more of the following:- allowed NSSAI (see TS 24.501 [13] clause 9.11.3.37).- configured NSSAI (see TS 24.501 [13] clause 9.11.3.37),- rejected NSSAI (see TS 24.501 [13] clause 9.11.3.46).This is derived from the information sent to the UE in the REGISTRATION ACCEPT message. | C |
| sUPI | SUPI associated with the registration (see clause 6.2.2.4). | M |
| sUCI | SUCI used in the registration, if available. | C |
| pEI | PEI provided by the UE during the registration, if available. | C |
| gPSI | GPSI obtained in the registration, if available as part of the subscription profile. | C |
| gUTI | 5G-GUTI provided as outcome of initial registration or used in other cases, see TS 24.501 [13] clause 5.5.1.2.2. | M |
| location | Location information determined by the network during the registration, if available.Encoded as a *userLocation* parameter (*location>locationInfo>userLocation*) and, when Dual Connectivity is activated, as an *additionalCellIDs* parameter (*location>locationInfo>additionalCellIDs*), see Annex A. | C |
| non3GPPAccessEndpoint | UE's local IP address used to reach the N3IWF, if available. IP addresses are given as 4 octets (for IPv4) or 16 octets (for IPv6) with the most significant octet first (network byte order). | C |
| fiveGSTAIList | List of tracking areas associated with the registration area within which the UE is current registered, see TS 24.501 [13], clause 9.11.3.9 (see NOTE) | C |
| NOTE: List shall be included each time there is a change to the registration area. |

Change 3: 6.2.2.2.5

##### 6.2.2.2.5 Start of interception with registered UE

The IRI-POI in the AMF shall generate an xIRI containing an AMFStartOfInterceptionWithRegisteredUE record when the IRI-POI present in the AMF detects that interception is activated on a UE that has already been registered in the 5GS (see clause 6.2.2.4 on identity privacy). A UE is considered already registered to the 5GS when the 5GMM state for the access type (3GPP NG-RAN or non-3GPP access) for that UE is 5GMM-REGISTERED. Therefore, the IRI-POI present in the AMF shall generate the xIRI AMFStartOfInterceptionWithRegisteredUE record when it detects that a new interception for a UE is activated (i.e. provisioned by the LIPF) and the 5G mobility management state for the access type (3GPP NG-RAN or non-3GPP access) within the AMF for that UE is 5GMM-REGISTERED. If the UE is registered over both 3GPP NG-RAN and non-3GPP access, the IRI-POI present in the AMF shall generate an xIRI containing an AMFStartOfInterceptionWithRegisteredUE record for each access type.

Table 6.2.2-4: Payload for AMFStartOfInterceptionWithRegisteredUE record

|  |  |  |
| --- | --- | --- |
| Field name | Description | M/C/O |
| registrationResult | Specifies the result of registration, see TS 24.501 [13], clause 9.11.3.6. | M |
| registrationType | Specifies the type of registration, see TS 24.501 [13] clause 9.11.3.7, if available. | C |
| slice | Provide, if available, one or more of the following:- allowed NSSAI (see TS 24.501 [13] clause 9.11.3.37).- configured NSSAI (see TS 24.501 [13] clause 9.11.3.37).- rejected NSSAI (see TS 24.501 [13] clause 9.11.3.46).This is derived from the information that was sent to the UE in the REGISTRATION ACCEPT message. IRI-POI in AMF can include this information if and only if it retained the information that it had previously sent in the REGISTRATION ACCEPT message to the UE. | C |
| sUPI | SUPI associated with the registration (see clause 6.2.2.4). | M |
| sUCI | SUCI used in the registration, if available. | C |
| pEI | PEI provided by the UE during the registration, if available. | C |
| gPSI | GPSI obtained in the registration, if available as part of the subscription profile. | C |
| gUTI | 5G-GUTI provided as outcome of initial registration or used in other cases, see TS 24.501 [13], clause 5.5.1.2.2. | M |
| location | Location information, if available.Encoded as a *userLocation* parameter (*location>locationInfo>userLocation*) and, when Dual Connectivity is activated, as an *additionalCellIDs* parameter (*location>locationInfo>additionalCellIDs*), see Annex A. | C |
| non3GPPAccessEndpoint | UE's local IP address used to reach the N3IWF, if available. IP addresses are given as 4 octets (for IPv4) or 16 octets (for IPv6) with the most significant octet first (network byte order). | C |
| timeOfRegistration | Time at which the last registration occurred, if available. This is the time stamp when the REGISTRATION ACCEPT message is sent to the UE or (when applicable) when the REGISTRATION COMPLETE is received from the UE.Shall be given qualified with time zone information (i.e. as UTC or offset from UTC, not as local time). | C |
| fiveGSTAIList | List of tracking areas associated with the registration area within which the UE is current registered, see TS 24.501 [13], clause 9.11.3.9 (see NOTE) | C |
| NOTE: List shall be included each time there is a change to the registration area. |

The IRI-POI present in the AMF generating an xIRI containing an AMFStartOfInterceptionWithRegisteredUE record shall set the Payload Direction field in the PDU header to *not applicable* (see ETSI TS 103 221-2 [8] clause 5.2.6).

Change 4: 6.2.2.2.7

##### 6.2.2.2.7 AMF identifier association

The IRI-POI present in the AMF shall generate an xIRI containing an AMFIdentifierAssociation record when the IRI-POI present in the AMF detects a new identifier association for a UE matching one of the target identifiers provided via LI\_X1. Generation of this record is subject to this record type being enabled for a specific target (see clause 6.2.2.2.1).

Table 6.2.2-6: Payload for AMFIdentifierAssociation record

|  |  |  |
| --- | --- | --- |
| Field name | Description | M/C/O |
| sUPI | SUPI associated with the procedure (see NOTE 1). | M |
| sUCI | SUCI used in the procedure, if applicable and if available. | C |
| pEI | PEI used in the procedure, if available (see NOTE 1). | C |
| gPSI | GPSI used in the procedure, if available (see NOTE 1). | C |
| gUTI | 5G-GUTI used in the procedure, see TS 24.501 [13], clause 9.11.3.4. | M |
| location | Location information available when identifier association occurs.Encoded as a *userLocation* parameter (*location>locationInfo>userLocation*) and, when Dual Connectivity is activated, as an *additionalCellIDs* parameter (*location>locationInfo>additionalCellIDs*), see Annex A. | M |
| fiveGSTAIList | List of tracking areas associated with the registration area within which the UE is current registered, see TS 24.501 [13], clause 9.11.3.9. (See NOTE 2) | C |
| NOTE 1: SUPI shall always be provided, in addition to the warrant target identifier if different to SUPI. Other identifiers shall be provided if available.NOTE 2: List shall be included each time there is a change to the registration area.  |

Change 5: 6.2.2A.2.2

##### 6.2.2A.2.2 Association Events

For each association event, the IEF shall create an IEFAssociationRecord, as defined below.

Table 6.2.2A-1: Payload for IEFAssociationRecord

|  |  |  |
| --- | --- | --- |
| Field name | Description | M/C/O |
| sUPI | SUPI associated with detected association event. | M |
| fiveGGUTI | 5G-GUTI shall be provided. Encoded as per TS 24.501 [13] figure 9.11.3.4.1, omitting the first four octets. | M |
| timeStamp | Time at which the identifier association event occurred.Shall be given qualified with time zone information (i.e. as UTC or offset from UTC, not as local time). | M |
| tAI | Last known TAI associated with the SUPI. Encoded as per TS 24.501 [13] clause 9.11.3.8, omitting the first octet. | M |
| nCGI | Last known nCGI(s) available when identifier association event detected. Given as a sequence of PLMNID (encoded as per TS 38.413 [23] clause 9.3.3.5) and NCI (encoded as per TS 38.413 [23] clause 9.3.1.7). | M |
| nCGITime | ueLocationTimestamp(s) of nCGIs if available in AMF as per TS 29 .571 [17] clause 5.4.4.9. If ueLocationTimestamp(s) is not available, shall be populated with timeStamp(s) of when last known nCGI(s), were obtained and stored by the AMF. | M |
| sUCI | SUCI shall be provided when event is triggered by association of a SUCI to a SUPI. | C |
| pEI | PEI, (See NOTE 1). | C |
| fiveGSTAIList | List of tracking areas associated with the registration area within which the UE is current registered, see TS 24.501 [13], clause 9.11.3.9. (See NOTE 2) | C |
| NOTE 1: Shall be provided in first association record to ICF after PEI is available and following any change of PEI.NOTE 2: As a minimum, list of tracking areas shall be included in the first association event for each SUPI registered (per UE session) with the AMF and additionally whenever the TAI list changes due to a change in registration area. |

For each de-association event, the IEF shall create an IEFDeassociationRecord, as defined below.

**Table 6.2.2A-2: Payload for IEFDeassociationRecord**

|  |  |  |
| --- | --- | --- |
| **Field name** | **Description** | **M/C/O** |
| sUPI | SUPI associated with detected de-association event. | M |
| fiveGGUTI | 5G-GUTI shall be provided. Encoded as per TS 24.501 [13] figure 9.11.3.4.1, omitting the first four octets. | M |
| timeStamp | Time at which the identifier de-association event occurred.Shall be given qualified with time zone information (i.e. as UTC or offset from UTC, not as local time). | M |
| nCGI | Last known nCGI(s) available when identifier de-association event detected. Given as a sequence of PLMNID (encoded as per TS 38.413 [23] clause 9.3.3.5) and NCI (encoded as per TS 38.413 [23] clause 9.3.1.7) | M |
| nCGITime | ueLocationTimestamp(s) of nCGIs if available in AMF as per TS 29 .571 [17] clause 5.4.4.9. If ueLocationTimestamp(s) is not available, shall be populated with timeStamp(s) of when last known nCGI(s), were obtained and stored by the AMF. | M |

Change 6: 6.2.3.2.2

##### 6.2.3.2.2 PDU session establishment

The IRI-POI in the SMF shall generate an xIRI containing an SMFPDUSessionEstablishment record when the IRI-POI present in the SMF detects that a PDU session has been established for the target UE. The IRI-POI present in the SMF shall generate the xIRI for the following events:

- For a non-roaming scenario, the SMF (or for a roaming scenario, V-SMF in the VPLMN), sends the N1 NAS message (via AMF) PDU SESSION ESTABLISHMENT ACCEPT to the UE and the 5G Session Management (5GSM) state within the SMF is changed to PDU SESSION ACTIVE (see TS 24.501 [13]).

- For a home-routed roaming scenario, the SMF in the HPLMN (i.e. H-SMF) sends the N16: Nsmf\_PDU\_Session\_Create response message with n1SmInfoToUe IE containing the PDU SESSION ESTABLISHMENT ACCEPT (see TS 29.502 [16]).

Table 6.2.3-1: Payload for SMFPDUSessionEstablishment record

|  |  |  |
| --- | --- | --- |
| Field name | Description | M/C/O |
| sUPI | SUPI associated with the PDU session (e.g. as provided by the AMF in the associated Nsmf\_PDU\_Session\_CreateSMContext service operation). Shall be present except for PEI-only unauthenticated emergency sessions (see NOTE). | C |
| sUPIUnauthenticated | Shall be present if a SUPI is present in the message and set to “true” if the SUPI has not been authenticated, or “false” if it has been authenticated. | C |
| pEI | PEI associated with the PDU session if available (see NOTE). | C |
| gPSI | GPSI associated with the PDU session if available (see NOTE). | C |
| pDUSessionID | PDU Session ID See TS 24.501 [13] clause 9.4. | M |
| gTPTunnelID | Contains the F-TEID identifying the GTP tunnel used to encapsulate the traffic, as defined in TS 29.244 [15] clause 8.2.3. Non-GTP encapsulation is for further study. | M |
| pDUSessionType | Identifies selected PDU session type, see TS 24.501 [13] clause 9.11.4.11. | M |
| sNSSAI | Slice identifiers associated with the PDU session, if available. See TS 23.003 [19] clause 28.4.2 and TS 23.501 [2] clause 5.15.2. | C |
| uEEndpoint | UE endpoint address(es) if available. | C |
| non3GPPAccessEndpoint | UE's local IP address used to reach the N3IWF, if available. IP addresses are given as 4 octets (for IPv4) or 16 octets (for IPv6) with the most significant octet first (network byte order). | C |
| location | Location information provided by the AMF, if available.Encoded as a *userLocation* parameter (*location>locationInfo>userLocation*), see Annex A. | C |
| dNN | Data Network Name associated with the target traffic, as defined in TS 23.003[19] clause 9A and described in TS 23.501 [2] clause 4.3.2.2. | M |
| aMFID | Identifier of the AMF associated with the target UE, as defined in TS 23.003 [19] clause 2.10.1 when available. | C |
| hSMFURI | URI of the Nsmf\_PDUSession service of the selected H-SMF, if available. See TS 29.502 [16] clause 6.1.6.2.2. | C |
| requestType | Type of request as described in TS 24.501 [13] clause 9.11.3.47 if available. In the case where the network does not support Multi Access (MA) PDU sessions, but receives a MA PDU session request, a request type of “Initial request” shall be reported. | C |
| accessType | Access type associated with the session (i.e. 3GPP or non-3GPP access) if provided by the AMF (see TS 24.501 [13] clause 9.11.2.1A). | C |
| rATType | RAT Type associated with the access if provided by the AMF as part of session establishment (see TS 23.502 [4] clause 4.3.2). Values given as per TS 29.571 [17] clause 5.4.3.2. | C |
| sMPDUDNRequest | Contents of the SM PDU DN Request container, if available, as described in TS 24.501 [13] clause 9.11.4.15. | C |
| uEEPSPDNConnection | This IE shall be present, if available, during an EPS to 5GS Idle mode mobility or handover using the N26 interface. When present, it shall contain the EPS bearer context(s) information present in the uEEPSPDNConnection parameter of the intercepted SmContextCreateData message. (see TS 29.502 [16] clause 6.1.6.2.2). | C |
| NOTE: At least one of the SUPI, PEI or GPSI fields shall be present. |

Change 7: 6.2.3.2.3

##### 6.2.3.2.3 PDU session modification

The IRI-POI in the SMF shall generate an xIRI containing an SMFPDUSessionModification record when the IRI-POI present in the SMF detects that a PDU session has been modified for the target UE. The IRI-POI present in the SMF shall generate the xIRI for the following events:

- For a non-roaming scenario, the SMF (or for a roaming scenario, V-SMF in the VPLMN), receives the N1 NAS message (via AMF) PDU SESSION MODIFICATION COMMAND COMPLETE from the UE and the 5GSM state within the SMF is returned to PDU SESSION ACTIVE (see TS 24.501 [13]). This applies to the following two cases:

- UE initiated PDU session modification.

- Network (VPLMN) initiated PDU session modification.

- For a non-roaming scenario, the SMF (or for a roaming scenario, V-SMF in the VPLMN), sends the N1 NAS message (via AMF) PDU SESSION ESTABLISHMENT ACCEPT to the UE and the 5GSM state within the SMF remains in the PDU SESSION ACTIVE (see TS 24.501 [13]). This applies to the following case:

- Handover from one access type to another access type happens (e.g. 3GPP to non-3GPP).

- For a home-routed roaming scenario, the SMF in the HPLMN (i.e. H-SMF) receives the N16: Nsmf\_PDU\_Session\_Update response message with n1SmInfoFromUe IE containing the PDU SESSION MODIFICATION COMMAND COMPLETE (see TS 29.502 [16]). This applies to the following three cases:

- UE initiated PDU session modification.

- Network (VPLMN) initiated PDU session modification.

- Network (HPLMN) initiated PDU session modification.

- For a home-routed roaming scenario, the SMF in the HPLMN (i.e. H-SMF) sends the N16: Nsmf\_PDU\_Session\_Create response message with n1SmInfoToUe IE containing the PDU SESSION ESTABLISHMENT ACCEPT (see TS 29.502 [16]) while it had received a N16 Nsmf\_PDU\_Session\_Create request message with an existing PDU Session Id with access type being changed. This applies to the following case:

- Handover from one access type to another access type happens (e.g. 3GPP to non-3GPP).

Table 6.2.3-2: Payload for SMFPDUSessionModification record

|  |  |  |
| --- | --- | --- |
| Field name | Description | M/C/O |
| sUPI | SUPI associated with the PDU session (e.g. as provided by the AMF in the associated Nsmf\_PDU\_Session\_CreateSMContext service operation). Shall be present except for PEI-only unauthenticated emergency sessions. | C |
| sUPIUnauthenticated | Shall be present if a SUPI is present in the message and set to “true” if the SUPI was not authenticated, or “false” if it has been authenticated. | C |
| pEI | PEI associated with the PDU session if available. | C |
| gPSI | GPSI associated with the PDU session if available. | C |
| sNSSAI | Slice identifier associated with the PDU session, if available. See TS 23.003 [19] clause 28.4.2 and TS 23.501 [2] clause 5.15.2. | C |
| non3GPPAccessEndpoint | UE's local IP address used to reach the N3IWF, if available. IP addresses are given as 4 octets (for IPv4) or 16 octets (for IPv6) with the most significant octet first (network byte order). | C |
| location | Location information provided by the AMF, if available.Encoded as a *userLocation* parameter (*location>locationInfo>userLocation*), see Annex A. | C |
| requestType | Type of request as described in TS 24.501 [13] clause 9.11.3.47 if available. | C |
| accessType | Access type associated with the session (i.e. 3GPP or non-3GPP access) if provided by the AMF (see TS 24.501 [13] clause 9.11.2.1A). | C |
| rATType | RAT type associated with the access, if available. Values given as per TS 29.571 [17] clause 5.4.3.2. | C |
| pDUSessionID | PDU Session ID See TS 24.501 [13] clause 9.4. This parameter is conditional only for backwards compatibility. | C |

Change 8: 6.2.3.2.5

##### 6.2.3.2.5 Start of interception with an established PDU session

The IRI-POI in the SMF shall generate an xIRI containing an SMFStartOfInterceptionWithEstablishedPDUSession record when the IRI-POI present in the SMF detects that a PDU session has already been established for the target UE when interception starts.

In a non-roaming scenario, the IRI-POI in the SMF (or in a roaming scenario, the IRI-POI in the V-SMF in the VPLMN) shall generate the xIRI containing the SMFStartOfInterceptionWithEstablishedPDUSession record when it detects that a new interception for a UE is activated (i.e. provisioned by the LIPF) for the following case:

- The 5GSM state within the SMF for that UE is 5GSM: PDU SESSION ACTIVE or PDU SESSION MODIFICATION PENDING.

NOTE: The above trigger happens when the SMF (V-SMF in VPLMN) had not sent an N1 NAS message PDU SESSION RELEASE COMMAND to the UE for a PDU session and the SMF (V-SMF in the VPLMN) had previously sent an N1 NAS message PDU SESSION ESTABLISHMENT ACCEPT to that UE for the same PDU session.

In a home-routed roaming scenario, the IRI-POI in the H-SMF shall generate the xIRI containing the SMFStartOfInterceptionWithEstablishedPDUSession record when it detects that a new interception for a UE is activated (i.e. provisioned by the LIPF) for the following case:

- The H-SMF had not sent a Nsmf\_PDU\_Session\_Update Request (n1SmInfoToUe: PDU SESSION RELEASE COMMAND) to the V-SMF for a PDU session and H-SMF had previously sent a Nsmf\_PDU\_Session\_Create response (n1SmInfoToUE: PDU SESSION ESTABLISHMENT ACCEPT) to the V-SMF for that PDU session.

The IRI-POI in the SMF shall generate the xIRI containing the SMFStartOfInterceptionWithEstablishedPDUSession record for each of the PDU sessions (that meets the above criteria) associated with the newly identified target UEs.

Table 6.2.3-4: Payload for SMFStartOfInterceptionWithEstablishedPDUSession record

|  |  |  |
| --- | --- | --- |
| Field name | Description | M/C/O |
| sUPI | SUPI associated with the PDU session (e.g. as provided by the AMF in the associated Nsmf\_PDU\_Session\_CreateSMContext service operation). Shall be present except for PEI-only unauthenticated emergency sessions. | C |
| sUPIUnauthenticated | Shall be present if a SUPI is present in the message and set to “true” if the SUPI has not been authenticated, or “false” if it has been authenticated. | C |
| pEI | PEI associated with the PDU session if available. | C |
| gPSI | GPSI associated with the PDU session if available. | C |
| pDUSessionID | PDU Session ID as assigned by the AMF, as defined in TS 24.007 [14] clause 11.2.3.1b. | M |
| gTPTunnelID | Contains the F-TEID identifying the tunnel used to encapsulate the traffic, as defined in TS 29.244 [15] clause 8.2.3. Non-GTP encapsulation is for further study. | M |
| pDUSessionType | Identifies selected PDU session type, see TS 24.501 [13] clause 9.11.4.11. | M |
| sNSSAI | Slice identifier associated with the PDU session, if available. See TS 23.003 [19] clause 28.4.2 and TS 23.501 [2] clause 5.15.2. | C |
| uEEndpoint | UE endpoint address(es) if available. IP addresses are given as 4 octets (for IPv4) or 16 octets (for IPv6) with the most significant octet first (network byte order). MAC addresses are given as 6 octets with the most significant octet first. | C |
| non3GPPAccessEndpoint | UE's local IP address used to reach the N3IWF, if available. IP addresses are given as 4 octets (for IPv4) or 16 octets (for IPv6) with the most significant octet first (network byte order). | C |
| location | Location information provided by the AMF at session establishment, if available.Encoded as a *userLocation* parameter (*location>locationInfo>userLocation*), see Annex A. | C |
| dNN | Data Network Name associated with the target traffic, as defined in TS 23.003 [19] clause 9A and described in TS 23.501 [2] clause 4.3.2.2. | M |
| aMFID | Identifier of the AMF associated with the target UE, as defined in TS 23.003 [19] clause 2.10.1, if available. | C |
| hSMFURI | URI of the Nsmf\_PDUSession service of the selected H-SMF, if available. See TS 29.502 [16] clause 6.1.6.2.2. | C |
| requestType | Type of request as described in TS 24.501 [13] clause 9.11.3.47 if available. | C |
| accessType | Access type associated with the session (i.e. 3GPP or non-3GPP access) if provided by the AMF (see TS 24.501 [13] clause 9.11.2.1A). | C |
| rATType | RAT type associated with the access if provided by the AMF as part of session establishment (see TS 23.502 [4] clause 4.3.2). Values given as per TS 29.571 [17] clause 5.4.3.2. | C |
| sMPDUDNRequest | Contents of the SM PDU DN request container, if available, as described in TS 24.501 [13] clause 9.11.4.15. | C |
| timeOfSessionEstablishment | Time at which the session establishment occurred, if available. Shall be given qualified with time zone information (i.e. as UTC or offset from UTC, not as local time). | C |

The IRI-POI present in the SMF generating an xIRI containing a SMFStartOfInterceptionWithEstablishedPDUSession record shall set the Payload Direction field in the PDU header to *not applicable* (see ETSI TS 103 221-2 [8] clause 5.2.6).

Change 9: 6.2.3.2.7.2

6.2.3.2.7.2 MA PDU session establishment

The IRI-POI in the SMF shall generate an xIRI containing an SMFMAPDUSessionEstablishment record when the IRI-POI present in the SMF detects that a PDU session has been established for the target UE that is an MA PDU session (Request Type set to MA PDU session or upgraded at establishment), or where the upgrade allowed parameter is set to upgrade allowed and session is established as an ordinary PDU session (not upgraded at establishment, but may occur later on). The IRI-POI present in the SMF shall generate the xIRI for the following events:

- For a non-roaming scenario , the SMF sends the N1 NAS message (via AMF) PDU Session Establishment Accept to the UE for a new PDU session and the 5G Session Management (5GSM) state within the SMF is changed to PDU SESSION ACTIVE (see TS 24.501 [13]) in response to a PDU Session Establishment request received along with:

- PDU Session ID which does not identify an existing PDU session, and

- Request Type = MA PDU request, or

- Request Type = initial request and MA PDU session information set to "MA PDU session network upgrade is allowed", with either upgrade occuring at establishment or upgrade does not occur at establishment but may occur later.

- For a home-routed roaming scenario, the SMF in the HPLMN (i.e. H-SMF) sends the N16: Nsmf\_PDU\_Session\_Create response message with n1SmInfoToUe IE containing the PDU SESSION ESTABLISHMENT ACCEPT (see TS 29.502 [16]) for a new PDU session in response to a PDU Session Establishment request received along with:

- PDU Session ID which does not identify an existing PDU session, and

- Request Type = MA PDU request, or

- Request Type = initial request and MA PDU session information set to "MA PDU session network upgrade is allowed", with either upgrade occuring at establishment or upgrade does not occur at establishment but may occur later.

Table 6.2.3-5A: Payload for SMFMAPDUSessionEstablishment record

|  |  |  |
| --- | --- | --- |
| Field name | Description | M/C/O |
| sUPI | SUPI associated with the PDU session (e.g. as provided by the AMF in the associated Nsmf\_PDU\_Session\_CreateSMContext service operation). Shall be present except for PEI-only unauthenticated emergency sessions (see NOTE). | C |
| sUPIUnauthenticated | Shall be present if a SUPI is present in the message and set to “true” if the SUPI has not been authenticated, or “false” if it has been authenticated. | C |
| pEI | PEI associated with the PDU session if available (see NOTE). | C |
| gPSI | GPSI associated with the PDU session if available (see NOTE). | C |
| pDUSessionID | PDU Session ID See clause 9.4 of TS 24.501 [13]. Identifies a new PDU session. | M |
| pDUSessionType | Identifies selected PDU session type, see TS 24.501 [13] clause 9.11.4.11. | M |
| accessInfo | Identifies the access(es) associated with the PDU session including the information for each specific access (see Table 6.2.3-5B) | M |
| sNSSAI | Slice identifiers associated with the PDU session, if available. See TS 23.003 [19] clause 28.4.2 and TS 23.501 [2] clause 5.15.2. | C |
| uEEndpoint | UE endpoint address(es) if available. | C |
| location | Location information provided by the AMF, if available.Encoded as a *userLocation* parameter (*location>locationInfo>userLocation*), see Annex A. | C |
| dNN | Data Network Name associated with the target traffic, as defined in TS 23.003[19] clause 9A and described in TS 23.501 [2] clause 4.3.2.2. | M |
| aMFID | Identifier of the AMF associated with the target UE, as defined in TS 23.003 [19] clause 2.10.1 when available. | C |
| hSMFURI | URI of the Nsmf\_PDUSession service of the selected H-SMF, if available. See TS 29.502 [16] clause 6.1.6.2.2. | C |
| requestType | Type of request as described in TS 24.501 [13] clause 9.11.3.47 if available.  | C |
| sMPDUDNRequest | Contents of the SM PDU DN Request container, if available, as described in TS 24.501 [13] clause 9.11.4.15. | C |
| servingNetwork | PLMN ID of the serving core network operator, and, for a Non-Public Network (NPN), the NID that together with the PLMN ID identifies the NPN. | M |
| oldPDUSessionID | The old PDU Session ID received from the UE. See clauses 4.3.2.2.1 and 4.3.5.2 of TS 23.502 [4] and clause 6.4.1.2 of TS 24.501 [13]. Include if known.  | C |
| mAUpgradeIndication | Indicates whether the PDU session is allowed to be upgraded to MA-Confirmed MA PDU session (see clause 4.22.3 of TS 23.502 [4]). Include if known. | C |
| ePSPDNCnxInfo | Indicates if the PDU session may be moved to EPS during its lifetime (see TS 29.502 [16] clause 6.1.6.2.31). Include if known.  | C |
| mAAcceptedIndication | Indicates that a request to establish an MA PDU session was accepted or if a single access PDU session request was upgraded into a MA PDU session (see clauses 4.22.2 and 4.22.3 of TS 23.502 [4]).It shall be set as follows:- true: MA-Confirmed MA PDU session was established- false: single access MA-Upgrade-Allowed MA PDU session was established that may be upgraded to an MA-Confirmed MA PDU session. | M |
| aTSSSContainer | Identifies the steering, switching, and splitting features for the MA-Confirmed MA PDU session. Also indicates whether MPTCP or ATSSS-LL is to be used for ATSSS. See 9.11.4.22 of 24.501[13]. | C |
| NOTE: At least one of the SUPI, PEI or GPSI fields shall be present. |

Table 6.2.3-5B: Contents of Access Info parameter

|  |  |  |
| --- | --- | --- |
| Field name | Description | M/C/O |
| accessType | Access type associated with the session (i.e. 3GPP or non-3GPP access) as provided by the AMF (see TS 24.501 [13] clause 9.11.2.1A). | M |
| rATType | RAT Type associated with the access as provided by the AMF as part of session establishment (see TS 23.502 [4] clause 4.3.2). Values given as per TS 29.571 [17] clause 5.4.3.2. | C |
| gTPTunnelID | Contains the F-TEID identifying the GTP tunnel used to encapsulate the traffic, as defined in TS 29.244 [15] clause 8.2.3. Non-GTP encapsulation is for further study. | M |
| non3GPPAccessEndpoint | UE's local IP address used to reach the N3IWF, if available. IP addresses are given as 4 octets (for IPv4) or 16 octets (for IPv6) with the most significant octet first (network byte order). | C |
| establishmentStatus | Indicates whether the access type is established or released. | M |
| aNTypeToReactivate | Indicates the Access Network Type for which the UP connection is requested to be re-activated, for an MA PDU session. Applicable to session modification reporting. | C |

Change 10: 6.2.3.2.7.3

6.2.3.2.7.3 MA PDU session modification

The IRI-POI in the SMF shall generate an xIRI containing an SMFMAPDUSessionModification record when the IRI-POI present in the SMF detects that an MA PDU session has been modified for the target UE. The IRI-POI present in the SMF shall generate the xIRI for the following events:

- For a non-roaming scenario, the SMF (or for a roaming scenario, V-SMF in the VPLMN), receives the N1 NAS message (via AMF) PDU SESSION MODIFICATION COMMAND COMPLETE from the UE and the 5GSM state within the SMF is returned to PDU SESSION ACTIVE (see TS 24.501 [13]). This applies to the following cases for an MA-Upgrade-Allowed PDU session:

- UE initiated PDU session modification.

- Network (VPLMN) initiated PDU session modification.

- Upgrade to an MA PDU session.

- For a non-roaming scenario, the SMF (or for a roaming scenario, V-SMF in the VPLMN), receives the N1 NAS message (via AMF) PDU SESSION RELEASE COMPLETE from the UE in response to a PDU SESSION RELEASE COMMAND message containing an Access type IE identifying a single access to be released of an MA PDU session which was established over both accesses and the 5GSM state within the SMF remains in the PDU SESSION ACTIVE (see TS 24.501 [13]). This applies to the following case:

- A single access type is released from an MA PDU session, but the MA PDU session continues.

- For a non-roaming scenario, the SMF (or for a roaming scenario, V-SMF in the VPLMN), sends the N1 NAS message (via AMF) PDU SESSION ESTABLISHMENT ACCEPT to the UE and the 5GSM state within the SMF remains in the PDU SESSION ACTIVE (see TS 24.501 [13]). This applies to the following cases:

- Handover from one access type to another access type happens (e.g. 3GPP to non-3GPP) for an MA-Upgrade-Allowed MA PDU session.

- MA PDU Session establishment over second access type.

- For a home-routed roaming scenario, the SMF in the HPLMN (i.e. H-SMF) receives the N16: Nsmf\_PDU\_Session\_Update response message with n1SmInfoFromUe IE containing the PDU SESSION MODIFICATION COMMAND COMPLETE (see TS 29.502 [16]). This applies to the following cases for an MA-Upgrade-Allowed PDU session:

- UE initiated PDU session modification.

- Network (VPLMN) initiated PDU session modification.

- Network (HPLMN) initiated PDU session modification.

- Upgrade to an MA PDU session.

- For a home-routed roaming scenario, the SMF in the HPLMN (i.e. H-SMF) receives the N16: Nsmf\_PDU\_Session\_Update response message with n1SmInfoFromUe IE containing the PDU SESSION RELEASE COMPLETE message, a response to a PDU SESSION RELEASE COMMAND message containing an Access type IE identifying a single access to be released of an MA PDU session which was established over both accesses and the 5GSM state within the SMF remains in the PDU SESSION ACTIVE (see TS 29.502 [16]). This applies to the following cases:

- A single access type is released from an MA PDU session, but the MA PDU session continues.

- For a home-routed roaming scenario, the SMF in the HPLMN (i.e. H-SMF) sends the N16: Nsmf\_PDU\_Session\_Create response message with n1SmInfoToUe IE containing the PDU SESSION ESTABLISHMENT ACCEPT (see TS 29.502 [16]) while it had received an N16 Nsmf\_PDU\_Session\_Create request message with an existing PDU Session Id with access type being changed. This applies to the following cases:

- Handover from one access type to another access type happens (e.g. 3GPP to non-3GPP) for an MA-Upgrade-Allowed PDU session.

- MA PDU Session establishment over second access type.

Table 6.2.3-5C: Payload for SMFMAPDUSessionModification record

|  |  |  |
| --- | --- | --- |
| Field name | Description | M/C/O |
| sUPI | SUPI associated with the PDU session (e.g. as provided by the AMF in the associated Nsmf\_PDU\_Session\_CreateSMContext service operation). Shall be present except for PEI-only unauthenticated emergency sessions. | C |
| sUPIUnauthenticated | Shall be present if a SUPI is present in the message, and set to “true” if the SUPI was not authenticated, or “false” if it has been authenticated. | C |
| pEI | PEI associated with the PDU session if available. | C |
| gPSI | GPSI associated with the PDU session if available. | C |
| pDUSessionID | PDU Session ID See clause 9.4 of TS 24.501 [13]. | M |
| accessInfo | Identifies the access(es) associated with the PDU session including the information for each specific access (see Table 6.2.3-5B) being modified.  | C |
| sNSSAI | Slice identifier associated with the PDU session, if available. See TS 23.003 [19] clause 28.4.2 and TS 23.501 [2] clause 5.15.2. | C |
| location | Location information provided by the AMF, if available.Encoded as a *userLocation* parameter (*location>locationInfo>userLocation*), see Annex A. | C |
| requestType | Type of request as described in TS 24.501 [13] clause 9.11.3.47 if available.  | C |
| servingNetwork | PLMN ID of the serving core network operator, and, for a Non-Public Network (NPN), the NID that together with the PLMN ID identifies the NPN. | M |
| oldPDUSessionID | The old PDU Session ID received from the UE. See clauses 4.3.2.2.1 and 4.3.5.2 of TS 23.502 [4] and clause 6.4.1.2 of TS 24.501 [13]. Include if known.  | C |
| mAUpgradeIndication | Indicates whether the PDU session is allowed to be upgraded to MA PDU session (see clause 4.22.3 of 3GPP TS 23.502 [4]). Include if known. | C |
| ePSPDNCnxInfo | Indicates if the PDU session may be moved to EPS during its lifetime (see TS 29.502 [16] clause 6.1.6.2.31). Include if known.  | C |
| mAAcceptedIndication | Indicates that a request to establish an MA PDU session was accepted or if a single access PDU session request was upgraded into a MA PDU session (see clauses 4.22.2 and 4.22.3 of TS 23.502 [4]).It shall be set as follows:- true: MA-Confirmed MA PDU session was established- false: single access MA-Upgrade-Allowed MA PDU session was established that may be upgraded to an MA-Confirmed MA PDU session. | M |
| aTSSSContainer | Identifies the steering, switching, and splitting features for the MA-Confirmed MA PDU session. Also indicates whether MPTCP or ATSSS-LL is to be used for ATSSS. See clause 9.11.4.22 of TS 24.501 [13]. | C |

Change 11: 6.2.3.2.7.5

6.2.3.2.7.5 Start of interception with an established MA PDU session

The IRI-POI in the SMF shall generate an xIRI containing an SMFStartOfInterceptionWithEstablishedMAPDUSession record when the IRI-POI present in the SMF detects that a MA PDU session has already been established for the target UE when interception starts.

In a non-roaming scenario, the IRI-POI in the SMF (or in a roaming scenario, the IRI-POI in the V-SMF in the VPLMN) shall generate the xIRI containing the SMFStartOfInterceptionWithEstablishedMAPDUSession record when it detects that a new interception for a UE is activated (i.e. provisioned by the LIPF) for the following case for an MA PDU session that is either MA-Confirmed or MA-Upgrade-Allowed:

- The 5GSM state within the SMF for that UE is 5GSM: PDU SESSION ACTIVE or PDU SESSION MODIFICATION PENDING.

NOTE: The above trigger happens when the SMF (V-SMF in VPLMN) had not sent an N1 NAS message PDU SESSION RELEASE COMMAND to the UE to release the entire MA PDU session and the SMF (V-SMF in the VPLMN) had previously sent an N1 NAS message PDU SESSION ESTABLISHMENT ACCEPT to that UE for the same MA PDU session.

In a home-routed roaming scenario, the IRI-POI in the H-SMF shall generate the xIRI containing the SMFStartOfInterceptionWithEstablishedMAPDUSession record when it detects that a new interception for a UE is activated (i.e. provisioned by the LIPF) for the following case for an MA PDU session that is either MA-Confirmed or MA-Upgrade-Allowed:

- The H-SMF had not sent an Nsmf\_PDU\_Session\_Update Request (n1SmInfoToUe: PDU SESSION RELEASE COMMAND to release the entire MA PDU session) to the V-SMF for a PDU session and H-SMF had previously sent an Nsmf\_PDU\_Session\_Create response (n1SmInfoToUE: PDU SESSION ESTABLISHMENT ACCEPT) to the V-SMF for that PDU session.

The IRI-POI in the SMF shall generate the xIRI containing the SMFStartOfInterceptionWithEstablishedMAPDUSession record for each of the MA PDU sessions (that meets the above criteria) associated with the newly identified target UEs.

Table 6.2.3-5E: Payload for SMFStartOfInterceptionWithEstablishedMAPDUSession record

|  |  |  |
| --- | --- | --- |
| Field name | Description | M/C/O |
| sUPI | SUPI associated with the PDU session (e.g. as provided by the AMF in the associated Nsmf\_PDU\_Session\_CreateSMContext service operation). Shall be present except for PEI-only unauthenticated emergency sessions. | C |
| sUPIUnauthenticated | Shall be present if a SUPI is present in the message and set to “true” if the SUPI has not been authenticated, or “false” if it has been authenticated. | C |
| pEI | PEI associated with the PDU session if available. | C |
| gPSI | GPSI associated with the PDU session if available. | C |
| pDUSessionID | PDU Session ID as assigned by the AMF, as defined in TS 24.007 [14] clause 11.2.3.1b. | M |
| pDUSessionType | Identifies selected PDU session type, see TS 24.501 [13] clause 9.11.4.11. | M |
| accessInfo | Identifies the access(es) associated with the PDU session including the information for each specific access (see Table 6.2.3-5B). | M |
| sNSSAI | Slice identifier associated with the PDU session, if available. See TS 23.003 [19] clause 28.4.2 and TS 23.501 [2] clause 5.15.2. | C |
| uEEndpoint | UE endpoint address(es) if available. IP addresses are given as 4 octets (for IPv4) or 16 octets (for IPv6) with the most significant octet first (network byte order). MAC addresses are given as 6 octets with the most significant octet first. | C |
| location | Location information provided by the AMF at session establishment, if available.Encoded as a *userLocation* parameter (*location>locationInfo>userLocation*), see Annex A. | C |
| dNN | Data Network Name associated with the target traffic, as defined in TS 23.003 [19] clause 9A and described in TS 23.501 [2] clause 4.3.2.2. | M |
| aMFID | Identifier of the AMF associated with the target UE, as defined in TS 23.003 [19] clause 2.10.1, if available. | C |
| hSMFURI | URI of the Nsmf\_PDUSession service of the selected H-SMF, if available. See TS 29.502 [16] clause 6.1.6.2.2. | C |
| requestType | Type of request as described in TS 24.501 [13] clause 9.11.3.47 if available. | C |
| sMPDUDNRequest | Contents of the SM PDU DN request container, if available, as described in TS 24.501 [13] clause 9.11.4.15. | C |
| servingNetwork | PLMN ID of the serving core network operator, and, for a Non-Public Network (NPN), the NID that together with the PLMN ID identifies the NPN. | M |
| oldPDUSessionID | The old PDU Session ID received from the UE. See clauses 4.3.2.2.1 and 4.3.5.2 of TS 23.502 [4] and clause 6.4.1.2 of TS 24.501 [13]. Include if known. | C |
| mAUpgradeIndication | Indicates whether the PDU session is allowed to be upgraded to MA PDU session (see clause 4.22.3 of TS 23.502 [4]). Include if known. | C |
| ePSPDNCnxInfo | Indicates if the PDU session may be moved to EPS during its lifetime (see TS 29.502 [16] clause 6.1.6.2.31). Include if known. | C |
| mAAcceptedIndication | Indicates that a request to establish an MA PDU session was accepted or if a single access PDU session request was upgraded into an MA PDU session (see clauses 4.22.2 and 4.22.3 of TS 23.502 [4]).It shall be set as follows:- true: MA-Confirmed MA PDU session was established.- false: single access MA-Upgrade-Allowed MA PDU session was established that may be upgraded to an MA-Confirmed MA PDU session. | M |
| aTSSSContainer | Identifies the steering, switching, and splitting features for the MA-Confirmed MA PDU session. Also indicates whether MPTCP or ATSSS-LL is to be used for ATSSS. See clause 9.11.4.22 of TS 24.501 [13].  | C |

The IRI-POI present in the SMF generating an xIRI containing a SMFStartOfInterceptionWithEstablishedMAPDUSession record shall set the Payload Direction field in the PDU header to not applicable (see ETSI TS 103 221-2 [8] clause 5.2.6).

Change 12: 6.2.3.2.8 (see other comment)

##### 6.2.3.2.8 PDU to MA PDU session modification

The IRI-POI in the SMF shall generate an xIRI containing an SMFPDUtoMAPDUSessionModification record when the IRI-POI present in the SMF detects that an existing PDU session for the target UE has been successfully modified to an MA PDU session using the PDU session modification procedures as described in TS 24.501 [13]. A PDU session is considered to be successfully modified to a MA PDU session, when all of the following are true:

1. The UE is registered to both 3GPP access and non-3GPP access:

- In the same PLMN (non-roaming UE).

- In the different PLMNs (roaming UE).

2. SMF receives the PDU SESSION MODIFICATION REQUEST from the UE (clause 8.2.10 in TS 24.501 [13]) that includes one of the following:

- *modification request* and includes MA PDU session information IE set to *MA PDU session network upgrade allowed*.

- *MA PDU request*.

3. SMF sends a PDU SESSION MODIFICATION COMMAND to the UE that includes the ATSSS IE (clause 6.4.2.3 in TS 24.501 [13]).

4. SMF receives the PDU SESSION MODIFICATION COMPLETE from the UE (clause 8.3.10.1 in TS 24.501 [13]).

5. The 5GSM state within the SMF is PDU Session Active.

Once the SMFPDUtoMAPDUSessionModification record has been generated by the IRI-POI in the SMF, the IRI-POI shall follow clause 6.2.3.2.7 of the present document for further reporting for this MA PDU session.

Table 6.2.3-5G: Payload for SMFPDUtoMAPDUSessionModification record

|  |  |  |
| --- | --- | --- |
| Field name | Description | M/C/O |
| sUPI | SUPI associated with the PDU session (e.g. as provided by the AMF in the associated Nsmf\_PDU\_Session\_CreateSMContext service operation). Shall be present except for PEI-only unauthenticated emergency sessions. | C |
| sUPIUnauthenticated | Shall be present if a SUPI is present in the message, and set to *true* if the SUPI was not authenticated, or *false* if it has been authenticated. | C |
| pEI | PEI associated with the PDU session if available. | C |
| gPSI | GPSI associated with the PDU session if available. | C |
| sNSSAI | Slice identifier associated with the PDU session, if available. See TS 23.003 [19] clause 28.4.2 and TS 23.501 [2] clause 5.15.2. | C |
| non3GPPAccessEndpoint | UE's local IP address used to reach the N3IWF, if available. IP addresses are given as 4 octets (for IPv4) or 16 octets (for IPv6) with the most significant octet first (network byte order). | C |
| location | Location information provided by the AMF, if available.Encoded as a *userLocation* parameter (*location>locationInfo>userLocation*), see Annex A. | C |
| requestType | Type of request as described in TS 24.501 [13] clause 9.11.3.47. | M |
| accessType | Access type associated with the session (i.e. 3GPP or non-3GPP access) if provided by the AMF (see TS 24.501 [13] clause 9.11.2.1A). | C |
| rATType | RAT type associated with the access, if available. Values given as per TS 29.571 [17] clause 5.4.3.2. | C |
| pDUSessionID | PDU Session ID See TS 24.501 [13] clause 9.4. | M |
| requestIndication | Indicates the request type for PDU session modification as indicated by the requestIndication sent in the PDU SESSION MODIFICATION REQUEST (see TS 29.502 [16] clause 6.1.6.3.6). | M |
| aTSSSContainer | Identifies the steering, switching, and splitting features for the MA-Confirmed MA PDU session. Also indicates whether MPTCP or ATSSS-LL is to be used for ATSSS. See TS 24.501 [13] clause 9.11.4.22. | M |

Change 13: 7.4.3.x

### 7.4.3 MMS Records

#### 7.4.3.1 MMSSend

The IRI-POI in the MMS Proxy-Relay shall generate an xIRI containing an MMSSend record when the MMS Proxy-Relay sends *m-send-conf* (as defined in OMA-TS-MMS\_ENC [39] clause 6.1.1) to local target UE.

The following table contains parameters generated by the IRI-POI, along with parameters derived from the *m-send-req* message (from the local target UE to the MMS Proxy-Relay), and the *m-send-conf* message(from MMS Proxy-Relay to the local target UE).

Table 7.4.3-1: Payload for MMSSend

|  |  |  |
| --- | --- | --- |
| Field name | Description | M/C/O |
| transactionID | An ID used to correlate an MMS request and response between the target and the MMS Proxy-Relay. As defined in OMA-TS-MMS\_ENC [39] clause 7.3.63. | M |
| version | The version of MM, to include major and minor version. | M |
| dateTime | Date and Time when the MM was last handled (either originated or forwarded). For origination, included by the sending MMS client or the originating MMS Proxy-Relay. | M |
| originatingMMSParty | ID(s) of the originating party in one or more of the formats described in 7.4.2.1When address translation occurs (such as the case of a token sent by the client and replaced with a proper address by the MMS Proxy-Relay), both the pre and post translated addresses (with appropriate correlation) are included. | M |
| terminatingMMSParty | ID(s) of the terminating party in one or more of the formats described in 7.4.2.1When address translation occurs (such as the case of a token sent by the client and replaced with a proper address by the MMS Proxy-Relay), both the pre and post translated addresses (with appropriate correlation) are included.This parameter is included if the corresponding MM includes a “TO” field.At least one of the terminatingMMSParty, cCRecipients, or bCCRecipients must be included. | C |
| cCRecipients | Address of a recipient; the "CC" field may include addresses of multiple recipients. When address translation occurs, both the pre and post translated addresses (with appropriate correlation) are included. This parameter is included if the corresponding MM includes a “CC” field.At least one of the terminatingMMSParty, cCRecipients, or bCCRecipients must be included. | C |
| bCCRecipients | Address of a recipient; the "BCC" field may include addresses of multiple recipients. When address translation occurs, both the pre and post translated addresses (with appropriate correlation) are included. This parameter is included if the corresponding MM includes a “BCC” field.At least one of the terminatingMMSParty, cCRecipients, or bCCRecipients must be included. | C |
| direction | Indicates the direction of the MM. This shall be encoded as “from target.” | M |
| subject | The subject of the MM. Include if sent to the MMS Proxy-Relay. | C |
| messageClass | Class of the MM. For example, a value of "auto" is automatically generated by the UE. If the field is not present, the class should be interpreted as "personal." Include if sent to the MMS Proxy-Relay. | C |
| expiry | Length of time in seconds the MM will be stored in MMS Proxy-Relay or time to delete the MM. The field has two formats, either absolute or relative. | M |
| desiredDeliveryTime | Date and Time of desired delivery. Indicates the earliest possible delivery of the MM to the recipient. Include if sent to the MMS Proxy-Relay. | C |
| priority | Priority of the MM assigned by the originator MMS Client. Include if sent to the MMS Proxy-Relay. | C |
| senderVisibility | An indication that the sender's address should not be delivered to the recipient. Sent by the target to indicate the target's visibility to the other party or if not signalled by the target and the default is to not make target visible to the other party. The values given in OMA-TS-MMS\_ENC [39] clause 7.3.52 shall be encoded as follows: “Show” = True, “Hide” = False. Include if sent to the MMS Proxy-Relay. | C |
| deliveryReport | Specifies whether the originator MM UE requests a delivery report from each recipient. Sent by the target to indicate the desired delivery report. The values given in OMA-TS-MMS\_ENC [39] clause 7.3.13. shall be encoded as follows: “Yes” = True, “No” = False. Include if sent to the MMS Proxy-Relay. | C |
| readReport | Specifies whether the originator MM UE requests a read report from each recipient. Sent by the target to indicate the desired read report. The values given in OMA-TS-MMS\_ENC [39] clause 7.3.37 shall be encoded as follows: “Yes” = True, “No” = False. Include if sent to the MMS Proxy-Relay. | C |
| store | Specifies whether the originator MM UE wants the submitted MM to be saved in the user's MMBox, in addition to sending it. Sent by the target to indicate the MM is to be stored. The values given in OMA-TS-MMS\_ENC [39] clause 7.3.56 shall be encoded as follows: “Yes” = True, “No” = False. Include if sent to the MMS Proxy-Relay. | C |

|  |  |  |
| --- | --- | --- |
| state | Identifies the value of the MM State associated with a to be stored or stored MM. See OMA-TS-MMS\_ENC [39] clause 7.3.33. Include if sent to the MMS Proxy-Relay. | C |
| flags | Identifies a keyword to add or remove from the list of keywords associated with a stored MM. See OMA-TS-MMS\_ENC [39] clause 7.3.32. Include if sent to the MMS Proxy-Relay. | C |
| replyCharging | If this field is present its value is set to “accepted” or “accepted text only” and the MMS-version-value of the M-Notification.ind PDU is higher than 1.0, this header field will indicate that a reply to this particular MM is free of charge for the recipient. If the Reply-Charging service is offered and the request for reply-charging has been accepted by the MMS service provider the value of this header field SHALL be set to “accepted” or “accepted text only”. See OMA-TS-MMS\_ENC [39] clause 7.3.43. Include if sent to the MMS Proxy-Relay. | C |
| applicID | Identification of the originating application of the original MM. Sent by the target to identify the destination application as defined in OMA-TS-MMS\_ENC [39] clause 7.3.2. Include if sent to the MMS Proxy-Relay. | C |
| replyApplicID | Identification of an application to which replies, delivery reports, and read reports are addressed. Sent by the target to identify the application to which replies, delivery reports, and read reports are addressed as defined in OMA-TS-MMS\_ENC [39] clause 7.3.42. Include if sent to the MMS Proxy-Relay. | C |
| auxApplicInfo | Auxiliary application addressing information as indicated in the original MM. As defined in OMA-TS-MMS\_ENC [39] clause 7.3.4. Include if sent to the MMS Proxy-Relay. | C |
| contentClass | Classifies the content of the MM to the smallest content class to which the message belongs. Sent by the target to identify the class of the content. See OMA-TS-MMS\_ENC [39] clause 7.3.9. Include if sent to the MMS Proxy-Relay. | C |
| dRMContent | Indicates if the MM contains any DRM-protected element. Provide when sent by the target to indicate if the MM contains any DRM-protected element. The values given in OMA-TS-MMS\_ENC [39] clause 7.3.16 shall be encoded as follows: “Yes” = True, “No” = False. Include if sent to the MMS Proxy-Relay. | C |
| adaptationAllowed | Provide when sent by the target to identify whether the target wishes the MM to be adapted or not. If overridden, an indication shall be included in the parameter. Include if sent to the MMS Proxy-Relay. | C |
| contentType | The content type of the MM. See OMA-TS-MMS\_ENC [39] clause 7.3.11 | M |
| responseStatus | MMS specific status. See OMA-TS-MMS\_ENC [39] clause 7.3.48. | M |
| responseStatusText | Text that qualifies the Response Status. Include if sent to the target. As defined in OMA-TS-MMS\_ENC [39] clause 7.3.49. Include if sent by the MMS Proxy-Relay. | C |
| messageID | An ID assigned by the MMS Proxy-Relay to uniquely identify an MM. As defined in OMA-TS-MMS\_ENC [39] clause 7.3.29. | M |

#### 7.4.3.2 MMSSendByNonLocalTarget

The IRI-POI in the MMS Proxy-Relay shall generate an xIRI containing an MMSSendByNonLocalTarget record when the MMS Proxy-Relay receives *MM4\_forward.REQ* (as defined in TS 23.140 [40] clause 8.4.1) from the non-local MMS Proxy-Relay, that contains a non-local target ID.

The following table contains parameters generated by the IRI-POI, along with parameters derived from the *MM4\_forward.REQ* message (from the non-local MMS Proxy-Relay to the local MMS Proxy-Relay).

Table 7.4.3-2: Payload for MMSSendByNonLocalTarget

|  |  |  |
| --- | --- | --- |
| Field name | Description | M/C/O |
| version | The version of MM, to include major and minor version. | M |
| transactionID | An ID used to correlate an MMS request and response between the proxies. As defined in TS 23.140 [40] clause 8.4.1.4. | M |
| messageID | An ID assigned by the MMS Proxy-Relay to uniquely identify an MM. As defined in TS 23.140 [40] clause 8.4.1.4. | M |
| terminatingMMSParty | ID(s) of the terminating party in one or more of the formats described in 7.4.2.1. | M |
| originatingMMSParty | ID(s) of the originating party in one or more of the formats described in 7.4.2.1. | M |
| direction | Indicates the direction of the MM. This shall be encoded as “from target.” | M |
| contentType | The content type of the MM. See OMA-TS-MMS\_ENC [39] clause 7.3.11 | M |
| messageClass | Class of the MM. For example, a value of "auto" is automatically generated by the UE. If the field is not present, the class should be interpreted as "personal." Include if sent to the MMS Proxy-Relay. | C |
| dateTime | Date and Time when the MM was last handled (either originated or forwarded).  | M |
| expiry | Length of time in seconds the MM will be stored in MMS Proxy-Relay or time to delete the MM. The field has two formats, either absolute or relative. Include if sent to the MMS Proxy-Relay. | C |
| deliveryReport | Specifies whether the originator MM UE requests a delivery report from each recipient. Indicates the desired delivery report. The values given in TS 23.140 [40] clause 8.4.1.4 shall be encoded as follows: “Yes” = True, “No” = False. Included if it exists in the MMS Proxy-Relay message. Include if sent to the MMS Proxy-Relay. | C |
| priority | Priority of the MM assigned by the originator MMS Client. Reported if sent by the target. Include if sent to the MMS Proxy-Relay. | C |
| senderVisibility | An indication that the sender's address should not be delivered to the recipient. Indicates the target's visibility to the other party or if not signalled by the target and the default is to not make target visible to the other party. The values given in TS 23.140 [40] clause 8.4.1.4 shall be encoded as follows: “Show” = True, “Hide” = False. Include if sent to the MMS Proxy-Relay. | C |
| readReport | Specifies whether the originator MM UE requests a read report from each recipient. Provide when sent by the target to indicate the desired read report. The values given in TS 23.140 [40] clause 8.4.1.4 shall be encoded as follows: “Yes” = True, “No” = False. Include if sent to the MMS Proxy-Relay. | C |
| subject | The subject of the MM. Include if sent by the target. | C |
| forwardCount | The number of times the MM was forwarded | C |
| previouslySentBy | History of UEs that have forwarded (including originally submitted) the MM. Include if sent to the MMS Proxy-Relay. | C |
| previouslySentByDateTime | The timestamp associated with the previous forward events. Include if sent to the MMS Proxy-Relay. | C |
| applicID | Identification of the originating application of the original MM. Provide when sent by the target to identify the destination application as defined in TS 23.140 [40] clause 8.4.1.4. Include if sent to the MMS Proxy-Relay. | C |
| replyApplicID | Identification of an application to which replies, delivery reports, and read reports are addressed. Provide when sent by the target to identify the application to which replies, delivery reports, and read reports are addressed as defined in TS 23.140 [40] clause 8.4.1.4. Include if sent to the MMS Proxy-Relay. | C |
| auxApplicInfo | Auxiliary application addressing information as indicated in the original MM. As defined in OMA-TS-MMS\_ENC [39] clause 7.3.4. Include if sent to the MMS Proxy-Relay. | C |
| contentClass | Classifies the content of the MM to the smallest content class to which the message belongs. Identifies the class of the content. Include if sent to the MMS Proxy-Relay. Include if sent to the MMS Proxy-Relay. | C |
| dRMContent | Indicates if the MM contains any DRM-protected element. Indicates if the MM contains any DRM-protected element. The values given as defined in TS 23.140 [40] clause 8.4.1.4 shall be encoded as follows: “Yes” = True, “No” = False. Include if sent to the MMS Proxy-Relay. | C |
| adaptationAllowed | Identifies whether the target wishes the MM to be adapted or not. If overridden, an indication shall be included in the parameter. Include if sent to the MMS Proxy-Relay. | C |

#### 7.4.3.3 MMSNotification

The IRI-POI in the MMS Proxy-Relay shall generate an xIRI containing an MMSNotification record when the MMS Proxy-Relay sends a *m-notification-ind* (as defined in OMA-TS-MMS\_ENC [39] clause 6.2) to the MMS client in the local target UE.

The following table contains parameters generated by the IRI-POI, along with parameters derived from the *m-notification-ind* message (from the local MMS Proxy-Relay to the local target).

Table 7.4.3-3: Payload for MMSNotification

|  |  |  |
| --- | --- | --- |
| Field name | Description | M/C/O |
| transactionID | An ID used to correlate an MMS request and response between the target and the MMS Proxy-Relay. As defined in OMA-TS-MMS\_ENC[ AA] clause 7.3.63. | M |
| version | The version of MM, to include major and minor version. | M |
| originatingMMSParty | ID(s) of the originating party in one or more of the formats described in 7.4.2.1When address translation occurs (such as the case of a token sent by the client and replaced with a proper address by the MMS Proxy-Relay), both the pre and post translated addresses (with appropriate correlation) are included.If the originating MMS client requested address hiding, but the MMS Proxy-Relay has access to the "From" field, this shall be reported, regardless of the fact that it may be hidden from the recepient. | C |
| direction | Indicates the direction of the MM. This shall be encoded as “to target." | M |
| subject | The subject of the MM. Include if sent by the MMS Proxy-Relay. | C |
| deliveryReportRequested | Specifies whether the originator MMS UE requests a delivery report from each recipient. The values given in OMA-TS-MMS\_ENC [39] clause 7.3.13 shall be encoded as follows: “Yes” = True, “No” = False. Include if sent by the MMS Proxy-Relay. | C |
| stored | Specifies whether the MM was stored in the target's MMBox, and that the *content-location-value* field is a reference to it. "Stored" is coded as True, and "not Stored" is coded as False. As defined in OMA-TS-MMS\_ENC [39] clause 7.3.57.Include if sent by the MMS Proxy-Relay. | C |
| messageClass | Class of the MM. For example, a value of "auto" is automatically generated by the UE.  | M |
| priority | Priority of the MM assigned by the originator MMS Client. Include if sent by the MMS Proxy-Relay. | C |
| messageSize | Specifies the size of the MM that was viewed or uploaded. Specified in bytes. | M |
| expiry | Length of time in seconds the MM will be stored in MMS Proxy-Relay or time to delete the MM. The field has two formats, either absolute or relative. | M |
| replyCharging | If this field is present its value is set to “accepted” or “accepted text only” and the MMS-version-value of the M-Notification.ind PDU is higher than 1.0, this header field will indicate that a reply to this particular MM is free of charge for the recipient. If the Reply-Charging service is offered and the request for reply-charging has been accepted by the MMS service provider the value of this header field SHALL be set to “accepted” or “accepted text only”. See OMA-TS-MMS\_ENC [39] clause 7.3.43. Include if sent by the MMS Proxy-Relay. | C |

#### 7.4.3.4 MMSSendToNonLocalTarget

The IRI-POI in the MMS Proxy-Relay shall generate an xIRI containing an MMSSendToNonLocalTarget record when the local MMS Proxy-Relay sends a *MM4\_forward.REQ* (as defined in TS 23.140 [40] clause 8.4.1) to the non-local MMS Proxy-Relay, that contains a non-local target ID.

The following table contains parameters generated by the IRI-POI, along with parameters derived from the *MM4\_forward.REQ* message (from the non-local MMS Proxy-Relay to the local MMS Proxy-Relay).

Table 7.4.3-4: Payload for MMSSendToNonLocalTarget

|  |  |  |
| --- | --- | --- |
| Field name | Description | M/C/O |
| version | The version of MM, to include major and minor version. | M |
| transactionID | An ID used to correlate an MMS request and response between the proxies. As defined in TS 23.140 [40] clause 8.4.1.4. | M |
| messageID | An ID assigned by the MMS Proxy-Relay to uniquely identify an MM. As defined in TS 23.140 [40] clause 8.4.1.4. | M |
| terminatingMMSParty | ID(s) of the terminating party in one or more of the formats described in 7.4.2.1. | M |
| originatingMMSParty | ID(s) of the originating party in one or more of the formats described in 7.4.2.1. | M |
| direction | Indicates the direction of the MM. This shall be encoded as “to target.” | M |
| contentType | The content type of the MM. See OMA-TS-MMS\_ENC [39] clause 7.3.11 | M |
| messageClass | Class of the MM. For example, a value of "auto" is automatically generated by the UE. If the field is not present, the class should be interpreted as "personal." Include if sent by the MMS Proxy-Relay message. | C |
| dateTime | Date and Time when the MM was last handled (either originated or forwarded).  | M |
| expiry | Length of time in seconds the MM will be stored in MMS Proxy-Relay or time to delete the MM. The field has two formats, either absolute or relative. Include if sent by the MMS Proxy-Relay message. | C |
| deliveryReportRequested | Specifies whether the originator MMS UE requests a delivery report from each recipient. Indicates the desired delivery report. The values given in TS 23.140 [40] clause 8.4.1.4 shall be encoded as follows: “Yes” = True, “No” = False. Include if sent by the MMS Proxy-Relay message. | C |
| priority | Priority of the MM assigned by the originator MMS Client. Reported if sent by the target. Include if sent by the MMS Proxy-Relay message. | C |
| senderVisibility | Indicates whether the sender's address should not be delivered to the recipient. Indicates the target's visibility to the other party or if not signalled by the target and the default is to not make target visible to the other party. The values given in TS 23.140 [40] clause 8.4.1.4 shall be encoded as follows: “Show” = True, “Hide” = False. Include if sent by the MMS Proxy-Relay message. | C |
| readReport | Specifies whether the originator MMS UE requests a read report from each recipient. Indicates the desired read report. The values given in TS 23.140 [40] clause 8.4.1.4 shall be encoded as follows: “Yes” = True, “No” = False. Include if sent by the MMS Proxy-Relay message. | C |
| subject | The subject of the MM. Include if sent to the target. | C |
| forwardCount | The number of times the MM was forwarded | C |
| previouslySentBy | History of UEs that have forwarded (including originally submitted) the MM. Include if sent by the MMS Proxy-Relay message. | C |
| previouslySentByDateTime | The timestamp associated with the previous forward events. Include if sent by the MMS Proxy-Relay message. | C |
| applicID | Identification of the originating application of the original MM. Provide when sent by the target to identify the destination application as defined in TS 23.140 [40] clause 8.4.1.4. Include if sent by the MMS Proxy-Relay message. | C |
| replyApplicID | Identification of an application to which replies, delivery reports, and read reports are addressed. identifies the application to which replies, delivery reports, and read reports are addressed as defined in TS 23.140 [40] clause 8.4.1.4. Include if sent by the MMS Proxy-Relay message. | C |
| auxApplicInfo | Auxiliary application addressing information as indicated in the original MM. As defined in OMA-TS-MMS\_ENC [39] clause 7.3.4. Include if sent by the MMS Proxy-Relay message. | C |
| contentClass | Classifies the content of the MM to the smallest content class to which the message belongs. Identifies the class of the content. Include if sent by the MMS Proxy-Relay message. | C |
| dRMContent | Indicates if the MM contains any DRM-protected element. Indicates if the MM contains any DRM-protected element. The values given as defined in TS 23.140 [40] clause 8.4.1.4 shall be encoded as follows: “Yes” = True, “No” = False. Include if sent by the MMS Proxy-Relay message. | C |
| adaptationAllowed | identifies whether the target wishes the MM to be adapted or not. If overridden, an indication shall be included in the parameter. Include if sent by the MMS Proxy-Relay message. | C |
| store | Specifies whether the originator MMS UE wants the submitted MM to be saved in the user's MMBox, in addition to sending it. Indicates whether the MMS is to be stored. The values given in TS 23.140 [40] clause 8.4.1.4 shall be encoded as follows: “Yes” = True, “No” = False. Include if sent by the MMS Proxy-Relay message. | C |

|  |  |  |
| --- | --- | --- |
| applicID | Identification of the originating application of the original MM. Identifies the destination application as defined in TS 23.140 [40] clause 8.4.1.4. Include if sent by the MMS Proxy-Relay message. | C |
| replyApplicID | Identification of an application to which replies, delivery reports, and read reports are addressed. Identifies the application to which replies, delivery reports, and read reports are addressed as defined in TS 23.140 [40] clause 8.4.1.4. Include if sent by the MMS Proxy-Relay message. | C |
| auxApplicInfo | Auxiliary application addressing information as indicated in the original MM. As defined in OMA-TS-MMS\_ENC [39] clause 7.3.4. Include if sent by the MMS Proxy-Relay message. | C |
| contentClass | Classifies the content of the MM to the smallest content class to which the message belongs. Identifies the class of the content. Include if sent by the MMS Proxy-Relay message. | C |
| dRMContent  | Indicates if the MM contains any DRM-protected element. Indicates whether the MM contains any DRM-protected element. The values given as defined in TS 23.140 [40] clause 8.4.1.4 shall be encoded as follows: “Yes” = True, “No” = False. Include if sent by the MMS Proxy-Relay message. | C |

#### 7.4.3.5 MMSNotificationResponse

The IRI-POI in the MMS Proxy-Relay shall generate an xIRI containing an MMSNotificationResponse record when the MMS Proxy-Relay receives a *m-notifyresp-ind* (as defined in OMA-TS-MMS\_ENC [39] clause 6.2, Table 4) from the MMS client in the target UE for the deferred retrieval case only. The immediate retrieval trigger on *m-notifyresp-ind* is in clause 7.4.3.7.

The following table contains parameters generated by the IRI-POI, along with parameters derived from the *m-notifyresp-ind*message (from the local target UE to the MMS Proxy-Relay).

Table 7.4.3-5: Payload for MMSNotificationResponse

|  |  |  |
| --- | --- | --- |
| Field name | Description | M/C/O |
| transactionID | An ID used to correlate an MMS request and response between the target and the MMS Proxy-Relay. As defined in OMA-TS-MMS\_ENC [39] clause 7.3.63. | M |
| version | The version of MM, to include major and minor version. | M |
| direction | Indicates the direction of the MM. This shall be encoded as “to target” | M |
| status | Provides a MM status. A status of "retrieved" is only signalled by the retrieving UE after retrieval of the MM. | M |
| reportAllowed | Indication whether or not the sending of delivery report is allowed by the recipient MMS Client. The values given in OMA-TS-MMS\_ENC [39] clause 7.3.47 shall be encoded as follows: “Yes” = True, “No” = False. Include if sent to the MMS Proxy-Relay. | C |

#### 7.4.3.6 MMSRetrieval

The IRI-POI in the MMS Proxy-Relay shall generate an xIRI containing an MMSRetrieval record when the MMS Proxy-Relay sends a *m-retrieve-conf* (as defined in OMA-TS-MMS\_ENC [39] clause 6.3) to the MMS client in the target UE.

The following table contains parameters generated by the IRI-POI, along with parameters derived from the *m-retrieve-conf* message (from the MMS Proxy-Relay to the local target UE).

Table 7.4.3-6: Payload for MMSRetrieval

|  |  |  |
| --- | --- | --- |
| Field name | Description | M/C/O |
| transactionID | An ID used to correlate an MMS request and response between the target and the MMS Proxy-Relay. As defined in OMA-TS-MMS\_ENC [39] clause 7.3.63. | M |
| version | The version of MM, to include major and minor version. | M |
| messageID | An ID assigned by the MMS Proxy-Relay to uniquely identify an MM. As defined in OMA-TS-MMS\_ENC [39] clause 7.3.29. | M |
| dateTime | Date and Time when the MM was last handled (either originated or forwarded). For origination, included by the sending MMS client or the originating MMS Proxy-Relay. | M |
| originatingMMSParty | ID(s) of the originating party in one or more of the formats described in 7.4.2.1When address translation occurs (such as the case of a token sent by the client and replaced with a proper address by the MMS Proxy-Relay), both the pre and post translated addresses (with appropriate correlation) are included. Include if sent by the MMS Proxy-Relay. | C |
| previouslySentBy | History of UEs that have forwarded (including originally submitted) the MM. Include if sent by the MMS Proxy-Relay. | C |
| previouslySentByDateTime | The timestamp associated with the previous forward events. Include if sent by the MMS Proxy-Relay. | C |
| terminatingMMSParty | ID(s) of the terminating party in one or more of the formats described in 7.4.2.1When address translation occurs (such as the case of a token sent by the client and replaced with a proper address by the MMS Proxy-Relay), both the pre and post translated addresses (with appropriate correlation) are included. Include if sent by the MMS Proxy-Relay.At least one of the terminatingMMSParty or cCRecipients must be included. | C |
| cCRecipients | Address of a recipient; the "CC" field may include addresses of multiple recipients. When address translation occurs, both the pre and post translated addresses (with appropriate correlation) are included. Include if sent by the MMS Proxy-Relay.At least one of the terminatingMMSParty or cCRecipients must be included. | C |
| direction | Indicates the direction of the MM. This shall be encoded as “to target,” or "fromTarget," as appropriate. | M |
| subject | The subject of the MM. Include if sent by the MMS Proxy-Relay. | C |
| state | Identifies the value of the MM State associated with a to be stored or stored MM. See OMA-TS-MMS\_ENC [39] clause 7.3.33. Include if sent by the MMS Proxy-Relay. | C |
| flags | Identifies a keyword to add or remove from the list of keywords associated with a stored MM. Include if sent. See OMA-TS-MMS\_ENC [39] clause 7.3.32. Include if sent by the MMS Proxy-Relay. | C |
| messageClass | Class of the MM. For example, a value of "auto" is automatically generated by the UE. If the field is not present, the class should be interpreted as "personal." Include if sent by the MMS Proxy-Relay. | C |
| priority | Priority of the MM assigned by the originator MMS Client. Include if sent by the MMS Proxy-Relay. | C |
| deliveryReport | Specifies whether the originator MM UE requests a delivery report from each recipient. Indicates whether a delivery report is desired. The values given in OMA-TS-MMS\_ENC [39] clause 7.3.13. shall be encoded as follows: “Yes” = True, “No” = False. Include if sent by the MMS Proxy-Relay. | C |
| readReport | Specifies whether the originator MM UE requests a read report from each recipient. Indicates whether a read report is desired. The values given in OMA-TS-MMS\_ENC [39] clause 7.3.37 shall be encoded as follows: “Yes” = True, “No” = False. Include if sent by the MMS Proxy-Relay. | C |
| replyCharging | If this field is present its value is set to “accepted” or “accepted text only” and the MMS-version-value of the PDU is higher than 1.0, this header field will indicate that a reply to this particular MM is free of charge for the recipient. If the Reply-Charging service is offered and the request for reply-charging has been accepted by the MMS service provider the value of this header field SHALL be set to “accepted” or “accepted text only”. See OMA-TS-MMS\_ENC [39] clause 7.3.43. Include if sent by the MMS Proxy-Relay. | C |
| retrieveStatus | MMS specific status. It is used by the recipient MMS Proxy-Relay to inform the recipient MMS Client about errors, if any that occurred during the preceding retrieval operation. Include if sent by the MMS Proxy-Relay. | C |
| retrieveStatusText | Text that qualifies the Retrieve Status. As defined in OMA-TS-MMS\_ENC [39] clause 7.3.55. Include if sent by the MMS Proxy-Relay. | C |

|  |  |  |
| --- | --- | --- |
| applicID | Identification of the originating application of the original MM. Sent by the target to identify the destination application as defined in OMA-TS-MMS\_ENC [39] clause 7.3.2. Include if sent by the MMS Proxy-Relay. | C |
| replyApplicID | Identification of an application to which replies, delivery reports, and read reports are addressed. Sent by the target to identify the application to which replies, delivery reports, and read reports are addressed as defined in OMA-TS-MMS\_ENC [39] clause 7.3.42. Include if sent by the MMS Proxy-Relay. | C |
| auxApplicInfo | Auxiliary application addressing information as indicated in the original MM. As defined in OMA-TS-MMS\_ENC [39] clause 7.3.4. Include if sent by the MMS Proxy-Relay. | C |
| contentClass | Classifies the content of the MM to the smallest content class to which the message belongs. Sent by the target to identify the class of the content. See OMA-TS-MMS\_ENC [39] clause 7.3.9. Include if sent by the MMS Proxy-Relay. | C |
| dRMContent | Indicates if the MM contains any DRM-protected element. Provide when sent by the target to indicate if the MM contains any DRM-protected element. The values given in OMA-TS-MMS\_ENC [39] clause 7.3.16 shall be encoded as follows: “Yes” = True, “No” = False. Include if sent by the MMS Proxy-Relay. | C |
| replaceID | Indicates the message ID of the message this one is intended to replace. Include if sent by the MMS Proxy-Relay. | C |
| contentType | The content type of the MM. See OMA-TS-MMS\_ENC [39] clause 7.3.11. | M |

#### 7.4.3.7 MMSDeliveryAck

The IRI-POI in the MMS Proxy-Relay shall generate an xIRI containing an MMSDeliveryAck record when

- the MMS Proxy-Relay receives an m-acknowledge-ind (as defined in OMA-TS-MMS\_ENC [39] clause 6.4) from the MMS client in the target UE (for deferred retrieval), or

- the MMS Proxy-Relay receives an m-notifyresp-ind (as defined in OMA-TS-MMS\_ENC [39] clause 6.4) from the MMS client in the target UE (for immediate retrieval).

The following table contains parameters generated by the IRI-POI, along with parameters derived from the *m-acknowledge-ind* message (from the local target UE to the MMS Proxy-Relay), and the *m-notifyresp-ind* message (from the local target UE to the MMS Proxy-Relay).

Table 7.4.3-7: Payload for MMSDeliveryAck

|  |  |  |
| --- | --- | --- |
| Field name | Description | M/C/O |
| transactionID | An ID used to correlate an MMS request and response between the target and the MMS Proxy-Relay. As defined in OMA-TS-MMS\_ENC [39] clause 7.3.63. | M |
| version | The version of MM, to include major and minor version. | M |
| reportAllowed | Indicates whether the target allows sending of a delivery report. Encoded as "Yes" = True, "No" = False. Include if received by the MMS Proxy-Relay. | C |
| status | Provides a MM status. A status of "retrieved" is only signalled by the retrieving UE after retrieval of the MM. Include if received by the MMS Proxy-Relay and if generated from a ***m-notifyresp-ind***. | C |
| direction | Indicates the direction of the MM. This shall be encoded as “to target.” | M |

#### 7.4.3.8 MMSForward

The IRI-POI in the MMS Proxy-Relay shall generate an xIRI containing an MMSForward record when the MMS Proxy-Relay sends an *m-forward-conf* (as defined in OMA-TS-MMS\_ENC [39] clause 6.5.2) to the MMS client in the target UE.

The following table contains parameters generated by the IRI-POI, along with parameters derived from the *m-forward-req* message (from the local target UE to the MMS Proxy-Relay), and the *m-forward-conf* message (from the MMS Proxy-Relay to the local target UE).

Table 7.4.3-8: Payload for MMSForward

|  |  |  |
| --- | --- | --- |
| Field name | Description | M/C/O |
| transactionID | An ID used to correlate an MMS request and response between the target and the MMS Proxy-Relay. As defined in OMA-TS-MMS\_ENC [39] clause 7.3.63. | M |
| version | The version of MM, to include major and minor version. | M |
| dateTime | Date and Time when the MM was last handled (either originated or forwarded). For origination, included by the sending MMS client or the originating MMS Proxy-Relay. Include if sent to the MMS Proxy-Relay. | C |
| originatingMMSParty | ID(s) of the originating (forwarding) party in one or more of the formats described in 7.4.2.1When address translation occurs (such as the case of a token sent by the client and replaced with a proper address to the MMS Proxy-Relay), both the pre and post translated addresses (with appropriate correlation) are included. | M |
| terminatingMMSParty | ID(s) of the terminating party in one or more of the formats described in 7.4.2.1When address translation occurs (such as the case of a token sent by the client and replaced with a proper address by the MMS Proxy-Relay), both the pre and post translated addresses (with appropriate correlation) are included. Include if sent to the MMS Proxy-Relay.At least one of the terminatingMMSParty, cCRecipients, or bCCRecipients must be included. | C |
| cCRecipients | Address of a recipient; the "CC" field may include addresses of multiple recipients. When address translation occurs, both the pre and post translated addresses (with appropriate correlation) are included. This parameter is included if the corresponding MM includes a “CC” field. Include if sent to the MMS Proxy-Relay.At least one of the terminatingMMSParty, cCRecipients, or bCCRecipients must be included. | C |
| bCCRecipients | Address of a recipient; the "BCC" field may include addresses of multiple recipients. When address translation occurs, both the pre and post translated addresses (with appropriate correlation) are included. This parameter is included if the corresponding MM includes a “BCC” field. Include if sent to the MMS Proxy-Relay.At least one of the terminatingMMSParty, cCRecipients, or bCCRecipients must be included. | C |
| direction | Indicates the direction of the MM. This shall be encoded as “from target.” | M |
| expiry | Length of time in seconds the MM will be stored in MMS Proxy-Relay or time to delete the MM. The field has two formats, either absolute or relative. Include either the signalled expiry or the default, whichever applies. Include if sent to the MMS Proxy-Relay. | C |
| desiredDeliveryTime | Date and Time of desired delivery. Indicates the earliest possible delivery of the MM to the recipient. Include if sent to the MMS Proxy-Relay. | C |
| deliveryReportAllowed | An indication that the target requested reporting to the original sender or the default, whichever applies. The values given in OMA-TS-MMS\_ENC [39] clause 7.3.47 shall be encoded as follows: “Yes” = True, “No” = False. Include if sent to the MMS Proxy-Relay. | C |
| deliveryReport | Specifies whether the originator MMS UE requests a delivery report from each recipient. The values given in OMA-TS-MMS\_ENC [39] clause 7.3.13. shall be encoded as follows: “Yes” = True, “No” = False. Include if sent to the MMS Proxy-Relay. | C |
| store | Specifies whether the originator MMS UE wants the submitted MM to be saved in the user's MMBox, in addition to sending it. Sent by the target to have the forwarded MM stored. The values given in OMA-TS-MMS\_ENC [39] clause 7.3.56 shall be encoded as follows: “Yes” = True, “No” = False. Include if sent to the MMS Proxy-Relay. | C |
| state | Identifies the value of the MM State associated with a MM to be stored or stored MM. Sets the state for the forwarded MM when it is stored. As defined in OMA-TS-MMS\_ENC [39] clause 7.3.33. Include if sent to the MMS Proxy-Relay. | C |

|  |  |  |
| --- | --- | --- |
| flags | Identifies a keyword to add or remove from the list of keywords associated with a stored MM. Include if sent to the MMS Proxy-relay. See OMA-TS-MMS\_ENC [39] clause 7.3.32.  | C |
| contentLocationReq | The content-location-value field defines the URL for the MMS server location of the content to be retrieved as it appears in the m-forward-req. As defined in OMA-TS-MMS\_ENC [39] clause 7.3.10. | M |
| replyCharging | If this field is present its value is set to “accepted” or “accepted text only” and the MMS-version-value is higher than 1.0, this header field will indicate that a reply to this particular MM is free of charge for the recipient. If the Reply-Charging service is offered and the request for reply-charging has been accepted by the MMS service provider the value of this header field SHALL be set to “accepted” or “accepted text only”. See OMA-TS-MMS\_ENC [39] clause 7.3.43. Include if sent to the MMS Proxy-Relay. | C |
| responseStatus | MMS specific status. See OMA-TS-MMS\_ENC [39] clause 7.3.48. | M |
| responseStatusText | Text that qualifies the Response Status. Include if sent to the target. As defined in OMA-TS-MMS\_ENC [39] clause 7.3.49. Include if sent by the MMS Proxy-Relay. | C |
| messageID | An ID assigned by the MMS Proxy-Relay to uniquely identify an MM. As defined in OMA-TS-MMS\_ENC [39] clause 7.3.29. Include if sent by the MMS Proxy-Relay. | C |
| contentLocationConf | The *content-location-value* field defines the URL for the MMS server location of the MM as it appears in the *m-forward-conf*. As defined in OMA-TS-MMS\_ENC [39] clause 7.3.10. Include if sent by the MMS Proxy-Relay. | C |
| storeStatus | Indicates if the MM was successfully stored in the MMBox. Include if sent by the MMS Proxy-Relay. | C |
| storeStatusText | Text that qualifies the Store Status. As defined in OMA-TS-MMS\_ENC [39] clause 7.3.59. Include if sent by the MMS Proxy-Relay. | C |

#### 7.4.3.9 MMSDeleteFromRelay

The IRI-POI present in the MMS Proxy-Relay shall generate an xIRI containing an MMSDeleteFromRelay record when the MMS Proxy-Relay sends a *m-delete-conf* (defined in OMA-TS-MMS\_ENC [39]) to the MMS client in the target UE.

The following table contains parameters generated by the IRI-POI, along with parameters derived from the *m-delete-req* message (from the local target UE to the MMS Proxy-Relay), and the *m-delete-conf* message (from the MMS Proxy-Relay to the local target UE).

Table 7.4.3-9: Payload for MMSDeleteFromRelay

|  |  |  |
| --- | --- | --- |
| Field name | Description | M/C/O |
| transactionID | An ID used to correlate an MMS request and response between the target and the MMS Proxy-Relay. | M |
| version | The version of MM, to include major and minor version. | M |
| direction | Indicates the direction of the MM. This shall be encoded as “to target,” or "fromTarget," as appropriate. | M |
| contentLocationReq | The *content-location-value* field defines the URL for the MMS server location of the MM as it appears in the *m-delete-conf,* as defined in OMA-TS-MMS\_ENC [39] clause 7.3.10. Include if sent to the MMS Proxy-Relay. | M |
| contentLocationConf | The *content-location-value* field defines the URL for the MMS server location of the MM as it appears in the *m-delete-conf*, as defined in OMA-TS-MMS\_ENC [39] clause 7.3.10. Include if sent by the MMS Proxy-Relay. | C |
| deleteResponseStatus | The delete response, as defined in OMA-TS-MMS\_ENC [39] clause 7.3.48. | M |
| deleteResponseText | The delete response, as defined in OMA-TS-MMS\_ENC [39] clause 7.3.49. Include if sent by the MMS Proxy-Relay. | C |

#### 7.4.3.10 MMSMBoxStore

The IRI-POI in the MMS Proxy-Relay shall generate an xIRI containing an MMSMBoxStore record when the MMS Proxy-Relay sends a m-mbox-store-conf (defined in OMA-TS-MMS\_ENC [39] clause 6.8) to the MMS client in the target UE.

The following table contains parameters generated by the IRI-POI, along with parameters derived from the m-mbox-store-req message (from the local target UE to the MMS Proxy-Relay), and from the *m-mbox-store-conf* message (from the MMS Proxy-Relay to the local target UE).

Table 7.4.3-10: Payload for MMSMBoxStore

|  |  |  |
| --- | --- | --- |
| Field name | Description | M/C/O |
| transactionID | An ID used to correlate an MMS request and response between the target and the MMS Proxy-Relay. As defined in OMA-TS-MMS\_ENC [39] clause 7.3.63. | M |
| version | The version of MM, to include major and minor version. | M |
| direction | Indicates the direction of the MM. This shall be encoded as “to target.” | M |
| contentLocationReq | The *content-location-value* field defines the URL for the MMS server location of the MM as it appears in the *m-mbox-store-req*. As defined in OMA-TS-MMS\_ENC [39] clause 7.3.10. Include if sent by the MMS Proxy-Relay. | M |
| state | Identifies the value of the MM State associated with a MM to be stored or stored MM. Sets the state for the forwarded MM when it is stored. As defined in OMA-TS-MMS\_ENC [39] clause 7.3.33. Include if sent by the MMS Proxy-Relay. | C |
| flags | Identifies a keyword to add or remove from the list of keywords associated with a stored MM. See OMA-TS-MMS\_ENC [39] clause 7.3.32. Include if sent by the MMS Proxy-Relay. | C |
| contentLocationConf | The *content-location-value* field defines the URL for the MMS server location of the MM as it appears in the *m-mbox-store-conf*. As defined in OMA-TS-MMS\_ENC [39] clause 7.3.10. Include if sent by the MMS Proxy-Relay. | C |
| storeStatus | Indicates if the MM was successfully stored in the MMBox.  | M |
| storeStatusText | Text that qualifies the Store Status. Include if sent to the target. As defined in OMA-TS-MMS\_ENC [39] clause 7.3.59. Include if sent by the MMS Proxy-Relay. | C |

#### 7.4.3.11 MMSMBoxUpload

The IRI-POI present in the MMS Proxy-Relay shall generate an xIRI containing an MMSMBoxUpload record when the MMS Proxy-Relay sends a *m-mbox-upload-conf* (defined in OMA-TS-MMS\_ENC [39] clause 6.10) to the MMS client in the target UE.

The following table contains parameters generated by the IRI-POI, along with parameters derived from the *m-mbox-upload-req* message (from the local target UE to the MMS Proxy-Relay), and from the *m-mbox-upload-conf* message (from the MMS Proxy-Relay to the local target UE).

Table 7.4.3-11: Payload for MMSMBoxUpload

|  |  |  |
| --- | --- | --- |
| Field name | Description | M/C/O |
| transactionID | An ID used to correlate an MMS request and response between the target and the MMS Proxy-Relay. As defined in OMA-TS-MMS\_ENC [39] clause 7.3.63. | M |
| version | The version of MM, to include major and minor version. | M |
| direction | Indicates the direction of the MM. This shall be encoded as “to target,” or "fromTarget," as appropriate. | M |
| state | Identifies the value of the MM State associated with a MM to be stored or stored MM. Sets the state for the forwarded MM when it is stored. As defined in OMA-TS-MMS\_ENC [39] clause 7.3.33. Include if sent by the MMS Proxy-Relay. | C |
| flags | Identifies a keyword to add or remove from the list of keywords associated with a stored MM. See OMA-TS-MMS\_ENC [39] clause 7.3.32. Include if sent by the MMS Proxy-Relay. | C |
| contentType | The content type of the MM. See OMA-TS-MMS\_ENC [39] clause 7.3.11 | M |
| contentLocation | The *content-location-value* field defines the URL for the MMS server location of the MM. As defined in OMA-TS-MMS\_ENC [39] clause 7.3.10. Include if sent by the MMS Proxy-Relay. | C |
| storeStatus | Indicates if the MM was successfully stored in the MMBox.  | M |
| storeStatusText | Text that qualifies the Store Status. Include if sent to the target. As defined in OMA-TS-MMS\_ENC [39] clause 7.3.59. Include if sent by the MMS Proxy-Relay. | C |
| mMBoxDescription | The MMBox description PDU as defined in 7.4.3.20 corresponds to the particular MM. include if sent by the MMS Proxy-Relay. | C |

#### 7.4.3.12 MMSMBoxDelete

The IRI-POI present in the MMS Proxy-Relay shall generate an xIRI containing an MMSMBoxDelete record when the MMS Proxy-Relay sends a *m-mbox-delete.conf* (defined in OMA-TS-MMS\_ENC [39]) to the MMS client in the target UE.

The following table contains parameters generated by the IRI-POI, along with parameters derived from the *m-mbox-delete-req* message (from the local target UE to the MMS Proxy-Relay), and from the *m-mbox-delete-conf* message (from the MMS Proxy-Relay to the local target UE).

Table 7.4.3-12: Payload for MMSMBoxDelete

|  |  |  |
| --- | --- | --- |
| Field name | Description | M/C/O |
| transactionID | An ID used to correlate an MMS request and response between the target and the MMS Proxy-Relay. As defined in OMA-TS-MMS\_ENC [39] clause 7.3.63. | M |
| version | The version of MM, to include major and minor version. | M |
| direction | Indicates the direction of the MM. This shall be encoded as “to target,” or "fromTarget," as appropriate. | M |
| contentLocationReq | The *content-location-value* field defines the URL for the MMS server location of the MM as it appears in the *m-mbox-delete-req*. As defined in OMA-TS-MMS\_ENC [39] clause 7.3.10. | M |
| contentLocationConf | The *content-location-value* field defines the URL for the MMS server location of the MM as it appears in the *m-mbox-delete-conf*. As defined in OMA-TS-MMS\_ENC [39] clause 7.3.10. Include if sent by the MMS Proxy-Relay. | C |
| responseStatus | MMS specific status. | M |
| responseStatusText | Text that qualifies the Response Status. As defined in OMA-TS-MMS\_ENC [39] clause 7.3.49. | C |

#### 7.4.3.13 MMSDeliveryReport

The IRI-POI present in the MMS Proxy-Relay shall generate an xIRI containing an MMSDeliveryReport record when the MMS Proxy-Relay sends an *m-delivery-ind* (as defined in OMA-TS-MMS\_ENC [39] clause 6.11) to the MMS client in the target UE.

The following table contains parameters generated by the IRI-POI, along with parameters derived from the *m-delivery-ind* message (from the MMS Proxy-Relay to the local target UE).

Table 7.4.3-13: Payload for MMSDeliveryReport

|  |  |  |
| --- | --- | --- |
| Field name | Description | M/C/O |
| version | The version of MM, to include major and minor version. | M |
| messageID | An ID assigned by the MMS Proxy-Relay to uniquely identify an MM. As defined in OMA-TS-MMS\_ENC [39] clause 7.3.29. Include if sent by the MMS Proxy-Relay. | M |
| terminatingMMSParty | ID(s) of the terminating party of the original message this Delivery Report refers to, in one or more of the formats described in 7.4.2.1When address translation occurs (such as the case of a token sent by the client and replaced with a proper address by the MMS Proxy-Relay), both the pre and post translated addresses (with appropriate correlation) are included. | M |
| dateTime | Date and Time when the MM was last handled (either originated or forwarded).. Include if sent by the MMS Proxy-Relay. | M |
| responseStatus | MMS specific status. | M |
| responseStatusText | Text that qualifies the Response Status. As defined in OMA-TS-MMS\_ENC [39] clause 7.3.49. Include if sent by the MMS Proxy-Relay. | C |
| applicID | Identification of the originating application of the original MM. Sent by the target to identify the destination application as defined in OMA-TS-MMS\_ENC [39] clause 7.3.2. Include if sent by the MMS Proxy-Relay. | C |
| replyApplicID | Identification of an application to which replies, delivery reports, and read reports are addressed. Sent by the target to identify the application to which replies, delivery reports, and read reports are addressed as defined in OMA-TS-MMS\_ENC [39] clause 7.3.42. Include if sent by the MMS Proxy-Relay. | C |
| auxApplicInfo | Auxiliary application addressing information as indicated in the original MM. As defined in OMA-TS-MMS\_ENC [39] clause 7.3.4. Include if sent by the MMS Proxy-Relay. | C |

#### 7.4.3.14 MMSDeliveryReportNonLocalTarget

The IRI-POI in the MMS Proxy-Relay shall generate an xIRI containing an MMSDeliveryReportNonLocalTarget record when the MMS Proxy-Relay:

- sends MM4\_delivery\_report.REQ (as defined in TS 23.140 [40] clause 8.4.2), that contains a non-local target ID, to the non-local MMS Proxy-Relay, or

- receives MM4\_delivery\_report.REQ, that contains a non-local target ID, from the non-local MMS Proxy-Relay.

The following table contains parameters generated by the IRI-POI, along with parameters derived from the *MM4\_delivery\_report.REQ* message (from the local MMS Proxy-Relay to the non-local MMS Proxy-Relay, or inversely).

Table 7.4.3-14: Payload for MMSDeliveryReportNonLocalTarget

|  |  |  |
| --- | --- | --- |
| Field name | Description | M/C/O |
| version | The version of MM, to include major and minor version. | M |
| transactionID | An ID used to correlate an MMS request and response between the proxies. As defined in TS 23.140 [40] clause 8.4.1.4. | M |
| messageID | An ID assigned by the MMS Proxy-Relay to uniquely identify an MM. As defined in TS 23.140 [40] clause 8.4.1.4. | M |
| terminatingMMSParty | ID(s) of the terminating party of the original message this Delivery Report refers to, in one or more of the formats described in 7.4.2.1. | M |
| originatingMMSParty | ID(s) of the originating party of the original message this Delivery Report refers to, in one or more of the formats described in 7.4.2.1. | M |
| direction | Indicates the direction of the MM. This shall be encoded as "toTarget," or “from target,” as appropriate. | M |
| dateTime | Date and Time when the MM was last handled (either originated or forwarded).  | M |
| forwardToOriginator | Indicates whether the MMS Proxy-Relay is allowed to forward the delivery report to the originating UE. "Yes" is coded as True, and "No" is coded as False. Include if sent to/by the MMS Proxy-Relay. | C |
| mMStatus | Provides a MM status. A status of "retrieved" is only signalled by the retrieving UE after retrieval of the MM. | M |
| mMStatusExtension | Extension of the MMStatus, that provides more granularity. Include if sent to/by the MMS Proxy-Relay. | C |
| mMStatusText | Text that qualifies the MM Status. As defined in OMA-TS-MMS\_ENC [39] clause 7.3.55. Include if sent to/by the MMS Proxy-Relay. | C |
| applicID | Identification of the originating application of the original MM. Identifies the destination application as defined in TS 23.140 [40] clause 8.4.1.4. Include if sent to/by the MMS Proxy-Relay. | C |
| replyApplicID | Identification of an application to which replies, delivery reports, and read reports are addressed. Identifies the application to which replies, delivery reports, and read reports are addressed as defined in TS 23.140 [40] clause 8.4.1.4. Include if sent to/by the MMS Proxy-Relay. | C |
| auxApplicInfo | Auxiliary application addressing information as indicated in the original MM. As defined in OMA-TS-MMS\_ENC [39] clause 7.3.4. Include if sent to/by the MMS Proxy-Relay. | C |

#### 7.4.3.15 MMSReadReport

The IRI-POI present in the MMS Proxy-Relay shall generate an xIRI containing an MMSReadReport record when the MMS Proxy-Relay:

- sends a m-read-orig-ind (as defined in OMA-TS-MMS\_ENC [39] clause 6.7.2) to the MMS client in the target UE, or

- receives a m-read-rec-ind (as defined in OMA-TS-MMS\_ENC [39] clause 6.7.2) from the MMS client in the target UE.

The following table contains parameters generated by the IRI-POI, along with parameters derived from the *m-read-orig-ind* message (from the MMS Proxy-Relay to the local target UE), and from the *m-read-rec-ind* message (from the local target UE to the MMS Proxy-Relay).

Table 7.4.3-15: Payload for MMSReadReport

|  |  |  |
| --- | --- | --- |
| Field name | Description | M/C/O |
| version | The version of MM, to include major and minor version. | M |
| messageID | An ID assigned by the MMS Proxy-Relay to uniquely identify an MM. As defined in OMA-TS-MMS\_ENC [39] clause 7.3.29. | M |
| terminatingMMSParty | ID(s) of the terminating party (i.e., the intended recipient of the read report or the originator of the initial MM message to which the read report applies) in one or more of the formats described in 7.4.2.1When address translation occurs (such as the case of a token sent by the client and replaced with a proper address by the MMS Proxy-Relay), both the pre and post translated addresses (with appropriate correlation) are included. | M |
| originatingMMSParty | ID(s) of the originating party (i.e., the originator of the read report or the recipient the initial MM message to which the read report applies) in one or more of the formats described in 7.4.2.1When address translation occurs (such as the case of a token sent by the client and replaced with a proper address by the MMS Proxy-Relay), both the pre and post translated addresses (with appropriate correlation) are included. | M |
| direction | Indicates the direction of the original MM (**not** of this message). This shall be encoded either as "from target," or “to target,” as appropriate. | M |
| dateTime | Date and Time when the MM was last handled (either originated or forwarded). Include if sent to/by the MMS Proxy-Relay. | C |
| readStatus | Status of the MMS (e.g.read or deleted without reading.) | M |
| applicID | Identification of the originating application of the original MM. As defined in OMA-TS-MMS\_ENC [39] clause 7.3.2. Include if sent to/by the MMS Proxy-Relay. | C |
| replyApplicID | Identification of an application to which replies, delivery reports, and read reports are addressed. As defined in OMA-TS-MMS\_ENC [39] clause 7.3.42. Include if sent to/by the MMS Proxy-Relay. | C |
| auxApplicInfo | Auxiliary application addressing information as indicated in the original MM. As defined in OMA-TS-MMS\_ENC [39] clause 7.3.4. Include if sent to/by the MMS Proxy-Relay. | C |

#### 7.4.3.16 MMSReadReportNonLocalTarget

The IRI-POI present in the MMS Proxy-Relay shall generate an xIRI containing an MMSReadReportNonLocalTarget record when the MMS Proxy-Relay:

- sends a MM4\_read\_reply\_report.REQ (as defined in TS 23.140 [40] clause 8.4.3), that contains a non-local target ID, to the non-local MMS Proxy-Relay, or

- receives a MM4\_read\_reply\_report.REQ (as defined in TS 23.140 [40] clause 8.4.3), that contains a non-local target ID, from the non-local MMS Proxy-Relay.

The following table contains parameters generated by the IRI-POI, along with parameters derived from the ***MM4\_read\_reply\_report.REQ*** message (from the local MMS Proxy-Relay to the non-local MMS Proxy-Relay, or inversely).

Table 7.4.3-16: Payload for MMSReadReportNonLocalTarget

|  |  |  |
| --- | --- | --- |
| Field name | Description | M/C/O |
| version | The version of MM, to include major and minor version. | M |
| transactionID | An ID used to correlate an MMS request and response between the proxies. As defined in TS 23.140 [40] clause 8.4.1.4. | M |
| terminatingMMSParty | ID(s) of the terminating party in one or more of the formats described in 7.4.2.1When address translation occurs (such as the case of a token sent by the client and replaced with a proper address by the MMS Proxy-Relay), both the pre and post translated addresses (with appropriate correlation) are included. | M |
| originatingMMSParty | ID(s) of the originating party in one or more of the formats described in 7.4.2.1When address translation occurs (such as the case of a token sent by the client and replaced with a proper address by the MMS Proxy-Relay), both the pre and post translated addresses (with appropriate correlation) are included. | M |
| direction | Indicates the direction of the original MM (**not** of this message). This shall be encoded either as "from target" = True, or “to target” = False. | M |
| messageID | An ID assigned by the MMS Proxy-Relay to uniquely identify an MM. As defined in TS 23.140 [40] clause 8.4.1.4. | M |
| dateTime | Date and Time when the MM was last handled (either originated or forwarded).  | M |
| readStatus | Status of the MMS (e.g.read or deleted without reading.) | M |
| readStatusText | Text explanation corresponding to the Read Status. Include if sent to/by the MMS Proxy-Relay. | C |
| applicID | Identification of the originating application of the original MM. Identifies the destination application as defined in TS 23.140 [40] clause 8.4.1.4. Include if sent to/by the MMS Proxy-Relay. | C |
| replyApplicID | Identification of an application to which replies, delivery reports, and read reports are addressed. Identifies the application to which replies, delivery reports, and read reports are addressed, as defined in TS 23.140 [40] clause 8.4.1.4. Include if sent to/by the MMS Proxy-Relay. | C |
| auxApplicInfo | Auxiliary application addressing information as indicated in the original MM. As defined in OMA-TS-MMS\_ENC [39] clause 7.3.4. Include if sent to/by the MMS Proxy-Relay. | C |

#### 7.4.3.17 MMSCancel

The IRI-POI present in the MMS Proxy-Relay shall generate an xIRI containing an MMSCancel record when the MMS Proxy-Relay sends a *m-cancel-req* (as defined in OMA-TS-MMS\_ENC [39] clause 6.13) to the MMS client in the target UE.

The following table contains parameters generated by the IRI-POI, along with parameters derived from the *m-cancel-req* message (from the MMS Proxy-Relay to the local target UE).

Table 7.4.3-17: Payload for MMSCancel

|  |  |  |
| --- | --- | --- |
| Field name | Description | M/C/O |
| transactionID | An ID used to correlate an MMS request and response between the target and the MMS Proxy-Relay. As defined in OMA-TS-MMS\_ENC [39] clause 7.3.63. | M |
| version | The version of MM, to include major and minor version. | M |
| cancelID | This field includes the Message ID identifying the message to be cancelled. As defined in OMA-TS-MMS\_ENC [39] clause 7.3.6. | M |
| direction | Indicates the direction of the original MM. This shall be encoded as “to target." | M |

#### 7.4.3.18 MMSMBoxViewRequest

The IRI-POI present in the MMS Proxy-Relay shall generate an xIRI containing an MMSViewRequest record when the MMS Proxy-Relay receives a *m-mbox-view-req* (as defined in OMA-TS-MMS\_ENC [39] clause 6.9) from the MMS client in the target UE.

The following table contains parameters generated by the IRI-POI, along with parameters derived from the *m-mbox-vew-req* message (from the local target UE to the MMS Proxy-Relay).

Table 7.4.3-18: Payload for MMSMBoxViewRequest

|  |  |  |
| --- | --- | --- |
| Field name | Description | M/C/O |
| transactionID | An ID used to correlate an MMS request and response between the target and the MMS Proxy-Relay. As defined in OMA-TS-MMS\_ENC [39] clause 7.3.63. | M |
| version | The version of MM, to include major and minor version. | M |
| contentLocation | The *content-location-value* field defines the URL for the MMS Proxy-Relay location of the content to be retrieved. As defined in OMA-TS-MMS\_ENC [39] clause 7.3.10. Include if sent to the MMS Proxy-Relay. | C |
| state | Specifies a MM State value to use in selecting the messages to return. As defined in OMA-TS-MMS\_ENC [39] clause 7.3.33. Include if sent to the MMS Proxy-Relay. | C |
| flags | Specifies a MM Flags keyword to use in selecting the messages to return in the response. See OMA-TS-MMS\_ENC [39] clause 7.3.32. Include if sent to the MMS Proxy-Relay. | C |
| start | A number, indicating the index of the first MM of those selected to have information returned in the response. Include if sent to the MMS Proxy-Relay. | C |
| limit | A number indicating the maximum number of selected MMs whose information are to be returned in the response.If this is absent, information elements from all remaining MMs are to be returned. If this is zero then no MM-related information are to be returned. Include if sent to the MMS Proxy-Relay. | C |
| mMSAttributes | A list of information elements that should appear in the view for each selected message. Include if sent to the MMS Proxy-Relay. | C |
| mMSTotals | Indicates a request for or the actual count of messages currently stored in the MMBox. The values given in OMA-TS-MMS\_ENC [39] clause 7.3.62. shall be encoded as follows: “Yes” = True, “No” = False. Include if sent to the MMS Proxy-Relay. | C |
| mMSQuotas | Indicates a request for or the actual quotas for the user's MMBox in messages or bytes. The values given in OMA-TS-MMS\_ENC [39] clause 7.3.36. shall be encoded as follows: “Yes” = True, “No” = False. Include if sent to the MMS Proxy-Relay. | C |

#### 7.4.3.19 MMSMBoxViewResponse

The IRI-POI present in the MMS Proxy-Relay shall generate an xIRI containing an MMSViewConfirm record when the MMS Proxy-Relay sends a *m-mbox-view.conf* (as defined in OMA-TS-MMS\_ENC [39] clause 6.9) to the MMS client in the target UE.

The following table contains parameters generated by the IRI-POI, along with parameters derived from the *m-mbox-vew-conf* message (from the local target UE to the MMS Proxy-Relay).

Table 7.4.3-19: Payload for MMSMBoxViewResponse

|  |  |  |
| --- | --- | --- |
| Field name | Description | M/C/O |
| version | The version of MM, to include major and minor version. | M |
| responseStatus | MMS specific status. | M |
| responseStatusText | Text that qualifies the Response Status. As defined in OMA-TS-MMS\_ENC [39] clause 7.3.49. | C |
| contentLocation | The *content-location-value* field defines the URL for the MMS server location of the content to be retrieved. As defined in OMA-TS-MMS\_ENC [39] clause 7.3.10. Include if sent by the MMS Proxy-Relay. | C |
| state | Specifies a MM State value to use in selecting the messages to return. As defined in OMA-TS-MMS\_ENC [39] clause 7.3.33. Include if sent by the MMS Proxy-Relay. | C |
| flags | Specifies a MM Flags keyword to use in selecting the messages to return in the response. See OMA-TS-MMS\_ENC [39] clause 7.3.32. Include if sent by the MMS Proxy-Relay. | C |
| start | A number, indicating the index of the first MM of those selected to have information returned in the response. Include if sent by the MMS Proxy-Relay. | C |
| limit | A number indicating the maximum number of selected MMs whose information are to be returned in the response.If this is absent, information elements from all remaining MMs are to be returned. If this is zero then no MM-related information are to be returned. Include if sent by the MMS Proxy-Relay. | C |
| mMSAttributes | A list of information elements that should appear in the view for each selected message. Include if sent by the MMS Proxy-Relay. | C |
| mMSTotals | Indicates a request for or the actual count of messages currently stored in the MMBox. The values given in OMA-TS-MMS\_ENC [39] clause 7.3.62. shall be encoded as follows: “Yes” = True, “No” = False. Include if sent by the MMS Proxy-Relay. | C |
| mMSQuotas | Indicates a request for or the actual quotas for the user's MMBox in messages or bytes. The values given in OMA-TS-MMS\_ENC [39] clause 7.3.36. shall be encoded as follows: “Yes” = True, “No” = False. Include if sent by the MMS Proxy-Relay. | C |
| mMBoxDescription | The MMBox description PDU as defined in 7.4.3.20 corresponds to the particular MM. | M |

#### 7.4.3.20 MMBoxDescription

The MMBoxDescription used in MMSMBoxViewResponse and MMSMBoxUpload records is defined in table 7.4.3-20.

Table 7.4.3-20: Payload for MMBoxDescription

|  |  |  |
| --- | --- | --- |
| Field name | Description | M/C/O |
| contentLocation | The *content-location-value* field defines the URL for the MMS Proxy-relay location of the content to be retrieved. As defined in OMA-TS-MMS\_ENC [39] clause 7.3.10. Include if sent by the MMS Proxy-Relay. | C |
| messageID | An ID assigned by the MMS Proxy-Relay to uniquely identify an MM. Included unconditionally for the MMS View Confirm report and is included for the MMS Upload report if a Message ID was previously assigned to the MM. In this latter case, if a Message ID was not previously assigned, this parameter is excluded. As defined in OMA-TS-MMS\_ENC [39] clause 7.3.29. Include if sent by the MMS Proxy-Relay. | C |
| state | Identifies the value of the MM State associated with a MM to be stored or stored MM. Include for the MMS View Confirm. Include for the MMS View Request if provided by the target. As defined in OMA-TS-MMS\_ENC [39] clause 7.3.33. Include if sent by the MMS Proxy-Relay. | C |
| flags | Identifies a keyword to add or remove from the list of keywords associated with a stored MM. This parameter may convey all the keywords associated with the MM. Include if at least one keyword is associated with the MM. If no keywords are associated with the MM, then this parameter may be excluded. Include if sent by the MMS Proxy-Relay. | C |
| dateTime | Date and Time when the MM request was detected. Include if sent by the MMS Proxy-Relay. | C |
| originatingMMSParty | ID(s) of the originating party in one or more of the formats described in 7.4.2.1When address translation occurs (such as the case of a token sent by the client and replaced with a proper address by the MMS Proxy-Relay), both the pre and post translated addresses (with appropriate correlation) are included. Include if sent by the MMS Proxy-Relay. | C |
| terminatingMMSParty | ID(s) of the terminating party in one or more of the formats described in 7.4.2.1When address translation occurs (such as the case of a token sent by the client and replaced with a proper address by the MMS Proxy-Relay), both the pre and post translated addresses (with appropriate correlation) are included. I Include if sent by the MMS Proxy-Relay. | C |
| cCRecipients | Address of a recipient; the "CC" field may include addresses of multiple recipients. When address translation occurs, both the pre and post translated addresses (with appropriate correlation) are included. This parameter is included if the corresponding MM includes a “CC” field. Include if sent by the MMS Proxy-Relay. | C |
| bCCRecipients | Address of a recipient; the "BCC" field may include addresses of multiple recipients. When address translation occurs, both the pre and post translated addresses (with appropriate correlation) are included. This parameter is included if the corresponding MM includes a “BCC” field. Include if sent by the MMS Proxy-Relay. | C |
| messageClass | Class of the MM. For example, a value of "auto" is automatically generated by the UE. If the field is not present, the class should be interpreted as "personal". Include if sent by the MMS Proxy-Relay. | C |
| subject | The subject of the MM. Include if sent by the MMS Proxy-Relay. | C |
| priority | Priority of the MM assigned by the originator MMS Client. Reported if sent by the target. Include if sent by the MMS Proxy-Relay. | C |
| deliveryTime | Date and Time of delivery. Include if sent by the MMS Proxy-Relay. | C |

|  |  |  |
| --- | --- | --- |
| readReport | Specifies whether the originator MMS UE requests a read report from each recipient. The values given in OMA-TS-MMS\_ENC [39] clause 7.3.37. shall be encoded as follows: “Yes” = True, “No” = False. Include if sent by the MMS Proxy-Relay. | C |
| messageSize | Specifies the size of the MM that was viewed or uploaded. Specified in bytes. Include if sent by the MMS Proxy-Relay. | C |
| replyCharging | If this field is present its value is set to “accepted” or “accepted text only” and the MMS-version-value of the M-Notification.ind PDU is higher than 1.0, this header field will indicate that a reply to this particular MM is free of charge for the recipient. If the Reply-Charging service is offered and the request for reply-charging has been accepted by the MMS service provider the value of this header field SHALL be set to “accepted” or “accepted text only”. See OMA-TS-MMS\_ENC [39] clause 7.3.43. Include if sent by the MMS Proxy-Relay. | C |
| previouslySentBy | Address of the MMS Client that forwarded or previously sent the message. along with a sequence number and timestamp.A higher sequence number indicates a forwarding event at a later point in time. The sequence number indicates the correspondence to the MMS Client's address in the "X-Mms-Previously- Sent-By" header field with the same sequence number.This header field MAY appear multiple times. Include if sent by the MMS Proxy-Relay. | C |
| previouslySentByDateTime | Date/Time MM was previously sent.This header field MAY appear multiple times. Include if sent by the MMS Proxy-Relay. | C |
| contentType | The content type of the MM. Include if sent by the MMS Proxy-Relay. | C |

#### 7.4.3.21 MMS Content

If content delivery is authorized, the CC-POI in the MMS Proxy-Relay shall generate an xCC as per clause 7.4.2.3 when any of the events in clauses 7.4.3.1 through 7.4.3.19 are detected.

Change 14: Annex A

Annex A (normative):
ASN.1 schema for the Internal and External Interfaces

TS33128Payloads

{itu-t(0) identified-organization(4) etsi(0) securityDomain(2) lawfulIntercept(2) threeGPP(4) ts33128(19) r16(16) version5(5)}

DEFINITIONS IMPLICIT TAGS EXTENSIBILITY IMPLIED ::=

BEGIN

-- =============

-- Relative OIDs

-- =============

tS33128PayloadsOID RELATIVE-OID ::= {threeGPP(4) ts33128(19) r16(16) version5(5)}

xIRIPayloadOID RELATIVE-OID ::= {tS33128PayloadsOID xIRI(1)}

xCCPayloadOID RELATIVE-OID ::= {tS33128PayloadsOID xCC(2)}

iRIPayloadOID RELATIVE-OID ::= {tS33128PayloadsOID iRI(3)}

cCPayloadOID RELATIVE-OID ::= {tS33128PayloadsOID cC(4)}

lINotificationPayloadOID RELATIVE-OID ::= {tS33128PayloadsOID lINotification(5)}

-- ===============

-- X2 xIRI payload

-- ===============

XIRIPayload ::= SEQUENCE

{

 xIRIPayloadOID [1] RELATIVE-OID,

 event [2] XIRIEvent

}

XIRIEvent ::= CHOICE

{

 -- Access and mobility related events, see clause 6.2.2

 registration [1] AMFRegistration,

 deregistration [2] AMFDeregistration,

 locationUpdate [3] AMFLocationUpdate,

 startOfInterceptionWithRegisteredUE [4] AMFStartOfInterceptionWithRegisteredUE,

 unsuccessfulAMProcedure [5] AMFUnsuccessfulProcedure,

 -- PDU session-related events, see clause 6.2.3

 pDUSessionEstablishment [6] SMFPDUSessionEstablishment,

 pDUSessionModification [7] SMFPDUSessionModification,

 pDUSessionRelease [8] SMFPDUSessionRelease,

 startOfInterceptionWithEstablishedPDUSession [9] SMFStartOfInterceptionWithEstablishedPDUSession,

 unsuccessfulSMProcedure [10] SMFUnsuccessfulProcedure,

 -- Subscriber-management related events, see clause 7.2.2

 servingSystemMessage [11] UDMServingSystemMessage,

 -- SMS-related events, see clause 6.2.5, see also sMSReport ([56] below)

 sMSMessage [12] SMSMessage,

 -- LALS-related events, see clause 7.3.3

 lALSReport [13] LALSReport,

 -- PDHR/PDSR-related events, see clause 6.2.3.4.1

 pDHeaderReport [14] PDHeaderReport,

 pDSummaryReport [15] PDSummaryReport,

 -- tag 16 is reserved because there is no equivalent mDFCellSiteReport in XIRIEvent

 -- MMS-related events, see clause 7.4.2

 mMSSend [17] MMSSend,

 mMSSendByNonLocalTarget [18] MMSSendByNonLocalTarget,

 mMSNotification [19] MMSNotification,

 mMSSendToNonLocalTarget [20] MMSSendToNonLocalTarget,

 mMSNotificationResponse [21] MMSNotificationResponse,

 mMSRetrieval [22] MMSRetrieval,

 mMSDeliveryAck [23] MMSDeliveryAck,

 mMSForward [24] MMSForward,

 mMSDeleteFromRelay [25] MMSDeleteFromRelay,

 mMSDeliveryReport [26] MMSDeliveryReport,

 mMSDeliveryReportNonLocalTarget [27] MMSDeliveryReportNonLocalTarget,

 mMSReadReport [28] MMSReadReport,

 mMSReadReportNonLocalTarget [29] MMSReadReportNonLocalTarget,

 mMSCancel [30] MMSCancel,

 mMSMBoxStore [31] MMSMBoxStore,

 mMSMBoxUpload [32] MMSMBoxUpload,

 mMSMBoxDelete [33] MMSMBoxDelete,

 mMSMBoxViewRequest [34] MMSMBoxViewRequest,

 mMSMBoxViewResponse [35] MMSMBoxViewResponse,

 -- PTC-related events, see clause 7.5.2

 pTCRegistration [36] PTCRegistration,

 pTCSessionInitiation [37] PTCSessionInitiation,

 pTCSessionAbandon [38] PTCSessionAbandon,

 pTCSessionStart [39] PTCSessionStart,

 pTCSessionEnd [40] PTCSessionEnd,

 pTCStartOfInterception [41] PTCStartOfInterception,

 pTCPreEstablishedSession [42] PTCPreEstablishedSession,

 pTCInstantPersonalAlert [43] PTCInstantPersonalAlert,

 pTCPartyJoin [44] PTCPartyJoin,

 pTCPartyDrop [45] PTCPartyDrop,

 pTCPartyHold [46] PTCPartyHold,

 pTCMediaModification [47] PTCMediaModification,

 pTCGroupAdvertisement [48] PTCGroupAdvertisement,

 pTCFloorControl [49] PTCFloorControl,

 pTCTargetPresence [50] PTCTargetPresence,

 pTCParticipantPresence [51] PTCParticipantPresence,

 pTCListManagement [52] PTCListManagement,

 pTCAccessPolicy [53] PTCAccessPolicy,

 -- More Subscriber-management related events, see clause 7.2.2

 subscriberRecordChangeMessage [54] UDMSubscriberRecordChangeMessage,

 cancelLocationMessage [55] UDMCancelLocationMessage,

 -- SMS-related events continued from choice 12

 sMSReport [56] SMSReport,

 -- MA PDU session-related events, see clause 6.2.3.2.7

 sMFMAPDUSessionEstablishment [57] SMFMAPDUSessionEstablishment,

 sMFMAPDUSessionModification [58] SMFMAPDUSessionModification,

 sMFMAPDUSessionRelease [59] SMFMAPDUSessionRelease,

 startOfInterceptionWithEstablishedMAPDUSession [60] SMFStartOfInterceptionWithEstablishedMAPDUSession,

 unsuccessfulMASMProcedure [61] SMFMAUnsuccessfulProcedure,

 -- Identifier Association events, see clauses 6.2.2.2.7 and 6.3.2.2.2

 aMFIdentifierAssocation [62] AMFIdentifierAssocation,

 mMEIdentifierAssocation [63] MMEIdentifierAssocation,

 -- PDU to MA PDU session-related events, see clause 6.2.3.2.8

sMFPDUtoMAPDUSessionModification [64] SMFPDUtoMAPDUSessionModification

}

-- ==============

-- X3 xCC payload

-- ==============

-- No additional xCC payload definitions required in the present document.

-- ===============

-- HI2 IRI payload

-- ===============

IRIPayload ::= SEQUENCE

{

 iRIPayloadOID [1] RELATIVE-OID,

 event [2] IRIEvent,

 targetIdentifiers [3] SEQUENCE OF IRITargetIdentifier OPTIONAL

}

IRIEvent ::= CHOICE

{

 -- Registration-related events, see clause 6.2.2

 registration [1] AMFRegistration,

 deregistration [2] AMFDeregistration,

 locationUpdate [3] AMFLocationUpdate,

 startOfInterceptionWithRegisteredUE [4] AMFStartOfInterceptionWithRegisteredUE,

 unsuccessfulRegistrationProcedure [5] AMFUnsuccessfulProcedure,

 -- PDU session-related events, see clause 6.2.3

 pDUSessionEstablishment [6] SMFPDUSessionEstablishment,

 pDUSessionModification [7] SMFPDUSessionModification,

 pDUSessionRelease [8] SMFPDUSessionRelease,

 startOfInterceptionWithEstablishedPDUSession [9] SMFStartOfInterceptionWithEstablishedPDUSession,

 unsuccessfulSessionProcedure [10] SMFUnsuccessfulProcedure,

 -- Subscriber-management related events, see clause 7.2.2

 servingSystemMessage [11] UDMServingSystemMessage,

 -- SMS-related events, see clause 6.2.5, see also sMSReport ([56] below)

 sMSMessage [12] SMSMessage,

 -- LALS-related events, see clause 7.3.3

 lALSReport [13] LALSReport,

 -- PDHR/PDSR-related events, see clause 6.2.3.4.1

 pDHeaderReport [14] PDHeaderReport,

 pDSummaryReport [15] PDSummaryReport,

 -- MDF-related events, see clause 7.3.4

 mDFCellSiteReport [16] MDFCellSiteReport,

 -- MMS-related events, see clause 7.4.2

 mMSSend [17] MMSSend,

 mMSSendByNonLocalTarget [18] MMSSendByNonLocalTarget,

 mMSNotification [19] MMSNotification,

 mMSSendToNonLocalTarget [20] MMSSendToNonLocalTarget,

 mMSNotificationResponse [21] MMSNotificationResponse,

 mMSRetrieval [22] MMSRetrieval,

 mMSDeliveryAck [23] MMSDeliveryAck,

 mMSForward [24] MMSForward,

 mMSDeleteFromRelay [25] MMSDeleteFromRelay,

 mMSDeliveryReport [26] MMSDeliveryReport,

 mMSDeliveryReportNonLocalTarget [27] MMSDeliveryReportNonLocalTarget,

 mMSReadReport [28] MMSReadReport,

 mMSReadReportNonLocalTarget [29] MMSReadReportNonLocalTarget,

 mMSCancel [30] MMSCancel,

 mMSMBoxStore [31] MMSMBoxStore,

 mMSMBoxUpload [32] MMSMBoxUpload,

 mMSMBoxDelete [33] MMSMBoxDelete,

 mMSMBoxViewRequest [34] MMSMBoxViewRequest,

 mMSMBoxViewResponse [35] MMSMBoxViewResponse,

 -- PTC-related events, see clause 7.5.2

 pTCRegistration [36] PTCRegistration,

 pTCSessionInitiation [37] PTCSessionInitiation,

 pTCSessionAbandon [38] PTCSessionAbandon,

 pTCSessionStart [39] PTCSessionStart,

 pTCSessionEnd [40] PTCSessionEnd,

 pTCStartOfInterception [41] PTCStartOfInterception,

 pTCPreEstablishedSession [42] PTCPreEstablishedSession,

 pTCInstantPersonalAlert [43] PTCInstantPersonalAlert,

 pTCPartyJoin [44] PTCPartyJoin,

 pTCPartyDrop [45] PTCPartyDrop,

 pTCPartyHold [46] PTCPartyHold,

 pTCMediaModification [47] PTCMediaModification,

 pTCGroupAdvertisement [48] PTCGroupAdvertisement,

 pTCFloorControl [49] PTCFloorControl,

 pTCTargetPresence [50] PTCTargetPresence,

 pTCParticipantPresence [51] PTCParticipantPresence,

 pTCListManagement [52] PTCListManagement,

 pTCAccessPolicy [53] PTCAccessPolicy,

 -- More Subscriber-management related events, see clause 7.2.2

 subscriberRecordChangeMessage [54] UDMSubscriberRecordChangeMessage,

 cancelLocationMessage [55] UDMCancelLocationMessage,

 -- SMS-related events, continued from choice 12

 sMSReport [56] SMSReport,

 -- MA PDU session-related events, see clause 6.2.3.2.7

 sMFMAPDUSessionEstablishment [57] SMFMAPDUSessionEstablishment,

 sMFMAPDUSessionModification [58] SMFMAPDUSessionModification,

 sMFMAPDUSessionRelease [59] SMFMAPDUSessionRelease,

 startOfInterceptionWithEstablishedMAPDUSession [60] SMFStartOfInterceptionWithEstablishedMAPDUSession,

 unsuccessfulMASMProcedure [61] SMFMAUnsuccessfulProcedure,

 -- Identifier Association events, see clauses 6.2.2.2.7 and 6.3.2.2.2

 aMFIdentifierAssocation [62] AMFIdentifierAssocation,

 mMEIdentifierAssocation [63] MMEIdentifierAssocation,

 -- PDU to MA PDU session-related events, see clause 6.2.3.2.8

 sMFPDUtoMAPDUSessionModification [64] SMFPDUtoMAPDUSessionModification

}

IRITargetIdentifier ::= SEQUENCE

{

 identifier [1] TargetIdentifier,

 provenance [2] TargetIdentifierProvenance OPTIONAL

}

-- ==============

-- HI3 CC payload

-- ==============

CCPayload ::= SEQUENCE

{

 cCPayloadOID [1] RELATIVE-OID,

 pDU [2] CCPDU

}

CCPDU ::= CHOICE

{

 uPFCCPDU [1] UPFCCPDU,

 extendedUPFCCPDU [2] ExtendedUPFCCPDU,

 mMSCCPDU [3] MMSCCPDU

}

-- ===========================

-- HI4 LI notification payload

-- ===========================

LINotificationPayload ::= SEQUENCE

{

 lINotificationPayloadOID [1] RELATIVE-OID,

 notification [2] LINotificationMessage

}

LINotificationMessage ::= CHOICE

{

 lINotification [1] LINotification

}

-- ==================

-- 5G AMF definitions

-- ==================

-- See clause 6.2.2.2.2 for details of this structure

AMFRegistration ::= SEQUENCE

{

 registrationType [1] AMFRegistrationType,

 registrationResult [2] AMFRegistrationResult,

 slice [3] Slice OPTIONAL,

 sUPI [4] SUPI,

 sUCI [5] SUCI OPTIONAL,

 pEI [6] PEI OPTIONAL,

 gPSI [7] GPSI OPTIONAL,

 gUTI [8] FiveGGUTI,

 location [9] Location OPTIONAL,

 non3GPPAccessEndpoint [10] UEEndpointAddress OPTIONAL,

 fiveGSTAIList [11] TAIList OPTIONAL

}

-- See clause 6.2.2.2.3 for details of this structure

AMFDeregistration ::= SEQUENCE

{

 deregistrationDirection [1] AMFDirection,

 accessType [2] AccessType,

 sUPI [3] SUPI OPTIONAL,

 sUCI [4] SUCI OPTIONAL,

 pEI [5] PEI OPTIONAL,

 gPSI [6] GPSI OPTIONAL,

 gUTI [7] FiveGGUTI OPTIONAL,

 cause [8] FiveGMMCause OPTIONAL,

 location [9] Location OPTIONAL

}

-- See clause 6.2.2.2.4 for details of this structure

AMFLocationUpdate ::= SEQUENCE

{

 sUPI [1] SUPI,

 sUCI [2] SUCI OPTIONAL,

 pEI [3] PEI OPTIONAL,

 gPSI [4] GPSI OPTIONAL,

 gUTI [5] FiveGGUTI OPTIONAL,

 location [6] Location

}

-- See clause 6.2.2.2.5 for details of this structure

AMFStartOfInterceptionWithRegisteredUE ::= SEQUENCE

{

 registrationResult [1] AMFRegistrationResult,

 registrationType [2] AMFRegistrationType OPTIONAL,

 slice [3] Slice OPTIONAL,

 sUPI [4] SUPI,

 sUCI [5] SUCI OPTIONAL,

 pEI [6] PEI OPTIONAL,

 gPSI [7] GPSI OPTIONAL,

 gUTI [8] FiveGGUTI,

 location [9] Location OPTIONAL,

 non3GPPAccessEndpoint [10] UEEndpointAddress OPTIONAL,

 timeOfRegistration [11] Timestamp OPTIONAL,

 fiveGSTAIList [12] TAIList OPTIONAL

}

-- See clause 6.2.2.2.6 for details of this structure

AMFUnsuccessfulProcedure ::= SEQUENCE

{

 failedProcedureType [1] AMFFailedProcedureType,

 failureCause [2] AMFFailureCause,

 requestedSlice [3] NSSAI OPTIONAL,

 sUPI [4] SUPI OPTIONAL,

 sUCI [5] SUCI OPTIONAL,

 pEI [6] PEI OPTIONAL,

 gPSI [7] GPSI OPTIONAL,

 gUTI [8] FiveGGUTI OPTIONAL,

 location [9] Location OPTIONAL

}

-- =================

-- 5G AMF parameters

-- =================

AMFID ::= SEQUENCE

{

 aMFRegionID [1] AMFRegionID,

 aMFSetID [2] AMFSetID,

 aMFPointer [3] AMFPointer

}

AMFDirection ::= ENUMERATED

{

 networkInitiated(1),

 uEInitiated(2)

}

AMFFailedProcedureType ::= ENUMERATED

{

 registration(1),

 sMS(2),

 pDUSessionEstablishment(3)

}

AMFFailureCause ::= CHOICE

{

 fiveGMMCause [1] FiveGMMCause,

 fiveGSMCause [2] FiveGSMCause

}

AMFPointer ::= INTEGER (0..63)

AMFRegistrationResult ::= ENUMERATED

{

 threeGPPAccess(1),

 nonThreeGPPAccess(2),

 threeGPPAndNonThreeGPPAccess(3)

}

AMFRegionID ::= INTEGER (0..255)

AMFRegistrationType ::= ENUMERATED

{

 initial(1),

 mobility(2),

 periodic(3),

 emergency(4)

}

AMFSetID ::= INTEGER (0..1023)

-- ==================

-- 5G SMF definitions

-- ==================

-- See clause 6.2.3.2.2 for details of this structure

SMFPDUSessionEstablishment ::= SEQUENCE

{

 sUPI [1] SUPI OPTIONAL,

 sUPIUnauthenticated [2] SUPIUnauthenticatedIndication OPTIONAL,

 pEI [3] PEI OPTIONAL,

 gPSI [4] GPSI OPTIONAL,

 pDUSessionID [5] PDUSessionID,

 gTPTunnelID [6] FTEID,

 pDUSessionType [7] PDUSessionType,

 sNSSAI [8] SNSSAI OPTIONAL,

 uEEndpoint [9] SEQUENCE OF UEEndpointAddress OPTIONAL,

 non3GPPAccessEndpoint [10] UEEndpointAddress OPTIONAL,

 location [11] Location OPTIONAL,

 dNN [12] DNN,

 aMFID [13] AMFID OPTIONAL,

 hSMFURI [14] HSMFURI OPTIONAL,

 requestType [15] FiveGSMRequestType,

 accessType [16] AccessType OPTIONAL,

 rATType [17] RATType OPTIONAL,

 sMPDUDNRequest [18] SMPDUDNRequest OPTIONAL,

 uEEPSPDNConnection [19] UEEPSPDNConnection OPTIONAL

}

-- See clause 6.2.3.2.3 for details of this structure

SMFPDUSessionModification ::= SEQUENCE

{

 sUPI [1] SUPI OPTIONAL,

 sUPIUnauthenticated [2] SUPIUnauthenticatedIndication OPTIONAL,

 pEI [3] PEI OPTIONAL,

 gPSI [4] GPSI OPTIONAL,

 sNSSAI [5] SNSSAI OPTIONAL,

 non3GPPAccessEndpoint [6] UEEndpointAddress OPTIONAL,

 location [7] Location OPTIONAL,

 requestType [8] FiveGSMRequestType,

 accessType [9] AccessType OPTIONAL,

 rATType [10] RATType OPTIONAL,

 pDUSessionID [11] PDUSessionID OPTIONAL

}

-- See clause 6.2.3.2.4 for details of this structure

SMFPDUSessionRelease ::= SEQUENCE

{

 sUPI [1] SUPI,

 pEI [2] PEI OPTIONAL,

 gPSI [3] GPSI OPTIONAL,

 pDUSessionID [4] PDUSessionID,

 timeOfFirstPacket [5] Timestamp OPTIONAL,

 timeOfLastPacket [6] Timestamp OPTIONAL,

 uplinkVolume [7] INTEGER OPTIONAL,

 downlinkVolume [8] INTEGER OPTIONAL,

 location [9] Location OPTIONAL,

 cause [10] SMFErrorCodes OPTIONAL

}

-- See clause 6.2.3.2.5 for details of this structure

SMFStartOfInterceptionWithEstablishedPDUSession ::= SEQUENCE

{

 sUPI [1] SUPI OPTIONAL,

 sUPIUnauthenticated [2] SUPIUnauthenticatedIndication OPTIONAL,

 pEI [3] PEI OPTIONAL,

 gPSI [4] GPSI OPTIONAL,

 pDUSessionID [5] PDUSessionID,

 gTPTunnelID [6] FTEID,

 pDUSessionType [7] PDUSessionType,

 sNSSAI [8] SNSSAI OPTIONAL,

 uEEndpoint [9] SEQUENCE OF UEEndpointAddress,

 non3GPPAccessEndpoint [10] UEEndpointAddress OPTIONAL,

 location [11] Location OPTIONAL,

 dNN [12] DNN,

 aMFID [13] AMFID OPTIONAL,

 hSMFURI [14] HSMFURI OPTIONAL,

 requestType [15] FiveGSMRequestType,

 accessType [16] AccessType OPTIONAL,

 rATType [17] RATType OPTIONAL,

 sMPDUDNRequest [18] SMPDUDNRequest OPTIONAL,

 timeOfSessionEstablishment [19] Timestamp OPTIONAL

}

-- See clause 6.2.3.2.6 for details of this structure

SMFUnsuccessfulProcedure ::= SEQUENCE

{

 failedProcedureType [1] SMFFailedProcedureType,

 failureCause [2] FiveGSMCause,

 initiator [3] Initiator,

 requestedSlice [4] NSSAI OPTIONAL,

 sUPI [5] SUPI OPTIONAL,

 sUPIUnauthenticated [6] SUPIUnauthenticatedIndication OPTIONAL,

 pEI [7] PEI OPTIONAL,

 gPSI [8] GPSI OPTIONAL,

 pDUSessionID [9] PDUSessionID OPTIONAL,

 uEEndpoint [10] SEQUENCE OF UEEndpointAddress OPTIONAL,

 non3GPPAccessEndpoint [11] UEEndpointAddress OPTIONAL,

 dNN [12] DNN OPTIONAL,

 aMFID [13] AMFID OPTIONAL,

 hSMFURI [14] HSMFURI OPTIONAL,

 requestType [15] FiveGSMRequestType OPTIONAL,

 accessType [16] AccessType OPTIONAL,

 rATType [17] RATType OPTIONAL,

 sMPDUDNRequest [18] SMPDUDNRequest OPTIONAL,

 location [19] Location OPTIONAL

}

-- See clause 6.2.3.2.8 for details of this structure

SMFPDUtoMAPDUSessionModification ::= SEQUENCE

{

 sUPI [1] SUPI OPTIONAL,

 sUPIUnauthenticated [2] SUPIUnauthenticatedIndication OPTIONAL,

 pEI [3] PEI OPTIONAL,

 gPSI [4] GPSI OPTIONAL,

 sNSSAI [5] SNSSAI OPTIONAL,

 non3GPPAccessEndpoint [6] UEEndpointAddress OPTIONAL,

 location [7] Location OPTIONAL,

 requestType [8] FiveGSMRequestType,

 accessType [9] AccessType OPTIONAL,

 rATType [10] RATType OPTIONAL,

 pDUSessionID [11] PDUSessionID,

 requestIndication [12] RequestIndication,

 aTSSSContainer [13] ATSSSContainer

}

-- See clause 6.2.3.2.7.1 for details of this structure

SMFMAPDUSessionEstablishment ::= SEQUENCE

{

 sUPI [1] SUPI OPTIONAL,

 sUPIUnauthenticated [2] SUPIUnauthenticatedIndication OPTIONAL,

 pEI [3] PEI OPTIONAL,

 gPSI [4] GPSI OPTIONAL,

 pDUSessionID [5] PDUSessionID,

 pDUSessionType [6] PDUSessionType,

 accessInfo [7] SEQUENCE OF AccessInfo,

 sNSSAI [8] SNSSAI OPTIONAL,

 uEEndpoint [9] SEQUENCE OF UEEndpointAddress OPTIONAL,

 location [10] Location OPTIONAL,

 dNN [11] DNN,

 aMFID [12] AMFID OPTIONAL,

 hSMFURI [13] HSMFURI OPTIONAL,

 requestType [14] FiveGSMRequestType,

 sMPDUDNRequest [15] SMPDUDNRequest OPTIONAL,

 servingNetwork [16] SMFServingNetwork,

 oldPDUSessionID [17] PDUSessionID OPTIONAL,

 mAUpgradeIndication [18] SMFMAUpgradeIndication OPTIONAL,

 ePSPDNCnxInfo [19] SMFEPSPDNCnxInfo OPTIONAL,

 mAAcceptedIndication [20] SMFMAAcceptedIndication,

 aTSSSContainer [21] ATSSSContainer OPTIONAL

}

-- See clause 6.2.3.2.7.2 for details of this structure

SMFMAPDUSessionModification ::= SEQUENCE

{

 sUPI [1] SUPI OPTIONAL,

 sUPIUnauthenticated [2] SUPIUnauthenticatedIndication OPTIONAL,

 pEI [3] PEI OPTIONAL,

 gPSI [4] GPSI OPTIONAL,

 pDUSessionID [5] PDUSessionID,

 accessInfo [6] SEQUENCE OF AccessInfo OPTIONAL,

 sNSSAI [7] SNSSAI OPTIONAL,

 location [8] Location OPTIONAL,

 requestType [9] FiveGSMRequestType OPTIONAL,

 servingNetwork [10] SMFServingNetwork,

 oldPDUSessionID [11] PDUSessionID OPTIONAL,

 mAUpgradeIndication [12] SMFMAUpgradeIndication OPTIONAL,

 ePSPDNCnxInfo [13] SMFEPSPDNCnxInfo OPTIONAL,

 mAAcceptedIndication [14] SMFMAAcceptedIndication,

 aTSSSContainer [15] ATSSSContainer OPTIONAL

}

-- See clause 6.2.3.2.7.3 for details of this structure

SMFMAPDUSessionRelease ::= SEQUENCE

{

 sUPI [1] SUPI,

 pEI [2] PEI OPTIONAL,

 gPSI [3] GPSI OPTIONAL,

 pDUSessionID [4] PDUSessionID,

 timeOfFirstPacket [5] Timestamp OPTIONAL,

 timeOfLastPacket [6] Timestamp OPTIONAL,

 uplinkVolume [7] INTEGER OPTIONAL,

 downlinkVolume [8] INTEGER OPTIONAL,

 location [9] Location OPTIONAL,

 cause [10] SMFErrorCodes OPTIONAL

}

-- See clause 6.2.3.2.7.4 for details of this structure

SMFStartOfInterceptionWithEstablishedMAPDUSession ::= SEQUENCE

{

 sUPI [1] SUPI OPTIONAL,

 sUPIUnauthenticated [2] SUPIUnauthenticatedIndication OPTIONAL,

 pEI [3] PEI OPTIONAL,

 gPSI [4] GPSI OPTIONAL,

 pDUSessionID [5] PDUSessionID,

 pDUSessionType [6] PDUSessionType,

 accessInfo [7] SEQUENCE OF AccessInfo,

 sNSSAI [8] SNSSAI OPTIONAL,

 uEEndpoint [9] SEQUENCE OF UEEndpointAddress OPTIONAL,

 location [10] Location OPTIONAL,

 dNN [11] DNN,

 aMFID [12] AMFID OPTIONAL,

 hSMFURI [13] HSMFURI OPTIONAL,

 requestType [14] FiveGSMRequestType OPTIONAL,

 sMPDUDNRequest [15] SMPDUDNRequest OPTIONAL,

 servingNetwork [16] SMFServingNetwork,

 oldPDUSessionID [17] PDUSessionID OPTIONAL,

 mAUpgradeIndication [18] SMFMAUpgradeIndication OPTIONAL,

 ePSPDNCnxInfo [19] SMFEPSPDNCnxInfo OPTIONAL,

 mAAcceptedIndication [20] SMFMAAcceptedIndication,

 aTSSSContainer [21] ATSSSContainer OPTIONAL

}

-- See clause 6.2.3.2.7.5 for details of this structure

SMFMAUnsuccessfulProcedure ::= SEQUENCE

{

 failedProcedureType [1] SMFFailedProcedureType,

 failureCause [2] FiveGSMCause,

 requestedSlice [3] NSSAI OPTIONAL,

 initiator [4] Initiator,

 sUPI [5] SUPI OPTIONAL,

 sUPIUnauthenticated [6] SUPIUnauthenticatedIndication OPTIONAL,

 pEI [7] PEI OPTIONAL,

 gPSI [8] GPSI OPTIONAL,

 pDUSessionID [9] PDUSessionID OPTIONAL,

 accessInfo [10] SEQUENCE OF AccessInfo,

 uEEndpoint [11] SEQUENCE OF UEEndpointAddress OPTIONAL,

 location [12] Location OPTIONAL,

 dNN [13] DNN OPTIONAL,

 aMFID [14] AMFID OPTIONAL,

 hSMFURI [15] HSMFURI OPTIONAL,

 requestType [16] FiveGSMRequestType OPTIONAL,

 sMPDUDNRequest [17] SMPDUDNRequest OPTIONAL

}

-- =================

-- 5G SMF parameters

-- =================

SMFFailedProcedureType ::= ENUMERATED

{

 pDUSessionEstablishment(1),

 pDUSessionModification(2),

 pDUSessionRelease(3)

}

SMFServingNetwork ::= SEQUENCE

{

 pLMNID [1] PLMNID,

 nID [2] NID OPTIONAL

}

AccessInfo ::= SEQUENCE

{

 accessType [1] AccessType,

 rATType [2] RATType OPTIONAL,

 gTPTunnelID [3] FTEID,

 non3GPPAccessEndpoint [4] UEEndpointAddress OPTIONAL,

 establishmentStatus [5] EstablishmentStatus,

 aNTypeToReactivate [6] AccessType OPTIONAL

}

-- see Clause 6.1.2 of TS 24.193[44] for the details of the ATSSS container contents.

ATSSSContainer ::= OCTET STRING

EstablishmentStatus ::= ENUMERATED

{

 established(0),

 released(1)

}

SMFMAUpgradeIndication ::= BOOLEAN

-- Given in YAML encoding as defined in clause 6.1.6.2.31 of TS 29.502[16]

SMFEPSPDNCnxInfo ::= UTF8String

SMFMAAcceptedIndication ::= BOOLEAN

-- see Clause 6.1.6.3.8 of TS 29.502[16] for the details of this structure.

SMFErrorCodes ::= UTF8String

-- see Clause 6.1.6.3.2 of TS 29.502[16] for details of this structure.

UEEPSPDNConnection ::= OCTET STRING

-- see Clause 6.1.6.3.6 of TS 29.502[16] for the details of this structure.

RequestIndication ::= ENUMERATED

{

 uEREQPDUSESMOD(0),

 uEREQPDUSESREL(1),

 pDUSESMOB(2),

 nWREQPDUSESAUTH(3),

 nWREQPDUSESMOD(4),

 nWREQPDUSESREL(5),

 eBIASSIGNMENTREQ(6),

 rELDUETO5GANREQUEST(7)

}

-- ==================

-- 5G UPF definitions

-- ==================

UPFCCPDU ::= OCTET STRING

-- See clause 6.2.3.8 for the details of this structure

ExtendedUPFCCPDU ::= SEQUENCE

{

 payload [1] UPFCCPDUPayload,

 qFI [2] QFI OPTIONAL

}

-- =================

-- 5G UPF parameters

-- =================

UPFCCPDUPayload ::= CHOICE

{

 uPFIPCC [1] OCTET STRING,

 uPFEthernetCC [2] OCTET STRING,

 uPFUnstructuredCC [3] OCTET STRING

}

QFI ::= INTEGER (0..63)

-- ==================

-- 5G UDM definitions

-- ==================

UDMServingSystemMessage ::= SEQUENCE

{

 sUPI [1] SUPI,

 pEI [2] PEI OPTIONAL,

 gPSI [3] GPSI OPTIONAL,

 gUAMI [4] GUAMI OPTIONAL,

 gUMMEI [5] GUMMEI OPTIONAL,

 pLMNID [6] PLMNID OPTIONAL,

 servingSystemMethod [7] UDMServingSystemMethod,

 serviceID [8] ServiceID OPTIONAL

}

UDMSubscriberRecordChangeMessage ::= SEQUENCE

{

 sUPI [1] SUPI OPTIONAL,

 pEI [2] PEI OPTIONAL,

 gPSI [3] GPSI OPTIONAL,

 oldPEI [4] PEI OPTIONAL,

 oldSUPI [5] SUPI OPTIONAL,

 oldGPSI [6] GPSI OPTIONAL,

 oldserviceID [7] ServiceID OPTIONAL,

 subscriberRecordChangeMethod [8] UDMSubscriberRecordChangeMethod,

 serviceID [9] ServiceID OPTIONAL

}

UDMCancelLocationMessage ::= SEQUENCE

{

 sUPI [1] SUPI,

 pEI [2] PEI OPTIONAL,

 gPSI [3] GPSI OPTIONAL,

 gUAMI [4] GUAMI OPTIONAL,

 pLMNID [5] PLMNID OPTIONAL,

 cancelLocationMethod [6] UDMCancelLocationMethod

}

-- =================

-- 5G UDM parameters

-- =================

UDMServingSystemMethod ::= ENUMERATED

{

 amf3GPPAccessRegistration(0),

 amfNon3GPPAccessRegistration(1),

 unknown(2)

}

UDMSubscriberRecordChangeMethod ::= ENUMERATED

{

 pEIChange(1),

 sUPIChange(2),

 gPSIChange(3),

 uEDeprovisioning(4),

 unknown(5),

 serviceIDChange(6)

}

UDMCancelLocationMethod ::= ENUMERATED

{

 aMF3GPPAccessDeregistration(1),

 aMFNon3GPPAccessDeregistration(2),

 uDMDeregistration(3),

 unknown(4)

}

ServiceID ::= SEQUENCE

{

 nSSAI [1] NSSAI OPTIONAL,

 cAGID [2] SEQUENCE OF CAGID OPTIONAL

}

CAGID ::= UTF8String

-- ===================

-- 5G SMSF definitions

-- ===================

-- See clause 6.2.5.3 for details of this structure

SMSMessage ::= SEQUENCE

{

 originatingSMSParty [1] SMSParty,

 terminatingSMSParty [2] SMSParty,

 direction [3] Direction,

 linkTransferStatus [4] SMSTransferStatus,

 otherMessage [5] SMSOtherMessageIndication OPTIONAL,

 location [6] Location OPTIONAL,

 peerNFAddress [7] SMSNFAddress OPTIONAL,

 peerNFType [8] SMSNFType OPTIONAL,

 sMSTPDUData [9] SMSTPDUData OPTIONAL,

 messageType [10] SMSMessageType OPTIONAL,

 rPMessageReference [11] SMSRPMessageReference OPTIONAL

}

SMSReport ::= SEQUENCE

{

 location [1] Location OPTIONAL,

 sMSTPDUData [2] SMSTPDUData,

 messageType [3] SMSMessageType,

 rPMessageReference [4] SMSRPMessageReference

}

-- ==================

-- 5G SMSF parameters

-- ==================

SMSAddress ::= OCTET STRING(SIZE(2..12))

SMSMessageType ::= ENUMERATED

{

 deliver(1),

 deliverReportAck(2),

 deliverReportError(3),

 statusReport(4),

 command(5),

 submit(6),

 submitReportAck(7),

 submitReportError(8),

 reserved(9)

}

SMSParty ::= SEQUENCE

{

 sUPI [1] SUPI OPTIONAL,

 pEI [2] PEI OPTIONAL,

 gPSI [3] GPSI OPTIONAL,

 sMSAddress [4] SMSAddress OPTIONAL

}

SMSTransferStatus ::= ENUMERATED

{

 transferSucceeded(1),

 transferFailed(2),

 undefined(3)

}

SMSOtherMessageIndication ::= BOOLEAN

SMSNFAddress ::= CHOICE

{

 iPAddress [1] IPAddress,

 e164Number [2] E164Number

}

SMSNFType ::= ENUMERATED

{

 sMSGMSC(1),

 iWMSC(2),

 sMSRouter(3)

}

SMSRPMessageReference ::= INTEGER (0..255)

SMSTPDUData ::= CHOICE

{

 sMSTPDU [1] SMSTPDU,

 truncatedSMSTPDU [2] TruncatedSMSTPDU

}

SMSTPDU ::= OCTET STRING (SIZE(1..270))

TruncatedSMSTPDU ::= OCTET STRING (SIZE(1..130))

-- ===============

-- MMS definitions

-- ===============

MMSSend ::= SEQUENCE

{

 transactionID [1] UTF8String,

 version [2] MMSVersion,

 dateTime [3] Timestamp,

 originatingMMSParty [4] MMSParty,

 terminatingMMSParty [5] SEQUENCE OF MMSParty OPTIONAL,

 cCRecipients [6] SEQUENCE OF MMSParty OPTIONAL,

 bCCRecipients [7] SEQUENCE OF MMSParty OPTIONAL,

 direction [8] MMSDirection,

 subject [9] MMSSubject OPTIONAL,

 messageClass [10] MMSMessageClass OPTIONAL,

 expiry [11] MMSExpiry,

 desiredDeliveryTime [12] Timestamp OPTIONAL,

 priority [13] MMSPriority OPTIONAL,

 senderVisibility [14] BOOLEAN OPTIONAL,

 deliveryReport [15] BOOLEAN OPTIONAL,

 readReport [16] BOOLEAN OPTIONAL,

 store [17] BOOLEAN OPTIONAL,

 state [18] MMState OPTIONAL,

 flags [19] MMFlags OPTIONAL,

 replyCharging [20] MMSReplyCharging OPTIONAL,

 applicID [21] UTF8String OPTIONAL,

 replyApplicID [22] UTF8String OPTIONAL,

 auxApplicInfo [23] UTF8String OPTIONAL,

 contentClass [24] MMSContentClass OPTIONAL,

 dRMContent [25] BOOLEAN OPTIONAL,

 adaptationAllowed [26] MMSAdaptation OPTIONAL,

 contentType [27] MMSContentType,

 responseStatus [28] MMSResponseStatus,

 responseStatusText [29] UTF8String OPTIONAL,

 messageID [30] UTF8String

}

MMSSendByNonLocalTarget ::= SEQUENCE

{

 version [1] MMSVersion,

 transactionID [2] UTF8String,

 messageID [3] UTF8String,

 terminatingMMSParty [4] SEQUENCE OF MMSParty,

 originatingMMSParty [5] MMSParty,

 direction [6] MMSDirection,

 contentType [7] MMSContentType,

 messageClass [8] MMSMessageClass OPTIONAL,

 dateTime [9] Timestamp,

 expiry [10] MMSExpiry OPTIONAL,

 deliveryReport [11] BOOLEAN OPTIONAL,

 priority [12] MMSPriority OPTIONAL,

 senderVisibility [13] BOOLEAN OPTIONAL,

 readReport [14] BOOLEAN OPTIONAL,

 subject [15] MMSSubject OPTIONAL,

 forwardCount [16] INTEGER OPTIONAL,

 previouslySentBy [17] MMSPreviouslySentBy OPTIONAL,

 prevSentByDateTime [18] Timestamp OPTIONAL,

 applicID [19] UTF8String OPTIONAL,

 replyApplicID [20] UTF8String OPTIONAL,

 auxApplicInfo [21] UTF8String OPTIONAL,

 contentClass [22] MMSContentClass OPTIONAL,

 dRMContent [23] BOOLEAN OPTIONAL,

 adaptationAllowed [24] MMSAdaptation OPTIONAL

}

MMSNotification ::= SEQUENCE

{

 transactionID [1] UTF8String,

 version [2] MMSVersion,

 originatingMMSParty [3] MMSParty OPTIONAL,

 direction [4] MMSDirection,

 subject [5] MMSSubject OPTIONAL,

 deliveryReportRequested [6] BOOLEAN OPTIONAL,

 stored [7] BOOLEAN OPTIONAL,

 messageClass [8] MMSMessageClass,

 priority [9] MMSPriority OPTIONAL,

 messageSize [10] INTEGER,

 expiry [11] MMSExpiry,

 replyCharging [12] MMSReplyCharging OPTIONAL

}

MMSSendToNonLocalTarget ::= SEQUENCE

{

 version [1] MMSVersion,

 transactionID [2] UTF8String,

 messageID [3] UTF8String,

 terminatingMMSParty [4] SEQUENCE OF MMSParty,

 originatingMMSParty [5] MMSParty,

 direction [6] MMSDirection,

 contentType [7] MMSContentType,

 messageClass [8] MMSMessageClass OPTIONAL,

 dateTime [9] Timestamp,

 expiry [10] MMSExpiry OPTIONAL,

 deliveryReport [11] BOOLEAN OPTIONAL,

 priority [12] MMSPriority OPTIONAL,

 senderVisibility [13] BOOLEAN OPTIONAL,

 readReport [14] BOOLEAN OPTIONAL,

 subject [15] MMSSubject OPTIONAL,

 forwardCount [16] INTEGER OPTIONAL,

 previouslySentBy [17] MMSPreviouslySentBy OPTIONAL,

 prevSentByDateTime [18] Timestamp OPTIONAL,

 applicID [19] UTF8String OPTIONAL,

 replyApplicID [20] UTF8String OPTIONAL,

 auxApplicInfo [21] UTF8String OPTIONAL,

 contentClass [22] MMSContentClass OPTIONAL,

 dRMContent [23] BOOLEAN OPTIONAL,

 adaptationAllowed [24] MMSAdaptation OPTIONAL

}

MMSNotificationResponse ::= SEQUENCE

{

 transactionID [1] UTF8String,

 version [2] MMSVersion,

 direction [3] MMSDirection,

 status [4] MMStatus,

 reportAllowed [5] BOOLEAN OPTIONAL

}

MMSRetrieval ::= SEQUENCE

{

 transactionID [1] UTF8String,

 version [2] MMSVersion,

 messageID [3] UTF8String,

 dateTime [4] Timestamp,

 originatingMMSParty [5] MMSParty OPTIONAL,

 previouslySentBy [6] MMSPreviouslySentBy OPTIONAL,

 prevSentByDateTime [7] Timestamp OPTIONAL,

 terminatingMMSParty [8] SEQUENCE OF MMSParty OPTIONAL,

 cCRecipients [9] SEQUENCE OF MMSParty OPTIONAL,

 direction [10] MMSDirection,

 subject [11] MMSSubject OPTIONAL,

 state [12] MMState OPTIONAL,

 flags [13] MMFlags OPTIONAL,

 messageClass [14] MMSMessageClass OPTIONAL,

 priority [15] MMSPriority,

 deliveryReport [16] BOOLEAN OPTIONAL,

 readReport [17] BOOLEAN OPTIONAL,

 replyCharging [18] MMSReplyCharging OPTIONAL,

 retrieveStatus [19] MMSRetrieveStatus OPTIONAL,

 retrieveStatusText [20] UTF8String OPTIONAL,

 applicID [21] UTF8String OPTIONAL,

 replyApplicID [22] UTF8String OPTIONAL,

 auxApplicInfo [23] UTF8String OPTIONAL,

 contentClass [24] MMSContentClass OPTIONAL,

 dRMContent [25] BOOLEAN OPTIONAL,

 replaceID [26] UTF8String OPTIONAL,

 contentType [27] UTF8String OPTIONAL

}

MMSDeliveryAck ::= SEQUENCE

{

 transactionID [1] UTF8String,

 version [2] MMSVersion,

 reportAllowed [3] BOOLEAN OPTIONAL,

 status [4] MMStatus,

 direction [5] MMSDirection

}

MMSForward ::= SEQUENCE

{

 transactionID [1] UTF8String,

 version [2] MMSVersion,

 dateTime [3] Timestamp OPTIONAL,

 originatingMMSParty [4] MMSParty,

 terminatingMMSParty [5] SEQUENCE OF MMSParty OPTIONAL,

 cCRecipients [6] SEQUENCE OF MMSParty OPTIONAL,

 bCCRecipients [7] SEQUENCE OF MMSParty OPTIONAL,

 direction [8] MMSDirection,

 expiry [9] MMSExpiry OPTIONAL,

 desiredDeliveryTime [10] Timestamp OPTIONAL,

 deliveryReportAllowed [11] BOOLEAN OPTIONAL,

 deliveryReport [12] BOOLEAN OPTIONAL,

 store [13] BOOLEAN OPTIONAL,

 state [14] MMState OPTIONAL,

 flags [15] MMFlags OPTIONAL,

 contentLocationReq [16] UTF8String,

 replyCharging [17] MMSReplyCharging OPTIONAL,

 responseStatus [18] MMSResponseStatus,

 responseStatusText [19] UTF8String OPTIONAL,

 messageID [20] UTF8String OPTIONAL,

 contentLocationConf [21] UTF8String OPTIONAL,

 storeStatus [22] MMSStoreStatus OPTIONAL,

 storeStatusText [23] UTF8String OPTIONAL

}

MMSDeleteFromRelay ::= SEQUENCE

{

 transactionID [1] UTF8String,

 version [2] MMSVersion,

 direction [3] MMSDirection,

 contentLocationReq [4] SEQUENCE OF UTF8String,

 contentLocationConf [5] SEQUENCE OF UTF8String,

 deleteResponseStatus [6] MMSDeleteResponseStatus,

 deleteResponseText [7] SEQUENCE OF UTF8String

}

MMSMBoxStore ::= SEQUENCE

{

 transactionID [1] UTF8String,

 version [2] MMSVersion,

 direction [3] MMSDirection,

 contentLocationReq [4] UTF8String,

 state [5] MMState OPTIONAL,

 flags [6] MMFlags OPTIONAL,

 contentLocationConf [7] UTF8String OPTIONAL,

 storeStatus [8] MMSStoreStatus,

 storeStatusText [9] UTF8String OPTIONAL

}

MMSMBoxUpload ::= SEQUENCE

{

 transactionID [1] UTF8String,

 version [2] MMSVersion,

 direction [3] MMSDirection,

 state [4] MMState OPTIONAL,

 flags [5] MMFlags OPTIONAL,

 contentType [6] UTF8String,

 contentLocation [7] UTF8String OPTIONAL,

 storeStatus [8] MMSStoreStatus,

 storeStatusText [9] UTF8String OPTIONAL,

 mMessages [10] SEQUENCE OF MMBoxDescription

}

MMSMBoxDelete ::= SEQUENCE

{

 transactionID [1] UTF8String,

 version [2] MMSVersion,

 direction [3] MMSDirection,

 contentLocationReq [4] SEQUENCE OF UTF8String,

 contentLocationConf [5] SEQUENCE OF UTF8String OPTIONAL,

 responseStatus [6] MMSDeleteResponseStatus,

 responseStatusText [7] UTF8String OPTIONAL

}

MMSDeliveryReport ::= SEQUENCE

{

 version [1] MMSVersion,

 messageID [2] UTF8String,

 terminatingMMSParty [3] SEQUENCE OF MMSParty,

 mMSDateTime [4] Timestamp,

 responseStatus [5] MMSResponseStatus,

 responseStatusText [6] UTF8String OPTIONAL,

 applicID [7] UTF8String OPTIONAL,

 replyApplicID [8] UTF8String OPTIONAL,

 auxApplicInfo [9] UTF8String OPTIONAL

}

MMSDeliveryReportNonLocalTarget ::= SEQUENCE

{

 version [1] MMSVersion,

 transactionID [2] UTF8String,

 messageID [3] UTF8String,

 terminatingMMSParty [4] SEQUENCE OF MMSParty,

 originatingMMSParty [5] MMSParty,

 direction [6] MMSDirection,

 mMSDateTime [7] Timestamp,

 forwardToOriginator [8] BOOLEAN OPTIONAL,

 status [9] MMStatus,

 statusExtension [10] MMStatusExtension,

 statusText [11] MMStatusText,

 applicID [12] UTF8String OPTIONAL,

 replyApplicID [13] UTF8String OPTIONAL,

 auxApplicInfo [14] UTF8String OPTIONAL

}

MMSReadReport ::= SEQUENCE

{

 version [1] MMSVersion,

 messageID [2] UTF8String,

 terminatingMMSParty [3] SEQUENCE OF MMSParty,

 originatingMMSParty [4] SEQUENCE OF MMSParty,

 direction [5] MMSDirection,

 mMSDateTime [6] Timestamp,

 readStatus [7] MMSReadStatus,

 applicID [8] UTF8String OPTIONAL,

 replyApplicID [9] UTF8String OPTIONAL,

 auxApplicInfo [10] UTF8String OPTIONAL

}

MMSReadReportNonLocalTarget ::= SEQUENCE

{

 version [1] MMSVersion,

 transactionID [2] UTF8String,

 terminatingMMSParty [3] SEQUENCE OF MMSParty,

 originatingMMSParty [4] SEQUENCE OF MMSParty,

 direction [5] MMSDirection,

 messageID [6] UTF8String,

 mMSDateTime [7] Timestamp,

 readStatus [8] MMSReadStatus,

 readStatusText [9] MMSReadStatusText OPTIONAL,

 applicID [10] UTF8String OPTIONAL,

 replyApplicID [11] UTF8String OPTIONAL,

 auxApplicInfo [12] UTF8String OPTIONAL

}

MMSCancel ::= SEQUENCE

{

 transactionID [1] UTF8String,

 version [2] MMSVersion,

 cancelID [3] UTF8String,

 direction [4] MMSDirection

}

MMSMBoxViewRequest ::= SEQUENCE

{

 transactionID [1] UTF8String,

 version [2] MMSVersion,

 contentLocation [3] UTF8String OPTIONAL,

 state [4] SEQUENCE OF MMState OPTIONAL,

 flags [5] SEQUENCE OF MMFlags OPTIONAL,

 start [6] INTEGER OPTIONAL,

 limit [7] INTEGER OPTIONAL,

 attributes [8] SEQUENCE OF UTF8String OPTIONAL,

 totals [9] INTEGER OPTIONAL,

 quotas [10] MMSQuota OPTIONAL

}

MMSMBoxViewResponse ::= SEQUENCE

{

 transactionID [1] UTF8String,

 version [2] MMSVersion,

 contentLocation [3] UTF8String OPTIONAL,

 state [4] SEQUENCE OF MMState OPTIONAL,

 flags [5] SEQUENCE OF MMFlags OPTIONAL,

 start [6] INTEGER OPTIONAL,

 limit [7] INTEGER OPTIONAL,

 attributes [8] SEQUENCE OF UTF8String OPTIONAL,

 mMSTotals [9] BOOLEAN OPTIONAL,

 mMSQuotas [10] BOOLEAN OPTIONAL,

 mMessages [11] SEQUENCE OF MMBoxDescription

}

MMBoxDescription ::= SEQUENCE

{

 contentLocation [1] UTF8String OPTIONAL,

 messageID [2] UTF8String OPTIONAL,

 state [3] MMState OPTIONAL,

 flags [4] SEQUENCE OF MMFlags OPTIONAL,

 dateTime [5] Timestamp OPTIONAL,

 originatingMMSParty [6] MMSParty OPTIONAL,

 terminatingMMSParty [7] SEQUENCE OF MMSParty OPTIONAL,

 cCRecipients [8] SEQUENCE OF MMSParty OPTIONAL,

 bCCRecipients [9] SEQUENCE OF MMSParty OPTIONAL,

 messageClass [10] MMSMessageClass OPTIONAL,

 subject [11] MMSSubject OPTIONAL,

 priority [12] MMSPriority OPTIONAL,

 deliveryTime [13] Timestamp OPTIONAL,

 readReport [14] BOOLEAN OPTIONAL,

 messageSize [15] INTEGER OPTIONAL,

 replyCharging [16] MMSReplyCharging OPTIONAL,

 previouslySentBy [17] MMSPreviouslySentBy OPTIONAL,

 previouslySentByDateTime [18] Timestamp OPTIONAL,

 contentType [19] UTF8String OPTIONAL

}

-- =========

-- MMS CCPDU

-- =========

MMSCCPDU ::= SEQUENCE

{

 version [1] MMSVersion,

 transactionID [2] UTF8String,

 mMSContent [3] OCTET STRING

}

-- ==============

-- MMS parameters

-- ==============

MMSAdaptation ::= SEQUENCE

{

 allowed [1] BOOLEAN,

 overriden [2] BOOLEAN

}

MMSCancelStatus ::= ENUMERATED

{

 cancelRequestSuccessfullyReceived(1),

 cancelRequestCorrupted(2)

}

MMSContentClass ::= ENUMERATED

{

 text(1),

 imageBasic(2),

 imageRich(3),

 videoBasic(4),

 videoRich(5),

 megaPixel(6),

 contentBasic(7),

 contentRich(8)

}

MMSContentType ::= UTF8String

MMSDeleteResponseStatus ::= ENUMERATED

{

 ok(1),

 errorUnspecified(2),

 errorServiceDenied(3),

 errorMessageFormatCorrupt(4),

 errorSendingAddressUnresolved(5),

 errorMessageNotFound(6),

 errorNetworkProblem(7),

 errorContentNotAccepted(8),

 errorUnsupportedMessage(9),

 errorTransientFailure(10),

 errorTransientSendingAddressUnresolved(11),

 errorTransientMessageNotFound(12),

 errorTransientNetworkProblem(13),

 errorTransientPartialSuccess(14),

 errorPermanentFailure(15),

 errorPermanentServiceDenied(16),

 errorPermanentMessageFormatCorrupt(17),

 errorPermanentSendingAddressUnresolved(18),

 errorPermanentMessageNotFound(19),

 errorPermanentContentNotAccepted(20),

 errorPermanentReplyChargingLimitationsNotMet(21),

 errorPermanentReplyChargingRequestNotAccepted(22),

 errorPermanentReplyChargingForwardingDenied(23),

 errorPermanentReplyChargingNotSupported(24),

 errorPermanentAddressHidingNotSupported(25),

 errorPermanentLackOfPrepaid(26)

}

MMSDirection ::= ENUMERATED

{

 fromTarget(0),

 toTarget(1)

}

MMSElementDescriptor ::= SEQUENCE

{

 reference [1] UTF8String,

 parameter [2] UTF8String OPTIONAL,

 value [3] UTF8String OPTIONAL

}

MMSExpiry ::= SEQUENCE

{

 expiryPeriod [1] INTEGER,

 periodFormat [2] MMSPeriodFormat

}

MMFlags ::= SEQUENCE

{

 length [1] INTEGER,

 flag [2] MMStateFlag,

 flagString [3] UTF8String

}

MMSMessageClass ::= ENUMERATED

{

 personal(1),

 advertisement(2),

 informational(3),

 auto(4)

}

MMSParty ::= SEQUENCE

{

 mMSPartyIDs [1] SEQUENCE OF MMSPartyID,

 nonLocalID [2] NonLocalID

}

MMSPartyID ::= CHOICE

{

 e164Number [1] E164Number,

 emailAddress [2] EmailAddress,

 iMSI [3] IMSI,

 iMPU [4] IMPU,

 iMPI [5] IMPI,

 sUPI [6] SUPI,

 gPSI [7] GPSI

}

MMSPeriodFormat ::= ENUMERATED

{

 absolute(1),

 relative(2)

}

MMSPreviouslySent ::= SEQUENCE

{

 previouslySentByParty [1] MMSParty,

 sequenceNumber [2] INTEGER,

 previousSendDateTime [3] Timestamp

}

MMSPreviouslySentBy ::= SEQUENCE OF MMSPreviouslySent

MMSPriority ::= ENUMERATED

{

 low(1),

 normal(2),

 high(3)

}

MMSQuota ::= SEQUENCE

{

 quota [1] INTEGER,

 quotaUnit [2] MMSQuotaUnit

}

MMSQuotaUnit ::= ENUMERATED

{

 numMessages(1),

 bytes(2)

}

MMSReadStatus ::= ENUMERATED

{

 read(1),

 deletedWithoutBeingRead(2)

}

MMSReadStatusText ::= UTF8String

MMSReplyCharging ::= ENUMERATED

{

 requested(0),

 requestedTextOnly(1),

 accepted(2),

 acceptedTextOnly(3)

}

MMSResponseStatus ::= ENUMERATED

{

 ok(1),

 errorUnspecified(2),

 errorServiceDenied(3),

 errorMessageFormatCorrupt(4),

 errorSendingAddressUnresolved(5),

 errorMessageNotFound(6),

 errorNetworkProblem(7),

 errorContentNotAccepted(8),

 errorUnsupportedMessage(9),

 errorTransientFailure(10),

 errorTransientSendingAddressUnresolved(11),

 errorTransientMessageNotFound(12),

 errorTransientNetworkProblem(13),

 errorTransientPartialSuccess(14),

 errorPermanentFailure(15),

 errorPermanentServiceDenied(16),

 errorPermanentMessageFormatCorrupt(17),

 errorPermanentSendingAddressUnresolved(18),

 errorPermanentMessageNotFound(19),

 errorPermanentContentNotAccepted(20),

 errorPermanentReplyChargingLimitationsNotMet(21),

 errorPermanentReplyChargingRequestNotAccepted(22),

 errorPermanentReplyChargingForwardingDenied(23),

 errorPermanentReplyChargingNotSupported(24),

 errorPermanentAddressHidingNotSupported(25),

 errorPermanentLackOfPrepaid(26)

}

MMSRetrieveStatus ::= ENUMERATED

{

 success(1),

 errorTransientFailure(2),

 errorTransientMessageNotFound(3),

 errorTransientNetworkProblem(4),

 errorPermanentFailure(5),

 errorPermanentServiceDenied(6),

 errorPermanentMessageNotFound(7),

 errorPermanentContentUnsupported(8)

}

MMSStoreStatus ::= ENUMERATED

{

 success(1),

 errorTransientFailure(2),

 errorTransientNetworkProblem(3),

 errorPermanentFailure(4),

 errorPermanentServiceDenied(5),

 errorPermanentMessageFormatCorrupt(6),

 errorPermanentMessageNotFound(7),

 errorMMBoxFull(8)

}

MMState ::= ENUMERATED

{

 draft(1),

 sent(2),

 new(3),

 retrieved(4),

 forwarded(5)

}

MMStateFlag ::= ENUMERATED

{

 add(1),

 remove(2),

 filter(3)

}

MMStatus ::= ENUMERATED

{

 expired(1),

 retrieved(2),

 rejected(3),

 deferred(4),

 unrecognized(5),

 indeterminate(6),

 forwarded(7),

 unreachable(8)

}

MMStatusExtension ::= ENUMERATED

{

 rejectionByMMSRecipient(0),

 rejectionByOtherRS(1)

}

MMStatusText ::= UTF8String

MMSSubject ::= UTF8String

MMSVersion ::= SEQUENCE

{

 majorVersion [1] INTEGER,

 minorVersion [2] INTEGER

}

-- ==================

-- 5G PTC definitions

-- ==================

PTCRegistration ::= SEQUENCE

{

 pTCTargetInformation [1] PTCTargetInformation,

 pTCServerURI [2] UTF8String,

 pTCRegistrationRequest [3] PTCRegistrationRequest,

 pTCRegistrationOutcome [4] PTCRegistrationOutcome

}

PTCSessionInitiation ::= SEQUENCE

{

 pTCTargetInformation [1] PTCTargetInformation,

 pTCDirection [2] Direction,

 pTCServerURI [3] UTF8String,

 pTCSessionInfo [4] PTCSessionInfo,

 pTCOriginatingID [5] PTCTargetInformation,

 pTCParticipants [6] SEQUENCE OF PTCTargetInformation OPTIONAL,

 pTCParticipantPresenceStatus [7] MultipleParticipantPresenceStatus OPTIONAL,

 location [8] Location OPTIONAL,

 pTCBearerCapability [9] UTF8String OPTIONAL,

 pTCHost [10] PTCTargetInformation OPTIONAL

}

PTCSessionAbandon ::= SEQUENCE

{

 pTCTargetInformation [1] PTCTargetInformation,

 pTCDirection [2] Direction,

 pTCSessionInfo [3] PTCSessionInfo,

 location [4] Location OPTIONAL,

 pTCAbandonCause [5] INTEGER

}

PTCSessionStart ::= SEQUENCE

{

 pTCTargetInformation [1] PTCTargetInformation,

 pTCDirection [2] Direction,

 pTCServerURI [3] UTF8String,

 pTCSessionInfo [4] PTCSessionInfo,

 pTCOriginatingID [5] PTCTargetInformation,

 pTCParticipants [6] SEQUENCE OF PTCTargetInformation OPTIONAL,

 pTCParticipantPresenceStatus [7] MultipleParticipantPresenceStatus OPTIONAL,

 location [8] Location OPTIONAL,

 pTCHost [9] PTCTargetInformation OPTIONAL,

 pTCBearerCapability [10] UTF8String OPTIONAL

}

PTCSessionEnd ::= SEQUENCE

{

 pTCTargetInformation [1] PTCTargetInformation,

 pTCDirection [2] Direction,

 pTCServerURI [3] UTF8String,

 pTCSessionInfo [4] PTCSessionInfo,

 pTCParticipants [5] SEQUENCE OF PTCTargetInformation OPTIONAL,

 location [6] Location OPTIONAL,

 pTCSessionEndCause [7] PTCSessionEndCause

}

PTCStartOfInterception ::= SEQUENCE

{

 pTCTargetInformation [1] PTCTargetInformation,

 pTCDirection [2] Direction,

 preEstSessionID [3] PTCSessionInfo OPTIONAL,

 pTCOriginatingID [4] PTCTargetInformation,

 pTCSessionInfo [5] PTCSessionInfo OPTIONAL,

 pTCHost [6] PTCTargetInformation OPTIONAL,

 pTCParticipants [7] SEQUENCE OF PTCTargetInformation OPTIONAL,

 pTCMediaStreamAvail [8] BOOLEAN OPTIONAL,

 pTCBearerCapability [9] UTF8String OPTIONAL

}

PTCPreEstablishedSession ::= SEQUENCE

{

 pTCTargetInformation [1] PTCTargetInformation,

 pTCServerURI [2] UTF8String,

 rTPSetting [3] RTPSetting,

 pTCMediaCapability [4] UTF8String,

 pTCPreEstSessionID [5] PTCSessionInfo,

 pTCPreEstStatus [6] PTCPreEstStatus,

 pTCMediaStreamAvail [7] BOOLEAN OPTIONAL,

 location [8] Location OPTIONAL,

 pTCFailureCode [9] PTCFailureCode OPTIONAL

}

PTCInstantPersonalAlert ::= SEQUENCE

{

 pTCTargetInformation [1] PTCTargetInformation,

 pTCIPAPartyID [2] PTCTargetInformation,

 pTCIPADirection [3] Direction

}

PTCPartyJoin ::= SEQUENCE

{

 pTCTargetInformation [1] PTCTargetInformation,

 pTCDirection [2] Direction,

 pTCSessionInfo [3] PTCSessionInfo,

 pTCParticipants [4] SEQUENCE OF PTCTargetInformation OPTIONAL,

 pTCParticipantPresenceStatus [5] MultipleParticipantPresenceStatus OPTIONAL,

 pTCMediaStreamAvail [6] BOOLEAN OPTIONAL,

 pTCBearerCapability [7] UTF8String OPTIONAL

}

PTCPartyDrop ::= SEQUENCE

{

 pTCTargetInformation [1] PTCTargetInformation,

 pTCDirection [2] Direction,

 pTCSessionInfo [3] PTCSessionInfo,

 pTCPartyDrop [4] PTCTargetInformation,

 pTCParticipantPresenceStatus [5] PTCParticipantPresenceStatus OPTIONAL

}

PTCPartyHold ::= SEQUENCE

{

 pTCTargetInformation [1] PTCTargetInformation,

 pTCDirection [2] Direction,

 pTCSessionInfo [3] PTCSessionInfo,

 pTCParticipants [4] SEQUENCE OF PTCTargetInformation OPTIONAL,

 pTCHoldID [5] SEQUENCE OF PTCTargetInformation,

 pTCHoldRetrieveInd [6] BOOLEAN

}

PTCMediaModification ::= SEQUENCE

{

 pTCTargetInformation [1] PTCTargetInformation,

 pTCDirection [2] Direction,

 pTCSessionInfo [3] PTCSessionInfo,

 pTCMediaStreamAvail [4] BOOLEAN OPTIONAL,

 pTCBearerCapability [5] UTF8String

}

PTCGroupAdvertisement ::=SEQUENCE

{

 pTCTargetInformation [1] PTCTargetInformation,

 pTCDirection [2] Direction,

 pTCIDList [3] SEQUENCE OF PTCTargetInformation OPTIONAL,

 pTCGroupAuthRule [4] PTCGroupAuthRule OPTIONAL,

 pTCGroupAdSender [5] PTCTargetInformation,

 pTCGroupNickname [6] UTF8String OPTIONAL

}

PTCFloorControl ::= SEQUENCE

{

 pTCTargetInformation [1] PTCTargetInformation,

 pTCDirection [2] Direction,

 pTCSessioninfo [3] PTCSessionInfo,

 pTCFloorActivity [4] SEQUENCE OF PTCFloorActivity,

 pTCFloorSpeakerID [5] PTCTargetInformation OPTIONAL,

 pTCMaxTBTime [6] INTEGER OPTIONAL,

 pTCQueuedFloorControl [7] BOOLEAN OPTIONAL,

 pTCQueuedPosition [8] INTEGER OPTIONAL,

 pTCTalkBurstPriority [9] PTCTBPriorityLevel OPTIONAL,

 pTCTalkBurstReason [10] PTCTBReasonCode OPTIONAL

}

PTCTargetPresence ::= SEQUENCE

{

 pTCTargetInformation [1] PTCTargetInformation,

 pTCTargetPresenceStatus [2] PTCParticipantPresenceStatus

}

PTCParticipantPresence ::= SEQUENCE

{

 pTCTargetInformation [1] PTCTargetInformation,

 pTCParticipantPresenceStatus [2] PTCParticipantPresenceStatus

}

PTCListManagement ::= SEQUENCE

{

 pTCTargetInformation [1] PTCTargetInformation,

 pTCDirection [2] Direction,

 pTCListManagementType [3] PTCListManagementType OPTIONAL,

 pTCListManagementAction [4] PTCListManagementAction OPTIONAL,

 pTCListManagementFailure [5] PTCListManagementFailure OPTIONAL,

 pTCContactID [6] PTCTargetInformation OPTIONAL,

 pTCIDList [7] SEQUENCE OF PTCIDList OPTIONAL,

 pTCHost [8] PTCTargetInformation OPTIONAL

}

PTCAccessPolicy ::= SEQUENCE

{

 pTCTargetInformation [1] PTCTargetInformation,

 pTCDirection [2] Direction,

 pTCAccessPolicyType [3] PTCAccessPolicyType OPTIONAL,

 pTCUserAccessPolicy [4] PTCUserAccessPolicy OPTIONAL,

 pTCGroupAuthRule [5] PTCGroupAuthRule OPTIONAL,

 pTCContactID [6] PTCTargetInformation OPTIONAL,

 pTCAccessPolicyFailure [7] PTCAccessPolicyFailure OPTIONAL

}

-- =================

-- 5G PTC parameters

-- =================

PTCRegistrationRequest ::= ENUMERATED

{

 register(1),

 reRegister(2),

 deRegister(3)

}

PTCRegistrationOutcome ::= ENUMERATED

{

 success(1),

 failure(2)

}

PTCSessionEndCause ::= ENUMERATED

{

 initiaterLeavesSession(1),

 definedParticipantLeaves(2),

 numberOfParticipants(3),

 sessionTimerExpired(4),

 pTCSpeechInactive(5),

 allMediaTypesInactive(6)

}

PTCTargetInformation ::= SEQUENCE

{

 identifiers [1] SEQUENCE SIZE(1..MAX) OF PTCIdentifiers

}

PTCIdentifiers ::= CHOICE

{

 mCPTTID [1] UTF8String,

 instanceIdentifierURN [2] UTF8String,

 pTCChatGroupID [3] PTCChatGroupID,

 iMPU [4] IMPU,

 iMPI [5] IMPI

}

PTCSessionInfo ::= SEQUENCE

{

 pTCSessionURI [1] UTF8String,

 pTCSessionType [2] PTCSessionType

}

PTCSessionType ::= ENUMERATED

{

 ondemand(1),

 preEstablished(2),

 adhoc(3),

 prearranged(4),

 groupSession(5)

}

MultipleParticipantPresenceStatus ::= SEQUENCE OF PTCParticipantPresenceStatus

PTCParticipantPresenceStatus ::= SEQUENCE

{

 presenceID [1] PTCTargetInformation,

 presenceType [2] PTCPresenceType,

 presenceStatus [3] BOOLEAN

}

PTCPresenceType ::= ENUMERATED

{

 pTCClient(1),

 pTCGroup(2)

}

PTCPreEstStatus ::= ENUMERATED

{

 established(1),

 modified(2),

 released(3)

}

RTPSetting ::= SEQUENCE

{

 iPAddress [1] IPAddress,

 portNumber [2] PortNumber

}

PTCIDList ::= SEQUENCE

{

 pTCPartyID [1] PTCTargetInformation,

 pTCChatGroupID [2] PTCChatGroupID

}

PTCChatGroupID ::= SEQUENCE

{

 groupIdentity [1] UTF8String

}

PTCFloorActivity ::= ENUMERATED

{

 tBCPRequest(1),

 tBCPGranted(2),

 tBCPDeny(3),

 tBCPIdle(4),

 tBCPTaken(5),

 tBCPRevoke(6),

 tBCPQueued(7),

 tBCPRelease(8)

}

PTCTBPriorityLevel ::= ENUMERATED

{

 preEmptive(1),

 highPriority(2),

 normalPriority(3),

 listenOnly(4)

}

PTCTBReasonCode ::= ENUMERATED

{

 noQueuingAllowed(1),

 oneParticipantSession(2),

 listenOnly(3),

 exceededMaxDuration(4),

 tBPrevented(5)

}

PTCListManagementType ::= ENUMERATED

{

 contactListManagementAttempt(1),

 groupListManagementAttempt(2),

 contactListManagementResult(3),

 groupListManagementResult(4),

 requestUnsuccessful(5)

}

PTCListManagementAction ::= ENUMERATED

{

 create(1),

 modify(2),

 retrieve(3),

 delete(4),

 notify(5)

}

PTCAccessPolicyType ::= ENUMERATED

{

 pTCUserAccessPolicyAttempt(1),

 groupAuthorizationRulesAttempt(2),

 pTCUserAccessPolicyQuery(3),

 groupAuthorizationRulesQuery(4),

 pTCUserAccessPolicyResult(5),

 groupAuthorizationRulesResult(6),

 requestUnsuccessful(7)

}

PTCUserAccessPolicy ::= ENUMERATED

{

 allowIncomingPTCSessionRequest(1),

 blockIncomingPTCSessionRequest(2),

 allowAutoAnswerMode(3),

 allowOverrideManualAnswerMode(4)

}

PTCGroupAuthRule ::= ENUMERATED

{

 allowInitiatingPTCSession(1),

 blockInitiatingPTCSession(2),

 allowJoiningPTCSession(3),

 blockJoiningPTCSession(4),

 allowAddParticipants(5),

 blockAddParticipants(6),

 allowSubscriptionPTCSessionState(7),

 blockSubscriptionPTCSessionState(8),

 allowAnonymity(9),

 forbidAnonymity(10)

}

PTCFailureCode ::= ENUMERATED

{

 sessionCannotBeEstablished(1),

 sessionCannotBeModified(2)

}

PTCListManagementFailure ::= ENUMERATED

{

 requestUnsuccessful(1),

 requestUnknown(2)

}

PTCAccessPolicyFailure ::= ENUMERATED

{

 requestUnsuccessful(1),

 requestUnknown(2)

}

-- ===================

-- 5G LALS definitions

-- ===================

LALSReport ::= SEQUENCE

{

 sUPI [1] SUPI OPTIONAL,

 pEI [2] PEI OPTIONAL,

 gPSI [3] GPSI OPTIONAL,

 location [4] Location OPTIONAL

}

-- =====================

-- PDHR/PDSR definitions

-- =====================

PDHeaderReport ::= SEQUENCE

{

 pDUSessionID [1] PDUSessionID,

 sourceIPAddress [2] IPAddress,

 sourcePort [3] PortNumber OPTIONAL,

 destinationIPAddress [4] IPAddress,

 destinationPort [5] PortNumber OPTIONAL,

 nextLayerProtocol [6] NextLayerProtocol,

 iPv6flowLabel [7] IPv6FlowLabel OPTIONAL,

 direction [8] Direction,

 packetSize [9] INTEGER

}

PDSummaryReport ::= SEQUENCE

{

 pDUSessionID [1] PDUSessionID,

 sourceIPAddress [2] IPAddress,

 sourcePort [3] PortNumber OPTIONAL,

 destinationIPAddress [4] IPAddress,

 destinationPort [5] PortNumber OPTIONAL,

 nextLayerProtocol [6] NextLayerProtocol,

 iPv6flowLabel [7] IPv6FlowLabel OPTIONAL,

 direction [8] Direction,

 pDSRSummaryTrigger [9] PDSRSummaryTrigger,

 firstPacketTimestamp [10] Timestamp,

 lastPacketTimestamp [11] Timestamp,

 packetCount [12] INTEGER,

 byteCount [13] INTEGER

}

-- ====================

-- PDHR/PDSR parameters

-- ====================

PDSRSummaryTrigger ::= ENUMERATED

{

 timerExpiry(1),

 packetCount(2),

 byteCount(3),

 startOfFlow(4),

 endOfFlow(5)

}

-- ==================================

-- Identifier Association definitions

-- ==================================

AMFIdentifierAssocation ::= SEQUENCE

{

 sUPI [1] SUPI,

 sUCI [2] SUCI OPTIONAL,

 pEI [3] PEI OPTIONAL,

 gPSI [4] GPSI OPTIONAL,

 gUTI [5] FiveGGUTI,

 location [6] Location,

 fiveGSTAIList [7] TAIList OPTIONAL

}

MMEIdentifierAssocation ::= SEQUENCE

{

 iMSI [1] IMSI,

 iMEI [2] IMEI OPTIONAL,

 mSISDN [3] MSISDN OPTIONAL,

 gUTI [4] GUTI,

 location [5] Location,

 tAIList [6] TAIList OPTIONAL

}

-- =================================

-- Identifier Association parameters

-- =================================

GUTI ::= SEQUENCE

{

 mCC [1] MCC,

 mNC [2] MNC,

 mMEGroupID [3] MMEGroupID,

 mMECode [4] MMECode,

 mTMSI [5] TMSI

}

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

MMECode ::= OCTET STRING (SIZE(1))

TMSI ::= OCTET STRING (SIZE(4))

-- ===========================

-- LI Notification definitions

-- ===========================

LINotification ::= SEQUENCE

{

 notificationType [1] LINotificationType,

 appliedTargetID [2] TargetIdentifier OPTIONAL,

 appliedDeliveryInformation [3] SEQUENCE OF LIAppliedDeliveryInformation OPTIONAL,

 appliedStartTime [4] Timestamp OPTIONAL,

 appliedEndTime [5] Timestamp OPTIONAL

}

-- ==========================

-- LI Notification parameters

-- ==========================

LINotificationType ::= ENUMERATED

{

 activation(1),

 deactivation(2),

 modification(3)

}

LIAppliedDeliveryInformation ::= SEQUENCE

{

 hI2DeliveryIPAddress [1] IPAddress OPTIONAL,

 hI2DeliveryPortNumber [2] PortNumber OPTIONAL,

 hI3DeliveryIPAddress [3] IPAddress OPTIONAL,

 hI3DeliveryPortNumber [4] PortNumber OPTIONAL

}

-- ===============

-- MDF definitions

-- ===============

MDFCellSiteReport ::= SEQUENCE OF CellInformation

-- =================

-- Common Parameters

-- =================

AccessType ::= ENUMERATED

{

 threeGPPAccess(1),

 nonThreeGPPAccess(2),

 threeGPPandNonThreeGPPAccess(3)

}

Direction ::= ENUMERATED

{

 fromTarget(1),

 toTarget(2)

}

DNN ::= UTF8String

E164Number ::= NumericString (SIZE(1..15))

EmailAddress ::= UTF8String

FiveGGUTI ::= SEQUENCE

{

 mCC [1] MCC,

 mNC [2] MNC,

 aMFRegionID [3] AMFRegionID,

 aMFSetID [4] AMFSetID,

 aMFPointer [5] AMFPointer,

 fiveGTMSI [6] FiveGTMSI

}

FiveGMMCause ::= INTEGER (0..255)

FiveGSMRequestType ::= ENUMERATED

{

 initialRequest(1),

 existingPDUSession(2),

 initialEmergencyRequest(3),

 existingEmergencyPDUSession(4),

 modificationRequest(5),

 reserved(6),

 mAPDURequest(7)

}

FiveGSMCause ::= INTEGER (0..255)

FiveGTMSI ::= INTEGER (0..4294967295)

FTEID ::= SEQUENCE

{

 tEID [1] INTEGER (0.. 4294967295),

 iPv4Address [2] IPv4Address OPTIONAL,

 iPv6Address [3] IPv6Address OPTIONAL

}

GPSI ::= CHOICE

{

 mSISDN [1] MSISDN,

 nAI [2] NAI

}

GUAMI ::= SEQUENCE

{

 aMFID [1] AMFID,

 pLMNID [2] PLMNID

}

GUMMEI ::= SEQUENCE

{

 mMEID [1] MMEID,

 mCC [2] MCC,

 mNC [3] MNC

}

HomeNetworkPublicKeyID ::= OCTET STRING

HSMFURI ::= UTF8String

IMEI ::= NumericString (SIZE(14))

IMEISV ::= NumericString (SIZE(16))

IMPI ::= NAI

IMPU ::= CHOICE

{

 sIPURI [1] SIPURI,

 tELURI [2] TELURI

}

IMSI ::= NumericString (SIZE(6..15))

Initiator ::= ENUMERATED

{

 uE(1),

 network(2),

 unknown(3)

}

IPAddress ::= CHOICE

{

 iPv4Address [1] IPv4Address,

 iPv6Address [2] IPv6Address

}

IPv4Address ::= OCTET STRING (SIZE(4))

IPv6Address ::= OCTET STRING (SIZE(16))

IPv6FlowLabel ::= INTEGER(0..1048575)

MACAddress ::= OCTET STRING (SIZE(6))

MCC ::= NumericString (SIZE(3))

MNC ::= NumericString (SIZE(2..3))

MMEID ::= SEQUENCE

{

 mMEGI [1] MMEGI,

 mMEC [2] MMEC

}

MMEC ::= NumericString

MMEGI ::= NumericString

MSISDN ::= NumericString (SIZE(1..15))

NAI ::= UTF8String

NextLayerProtocol ::= INTEGER(0..255)

NonLocalID ::= ENUMERATED

{

 local(1),

 nonLocal(2)

}

NSSAI ::= SEQUENCE OF SNSSAI

PLMNID ::= SEQUENCE

{

 mCC [1] MCC,

 mNC [2] MNC

}

PDUSessionID ::= INTEGER (0..255)

PDUSessionType ::= ENUMERATED

{

 iPv4(1),

 iPv6(2),

 iPv4v6(3),

 unstructured(4),

 ethernet(5)

}

PEI ::= CHOICE

{

 iMEI [1] IMEI,

 iMEISV [2] IMEISV

}

PortNumber ::= INTEGER(0..65535)

ProtectionSchemeID ::= INTEGER (0..15)

RATType ::= ENUMERATED

{

 nR(1),

 eUTRA(2),

 wLAN(3),

 virtual(4),

 nBIOT(5),

 wireline(6),

 wirelineCable(7),

 wirelineBBF(8),

 lTEM(9),

 nRU(10),

 eUTRAU(11),

 trustedN3GA(12),

 trustedWLAN(13),

 uTRA(14),

 gERA(15)

}

RejectedNSSAI ::= SEQUENCE OF RejectedSNSSAI

RejectedSNSSAI ::= SEQUENCE

{

 causeValue [1] RejectedSliceCauseValue,

 sNSSAI [2] SNSSAI

}

RejectedSliceCauseValue ::= INTEGER (0..255)

RoutingIndicator ::= INTEGER (0..9999)

SchemeOutput ::= OCTET STRING

SIPURI ::= UTF8String

Slice ::= SEQUENCE

{

 allowedNSSAI [1] NSSAI OPTIONAL,

 configuredNSSAI [2] NSSAI OPTIONAL,

 rejectedNSSAI [3] RejectedNSSAI OPTIONAL

}

SMPDUDNRequest ::= OCTET STRING

SNSSAI ::= SEQUENCE

{

 sliceServiceType [1] INTEGER (0..255),

 sliceDifferentiator [2] OCTET STRING (SIZE(3)) OPTIONAL

}

SUCI ::= SEQUENCE

{

 mCC [1] MCC,

 mNC [2] MNC,

 routingIndicator [3] RoutingIndicator,

 protectionSchemeID [4] ProtectionSchemeID,

 homeNetworkPublicKeyID [5] HomeNetworkPublicKeyID,

 schemeOutput [6] SchemeOutput

}

SUPI ::= CHOICE

{

 iMSI [1] IMSI,

 nAI [2] NAI

}

SUPIUnauthenticatedIndication ::= BOOLEAN

TargetIdentifier ::= CHOICE

{

 sUPI [1] SUPI,

 iMSI [2] IMSI,

 pEI [3] PEI,

 iMEI [4] IMEI,

 gPSI [5] GPSI,

 mSISDN [6] MSISDN,

 nAI [7] NAI,

 iPv4Address [8] IPv4Address,

 iPv6Address [9] IPv6Address,

 ethernetAddress [10] MACAddress

}

TargetIdentifierProvenance ::= ENUMERATED

{

 lEAProvided(1),

 observed(2),

 matchedOn(3),

 other(4)

}

TELURI ::= UTF8String

Timestamp ::= GeneralizedTime

UEEndpointAddress ::= CHOICE

{

 iPv4Address [1] IPv4Address,

 iPv6Address [2] IPv6Address,

 ethernetAddress [3] MACAddress

}

-- ===================

-- Location parameters

-- ===================

Location ::= SEQUENCE

{

 locationInfo [1] LocationInfo OPTIONAL,

 positioningInfo [2] PositioningInfo OPTIONAL,

 locationPresenceReport [3] LocationPresenceReport OPTIONAL

}

CellSiteInformation ::= SEQUENCE

{

 geographicalCoordinates [1] GeographicalCoordinates,

 azimuth [2] INTEGER (0..359) OPTIONAL,

 operatorSpecificInformation [3] UTF8String OPTIONAL

}

-- TS 29.518 [22], clause 6.4.6.2.6

LocationInfo ::= SEQUENCE

{

 userLocation [1] UserLocation OPTIONAL,

 currentLoc [2] BOOLEAN OPTIONAL,

 geoInfo [3] GeographicArea OPTIONAL,

 rATType [4] RATType OPTIONAL,

 timeZone [5] TimeZone OPTIONAL,

 additionalCellIDs [6] SEQUENCE OF CellInformation OPTIONAL

}

-- TS 29.571 [17], clause 5.4.4.7

UserLocation ::= SEQUENCE

{

 eUTRALocation [1] EUTRALocation OPTIONAL,

 nRLocation [2] NRLocation OPTIONAL,

 n3GALocation [3] N3GALocation OPTIONAL

}

-- TS 29.571 [17], clause 5.4.4.8

EUTRALocation ::= SEQUENCE

{

 tAI [1] TAI,

 eCGI [2] ECGI,

 ageOfLocationInfo [3] INTEGER OPTIONAL,

 uELocationTimestamp [4] Timestamp OPTIONAL,

 geographicalInformation [5] UTF8String OPTIONAL,

 geodeticInformation [6] UTF8String OPTIONAL,

 globalNGENbID [7] GlobalRANNodeID OPTIONAL,

 cellSiteInformation [8] CellSiteInformation OPTIONAL,

 globalENbID [9] GlobalRANNodeID OPTIONAL

}

-- TS 29.571 [17], clause 5.4.4.9

NRLocation ::= SEQUENCE

{

 tAI [1] TAI,

 nCGI [2] NCGI,

 ageOfLocationInfo [3] INTEGER OPTIONAL,

 uELocationTimestamp [4] Timestamp OPTIONAL,

 geographicalInformation [5] UTF8String OPTIONAL,

 geodeticInformation [6] UTF8String OPTIONAL,

 globalGNbID [7] GlobalRANNodeID OPTIONAL,

 cellSiteInformation [8] CellSiteInformation OPTIONAL

}

-- TS 29.571 [17], clause 5.4.4.10

N3GALocation ::= SEQUENCE

{

 tAI [1] TAI OPTIONAL,

 n3IWFID [2] N3IWFIDNGAP OPTIONAL,

 uEIPAddr [3] IPAddr OPTIONAL,

 portNumber [4] INTEGER OPTIONAL

}

-- TS 38.413 [23], clause 9.3.2.4

IPAddr ::= SEQUENCE

{

 iPv4Addr [1] IPv4Address OPTIONAL,

 iPv6Addr [2] IPv6Address OPTIONAL

}

-- TS 29.571 [17], clause 5.4.4.28

GlobalRANNodeID ::= SEQUENCE

{

 pLMNID [1] PLMNID,

 aNNodeID [2] ANNodeID,

 nID [3] NID OPTIONAL

}

ANNodeID ::= CHOICE

{

 n3IWFID [1] N3IWFIDSBI,

 gNbID [2] GNbID,

 nGENbID [3] NGENbID,

 eNbID [4] ENbID

}

-- TS 38.413 [23], clause 9.3.1.6

GNbID ::= BIT STRING(SIZE(22..32))

-- TS 29.571 [17], clause 5.4.4.4

TAI ::= SEQUENCE

{

 pLMNID [1] PLMNID,

 tAC [2] TAC,

 nID [3] NID OPTIONAL

}

-- TS 29.571 [17], clause 5.4.4.5

ECGI ::= SEQUENCE

{

 pLMNID [1] PLMNID,

 eUTRACellID [2] EUTRACellID,

 nID [3] NID OPTIONAL

}

TAIList ::= SEQUENCE OF TAI

-- TS 29.571 [17], clause 5.4.4.6

NCGI ::= SEQUENCE

{

 pLMNID [1] PLMNID,

 nRCellID [2] NRCellID,

 nID [3] NID OPTIONAL

}

RANCGI ::= CHOICE

{

 eCGI [1] ECGI,

 nCGI [2] NCGI

}

CellInformation ::= SEQUENCE

{

 rANCGI [1] RANCGI,

 cellSiteinformation [2] CellSiteInformation OPTIONAL,

 timeOfLocation [3] Timestamp OPTIONAL

}

-- TS 38.413 [23], clause 9.3.1.57

N3IWFIDNGAP ::= BIT STRING (SIZE(16))

-- TS 29.571 [17], clause 5.4.4.28

N3IWFIDSBI ::= UTF8String

-- TS 29.571 [17], table 5.4.2-1

TAC ::= OCTET STRING (SIZE(2..3))

-- TS 38.413 [23], clause 9.3.1.9

EUTRACellID ::= BIT STRING (SIZE(28))

-- TS 38.413 [23], clause 9.3.1.7

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

-- TS 38.413 [23], clause 9.3.1.8

NGENbID ::= CHOICE

{

 macroNGENbID [1] BIT STRING (SIZE(20)),

 shortMacroNGENbID [2] BIT STRING (SIZE(18)),

 longMacroNGENbID [3] BIT STRING (SIZE(21))

}

-- TS 23.003 [19], clause 12.7.1 encoded as per TS 29.571 [17], clause 5.4.2

NID ::= UTF8String (SIZE(11))

-- TS 36.413 [38], clause 9.2.1.37

ENbID ::= CHOICE

{

 macroENbID [1] BIT STRING (SIZE(20)),

 homeENbID [2] BIT STRING (SIZE(28)),

 shortMacroENbID [3] BIT STRING (SIZE(18)),

 longMacroENbID [4] BIT STRING (SIZE(21))

}

-- TS 29.518 [22], clause 6.4.6.2.3

PositioningInfo ::= SEQUENCE

{

 positionInfo [1] LocationData OPTIONAL,

 rawMLPResponse [2] RawMLPResponse OPTIONAL

}

RawMLPResponse ::= CHOICE

{

 -- The following parameter contains a copy of unparsed XML code of the

 -- MLP response message, i.e. the entire XML document containing

 -- a <slia> (described in OMA-TS-MLP-V3\_5-20181211-C [20], clause 5.2.3.2.2) or

 -- a <slirep> (described in OMA-TS-MLP-V3\_5-20181211-C [20], clause 5.2.3.2.3) MLP message.

 mLPPositionData [1] UTF8String,

 -- OMA MLP result id, defined in OMA-TS-MLP-V3\_5-20181211-C [20], Clause 5.4

 mLPErrorCode [2] INTEGER (1..699)

}

-- TS 29.572 [24], clause 6.1.6.2.3

LocationData ::= SEQUENCE

{

 locationEstimate [1] GeographicArea,

 accuracyFulfilmentIndicator [2] AccuracyFulfilmentIndicator OPTIONAL,

 ageOfLocationEstimate [3] AgeOfLocationEstimate OPTIONAL,

 velocityEstimate [4] VelocityEstimate OPTIONAL,

 civicAddress [5] CivicAddress OPTIONAL,

 positioningDataList [6] SET OF PositioningMethodAndUsage OPTIONAL,

 gNSSPositioningDataList [7] SET OF GNSSPositioningMethodAndUsage OPTIONAL,

 eCGI [8] ECGI OPTIONAL,

 nCGI [9] NCGI OPTIONAL,

 altitude [10] Altitude OPTIONAL,

 barometricPressure [11] BarometricPressure OPTIONAL

}

-- TS 29.518 [22], clause 6.2.6.2.5

LocationPresenceReport ::= SEQUENCE

{

 type [1] AMFEventType,

 timestamp [2] Timestamp,

 areaList [3] SET OF AMFEventArea OPTIONAL,

 timeZone [4] TimeZone OPTIONAL,

 accessTypes [5] SET OF AccessType OPTIONAL,

 rMInfoList [6] SET OF RMInfo OPTIONAL,

 cMInfoList [7] SET OF CMInfo OPTIONAL,

 reachability [8] UEReachability OPTIONAL,

 location [9] UserLocation OPTIONAL,

 additionalCellIDs [10] SEQUENCE OF CellInformation OPTIONAL

}

-- TS 29.518 [22], clause 6.2.6.3.3

AMFEventType ::= ENUMERATED

{

 locationReport(1),

 presenceInAOIReport(2)

}

-- TS 29.518 [22], clause 6.2.6.2.16

AMFEventArea ::= SEQUENCE

{

 presenceInfo [1] PresenceInfo OPTIONAL,

 lADNInfo [2] LADNInfo OPTIONAL

}

-- TS 29.571 [17], clause 5.4.4.27

PresenceInfo ::= SEQUENCE

{

 presenceState [1] PresenceState OPTIONAL,

 trackingAreaList [2] SET OF TAI OPTIONAL,

 eCGIList [3] SET OF ECGI OPTIONAL,

 nCGIList [4] SET OF NCGI OPTIONAL,

 globalRANNodeIDList [5] SET OF GlobalRANNodeID OPTIONAL,

 globalENbIDList [6] SET OF GlobalRANNodeID OPTIONAL

}

-- TS 29.518 [22], clause 6.2.6.2.17

LADNInfo ::= SEQUENCE

{

 lADN [1] UTF8String,

 presence [2] PresenceState OPTIONAL

}

-- TS 29.571 [17], clause 5.4.3.20

PresenceState ::= ENUMERATED

{

 inArea(1),

 outOfArea(2),

 unknown(3),

 inactive(4)

}

-- TS 29.518 [22], clause 6.2.6.2.8

RMInfo ::= SEQUENCE

{

 rMState [1] RMState,

 accessType [2] AccessType

}

-- TS 29.518 [22], clause 6.2.6.2.9

CMInfo ::= SEQUENCE

{

 cMState [1] CMState,

 accessType [2] AccessType

}

-- TS 29.518 [22], clause 6.2.6.3.7

UEReachability ::= ENUMERATED

{

 unreachable(1),

 reachable(2),

 regulatoryOnly(3)

}

-- TS 29.518 [22], clause 6.2.6.3.9

RMState ::= ENUMERATED

{

 registered(1),

 deregistered(2)

}

-- TS 29.518 [22], clause 6.2.6.3.10

CMState ::= ENUMERATED

{

 idle(1),

 connected(2)

}

-- TS 29.572 [24], clause 6.1.6.2.5

GeographicArea ::= CHOICE

{

 point [1] Point,

 pointUncertaintyCircle [2] PointUncertaintyCircle,

 pointUncertaintyEllipse [3] PointUncertaintyEllipse,

 polygon [4] Polygon,

 pointAltitude [5] PointAltitude,

 pointAltitudeUncertainty [6] PointAltitudeUncertainty,

 ellipsoidArc [7] EllipsoidArc

}

-- TS 29.572 [24], clause 6.1.6.3.12

AccuracyFulfilmentIndicator ::= ENUMERATED

{

 requestedAccuracyFulfilled(1),

 requestedAccuracyNotFulfilled(2)

}

-- TS 29.572 [24], clause 6.1.6.2.17

VelocityEstimate ::= CHOICE

{

 horVelocity [1] HorizontalVelocity,

 horWithVertVelocity [2] HorizontalWithVerticalVelocity,

 horVelocityWithUncertainty [3] HorizontalVelocityWithUncertainty,

 horWithVertVelocityAndUncertainty [4] HorizontalWithVerticalVelocityAndUncertainty

}

-- TS 29.572 [24], clause 6.1.6.2.14

CivicAddress ::= SEQUENCE

{

 country [1] UTF8String,

 a1 [2] UTF8String OPTIONAL,

 a2 [3] UTF8String OPTIONAL,

 a3 [4] UTF8String OPTIONAL,

 a4 [5] UTF8String OPTIONAL,

 a5 [6] UTF8String OPTIONAL,

 a6 [7] UTF8String OPTIONAL,

 prd [8] UTF8String OPTIONAL,

 pod [9] UTF8String OPTIONAL,

 sts [10] UTF8String OPTIONAL,

 hno [11] UTF8String OPTIONAL,

 hns [12] UTF8String OPTIONAL,

 lmk [13] UTF8String OPTIONAL,

 loc [14] UTF8String OPTIONAL,

 nam [15] UTF8String OPTIONAL,

 pc [16] UTF8String OPTIONAL,

 bld [17] UTF8String OPTIONAL,

 unit [18] UTF8String OPTIONAL,

 flr [19] UTF8String OPTIONAL,

 room [20] UTF8String OPTIONAL,

 plc [21] UTF8String OPTIONAL,

 pcn [22] UTF8String OPTIONAL,

 pobox [23] UTF8String OPTIONAL,

 addcode [24] UTF8String OPTIONAL,

 seat [25] UTF8String OPTIONAL,

 rd [26] UTF8String OPTIONAL,

 rdsec [27] UTF8String OPTIONAL,

 rdbr [28] UTF8String OPTIONAL,

 rdsubbr [29] UTF8String OPTIONAL,

 prm [30] UTF8String OPTIONAL,

 pom [31] UTF8String OPTIONAL

}

-- TS 29.572 [24], clause 6.1.6.2.15

PositioningMethodAndUsage ::= SEQUENCE

{

 method [1] PositioningMethod,

 mode [2] PositioningMode,

 usage [3] Usage,

 methodCode [4] MethodCode OPTIONAL

}

-- TS 29.572 [24], clause 6.1.6.2.16

GNSSPositioningMethodAndUsage ::= SEQUENCE

{

 mode [1] PositioningMode,

 gNSS [2] GNSSID,

 usage [3] Usage

}

-- TS 29.572 [24], clause 6.1.6.2.6

Point ::= SEQUENCE

{

 geographicalCoordinates [1] GeographicalCoordinates

}

-- TS 29.572 [24], clause 6.1.6.2.7

PointUncertaintyCircle ::= SEQUENCE

{

 geographicalCoordinates [1] GeographicalCoordinates,

 uncertainty [2] Uncertainty

}

-- TS 29.572 [24], clause 6.1.6.2.8

PointUncertaintyEllipse ::= SEQUENCE

{

 geographicalCoordinates [1] GeographicalCoordinates,

 uncertainty [2] UncertaintyEllipse,

 confidence [3] Confidence

}

-- TS 29.572 [24], clause 6.1.6.2.9

Polygon ::= SEQUENCE

{

 pointList [1] SET SIZE (3..15) OF GeographicalCoordinates

}

-- TS 29.572 [24], clause 6.1.6.2.10

PointAltitude ::= SEQUENCE

{

 point [1] GeographicalCoordinates,

 altitude [2] Altitude

}

-- TS 29.572 [24], clause 6.1.6.2.11

PointAltitudeUncertainty ::= SEQUENCE

{

 point [1] GeographicalCoordinates,

 altitude [2] Altitude,

 uncertaintyEllipse [3] UncertaintyEllipse,

 uncertaintyAltitude [4] Uncertainty,

 confidence [5] Confidence

}

-- TS 29.572 [24], clause 6.1.6.2.12

EllipsoidArc ::= SEQUENCE

{

 point [1] GeographicalCoordinates,

 innerRadius [2] InnerRadius,

 uncertaintyRadius [3] Uncertainty,

 offsetAngle [4] Angle,

 includedAngle [5] Angle,

 confidence [6] Confidence

}

-- TS 29.572 [24], clause 6.1.6.2.4

GeographicalCoordinates ::= SEQUENCE

{

 latitude [1] UTF8String,

 longitude [2] UTF8String,

 mapDatumInformation [3] OGCURN OPTIONAL

}

-- TS 29.572 [24], clause 6.1.6.2.22

UncertaintyEllipse ::= SEQUENCE

{

 semiMajor [1] Uncertainty,

 semiMinor [2] Uncertainty,

 orientationMajor [3] Orientation

}

-- TS 29.572 [24], clause 6.1.6.2.18

HorizontalVelocity ::= SEQUENCE

{

 hSpeed [1] HorizontalSpeed,

 bearing [2] Angle

}

-- TS 29.572 [24], clause 6.1.6.2.19

HorizontalWithVerticalVelocity ::= SEQUENCE

{

 hSpeed [1] HorizontalSpeed,

 bearing [2] Angle,

 vSpeed [3] VerticalSpeed,

 vDirection [4] VerticalDirection

}

-- TS 29.572 [24], clause 6.1.6.2.20

HorizontalVelocityWithUncertainty ::= SEQUENCE

{

 hSpeed [1] HorizontalSpeed,

 bearing [2] Angle,

 uncertainty [3] SpeedUncertainty

}

-- TS 29.572 [24], clause 6.1.6.2.21

HorizontalWithVerticalVelocityAndUncertainty ::= SEQUENCE

{

 hSpeed [1] HorizontalSpeed,

 bearing [2] Angle,

 vSpeed [3] VerticalSpeed,

 vDirection [4] VerticalDirection,

 hUncertainty [5] SpeedUncertainty,

 vUncertainty [6] SpeedUncertainty

}

-- The following types are described in TS 29.572 [24], table 6.1.6.3.2-1

Altitude ::= UTF8String

Angle ::= INTEGER (0..360)

Uncertainty ::= INTEGER (0..127)

Orientation ::= INTEGER (0..180)

Confidence ::= INTEGER (0..100)

InnerRadius ::= INTEGER (0..65535)

AgeOfLocationEstimate ::= INTEGER (0..32767)

HorizontalSpeed ::= UTF8String

VerticalSpeed ::= UTF8String

SpeedUncertainty ::= UTF8String

BarometricPressure ::= INTEGER (30000..155000)

-- TS 29.572 [24], clause 6.1.6.3.13

VerticalDirection ::= ENUMERATED

{

 upward(1),

 downward(2)

}

-- TS 29.572 [24], clause 6.1.6.3.6

PositioningMethod ::= ENUMERATED

{

 cellID(1),

 eCID(2),

 oTDOA(3),

 barometricPressure(4),

 wLAN(5),

 bluetooth(6),

 mBS(7),

 motionSensor(8),

 dLTDOA(9),

 dLAOD(10),

 multiRTT(11),

 nRECID(12),

 uLTDOA(13),

 uLAOA(14),

 networkSpecific(15)

}

-- TS 29.572 [24], clause 6.1.6.3.7

PositioningMode ::= ENUMERATED

{

 uEBased(1),

 uEAssisted(2),

 conventional(3)

}

-- TS 29.572 [24], clause 6.1.6.3.8

GNSSID ::= ENUMERATED

{

 gPS(1),

 galileo(2),

 sBAS(3),

 modernizedGPS(4),

 qZSS(5),

 gLONASS(6),

 bDS(7),

 nAVIC(8)

}

-- TS 29.572 [24], clause 6.1.6.3.9

Usage ::= ENUMERATED

{

 unsuccess(1),

 successResultsNotUsed(2),

 successResultsUsedToVerifyLocation(3),

 successResultsUsedToGenerateLocation(4),

 successMethodNotDetermined(5)

}

-- TS 29.571 [17], table 5.2.2-1

TimeZone ::= UTF8String

-- Open Geospatial Consortium URN [35]

OGCURN ::= UTF8String

-- TS 29.572 [24], clause 6.1.6.2.15

MethodCode ::= INTEGER (16..31)

END

End of changes