**3GPP TSG-SA3 Meeting #79-LI-e-b *s3i200713***

**Online, , 10th Nov 2020 - 12th Nov 2020**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **33.128** | **CR** | **0143** | **rev** | **1** | **Current version:** | **16.4.0** |  |
|  | | | | | | | | |
| *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)*.* | | | | | | | | |
|  | | | | | | | | |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Proposed change affects:*** | UICC apps |  | ME |  | Radio Access Network |  | Core Network | **X** |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | | | | | |
| ***Title:*** | Missing session establishment time in SMF IRI | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | SA3-LI (National Technical Assistance) | | | | | | | | | |
| ***Source to TSG:*** | SA3 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | LI15 | | | | |  | ***Date:*** | | | 2020-11-03 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | A |  | | | | | ***Release:*** | | | Rel-16 |
|  | *Use one of the following categories:* ***F*** *(correction)* ***A*** *(mirror corresponding to a change in an earlier release)* ***B*** *(addition of feature),* ***C*** *(functional modification of feature)* ***D*** *(editorial modification)*  Detailed explanations of the above categories can be found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | | | | | | | | *Use one of the following releases: Rel-8 (Release 8) Rel-9 (Release 9) Rel-10 (Release 10) Rel-11 (Release 11) … Rel-15 (Release 15) Rel-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | The SMFStartOfInterceptionWithEstablishedPDUSession record does not contain an indication of when the session was established. Since the IRI message will, by definition, be generated *after* the session establishment has occurred, this means that the LEA has no way of determining when the session started. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | A timeOfSessionEstablishment field is added. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Incomplete information delivered to the LEA. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 6.2.3.2.5, 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:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

FIRST CHANGE

##### 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 5.12.2.2. | 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).

SECOND CHANGE

Annex A (normative): Structure of both the Internal and External Interfaces

TS33128Payloads

{itu-t(0) identified-organization(4) etsi(0) securityDomain(2) lawfulIntercept(2) threeGPP(4) ts33128(19) r16(16) version4(4)}

DEFINITIONS IMPLICIT TAGS EXTENSIBILITY IMPLIED ::=

BEGIN

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

-- Relative OIDs

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

tS33128PayloadsOID RELATIVE-OID ::= {threeGPP(4) ts33128(19) r16(16) version4(4)}

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

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

}

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

-- 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

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

}

}

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

}

-- 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

}

-- 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

}

-- 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

}

-- 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

}

-- 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

}

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

-- 5G SMF parameters

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

SMFFailedProcedureType ::= ENUMERATED

{

pDUSessionEstablishment(1),

pDUSessionModification(2),

pDUSessionRelease(3)

}

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

-- 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

}

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

-- 5G UDM parameters

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

UDMServingSystemMethod ::= ENUMERATED

{

amf3GPPAccessRegistration(0),

amfNon3GPPAccessRegistration(1),

unknown(2)

}

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

-- 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,

transferStatus [4] SMSTransferStatus,

otherMessage [5] SMSOtherMessageIndication OPTIONAL,

location [6] Location OPTIONAL,

peerNFAddress [7] SMSNFAddress OPTIONAL,

peerNFType [8] SMSNFType OPTIONAL,

sMSTPDUData [9] SMSTPDUData OPTIONAL

}

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

-- 5G SMSF parameters

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

SMSParty ::= SEQUENCE

{

sUPI [1] SUPI OPTIONAL,

pEI [2] PEI OPTIONAL,

gPSI [3] GPSI 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)

}

SMSTPDUData ::= CHOICE

{

sMSTPDU [1] SMSTPDU

}

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

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

-- 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)

}

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

-- 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,

ageOfLocatonInfo [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,

ageOfLocatonInfo [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

}

-- 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

}

-- 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),

barometricPresure(4),

wLAN(5),

bluetooth(6),

mBS(7),

motionSensor(8)

}

-- 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)

}

-- 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

END

END OF CHANGES