**3GPP TSG-SA5 Meeting #154 *S5-241863***

**Changsha, CHINA, 15 Apr - 19 Apr 2024**  Revision of S5-241632

|  |
| --- |
| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
|  |
|  | **32.298** | **CR** | **1000** | **rev** | **1** | **Current version:** | **18.5.0** |  |
|  |
| *For* [***HELP***](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:***  | Rel-18 CR 32.298 Add the triggers in CHF CDR |
|  |  |
| ***Source to WG:*** | Huawei |
| ***Source to TSG:*** | S5 |
|  |  |
| ***Work item code:*** | TEI18 |  | ***Date:*** | 2024-04-17 |
|  |  |  |  |  |
| ***Category:*** | F |  | ***Release:*** | Rel-18 |
|  | *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: | Based on the conclusion of S5-241623, the service description of Trigger in the CHF CDR for NSACF charging, IMS charging and SMF charging should be specified in the CHF CDR. |
|  |  |
| ***Summary of change:*** | Add the NSACF triggers and IMS triggers in the CHF CDR. |
|  |  |
| ***Consequences if not approved:*** | The CHF CDRs is not aligned with service specifactions in the stage 2. |
|  |  |
| ***Clauses affected:*** | 5.1.5.0,5.2.5.2 |
|  |  |
|  | **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** |

#### 5.1.5.0 CHF record (CHF-CDR)

If enabled, CHF records shall be produced for chargeable events, with or without quota management. A CHF-CDR shall be opened when the CHF receives Charging Data Request [Initial].

As an alternative to the default CHF behaviour, the "Individual Partial record" mechanism can be used based on Operator's policy configured in the CHF. In this case a new CDR shall be opened for each Charging Data Request [Initial, Update, Termination], charging information shall be added and the CDR shall then be closed. The Sequence Number will be incremented for each Charging Data Request [Initial, Update, Termination] received by the CHF.

 The generic fields in the record are specified in table 5.1.5.0.1. The NF specific parts will be concatenated to this e.g. the PDU Session Information, PDU Container Information and Roaming QBC Information are concatenated for the SMF.

Table 5.1.5.0.1: CHF record (CHF-CDR)

|  |  |  |
| --- | --- | --- |
| Field | Category | Description |
| Record Type  | M | CHF record, clause 5.1.5.1.10. |
| Recording Network Function ID | OM | This field holds the name of the recording entity, clause 5.1.5.1.11. |
| Charging Session Identifier | OC | This field holds the Session Identifier described in TS 32.290 [57]. |
| Subscriber Identifier | OM | This field holds the 5G Subscription Permanent Identifier (SUPI), clause 5.1.5.1.13. |
| Tenant Identifier | OM | This field holds the tenant identifier |
| MnS Consumer Identifier | OM | This fields holds the identifier of the MnS Consumer. |
| NF Consumer Information | M | This field holds the information of the NF consumer of the charging service, clause 5.1.5.1.6. |
| NF Functionality | M | This field holds the type of functionality the NF provides. |
| NF Name | OC | This field holds the name of the NF used. |
| NF Address | OC | This field holds the IP Address of the NF used. |
| NF PLMN ID | OC | This field holds the PLMN identifier (MCC MNC) of the NF. |
| Invocation Timestamp | OM | This field holds the timestamp of the charging service invocation, clause 5.1.5.1.19. |
| Charging Identifier | OM | Charging identifier for correlation between different records. Only applicable if not available in the service specific information. |
| Triggers | OC | This field holds the triggers that are common to all Multiple Unit Usage. Can be the same as in Used Unit Container. |
| SMF Triggers | OC | This field holds the 5G data connectivity specific triggers described in TS 32.255 [15]. |
| List of Multiple Unit Usage | OC | This field holds the parameters for the unit reporting. It may have multiple occurrences, clause 5.1.5.1.3. |
| Rating Group | M | This filed holds the rating group, clause 5.1.5.1.7. |
| Used Unit Container | OC | This field holds the used units and information connected to the reported units, clause 5.1.5.1.14. |
| Service Identifier | OC | This field holds the Service Identifier. |
| Quota management Indicator | OC | This field holds an indicator on whether the reported used units are with or without quota management control. If the field is not present, it indicates the used unit is without quota management applied.  |
| Local Sequence Number | OM | This field holds the container sequence number. |
| Time | OC | This field holds the amount of used time. |
| Uplink Volume  | OC | This field holds the amount of used volume in uplink direction. |
| Downlink Volume  | OC | This field holds the amount of used volume in downlink direction. |
| Total Volume | OC | This field holds the amount of used volume in both uplink and downlink directions. |
| Service Specific Units | OC | This field holds the amount of used service specific units. |
| Event Time Stamp | OC | This field holds the timestamps of the event reported in the Service Specific Units, if the reported units are event based.  |
| Rating Indicator | OC | This field indicates if the units have been rated or not. |
| Triggers | OC | This field holds the triggers that caused the Used Unit Container to be reported, independently on if they are PDU Session or RG level triggers. |
| SMF Triggers | OC | This field holds the 5G data connectivity specific triggers described in TS 32.255 [15]. |
| IMS Triggers | OC | This field holds the IMS specific triggers described in TS 32.260 [20]. |
| MB-SMF Triggers | OC | This field holds the 5G Multicast-broadcast Services related triggers described in TS 32.279 [39]. |
| Trigger Time Stamp | OC | This field holds the timestamp of the trigger. |
| PDU Container Information | OC | This field holds the 5G data connectivity specific information described in TS 32.255 [15]. |
| NSPA Container Information | OC | This field holds the network slice performance and analytics container specific information described in TS 28.201 [151]. |
| PC5 Container Information | OC | This field holds the PC5 container information |
| MBS Container Information | OC | This field holds the MBS container information |
| Allocated Unit  | OC | This field holds the Allocated Unit. |
| Quota management Indicator | OC | This field holds an indicator on whether the reported allocated unit are with or without quota management control. If the field is not present, it indicates the allocated unit without quota management applied. |
| Triggers | OC | This field holds the triggers that caused the Allocated unit Container to be reported. |
| NSACF Triggers | OC | This field holds the Network slice admission control Charging specific triggers described in TS 28.203 [72]. |
| Trigger Timestamp | OC | This field holds the timestamp of the trigger. |
| Local Sequence Number  | OM | This field holds the container sequence number. |
| NSAC Container Information | OC | This field holds the Network Slice Admission Control specific units in use described in TS 28.203 [72]. |
| UPF ID | OC | This field holds the UPF identifier used to identify the UPF when reporting the usage for the UPF. |
| Record Opening Time | OC | This field contains the time stamp when the record is opened, clause 5.1.5.1.8. |
| Duration | M | This field holds the duration of this record, clause 5.1.5.1.3. |
| Record Sequence Number | C | Partial record sequence number, clause 5.1.5.1.9. |
| Cause for Record Closing  | M | The reason for the release of the record, clause 5.1.5.1.2. |
| Local Record Sequence Number | OM | This field holds consecutive record number, described in clause 5.1.5.1.5. The number is allocated sequentially including all CDR types. |
| Record Extensions | OC | A set of network operator/manufacturer specific extensions to the record, clause 5.1.5.1.12.  |
| Service Specification Information | OC | Identifies service specific document that applies to the request, clause 5.1.5.1.16. |
| PDU Session Charging Information | OM | This field holds the 5G data connectivity specific information described in TS 32.255 [15] |
| Roaming QBC Information | OM | This field holds the roaming 5G data connectivity specific information described in TS 32.255 [15] |
| SMS Charging Information | OC | This field holds the SMS specific information described in TS 32.274 [34]. |
| Registration Charging Information | OM | This field holds the 5G registration specific information described in TS 32.256 [16]. |
| N2 connection charging Information | OM | This field holds the N2 connection specific information described in TS 32.256 [16]. |
| Location reporting charging Information | OM | This field holds the Location reporting specific information described in TS 32.256 [16]. |
| NEF API Charging Information | OM | This field holds the NEF API specific information described in TS 32.254 [14]. |
| NSPA Charging Information | OM | This field holds the performance and analytics specific information described in TS 28.201 [151]. |
| NSM charging Information | OM | This field holds the Network Slice Management (NSM) specific information described in TS 28.202 [71]. |
| IMS Charging Information | OM | This field holds the IMS specific information described in TS 32.260 [20]. |
| ProSe charging Information | OM | This field holds the ProSe specific information described in TS 32.277 [37]. |
| Edge Enabling Infrastructure Resource Usage Charging Information | OM | This field holds the Edge Enabling Infrastructure Resource Usage Charging Information described in TS 32.257 [17]. |
| EAS Deployment Charging Information | OM | This field holds the EAS Deployment Charging Information described in TS 32.257 [17]. |
| Direct Edge Enabling Service Charging Information | OM | This field holds the Direct Edge Enabling Service Charging Information described in TS 32.257 [17]. |
| Exposed Edge Enabling Service Charging Information | OM | This field holds the Exposed Edge Enabling Service Charging Information described in TS 32.257 [17]. |
| EAS ID | OC | This field holds the EAS ID described in TS 32.257 [17]. |
| EDN ID | OC | This field holds the DN of EdgeDataNetwork MOI described in TS 32.257 [17]. |
| EAS Provider Identifier | OC | This field holds the identifier of the ASP that provides the EAS described in TS 32.257 [17]. |
| NSACF Charging Information | OC | This field holds the Network slice admission control Charging Information described in TS 28.203 [72]. |
| TSN Charging Information | OM | This field holds the time sensitive networking charging information described in TS 32.282 [43]. |
| MBS Session charging Information | OC | This field holds the MBS Session specific information described in TS 32.279 [39]. |
| NSSAA Charging Information | OC | This field holds the Network slice-specific authentication and authorization Charging Information described in TS 28.204 [73]. |

|  |
| --- |
| **Next change** |

### 5.2.5 Charging Function domain CDRs

#### 5.2.5.1 General

This subclause contains the syntax definitions of the CDRs for the CHF.

#### 5.2.5.2 CHF CDRs

This subclause contains the abstract syntax definitions that are specific to the CHF CDR types defined in this document.

.$CHFChargingDataTypes {itu-t (0) identified-organization (4) etsi (0) mobileDomain (0) charging (5) chfChargingDataTypes (15) asn1Module (0) version1 (0)}

DEFINITIONS IMPLICIT TAGS ::=

BEGIN

-- EXPORTS everything

IMPORTS

CallDuration,

CauseForRecClosing,

ChargingID,

DataVolumeOctets,

Diagnostics,

Ecgi,

EnhancedDiagnostics,

DynamicAddressFlag,

InvolvedParty,

IPAddress,

LocalSequenceNumber,

ManagementExtensions,

MessageClass,

MessageReference,

MSCAddress,

MSISDN,

MSTimeZone,

Ncgi,

Nid,

NodeAddress,

PLMN-Id,

PriorityType,

PSCellInformation,

RANNASCause,

RecordType,

ServiceSpecificInfo,

Session-Id,

SubscriberEquipmentNumber,

SubscriptionID,

ThreeGPPPSDataOffStatus,

TimeStamp,

TMGI

FROM GenericChargingDataTypes {itu-t (0) identified-organization (4) etsi(0) mobileDomain (0) charging (5) genericChargingDataTypes (0) asn1Module (0) version2 (1)}

AddressString,

IMSI

FROM MAP-CommonDataTypes {itu-t identified-organization (4) etsi (0) mobileDomain (0) gsm-Network (1) modules (3) map-CommonDataTypes (18) version18 (18) }

CalleePartyInformation,

ChargingCharacteristics,

ChargingRuleBaseName,

ChChSelectionMode,

EventBasedChargingInformation,

PresenceReportingAreaInfo,

RatingGroupId,

ServiceIdentifier

FROM GPRSChargingDataTypes {itu-t (0) identified-organization (4) etsi (0) mobileDomain (0) charging (5) gprsChargingDataTypes (2) asn1Module (0) version2 (1)}

OriginatorInfo,

RecipientInfo,

SMAddressInfo,

SMMessageType,

SMSResult,

SMSStatus

FROM SMSChargingDataTypes {itu-t (0) identified-organization (4) etsi(0) mobileDomain (0) charging (5) smsChargingDataTypes (10) asn1Module (0) version2 (1)}

APIDirection

FROM ExposureFunctionAPIChargingDataTypes {itu-t (0) identified-organization (4) etsi (0) mobileDomain (0) charging (5) exposureFunctionAPIChargingDataTypes (14) asn1Module (0) version2 (1)}

SupplService

FROM MMTelChargingDataTypes {itu-t (0) identified-organization (4) etsi(0) mobileDomain (0) charging (5) mMTelChargingDataTypes (9) asn1Module (0) version2 (1)}

AccessNetworkInfoChange,

AccessTransferInformation,

ApplicationServersInformation,

CalledIdentityChange,

CarrierSelectRouting,

Early-Media-Components-List,

FEIdentifierList,

IMS-Charging-Identifier,

IMSCommunicationServiceIdentifier,

InterOperatorIdentifiers,

ISUPCause,

ListOfInvolvedParties,

ListOfReasonHeader,

MessageBody,

NNI-Information,

NumberPortabilityRouting,

Role-of-Node,

S-CSCF-Information,

SDP-Media-Component,

ServedPartyIPAddress,

Service-Id,

SessionPriority,

SIP-Method,

TADIdentifier,

TransitIOILists,

TransmissionMedium,

TrunkGroupID

FROM IMSChargingDataTypes {itu-t (0) identified-organization (4) etsi(0) mobileDomain (0) charging (5) imsChargingDataTypes (4) asn1Module (0) version2 (1)}

AppSpecificData,

ProseFunctionality,

ProSeEventType,

ProSeUERole,

RangeClass,

ProximityAlertIndication,

ChangeOfProSeCondition,

CoverageInfo,

RadioParameterSetInfo,

TransmitterInfo

FROM ProSeChargingDataTypes {itu-t (0) identified-organization (4) etsi (0) mobileDomain (0) charging (5) proseChargingDataTypes (11) asn1Module (0) version2 (1)}

;

--

-- CHF RECORDS

--

CHFRecord ::= CHOICE

--

-- Record values 200..201 are specific

--

{

 chargingFunctionRecord [200] ChargingRecord

}

ChargingRecord ::= SET

{

 recordType [0] RecordType,

 recordingNetworkFunctionID [1] NetworkFunctionName,

 subscriberIdentifier [2] SubscriptionID OPTIONAL,

 nFunctionConsumerInformation [3] NetworkFunctionInformation,

 triggers [4] SEQUENCE OF Trigger OPTIONAL,

 listOfMultipleUnitUsage [5] SEQUENCE OF MultipleUnitUsage OPTIONAL,

 recordOpeningTime [6] TimeStamp,

 duration [7] CallDuration,

 recordSequenceNumber [8] INTEGER OPTIONAL,

 causeForRecClosing [9] CauseForRecClosing,

 diagnostics [10] Diagnostics OPTIONAL,

 localRecordSequenceNumber [11] LocalSequenceNumber OPTIONAL,

 recordExtensions [12] ManagementExtensions OPTIONAL,

 pDUSessionChargingInformation [13] PDUSessionChargingInformation OPTIONAL,

 roamingQBCInformation [14] RoamingQBCInformation OPTIONAL,

 sMSChargingInformation [15] SMSChargingInformation OPTIONAL,

 chargingSessionIdentifier [16] ChargingSessionIdentifier OPTIONAL,

 serviceSpecificationInformation [17] OCTET STRING OPTIONAL,

 exposureFunctionAPIInformation [18] ExposureFunctionAPIInformation OPTIONAL,

 registrationChargingInformation [19] RegistrationChargingInformation OPTIONAL,

 n2ConnectionChargingInformation [20] N2ConnectionChargingInformation OPTIONAL,

 locationReportingChargingInformation [21] LocationReportingChargingInformation OPTIONAL,

 incompleteCDRIndication [22] IncompleteCDRIndication OPTIONAL,

 tenantIdentifier [23] TenantIdentifier OPTIONAL,

 mnSConsumerIdentifier [24] MnSConsumerIdentifier OPTIONAL,

 nSMChargingInformation [25] NSMChargingInformation OPTIONAL,

 nSPAChargingInformation [26] NSPAChargingInformation OPTIONAL,

 chargingID [27] ChargingID OPTIONAL,

 iMSChargingInformation [28] IMSChargingInformation OPTIONAL,

 mMTelChargingInformation [29] MMTelChargingInformation OPTIONAL,

 edgeInfrastructureUsageChargingInformation [30] EdgeInfrastructureUsageChargingInformation OPTIONAL,

 eASDeploymentChargingInformation [31] EASDeploymentChargingInformation OPTIONAL,

 directEdgeEnablingServiceChargingInformation [32] ExposureFunctionAPIInformation OPTIONAL,

 exposedEdgeEnablingServiceChargingInformation [33] ExposureFunctionAPIInformation OPTIONAL,

 proseChargingInformation [34] ProseChargingInformation OPTIONAL,

 eASID [35] UTF8String OPTIONAL,

 eDNID [36] UTF8String OPTIONAL,

 eASProviderIdentifier [37] UTF8String OPTIONAL,

 mMSChargingInformation [38] MMSChargingInformation OPTIONAL,

 aMFIdentifier [39] AMFID OPTIONAL,

 invocationTimestamp [40] TimeStamp OPTIONAL,

 nSACFChargingInformation [41] NSACFChargingInformation OPTIONAL,

 tSNChargingInformation [42] TSNChargingInformation OPTIONAL,

 mBSSessionChargingInformation [43] MbsSessionChargingInformation OPTIONAL,

 interCHFInformation [44] InterCHFInformation OPTIONAL,

 nSSAAChargingInformation [45] NSSAAChargingInformation OPTIONAL

}

--

-- PDU Session Charging Information

--

PDUSessionChargingInformation ::= SET

{

 pDUSessionChargingID [0] ChargingID,

 userIdentifier [1] InvolvedParty OPTIONAL,

 userEquipmentInfo [2] SubscriberEquipmentNumber OPTIONAL,

 userLocationInformation [3] UserLocationInformation OPTIONAL,

 userRoamerInOut [4] RoamerInOut OPTIONAL,

 presenceReportingAreaInfo [5] PresenceReportingAreaInfo OPTIONAL,

 pDUSessionId [6] PDUSessionId,

 networkSliceInstanceID [7] SingleNSSAI OPTIONAL,

 pDUType [8] PDUSessionType OPTIONAL,

 sSCMode [9] SSCMode OPTIONAL,

 sUPIPLMNIdentifier [10] PLMN-Id OPTIONAL,

 servingNetworkFunctionID [11] SEQUENCE OF ServingNetworkFunctionID OPTIONAL,

 rATType [12] RATType OPTIONAL,

 dataNetworkNameIdentifier [13] DataNetworkNameIdentifier OPTIONAL,

 pDUAddress [14] PDUAddress OPTIONAL,

 authorizedQoSInformation [15] AuthorizedQoSInformation OPTIONAL,

 uETimeZone [16] MSTimeZone OPTIONAL,

 pDUSessionstartTime [17] TimeStamp OPTIONAL,

 pDUSessionstopTime [18] TimeStamp OPTIONAL,

 diagnostics [19] Diagnostics OPTIONAL,

 chargingCharacteristics [20] ChargingCharacteristics OPTIONAL,

 chChSelectionMode [21] ChChSelectionMode OPTIONAL,

 threeGPPPSDataOffStatus  [22] ThreeGPPPSDataOffStatus OPTIONAL,

 rANSecondaryRATUsageReport [23] SEQUENCE OF NGRANSecondaryRATUsageReport OPTIONAL,

 subscribedQoSInformation [24] SubscribedQoSInformation OPTIONAL,

 authorizedSessionAMBR [25] SessionAMBR OPTIONAL,

 subscribedSessionAMBR [26] SessionAMBR OPTIONAL,

 servingCNPLMNID [27] PLMN-Id OPTIONAL,

 sUPIunauthenticatedFlag [28] NULL OPTIONAL,

 dnnSelectionMode [29] DNNSelectionMode OPTIONAL,

 homeProvidedChargingID [30] ChargingID OPTIONAL,

 mAPDUNonThreeGPPUserLocationInfo [31] UserLocationInformation OPTIONAL,

 mAPDUNonThreeGPPRATType [32] RATType OPTIONAL,

 mAPDUSessionInformation [33] MAPDUSessionInformation OPTIONAL,

 enhancedDiagnostics [34] EnhancedDiagnostics5G OPTIONAL,

 userLocationInformationASN1  [35] UserLocationInformationStructured OPTIONAL,

 mAPDUNonThreeGPPUserLocationInfoASN1 [36] UserLocationInformationStructured OPTIONAL,

 userLocationTime [37] TimeStamp OPTIONAL, -- not to be used

-- user location info time is included under UserLocationInformation

 mAPDUNonThreeGPPUserLocationTime [38] TimeStamp OPTIONAL,

 listOfPresenceReportingAreaInformation [39] SEQUENCE OF PresenceReportingAreaInfo OPTIONAL,

 redundantTransmissionType [40] RedundantTransmissionType OPTIONAL,

 pDUSessionPairID [41] PDUSessionPairID OPTIONAL,

 fiveGLANTypeService [42] FiveGLANTypeService OPTIONAL,

 cpCIoTOptimisationIndicator [43] TimeStamp OPTIONAL,

 fiveGSControlPlaneOnlyIndicator [44] QosMonitoringReport OPTIONAL,

 smfChargingID [45] UTF8String OPTIONAL,

 smfHomeProvidedChargingID [46] UTF8String OPTIONAL,

 sNPNInformation [47] SNPNInformation OPTIONAL,

 hPLMNSNSSAI [48] SingleNSSAI OPTIONAL,

 iMSSessionInformation [49] IMSSessionInformation OPTIONAL,

 alternativeSNSSAI [50] SingleNSSAI OPTIONAL,

 fiveGSBridgeInformation [51] FiveGSBridgeInformation OPTIONAL,

 fiveGMulticastService [52] FiveGMulticastService OPTIONAL,

 satelliteAccessIndicator [53] BOOLEAN OPTIONAL,

 satelliteBackhaulInformation [54] SatelliteBackhaulInformation OPTIONAL

}

--

-- Roaming QBC Information

--

RoamingQBCInformation ::= SET

{

 multipleQFIcontainer [0] SEQUENCE OF MultipleQFIContainer OPTIONAL,

 uPFID [1] NetworkFunctionName OPTIONAL,

 -- included for backwards compatibility and

 -- can be included based on operators requirement

 roamingChargingProfile [2] RoamingChargingProfile OPTIONAL

}

--

-- SMS Charging Information

--

SMSChargingInformation ::= SET

{

 originatorInfo [1] OriginatorInfo OPTIONAL,

 recipientInfos [2] SEQUENCE OF RecipientInfo OPTIONAL,

 userEquipmentInfo [3] SubscriberEquipmentNumber OPTIONAL,

 userLocationInformation [4] UserLocationInformation OPTIONAL,

 uETimeZone [5] MSTimeZone OPTIONAL,

 rATType [6] RATType OPTIONAL,

 sMSCAddress [7] AddressString OPTIONAL,

 eventtimestamp [8] TimeStamp,

-- 9 to 19 is for future use

 sMDataCodingScheme [20] INTEGER OPTIONAL,

 sMMessageType [21] SMMessageType OPTIONAL,

 sMReplyPathRequested [22] SMReplyPathRequested OPTIONAL,

 sMUserDataHeader [23] OCTET STRING OPTIONAL,

 sMSStatus [24] SMSStatus OPTIONAL,

 sMDischargeTime [25] TimeStamp OPTIONAL,

 sMTotalNumber [26] INTEGER OPTIONAL,

 sMServiceType [27] SMServiceType OPTIONAL,

 sMSequenceNumber [28] INTEGER OPTIONAL,

 sMSResult [29] SMSResult OPTIONAL,

 submissionTime [30] TimeStamp OPTIONAL,

 sMPriority [31] PriorityType OPTIONAL,

 messageReference [32] MessageReference OPTIONAL,

 messageSize [33] INTEGER OPTIONAL,

 messageClass [34] MessageClass OPTIONAL,

 sMdeliveryReportRequested [35] SMdeliveryReportRequested OPTIONAL,

 messageClassTokenText [36] UTF8String OPTIONAL,

 userRoamerInOut [37] RoamerInOut OPTIONAL,

 userLocationInformationASN1 [38] UserLocationInformationStructured OPTIONAL

}

--

-- Exposure Function API Information corresponds to NEF API Charging information

--

ExposureFunctionAPIInformation ::= SET

{

 groupIdentifier [0] UTF8String OPTIONAL,

-- This UTF8String is based on the string specified in TS 29.571 [249]

-- The string may also be based on AddressString.

 aPIDirection [1] APIDirection OPTIONAL,

 aPITargetNetworkFunction [2] NetworkFunctionInformation OPTIONAL,

 aPIResultCode [3] APIResultCode OPTIONAL,

 aPIName [4] IA5String,

 aPIReference [5] IA5String OPTIONAL,

 aPIContent [6] OCTET STRING OPTIONAL,

 externalIndividualIdentifier [7] InvolvedParty OPTIONAL,

 externalGroupIdentifier [8] ExternalGroupIdentifier OPTIONAL,

 internalGroupIdentifier [9] InternalGroupIdentifier OPTIONAL,

 internalIndividualIdentifier [10] SubscriptionID OPTIONAL,

 aPIOperation [11] APIOperation OPTIONAL,

 externalIndividualIdList [12] SEQUENCE OF ExternalGroupIdentifier OPTIONAL,

 internalIndividualIdList [13] SEQUENCE OF SubscriptionID OPTIONAL

}

--

-- Registration Charging Information

--

RegistrationChargingInformation ::= SET

{

 registrationMessagetype [0] RegistrationMessageType,

 userIdentifier [1] InvolvedParty OPTIONAL,

 userEquipmentInfo [2] SubscriberEquipmentNumber OPTIONAL,

 sUPIunauthenticatedFlag [3] NULL OPTIONAL,

 userRoamerInOut [4] RoamerInOut OPTIONAL,

 userLocationInformation [5] UserLocationInformation OPTIONAL,

 userLocationInfoTime [6] TimeStamp OPTIONAL, -- This field is not used

-- user location info time is included under UserLocationInformation

 uETimeZone [7] MSTimeZone OPTIONAL,

 rATType [8] RATType OPTIONAL,

 mICOModeIndication [9] MICOModeIndication OPTIONAL,

 smsIndication [10] SmsIndication OPTIONAL,

 taiList [11] SEQUENCE OF TAI OPTIONAL,

 serviceAreaRestriction [12] ServiceAreaRestriction OPTIONAL,

 requestedNSSAI [13] SEQUENCE OF SingleNSSAI OPTIONAL,

 allowedNSSAI [14] SEQUENCE OF SingleNSSAI OPTIONAL,

 rejectedNSSAI [15] SEQUENCE OF SingleNSSAI OPTIONAL,

 pSCellInformation [16] PSCellInformation OPTIONAL,

 fiveGMMCapability [17] FiveGMMCapability OPTIONAL,

 nSSAIMapList [18] SEQUENCE OF NSSAIMap OPTIONAL,

 amfUeNgapId [19] AmfUeNgapId OPTIONAL,

 ranUeNgapId [20] RanUeNgapId OPTIONAL,

 ranNodeId [21] GlobalRanNodeId OPTIONAL,

 userLocationInformationASN1 [22] UserLocationInformationStructured OPTIONAL,

 sNPNID [23] PlmnIdNid OPTIONAL,

 aMFIdentifier [24] AMFID OPTIONAL,

 cAGIDList [25] SEQUENCE OF CagId OPTIONAL,

 alternativeNSSAIMap [26] SEQUENCE OF AlternativeNSSAIMap OPTIONAL,

 satelliteAccessIndicator [27] BOOLEAN OPTIONAL

}

--

-- N2 connection charging Information

--

N2ConnectionChargingInformation ::= SET

{

 n2ConnectionMessageType [0] N2ConnectionMessageType,

 userIdentifier [1] InvolvedParty OPTIONAL,

 userEquipmentInfo [2] SubscriberEquipmentNumber OPTIONAL,

 sUPIunauthenticatedFlag [3] NULL OPTIONAL,

 userRoamerInOut [4] RoamerInOut OPTIONAL,

 userLocationInformation [5] UserLocationInformation OPTIONAL,

 userLocationInfoTime [6] TimeStamp OPTIONAL, -- This field is not used

-- user location info time is included under UserLocationInformation

 uETimeZone [7] MSTimeZone OPTIONAL,

 rATType [8] RATType OPTIONAL,

 ranUeNgapId [9] RanUeNgapId OPTIONAL,

 ranNodeId [10] GlobalRanNodeId OPTIONAL,

 restrictedRatList [11] SEQUENCE OF RATType OPTIONAL,

 forbiddenAreaList [12] SEQUENCE OF Area OPTIONAL,

 serviceAreaRestriction [13] ServiceAreaRestriction OPTIONAL,

 restrictedCnList [14] SEQUENCE OF CoreNetworkType OPTIONAL,

 allowedNSSAI [15] SEQUENCE OF SingleNSSAI OPTIONAL,

 rrcEstablishmentCause [16] RrcEstablishmentCause OPTIONAL,

 pSCellInformation [17] PSCellInformation OPTIONAL,

 amfUeNgapId [18] AmfUeNgapId OPTIONAL,

 userLocationInformationASN1 [19] UserLocationInformationStructured OPTIONAL,

 nSSAIMapList [20] SEQUENCE OF NSSAIMap OPTIONAL,

 aMFIdentifier [21] AMFID OPTIONAL,

 satelliteAccessIndicator [22] BOOLEAN OPTIONAL

}

--

-- Location reporting charging Information

--

LocationReportingChargingInformation ::= SET

{

 locationReportingMessagetype [0] LocationReportingMessageType,

 userIdentifier [1] InvolvedParty OPTIONAL,

 userEquipmentInfo [2] SubscriberEquipmentNumber OPTIONAL,

 sUPIunauthenticatedFlag [3] NULL OPTIONAL,

 userRoamerInOut [4] RoamerInOut OPTIONAL,

 userLocationInformation [5] UserLocationInformation OPTIONAL,

 userLocationInfoTime [6] TimeStamp OPTIONAL, -- This field is not used

-- user location info time is included under UserLocationInformation

 uETimeZone [7] MSTimeZone OPTIONAL,

 presenceReportingAreaInfo [8] PresenceReportingAreaInfo OPTIONAL,

 rATType [9] RATType OPTIONAL,

 pSCellInformation [10] PSCellInformation OPTIONAL,

 userLocationInformationASN1 [11] UserLocationInformationStructured OPTIONAL,

 listOfPresenceReportingAreaInformation [12] SEQUENCE OF PresenceReportingAreaInfo OPTIONAL,

 aMFIdentifier [13] AMFID OPTIONAL,

 satelliteAccessIndicator [14] BOOLEAN OPTIONAL

}

--

-- Network Slice Performance and Analytics charging Information

--

NSPAChargingInformation ::= SET

{

 singelNSSAI [0] SingleNSSAI

}

--

-- NSM charging Information

--

--

-- See TS 28.541 [254] for more information

--

NSMChargingInformation ::= SET

{

 managementOperation [0] ManagementOperation OPTIONAL,

 iDnetworkSliceInstance [1] OCTET STRING OPTIONAL,

 listOfserviceProfileChargingInformation [2] SEQUENCE OF ServiceProfileChargingInformation OPTIONAL,

 managementOperationStatus [3] ManagementOperationStatus OPTIONAL,

 operationalState [4] OperationalState OPTIONAL,

 administrativeState [5] AdministrativeState OPTIONAL

}

--

-- MMTel charging Information

--

--

-- See TS 32.275 [35] for more information

--

MMTelChargingInformation ::= SET

{

 supplementaryServices [0] SEQUENCE OF SupplService OPTIONAL

}

--

-- IMS charging Information

--

--

-- See TS 32.260 [20] for more information

--

IMSChargingInformation ::= SET

{

 eventType [0] SIPEventType OPTIONAL,

 iMSNodeFunctionality [1] IMSNodeFunctionality OPTIONAL,

 roleOfNode [2] Role-of-Node OPTIONAL,

 userIdentifier [3] InvolvedParty OPTIONAL,

 userEquipmentInfo [4] SubscriberEquipmentNumber OPTIONAL,

 userLocationInfo [5] UserLocationInformation OPTIONAL,

 ueTimeZone [6] MSTimeZone OPTIONAL,

 threeGPPPSDataOffStatus [7] ThreeGPPPSDataOffStatus OPTIONAL,

 iSUPCause [8] ISUPCause OPTIONAL,

 controlPlaneAddress [9] NodeAddress OPTIONAL,

 vlrNumber [10] MSCAddress OPTIONAL,

 mscAddress [11] MSCAddress OPTIONAL,

 userSessionID [12] Session-Id OPTIONAL,

 outgoingSessionID [13] Session-Id OPTIONAL,

 sessionPriority [14] SessionPriority OPTIONAL,

 callingPartyAddresses [15] ListOfInvolvedParties OPTIONAL,

 calledPartyAddress [16] InvolvedParty OPTIONAL,

 numberPortabilityRouting [17] NumberPortabilityRouting OPTIONAL,

 carrierSelectRoutingInformation [18] CarrierSelectRouting OPTIONAL,

 alternateChargedPartyAddress [19] UTF8String OPTIONAL,

 requestedPartyAddresses [20] ListOfInvolvedParties OPTIONAL,

 calledAssertedIdentities [21] ListOfInvolvedParties OPTIONAL,

 calledIdentityChanges [22] SEQUENCE OF CalledIdentityChange OPTIONAL,

 associatedURIs [23] ListOfInvolvedParties OPTIONAL,

 timeStamps [24] TimeStamp OPTIONAL,

 applicationServerInformation [25] SEQUENCE OF ApplicationServersInformation OPTIONAL,

 interOperatorIdentifiers [26] SEQUENCE OF InterOperatorIdentifiers OPTIONAL,

 imsChargingIdentifier [27] IMS-Charging-Identifier OPTIONAL,

 relatedICID [28] IMS-Charging-Identifier OPTIONAL,

 relatedICIDGenerationNode [29] NodeAddress OPTIONAL,

 transitIOIList [30] TransitIOILists OPTIONAL,

 earlyMediaDescription [31] SEQUENCE OF Early-Media-Components-List OPTIONAL,

 sdpSessionDescription [32] SEQUENCE OF UTF8String OPTIONAL,

 sdpMediaComponent [33] SEQUENCE OF SDP-Media-Component OPTIONAL,

 servedPartyIPAddress [34] ServedPartyIPAddress OPTIONAL,

 serverCapabilities [35] S-CSCF-Information OPTIONAL,

 trunkGroupID [36] TrunkGroupID OPTIONAL,

 bearerService [37] TransmissionMedium OPTIONAL,

 imsServiceId [38] Service-Id OPTIONAL,

 messageBodies [39] SEQUENCE OF MessageBody OPTIONAL,

 accessNetworkInformation [40] SEQUENCE OF UTF8String OPTIONAL,

 additionalAccessNetworkInformation [41] UTF8String OPTIONAL,

 cellularNetworkInformation [42] UTF8String OPTIONAL,

 accessTransferInformation [43] SEQUENCE OF AccessTransferInformation OPTIONAL,

 accessNetworkInfoChange [44] SEQUENCE OF AccessNetworkInfoChange OPTIONAL,

 imsCommunicationServiceID [45] IMSCommunicationServiceIdentifier OPTIONAL,

 imsApplicationReferenceID [46] UTF8String OPTIONAL,

 causeCode [47] INTEGER OPTIONAL,

 reasonHeaders [48] ListOfReasonHeader OPTIONAL,

 initialIMSChargingIdentifier [49] IMS-Charging-Identifier OPTIONAL,

 nniInformation [50] SEQUENCE OF NNI-Information OPTIONAL,

 fromAddress [51] UTF8String OPTIONAL,

 imsEmergencyIndicator [52] NULL OPTIONAL,

 imsVisitedNetworkIdentifier [53] UTF8String OPTIONAL,

 sipRouteHeaderReceived [54] UTF8String OPTIONAL,

 sipRouteHeaderTransmitted [55] UTF8String OPTIONAL,

 tadIdentifier [56] TADIdentifier OPTIONAL,

 feIdentifierList [57] FEIdentifierList OPTIONAL

}

--

-- Edge Enabling Infrastructure Resource Usage Charging Information

--

EdgeInfrastructureUsageChargingInformation ::= SET

{

 meanVirtualCPUUsage [0] REAL OPTIONAL,

 meanVirtualMemoryUsage [1] REAL OPTIONAL,

 meanVirtualDiskUsage [2] REAL OPTIONAL,

 durationStartTime [3] TimeStamp OPTIONAL,

 durationEndTime [4] TimeStamp OPTIONAL,

 measuredInBytes [5] INTEGER OPTIONAL,

 measuredOutBytes [6] INTEGER OPTIONAL

}

--

-- EAS Deployment Charging Information

--

EASDeploymentChargingInformation ::= SET

{

 eASDeploymentRequirements [0] EASDeploymentRequirements OPTIONAL,

 lCMStartTime [1] TimeStamp,

 lCMEndTime [2] TimeStamp,

 lCMEventType [3] ManagementOperation OPTIONAL,

 satelliteBackhaulInformation [4] SatelliteBackhaulInformation OPTIONAL

}

--

-- Prose Charging Information--

--

-- See TS 32.277 [34] for more information

-- See clause 5.2.4.7 for ProSe CDR types definition

ProseChargingInformation ::= SET

{

 announcingPlmnID [0] PLMN-Id OPTIONAL,

 announcingUeHplmnIdentifier [1] PLMN-Id OPTIONAL,

 announcingUeVplmnIdentifier [2] PLMN-Id OPTIONAL,

 monitoringUeHplmnIdentifier [3] PLMN-Id OPTIONAL,

 monitoringUeVplmnIdentifier [4] PLMN-Id OPTIONAL,

 discovererUeHplmnIdentifier [5] PLMN-Id OPTIONAL,

 discovererUeVplmnIdentifier [6] PLMN-Id OPTIONAL,

 discovereeUeHplmnIdentifier [8] PLMN-Id OPTIONAL,

 discovereeUeVplmnIdentifier [9] PLMN-Id OPTIONAL,

 monitoredPlmnIdentifier [10] PLMN-Id OPTIONAL,

 proseApplicationID [11] UTF8String OPTIONAL,

 applicationID [12] UTF8String OPTIONAL,

 applicationSpecificDataList [13] SEQUENCE OF AppSpecificData,

 proseFunctionality [14] ProseFunctionality OPTIONAL,

 proseEventType [15] ProSeEventType OPTIONAL,

 directDiscoveryModel [16] UTF8String OPTIONAL,

 validityPeriod [17] INTEGER OPTIONAL,

 roleOfUE [18] ProSeUERole OPTIONAL,

 proseRequestTimestamp [19] TimeStamp OPTIONAL,

 pC3ProtocolCause [20] INTEGER OPTIONAL,

 monitoringUEIdentifier [21] SubscriptionID OPTIONAL,

 requestedPLMNIdentifier [22] PLMN-Id OPTIONAL,

 timeWindow [23] INTEGER OPTIONAL,

 rangeClass [24] RangeClass OPTIONAL,

 proximityAlertIndication [25] ProximityAlertIndication OPTIONAL,

 proximityAlertTimestamp [26] TimeStamp OPTIONAL,

 proximityCancellationTimestamp [27] TimeStamp OPTIONAL,

 relayIPAddress [28] IPAddress OPTIONAL,

 proseUEToNetworkRelayUEID [29] OCTET STRING OPTIONAL,

 proseDestinationLayer2ID [30] OCTET STRING OPTIONAL,

 pFIContainerInformation [31] SEQUENCE OF PFIContainerInformation OPTIONAL,

 transmissionDataContainer [32] SEQUENCE OF ChangeOfProSeCondition OPTIONAL,

 receptionDataContainer [33] SEQUENCE OF ChangeOfProSeCondition OPTIONAL

}

--

-- MMS Charging Information

--

MMSChargingInformation ::= SET

{

 mMOriginatorInfo [1] MMOriginatorInfo OPTIONAL,

 mMRecipientInfoList [2] SEQUENCE OF MMRecipientInfo OPTIONAL,

 userLocationInformation [3] UserLocationInformation OPTIONAL,

 uETimeZone [4] MSTimeZone OPTIONAL,

 rATType [5] RATType OPTIONAL,

 correlationInformation [6] UTF8String OPTIONAL,

 submissionTime [7] TimeStamp OPTIONAL,

 mMContentType [8] MMContentType OPTIONAL,

 mMPriority [9] PriorityType OPTIONAL,

 messageID [10] UTF8String OPTIONAL,

 messageType [11] UTF8String OPTIONAL,

 messageSize [12] INTEGER OPTIONAL,

 messageClass [13] UTF8String OPTIONAL,

 deliveryReportRequested [14] BOOLEAN OPTIONAL,

 readReplyReportRequested [15] BOOLEAN OPTIONAL,

 applicID [16] UTF8String OPTIONAL,

 replyApplicID [17] UTF8String OPTIONAL,

 auxApplicInfo [18] UTF8String OPTIONAL,

 contentClass [19] UTF8String OPTIONAL,

 dRMContent [20] BOOLEAN OPTIONAL,

 adaptations [21] BOOLEAN OPTIONAL,

 vasID [22] UTF8String OPTIONAL,

 vaspID [23] UTF8String OPTIONAL

}

--

-- NSACF Charging Information

--

NSACFChargingInformation ::= SET

{

 nSACFChargingIndicator [1] BOOLEAN OPTIONAL

}

--

-- TSN charging Information

-- See TS 32.282 [43] for more information

--

TSNChargingInformation ::= SET

{

 dNN [0] DataNetworkNameIdentifier OPTIONAL,

 sNSSAI [1] SingleNSSAI OPTIONAL,

 internalGroupIdentifier [2] InternalGroupIdentifier OPTIONAL,

 externalIndividualIdList [3] SEQUENCE OF InvolvedParty OPTIONAL,

 fiveGSBridgeInformation [4] FiveGSBridgeInformation OPTIONAL,

 tSNQoSInformation [5] TSNQoSInformation OPTIONAL,

 tSCAssistanceInformation [6] TSCAssistanceInformation OPTIONAL,

 timeSynchronizationInformation [7] TimeSynchronizationInformation OPTIONAL

}

--

-- MBS Session charging Information

--

MbsSessionChargingInformation ::= SET

{

 mBSSessionID [1] MbsSessionId,

 mBSServiceType [2] MbsServiceType,

 serviceArea [3] ServiceArea OPTIONAL,

 mBSStartTime [4] TimeStamp OPTIONAL,

 mBSStopTime [5] TimeStamp OPTIONAL,

 servingNetworkFunctionID [6] SEQUENCE OF ServingNetworkFunctionID OPTIONAL

}

--

-- Inter-CHF Information

--

--

-- See TS 32.255 [15] and TS 32.256 [16] for more information

--

InterCHFInformation ::= SET

{

 remoteCHFResource [0] UTF8String OPTIONAL,

 originalNFConsumerId [1] NetworkFunctionInformation OPTIONAL

}

--

-- NSSAA Charging Information

--

NSSAAChargingInformation ::= SET

{

 nSSAAMessageType [0] NSSAAMessageType,

 userIdentification [1] InvolvedParty OPTIONAL,

 aAAPAddress [2] NodeAddress OPTIONAL,

 aAASAddress [3] NodeAddress OPTIONAL,

 eAPIDResponse [4] EAPIDResponse OPTIONAL,

 eAPAuthStatus [5] EAPAuthStatus OPTIONAL,

 aMFIdentifier [6] AMFID OPTIONAL

}

--

-- CHF CHARGING TYPES

--

--

-- A

--

AFChargingID ::= UTF8String

--

-- See 3GPP TS 29.571 [249] for details.

--

AffinityAntiAffinity ::= SEQUENCE

{

 affinityEAS [0] SEQUENCE OF UTF8String OPTIONAL,

 antiAffinityEAS [1] SEQUENCE OF UTF8String OPTIONAL

}

AgeOfLocationInformation ::= INTEGER

AdministrativeState ::= ENUMERATED

{

 lOCKED (0),

 uNLOCKED (1),

 sHUTTINGDOWN (2)

}

AccessType ::= ENUMERATED

{

 threeGPPAccess (0),

 nonThreeGPPAccess (1)

}

AllocatedUnit ::= SEQUENCE

{

 quotaManagementIndicator [O] BOOLEAN OPTIONAL,

 triggers [1] SEQUENCE OF Trigger OPTIONAL,

 triggerTimeStamp [2] TimeStamp OPTIONAL,

 localSequenceNumber [3] LocalSequenceNumber OPTIONAL,

 nSACFContainerInformation [4] NSACFContainerInformation OPTIONAL

}

AllocationRetentionPriority ::= SEQUENCE

{

 priorityLevel [1] INTEGER,

 preemptionCapability [2] PreemptionCapability,

 preemptionVulnerability [3] PreemptionVulnerability

}

AlternativeNSSAIMap ::= SEQUENCE

{

 snssai [0] SingleNSSAI,

 alternativeSnssai [1] SingleNSSAI

}

AMFID ::= OCTET STRING (SIZE(3..6))

-- See subclause 2.10.1 of 3GPP TS 23.003 [7] for encoding.

-- Any byte following the 3 first shall be set to ”F”

AmfUeNgapId ::= INTEGER

APIOperation ::= SEQUENCE

{

 name [1] UTF8String,

 description [2] UTF8String

}

APIResultCode ::= INTEGER

--

-- See specific API for more information

--

Area ::= SEQUENCE

{

 tacs [0] SEQUENCE OF TAC OPTIONAL,

 areaCode [1] OCTET STRING OPTIONAL

}

ATSSSCapability ::= ENUMERATED

{

 aTSSS-LL (0),

 mPTCP-ATSS-LL (1),

 mPTCP-ATSS-LL-ASModeUL (2),

 mPTCP-ATSS-LL-ExSDModeUL (3),

 mPTCP-ATSS-LL-ASModeDLUL (4)

}

AuthorizedQoSInformation ::= SEQUENCE

--

-- See TS 32.291 [58] for more information

--

{

 fiveQi [1] INTEGER OPTIONAL,

 aRP [2] AllocationRetentionPriority OPTIONAL,

 priorityLevel [3] INTEGER OPTIONAL,

 averWindow [4] INTEGER OPTIONAL,

 maxDataBurstVol [5] INTEGER OPTIONAL

}

--

-- B

--

Bitrate ::= OCTET STRING

--

-- See 3GPP TS 29.571 [249] Bitrate data type.

--

--

-- C

--

CagId ::= OCTET STRING

--

-- See 3GPP TS 29.571 [249] for details

--

CellGlobalId ::= SEQUENCE

{

 plmnId [0] PLMN-Id,

 lac [1] Lac,

 cellId [2] CellId

}

CellId ::= UTF8String

--

-- See 3GPP TS 29.571 [249] for details

--

ChargingSessionIdentifier ::= OCTET STRING

-- See 3GPP TS 32.290 [57] for details.

ClockQuality ::= SEQUENCE

--

-- See 3GPP TS 29.571 [249] for details

--

{

 traceabilityToGnss [1] BOOLEAN OPTIONAL,

 traceabilityToUtc [2] BOOLEAN OPTIONAL,

 frequencyStability [3] INTEGER OPTIONAL,

 clockAccuracy [4] OCTET STRING (SIZE(2)) OPTIONAL

}

CoreNetworkType ::= ENUMERATED

{

 fiveGC (0),

 ePC (1)

}

--

-- D

--

DataNetworkNameIdentifier ::= IA5String (SIZE(1..63))

--

-- Network Identifier part of DNN in dot representation.

-- For example, if the complete DNN is 'apn1a.apn1b.apn1c.mnc022.mcc111.gprs'

-- The Identifier is 'apn1a.apn1b.apn1c' and is presented in this form in the CDR.

--

DelayToleranceIndicator ::= ENUMERATED

{

 dTSupported (0),

 dTNotSupported (1)

}

DNNSelectionMode ::= ENUMERATED

--

-- See Information Elements TS 29.502 [250] for more information

--

{

 uEorNetworkProvidedSubscriptionVerified (0),

 uEProvidedSubscriptionNotVerified (1),

 networkProvidedSubscriptionNotVerified (2)

}

--

-- E

--

EAPAuthStatus ::= ENUMERATED

{

 eAPSuccess (0),

 eAPFailure (1),

 pending (2)

}

EAPIDResponse ::= OCTET STRING

--

-- See 3GPP TS 28.538 [256] for details

--

EASDeploymentRequirements ::= SEQUENCE

{

 requiredEASservingLocation [0] ServingLocation OPTIONAL,

 softwareImageInfo [1] SoftwareImageInfo OPTIONAL,

 affinityAntiAffinity [2] AffinityAntiAffinity OPTIONAL,

 serviceContinuity [3] BOOLEAN OPTIONAL,

 virtualResource [4] VirtualResource OPTIONAL

}

--

-- See 3GPP TS 29.571 [249] for details

--

ENbId ::= UTF8String

--

-- See 3GPP TS 29.571 [249] for details

--

ExternalGroupIdentifier ::= UTF8String

--

-- See 3GPP TS 29.571 [249] for details

--

EstablishedConnectionInfo ::= SEQUENCE

{

 uPFIDs [0] SEQUENCE OF NetworkFunctionName OPTIONAL,

 ranNodeIDs [1] SEQUENCE OF GlobalRanNodeId OPTIONAL

}

EutraLocation ::= SEQUENCE

{

 tai [0] TAI OPTIONAL,

 ecgi [1] Ecgi OPTIONAL,

 ageOfLocationInformation [3] AgeOfLocationInformation OPTIONAL,

 ueLocationTimestamp [4] TimeStamp OPTIONAL,

 geographicalInformation [5] GeographicalInformation OPTIONAL,

 geodeticInformation [6] GeodeticInformation OPTIONAL,

 globalNgenbId [7] GlobalRanNodeId OPTIONAL,

 globalENbId [8] GlobalRanNodeId OPTIONAL

}

EnhancedDiagnostics5G ::= SEQUENCE

{

 rANNASRelCause [0] SEQUENCE OF RANNASRelCause

}

--

-- F

--

FiveGLANTypeService ::= SEQUENCE

{

 internalGroupIdentifier [1] UTF8String

}

FiveGMMCapability ::= OCTET STRING

--

-- See 3GPP TS 29.571 [249] for details

--

FiveGMmCause ::= INTEGER

--

-- See 3GPP TS 29.571 [249] for details

--

FiveGMulticastService ::= SEQUENCE

{

 mBSSessionIDList [0] SEQUENCE OF MbsSessionId

}

FiveGQoSInformation ::= SEQUENCE

--

-- See TS 32.291 [58] for more information

--

{

 fiveQi [1] INTEGER OPTIONAL,

 aRP [2] AllocationRetentionPriority OPTIONAL,

 qoSNotificationControl [3] BOOLEAN OPTIONAL,

 reflectiveQos [4] BOOLEAN OPTIONAL,

 maxbitrateUL [5] Bitrate OPTIONAL,

 maxbitrateDL [6] Bitrate OPTIONAL,

 guaranteedbitrateUL [7] Bitrate OPTIONAL,

 guaranteedbitrateDL [8] Bitrate OPTIONAL,

 priorityLevel [9] INTEGER OPTIONAL,

 averWindow [10] INTEGER OPTIONAL,

 maxDataBurstVol [11] INTEGER OPTIONAL,

 maxPacketLossRateDL [12] INTEGER OPTIONAL,

 maxPacketLossRateUL [13] INTEGER OPTIONAL

}

FiveGSBridgeInformation ::= SEQUENCE

{

 bridgeId [1] INTEGER,

 nWTTPortNumber [2] INTEGER OPTIONAL,

 dSTTPortNumber [3] INTEGER OPTIONAL

}

FiveGSmCause ::= INTEGER

--

-- See 3GPP TS 29.571 [249] for details

--

--

-- G

--

GCI ::= UTF8String

--

-- See 3GPP TS 29.571 [249] for details

--

GeodeticInformation ::= UTF8String

--

-- See 3GPP TS 29.571 [249] for details

--

GeographicalInformation ::= UTF8String

--

-- See 3GPP TS 29.571 [249] for details

--

GeographicalLocation ::= SEQUENCE

{

 geographicalCoordinates [0] GeographicalCoordinates OPTIONAL,

 civicLocation [1] OCTET STRING OPTIONAL

}

GeographicalCoordinates::= SEQUENCE

{

 latitude [0] INTEGER OPTIONAL,

 longitude [1] INTEGER OPTIONAL

}

GeraLocation ::= SEQUENCE

{

 locationNumber [0] LocationNumber OPTIONAL,

 cgi [1] CellGlobalId OPTIONAL,

 sai [2] ServiceAreaId OPTIONAL,

 lai [3] LocationAreaId OPTIONAL,

 rai [4] RoutingAreaId OPTIONAL,

 vlrNumber [5] VlrNumber OPTIONAL,

 mscNumber [6] MscNumber OPTIONAL,

 ageOfLocationInformation [7] AgeOfLocationInformation OPTIONAL,

 ueLocationTimestamp [8] TimeStamp OPTIONAL,

 geographicalInformation [9] GeographicalInformation OPTIONAL,

 geodeticInformation [10] GeodeticInformation OPTIONAL

}

GLI ::= UTF8String

--

-- See 3GPP TS 29.571 [249] for details

--

GlobalRanNodeId ::= SEQUENCE

{

 pLMNId [0] PLMN-Id OPTIONAL,

 n3IwfId [1] N3IwFId OPTIONAL,

 gNbId [2] GNbId OPTIONAL,

 ngeNbId [3] NgeNbId OPTIONAL,

 wagfId [4] WAgfId OPTIONAL,

 tngfId [5] TngfId OPTIONAL,

 nid [6] Nid OPTIONAL,

 eNbId [7] ENbId OPTIONAL

}

GNbId ::= SEQUENCE

{

 bitLength [0] INTEGER,

 gNbValue [1] IA5String (SIZE(6..8))

}

--

-- H

--

HFCNodeId ::= UTF8String

--

-- See 3GPP TS 29.571 [249] for details

--

--

-- I

--

IMSNodeFunctionality ::= ENUMERATED

{

 iMS-GWF (0),

 aS (1),

 mRFC (2)

}

IMSSessionInformation ::= SEQUENCE

{

 callerInformation [0] SEQUENCE OF InvolvedParty OPTIONAL,

 calleeInformation [1] CalleePartyInformation OPTIONAL

}

IMSTrigger ::= INTEGER

{

--Initial

 sIPInvite (1),

--Change of charging conditions

 sIPReInviteOrUpdate (2),

 sIP2xxAcknowledging (3),

 sIP1xxProvisionalResponse (4),

 sIP4xx5xxOr6xxResponse (5),

 otherSipMessage (6),

--CHF Limit

 expiryOfTimeLimit (7),

 expiryOfLimitOfNumOfChConditionChanges (8),

--Quota management

 timeThresholdReached (9),

 timeQuotaExhausted (10),

 unitQuotaExhausted (11),

 expiryOfQuotaValidityTime (12),

 expiryOfQuotaHoldingTime (13),

 reAuthorizationReqByChf (14),

--Other

 managementIntervention (15),

--Termination

 sIPByeMessage

 sIP2xxAcknowledgingASipBye (16),

 abortingASipSessionSetup (17),

 sIP3xxFinalOrRedirectionResponse (18),

 sIP4xx5xxOr6xxFinalResponse (19)

}

IncompleteCDRIndication ::= SEQUENCE

-- The values are TRUE if the corresponding message was lost, FALSE if it is not lost

-- and not included if the status is unknown

{

 initialLost [0] BOOLEAN OPTIONAL, -- Initial was lost

 updateLost [1] BOOLEAN OPTIONAL, -- An Update was lost,

 terminationLost [2] BOOLEAN OPTIONAL -- Termination was lost

}

InternalGroupIdentifier ::= UTF8String

--

-- See 3GPP TS 29.571 [249] for details

--

--

-- L

--

Lac ::= UTF8String

--

-- See 3GPP TS 29.571 [249] for details

--

LineType ::= ENUMERATED

{

 dSL (0),

 pON (1)

}

LocationAreaId ::= SEQUENCE

{

 plmnId [0] PLMN-Id,

 lac [1] Lac

}

LocationNumber ::= UTF8String

--

-- See 3GPP TS 29.571 [249] for details

--

LocationReportingMessageType ::= INTEGER

--

-- M

--

ManagementOperation ::= ENUMERATED

{

 createMOI (0),

 modifyMOIAttributes (1),

 deleteMOI (2),

 notifyMOICreation (3),

 notifyMOIAttrChange (4),

 notifyMOIDeletion (5)

}

ManagementOperationStatus ::= ENUMERATED

{

 oPERATION-SUCCEEDED (0),

 oPERATION-FAILED (1)

}

MbsContainerInformation ::= SEQUENCE

{

 timeOfFirstUsage [0] TimeStamp OPTIONAL,

 timeOfLastUsage [1] TimeStamp OPTIONAL,

 qoSInformation [2] FiveGQoSInformation OPTIONAL,

 establishedConnectionInfo [3] EstablishedConnectionInfo OPTIONAL

}

MBSMFTrigger ::= INTEGER

{

 startOfMBSSession (1),

-- Change of Charging conditions

 connectionEstablishedWithNGRAN (100),

 connectionReleasedWithNGRAN (101),

 connectionEstablishedWithUPF (102),

 tariffTimeChange (103),

 connectionReleasedWithUPF (104),

-- Limit per MBS session

 mBSSessionExpiryDataTimeLimit (200),

 mBSSessionExpiryDataVolumeLimit (201),

 mBSSessionExpiryChargingConditionChanges (202),

-- Quota management

 timeThresholdReached (400),

 timeQuotaExhausted (401),

-- Others

 endOfMBSSession (500)

}

MbsServiceArea ::= SEQUENCE

--

-- See 3GPP TS 29.571 [249] for details

--

{

 ncgiList [0] SEQUENCE OF NcgiTai OPTIONAL,

 taiList [1] SEQUENCE OF TAI OPTIONAL

}

MbsServiceType := ENUMERATED

--

-- See 3GPP TS 29.571 [249] for details

--

{

 multicast (0),

 broadcast (1)

}

MbsSessionId ::= SEQUENCE

-- See 3GPP TS 29.571 [249] for details.

{

 tMGI [0] TMGI OPTIONAL,

 ssm [1] Ssm OPTIONAL,

 nid [2] Nid OPTIONAL

}

MbsDeliveryMethod ::= ENUMERATED

{

 shared (0),

 individual (1)

}

MnSConsumerIdentifier ::= OCTET STRING

MAPDUSessionIndicator ::= ENUMERATED

{

 mAPDURequest (0),

 mAPDUNetworkUpgradeAllowed (1)

}

MAPDUSessionInformation ::= SEQUENCE

{

 mAPDUSessionIndicator [0] MAPDUSessionIndicator OPTIONAL,

 aTSSSCapability [1] ATSSSCapability OPTIONAL

}

MAPDUSteeringFunctionality ::= ENUMERATED

{

 mPTCP (0),

 aTSSSLL (1)

}

MAPDUSteeringMode ::= SEQUENCE

{

 steerModeValue [0] SteerModeValue OPTIONAL,

 active [1] AccessType OPTIONAL,

 standby [2] AccessType OPTIONAL,

 threegLoad [3] INTEGER OPTIONAL,

 prioAcc [4] AccessType OPTIONAL

}

MICOModeIndication ::= ENUMERATED

{

 mICOMode (0),

 noMICOMode (1)

}

MMAddContentInfo ::= SEQUENCE

{

 typeNumber [0] UTF8String OPTIONAL,

 addtypeInfo [1] UTF8String OPTIONAL,

 contentSize [2] INTEGER OPTIONAL

}

MMContentType ::= SEQUENCE

{

 typeNumber [0] UTF8String OPTIONAL,

 addtypeInfo [1] UTF8String OPTIONAL,

 contentSize [2] INTEGER OPTIONAL,

 mmAddContentInfo [3] SEQUENCE OF MMAddContentInfo OPTIONAL

}

MMOriginatorInfo ::= SEQUENCE

{

 originatorIMSI [0] IMSI OPTIONAL,

 originatorMSISDN [1] MSISDN OPTIONAL,

 originatorOtherAddresses [2] SEQUENCE OF SMAddressInfo OPTIONAL

}

MMRecipientInfo ::= SEQUENCE

{

 recipientIMSI [0] IMSI OPTIONAL,

 recipientMSISDN [1] MSISDN OPTIONAL,

 recipientOtherAddresses [2] SEQUENCE OF SMAddressInfo OPTIONAL

}

MobilityLevel ::= ENUMERATED

{

 stationary (0),

 nomadic (1),

 restrictedMobility (2),

 fullyMobility (3)

}

MscNumber ::= UTF8String

--

-- See 3GPP TS 29.571 [249] for details

--

MultipleUnitUsage ::= SEQUENCE

{

 ratingGroup [0] RatingGroupId,

 usedUnitContainers [1] SEQUENCE OF UsedUnitContainer OPTIONAL,

 uPFID [2] NetworkFunctionName OPTIONAL,

 multihomedPDUAddress [3] PDUAddress OPTIONAL,

 allocatedUnit [4] AllocatedUnit OPTIONAL,

 mBUPFID [5] NetworkFunctionName OPTIONAL

}

MultipleQFIContainer ::= SEQUENCE

{

 qosFlowId [0] QoSFlowId OPTIONAL,

 triggers [1] SEQUENCE OF Trigger OPTIONAL,

 triggerTimeStamp [2] TimeStamp OPTIONAL,

 dataTotalVolume [3] DataVolumeOctets OPTIONAL,

 dataVolumeUplink [4] DataVolumeOctets OPTIONAL,

 dataVolumeDownlink [5] DataVolumeOctets OPTIONAL,

 localSequenceNumber [6] LocalSequenceNumber OPTIONAL,

 timeOfFirstUsage [8] TimeStamp OPTIONAL,

 timeOfLastUsage [9] TimeStamp OPTIONAL,

 qoSInformation [10] FiveGQoSInformation OPTIONAL,

 userLocationInformation [11] UserLocationInformation OPTIONAL,

 uETimeZone [12] MSTimeZone OPTIONAL,

 presenceReportingAreaInfo [13] PresenceReportingAreaInfo OPTIONAL,

 rATType [14] RATType OPTIONAL,

 reportTime [15] TimeStamp,

 servingNetworkFunctionID [16] SEQUENCE OF ServingNetworkFunctionID OPTIONAL,

 threeGPPPSDataOffStatus [17] ThreeGPPPSDataOffStatus OPTIONAL,

 threeGPPChargingID [18] ChargingID OPTIONAL,

 diagnostics [19] Diagnostics OPTIONAL,

 extensionDiagnostics [20] EnhancedDiagnostics OPTIONAL,

 qoSCharacteristics [21] QoSCharacteristics OPTIONAL,

 time [22] CallDuration OPTIONAL,

 userLocationInformationASN1 [23] UserLocationInformationStructured OPTIONAL,

 listOfPresenceReportingAreaInformation [39] SEQUENCE OF PresenceReportingAreaInfo OPTIONAL

}

--

-- N

--

N2ConnectionMessageType ::= INTEGER

N3IwFId ::= IA5String (SIZE(1..16))

--

-- See 3GPP TS 29.571 [249] for details.

--

N3gaLocation ::= SEQUENCE

{

 n3gppTai [0] TAI OPTIONAL,

 n3IwfId [1] N3IwFId OPTIONAL,

 ueIpv4Addr [2] IPAddress OPTIONAL,

 ueIpv6Addr [3] IPAddress OPTIONAL,

 portNumber [4] INTEGER OPTIONAL,

 tnapId [5] TNAPId OPTIONAL,

 twapId [6] TWAPId OPTIONAL,

 hfcNodeId [7] HFCNodeId OPTIONAL,

 w5gbanLineType [8] LineType OPTIONAL,

 gli [9] GLI OPTIONAL,

 gci [10] GCI OPTIONAL

}

NcgiTai ::= SEQUENCE

--

-- See 3GPP TS 29.571 [249] for details

--

{

 tai [0] TAI,

 cellList [1] SEQUENCE OF Ncgi

}

NSACFContainerInformation ::= SEQUENCE

{

 numberOfUEs [0] INTEGER OPTIONAL,

 numberOfPDUs [1] INTEGER OPTIONAL

}

NSACFTrigger ::= INTEGER

{

--Initial

 nSACThresholdInitial (1),

--Change of charging conditions

 nSACThresholdUpwardsReached (2),

 nSACThresholdUpwardsCrossed (3),

 nSACThresholdDownwardsCrossed (4),

--Quota management

 nSACQuotaThreshold (5),

 nSACQuotaExhausted (6),

 nSACValidityTime (7),

 nSACQHT (8),

 nSACThresholdTermination (9),

--Termination

 nSTermination (10)

}

NSSAAMessageType ::= ENUMERATED

{

 authenticate (0),

 reAuthenticationNotification (1),

 revocationNotification (2)

}

NrLocation ::= SEQUENCE

{

 tai [0] TAI OPTIONAL,

 ncgi [1] Ncgi OPTIONAL,

 ageOfLocationInformation [2] AgeOfLocationInformation OPTIONAL,

 ueLocationTimestamp [3] TimeStamp OPTIONAL,

 geographicalInformation [4] GeographicalInformation OPTIONAL,

 geodeticInformation [5] GeodeticInformation OPTIONAL,

 globalGnbId [6] GlobalRanNodeId OPTIONAL,

 ntnTaiInfo [7] NtnTaiInfo OPTIONAL

}

--

-- See 3GPP TS 29.571 [249] for details

--

NetworkAreaInfo ::= SEQUENCE

{

 ecgis [0] SEQUENCE OF Ecgi OPTIONAL,

 ncgis [1] SEQUENCE OF Ncgi OPTIONAL,

 gRanNodeIds [2] SEQUENCE OF GlobalRanNodeId OPTIONAL,

 tais [3] SEQUENCE OF TAI OPTIONAL

}

NetworkFunctionInformation ::= SEQUENCE

{

 networkFunctionality [0] NetworkFunctionality,

 networkFunctionName [1] NetworkFunctionName OPTIONAL,

 networkFunctionIPv4Address [2] IPAddress OPTIONAL,

 networkFunctionPLMNIdentifier [3] PLMN-Id OPTIONAL,

 networkFunctionIPv6Address [4] IPAddress OPTIONAL,

 networkFunctionFQDN [5] NodeAddress OPTIONAL

}

NetworkFunctionName ::= IA5String (SIZE(1..36))

-- Shall be a Universally Unique Identifier (UUID) version 4, as described in IETF RFC 4122 [410]

NetworkFunctionality ::= ENUMERATED

{

 cHF (0),

 -- CHF may only to be used in failure cases

 sMF (1),

-- SMF is applicable in two scenario: as NF consumer of CHF services, and as API Target NF

-- in NEF charging

 aMF (2),

-- AMF is applicable in two scenario: as NF consumer of CHF services, and as API Target NF

-- in NEF charging

 sMSF (3),

 sGW (4),

 -- SGW is only applicable for interworking with EPC scenario

 -- when UE is connected to P-GW+SMF via EPC

 iSMF (5),

 ePDG (6),

 -- ePDG is only applicable for interworking with EPC scenario

 -- when UE is connected to P-GW+SMF via EPC/ePDG

 cEF (7),

 nEF (8),

 pGWCSMF (9),

 mnS-Producer (10),

 sGSN (11),

 -- SGSN is only applicable when UE is connected to SMF+PGW-C via GERAN/UTRAN

 fiveGDDNMF (12),

 vSMF (13),

 -- vSMF may be used instead of sMF in roaming scenarios}

 iMS-Node (14),

 eES (15),

 mMS-Node (16),

 pCF (17),

 -- PCF is applicable only as API Target NF in NEF charging

 uDM (18),

 -- UDM is applicable only as API Target NF in NEF charging

 uPF (19),

 -- UPF is applicable only as API Target NF in NEF charging

 tSN-AF (20),

 tSNTSF (21),

 mB-SMF (22)

}

NgApCause ::= SEQUENCE

-- See 3GPP TS 29.571 [249] for details.

{

 group [0] INTEGER,

 value [1] INTEGER

}

NgeNbId ::= IA5String (SIZE(1..21))

--

-- See 3GPP TS 29.571 [249] for details.

--

NGRANSecondaryRATType ::= OCTET STRING

--

-- "NR" or "EUTRA"

--

NGRANSecondaryRATUsageReport ::= SEQUENCE

{

 nGRANSecondaryRATType [0] NGRANSecondaryRATType OPTIONAL,

 qosFlowsUsageReports [1] SEQUENCE OF QosFlowsUsageReport OPTIONAL

}

NsiLoadLevelInfo ::= SEQUENCE

--

-- See 3GPP TS 29.520 [233] for details

--

{

 loadLevelInformation [0] INTEGER OPTIONAL,

 snssai [1] SingleNSSAI OPTIONAL,

 nsiId [2] OCTET STRING OPTIONAL

}

NSPAContainerInformation ::= SEQUENCE

{

-- latency [0] INTEGER OPTIONAL,

-- throughput [1] Throughput OPTIONAL,

-- maximumPacketLossRate [3] UTF8String OPTIONAL,

 serviceExperienceStatisticsData [4] ServiceExperienceInfo OPTIONAL,

 numberOfPDUSessions [5] INTEGER OPTIONAL,

 numberOfRegisteredSubscribers [6] INTEGER OPTIONAL,

 loadLevel [7] NsiLoadLevelInfo OPTIONAL,

 uplinkLatency [8] INTEGER OPTIONAL,

 downlinkLatency [9] INTEGER OPTIONAL,

 uplinkThroughput [10] Throughput OPTIONAL,

 downlinkThroughput [11] Throughput OPTIONAL,

 maximumPacketLossRateUL [12] INTEGER OPTIONAL,

 maximumPacketLossRateDL [13] INTEGER OPTIONAL

}

NSSAIMap ::= SEQUENCE

{

 servingSnssai [0] SingleNSSAI,

 homeSnssai [1] SingleNSSAI

}

NtnTaiInfo ::= SEQUENCE

{

 pLMNId [0] PlmnIdNid,

 tacList [1] SEQUENCE OF TAC,

 derivedTac [2] TAC OPTIONAL

}

--

-- O

--

OperationalState ::= ENUMERATED

{

 eNABLED (0),

 dISABLED(1)

}

--

-- P

--

PartialRecordMethod ::= ENUMERATED

{

 default (0),

 individual (1)

}

PDUAddress ::= SEQUENCE

{

 pDUIPv4Address [0] IPAddress OPTIONAL,

 pDUIPv6AddresswithPrefix [1] IPAddress OPTIONAL,

 iPV4dynamicAddressFlag [2] DynamicAddressFlag OPTIONAL,

 iPV6dynamicPrefixFlag [3] DynamicAddressFlag OPTIONAL,

 additionalPDUIPv6Prefixes [4] SEQUENCE OF IPAddress OPTIONAL

}

PDUContainerInformation ::= SEQUENCE

{

 chargingRuleBaseName [0] ChargingRuleBaseName OPTIONAL,

 -- aFCorrelationInformation [1] is replaced by afChargingIdentifier [14]

 timeOfFirstUsage [2] TimeStamp OPTIONAL,

 timeOfLastUsage [3] TimeStamp OPTIONAL,

 qoSInformation [4] FiveGQoSInformation OPTIONAL,

 userLocationInformation [5] UserLocationInformation OPTIONAL,

 presenceReportingAreaInfo [6] PresenceReportingAreaInfo OPTIONAL,

 rATType [7] RATType OPTIONAL,

 sponsorIdentity [8] OCTET STRING OPTIONAL,

 applicationServiceProviderIdentity [9] OCTET STRING OPTIONAL,

 servingNetworkFunctionID [10] SEQUENCE OF ServingNetworkFunctionID OPTIONAL,

 uETimeZone [11] MSTimeZone OPTIONAL,

 threeGPPPSDataOffStatus [12] ThreeGPPPSDataOffStatus OPTIONAL,

 qoSCharacteristics [13] QoSCharacteristics OPTIONAL,

 afChargingIdentifier [14] ChargingID OPTIONAL,

 afChargingIdString [15] AFChargingID OPTIONAL,

 mAPDUSteeringFunctionality [16] MAPDUSteeringFunctionality OPTIONAL,

 mAPDUSteeringMode [17] MAPDUSteeringMode OPTIONAL,

 userLocationInformationASN1 [18] UserLocationInformationStructured OPTIONAL,

 listOfPresenceReportingAreaInformation [19] SEQUENCE OF PresenceReportingAreaInfo OPTIONAL,

 trafficForwardingWay [20] TrafficForwardingWay OPTIONAL,

 qosMonitoringReport [21] QosMonitoringReport OPTIONAL,

 mBSSessionID [22] MbsSessionId OPTIONAL,

 mBSDeliveryMethod [23] MbsDeliveryMethod OPTIONAL

}

PDUSessionPairID ::= INTEGER

PDUSessionId ::= INTEGER (0..255)

--

-- See 3GPP TS 29.571 [249] for details

--

PDUSessionType ::= ENUMERATED

{

 iPv4v6 (0),

 iPv4 (1),

 iPv6 (2),

 unstructured (3),

 ethernet (4)

}

-- See 3GPP TS 29.571 [249] for details.

PFIContainerInformation ::= SEQUENCE

{

 pC5qosFlowId [0] QoSFlowId OPTIONAL,

 timeOfFirstUsage [1] TimeStamp OPTIONAL,

 timeOfLastUsage [2] TimeStamp OPTIONAL,

 qoSInformation [3] FiveGQoSInformation OPTIONAL,

 userLocationInformation [4] UserLocationInformation OPTIONAL,

 uETimeZone [5] MSTimeZone OPTIONAL,

 presenceReportingAreaInfo [6] PresenceReportingAreaInfo OPTIONAL,

 reportTime [7] TimeStamp,

 qoSCharacteristics [8] QoSCharacteristics OPTIONAL

}

PlmnIdNid ::= SEQUENCE

{

 pLMNId [0] PLMN-Id OPTIONAL,

 nid [1] Nid OPTIONAL

}

PreemptionCapability ::= ENUMERATED

{

 nOT-PREEMPT (0),

 mAY-PREEMPT (1)

}

PreemptionVulnerability ::= ENUMERATED

{

 nOT-PREEMPTABLE (0),

 pREEMPTABLE (1)

}

PC5ContainerInformation ::= SET

{

 coverageInfoList [0] SEQUENCE OF CoverageInfo OPTIONAL,

 radioParameterSetInfoList [1] SEQUENCE OF RadioParameterSetInfo OPTIONAL,

 transmitterInfoList [2] SEQUENCE OF TransmitterInfo OPTIONAL,

 timeOfFirstTransmission [3] TimeStamp OPTIONAL,

 timeOfFirstReception [4] TimeStamp OPTIONAL

}

--

-- Q

--

QoSCharacteristics ::= OCTET STRING

--

-- This data is converted from JSON format of the QoSCharacteristics as described in TS 29.512

-- [251].

--

QoSFlowId ::= INTEGER

QosFlowsUsageReport ::= SEQUENCE

{

 qosFlowId [0] QoSFlowId OPTIONAL,

 startTime [1] TimeStamp,

 endTime [2] TimeStamp,

 dataVolumeDownlink [3] DataVolumeOctets,

 dataVolumeUplink [4] DataVolumeOctets

}

QuotaManagementIndicator ::= ENUMERATED

{

 onlineCharging (0),

 offlineCharging (1),

 quotaManagementSuspended (2)

}

QosMonitoringReport ::= SEQUENCE-- The maximum number of elements in the SEQUENCE of ulDelays,dlDelays and rtDelays is 2.

{

 ulDelays [0] SEQUENCE OF INTEGER OPTIONAL,

 dlDelays [1] SEQUENCE OF INTEGER OPTIONAL,

 rtDelays [2] SEQUENCE OF INTEGER OPTIONAL

}

--

-- R

--

Rac ::= UTF8String

--

-- See 3GPP TS 29.571 [249] for details

--

RanUeNgapId ::= INTEGER

RANNASRelCause ::= SEQUENCE

-- Mode details are described in TS 29.512[251].

{

 ngApCause [0] NgApCause OPTIONAL,

 fivegMmCause [1] FiveGMmCause OPTIONAL,

 fivegSmCause [2] FiveGSmCause OPTIONAL,

 epsCause [3] RANNASCause OPTIONAL

}

RatingIndicator ::= BOOLEAN

-- Included if the units have been rated.

RATType ::= INTEGER

--

-- This integer is based on the RatType specified in TS 29.571 [249]

-- with 3GPP RAT Type specified in TS 29.061 [216] added for backwards compatibility.

--

{

-- 0 reserved

 uTRAN (1),

 gERAN (2),

 wLAN (3),

-- 4 reserved for GAN

-- 5 reserved for HSPA Evolution

 eUTRAN (6),

 virtual (7),

-- 8 reserved for nBIoT

-- 9 reserved for lTEM

 nR (51),

 nR-U (52),

 eUTRAN-U (53),

 lte-m (54),

 wIRELINE (55),

 wIRELINE-CABLE (56),

 wIRELINE-BBF (57),

 nR-REDCAP (58),

 nR-LEO (59),

 nR-MEO (60),

 nR-GEO (61),

 nR-OTHERSAT (62),

 tRUSTED-N3GA (65),

 tRUSTED-WLAN (66)

-- 101 reserved for IEEE 802.16e

-- 102 reserved for 3GPP2 eHRPD

-- 103 reserved for 3GPP2 HRPD

-- 104 reserved for 3GPP2 1xRTT

-- 105 reserved for 3GPP2 UMB

}

RegistrationMessageType ::= ENUMERATED

{

 initial (0),

 mobility (1),

 periodic (2),

 emergency (3),

 deregistration (4)

}

RestrictionType ::= ENUMERATED

{

 allowedAreas (0),

 notAllowedAreas (1)

}

RoamingChargingProfile ::= SEQUENCE

{

 roamingTriggers [0] SEQUENCE OF RoamingTrigger OPTIONAL,

 partialRecordMethod [1] PartialRecordMethod OPTIONAL

}

RoamerInOut ::= ENUMERATED

{

 roamerInBound (0),

 roamerOutBound (1)

}

RoamingTrigger ::= SEQUENCE

{

 trigger [0] SMFTrigger OPTIONAL,

 triggerCategory [1] TriggerCategory OPTIONAL,

 timeLimit [2] CallDuration OPTIONAL,

 volumeLimit [3] DataVolumeOctets OPTIONAL,

 maxNbChargingConditions [4] INTEGER OPTIONAL

}

RoutingAreaId ::= SEQUENCE

{

 plmnId [0] PLMN-Id,

 lac [1] Lac,

 rac [2] Rac

}

RrcEstablishmentCause ::= OCTET STRING

RedundantTransmissionType ::= ENUMERATED

{

 nonTransmission (0),

 endToEndUserPlanePaths (1),

 n3N9 (2),

 transportLayer (3)

}

--

-- S

--

Sac ::= UTF8String

--

-- See 3GPP TS 29.571 [249] for details

--

ServiceArea ::= SEQUENCE

{

 mBSServiceArea [0] MbsServiceArea OPTIONAL,

 uPFIDs [1] SEQUENCE OF NetworkFunctionName OPTIONAL,

 ranNodeIDs [2] SEQUENCE OF GlobalRanNodeId OPTIONAL

}

ServiceAreaId ::= SEQUENCE

{

 plmnId [0] PLMN-Id,

 lac [1] Lac,

 sac [2] Sac

}

ServiceAreaRestriction ::= SEQUENCE

{

 restrictionType [0] RestrictionType OPTIONAL,

 areas [1] SEQUENCE OF Area OPTIONAL,

 maxNumOfTAs [2] INTEGER OPTIONAL,

 maxNumOfTAsForNotAllowedAreas [3] INTEGER OPTIONAL

}

-- See 3GPP TS 29.571 [249] for details.

ServiceExperienceInfo ::= SEQUENCE

--

-- See 3GPP TS 29.520 [233] for details

--

{

 svcExprc [0] SvcExperience OPTIONAL,

 svcExprcVariance [1] INTEGER OPTIONAL,

 snssai [2] SingleNSSAI OPTIONAL,

 appId [3] OCTET STRING OPTIONAL,

 confidence [4] INTEGER OPTIONAL,

 dnn [5] DataNetworkNameIdentifier OPTIONAL,

 networkArea [6] NetworkAreaInfo OPTIONAL,

 nsiId [7] OCTET STRING OPTIONAL,

 ratio [8] INTEGER OPTIONAL

}

ServiceProfileChargingInformation ::= SET

{

--

-- attributes of the service profile: see TS 28.541 [254]

--

 serviceProfileIdentifier [0] OCTET STRING OPTIONAL,

 sNSSAIList [1] SEQUENCE OF SingleNSSAI OPTIONAL,

 sST [2] SliceServiceType OPTIONAL,

 latency [3] INTEGER OPTIONAL,

 availability [4] INTEGER OPTIONAL,

 resourceSharingLevel [5] SharingLevel OPTIONAL,

 jitter [6] INTEGER OPTIONAL,

 reliability [7] OCTET STRING OPTIONAL,

 maxNumberofUEs [8] INTEGER OPTIONAL,

 coverageArea [9] OCTET STRING OPTIONAL,

 uEMobilityLevel [10] MobilityLevel OPTIONAL,

 delayToleranceIndicator [11] DelayToleranceIndicator OPTIONAL,

 dLThroughtputPerSlice [12] Throughput OPTIONAL,

 dLThroughtputPerUE [13] Throughput OPTIONAL,

 uLThroughtputPerSlice [14] Throughput OPTIONAL,

 uLThroughtputPerUE [15] Throughput OPTIONAL,

 maxNumberofPDUsessions [16] INTEGER OPTIONAL,

 kPIsMonitoringList [17] OCTET STRING OPTIONAL,

 supportedAccessTechnology [18] INTEGER OPTIONAL,

 v2XCommunicationMode [19] V2XCommunicationModeIndicator OPTIONAL,

 addServiceProfileChargingInfo [100] OCTET STRING OPTIONAL

}

ServingLocation ::= SEQUENCE

{

 geographicalLocation [0] SEQUENCE OF GeographicalLocation OPTIONAL,

 topologicalLocation [1] TopologicalLocation OPTIONAL

}

ServingNetworkFunctionID ::= SEQUENCE

{

 servingNetworkFunctionInformation [0] NetworkFunctionInformation,

 aMFIdentifier [1] AMFID OPTIONAL

}

SessionAMBR ::= SEQUENCE

{

 ambrUL [1] Bitrate,

 ambrDL [2] Bitrate

}

SharingLevel ::= ENUMERATED

{

 sHARED (0),

 nON-SHARED (1)

}

SIPEventType ::= SEQUENCE

{

 sIPMethod [0] SIP-Method OPTIONAL,

 eventHeader [1] INTEGER OPTIONAL,

 expiresHeader [2] UTF8String OPTIONAL

}

SingleNSSAI ::= SEQUENCE

-- See S-NSSAI subclause 28.4.2 of TS 23.003 [200] for encoding.

{

 sST [0] SliceServiceType,

 sD [1] SliceDifferentiator OPTIONAL

}

SliceServiceType ::= INTEGER (0..255)

--

-- See subclause 28.4.2 TS 23.003 [200]

--

SliceDifferentiator ::= OCTET STRING (SIZE(3))

--

-- See subclause 28.4.2 TS 23.003 [200]

--

SMdeliveryReportRequested ::= ENUMERATED

{

 yes (0),

 no (1)

}

SMFTrigger ::= INTEGER

{

 startOfPDUSession (1),

 startOfServiceDataFlowNoSession (2),

-- Change of Charging conditions

 qoSChange (100),

 userLocationChange (101),

 servingNodeChange (102),

 presenceReportingAreaChange (103),

 threeGPPPSDataOffStatusChange (104),

 tariffTimeChange (105),

 uETimeZoneChange (106),

 pLMNChange (107),

 rATTypeChange (108),

 sessionAMBRChange (109),

 additionOfUPF (110),

 removalOfUPF (111),

 insertionOfISMF (112),

 removalOfISMF (113),

 changeOfISMF (114),

 gFBRGuaranteedStatusChange (115),

 additionOfAccess (116),

 removalOfAccess (117),

 redundantTransmissionChange (118),

 vSMFChange (119),

 sNSSAIReplacement (120),

 joinMulticastMBSSession (121),

 mBSDeliveryMethodChange (122),

 leaveMulticastMBSSession (123),

 satelliteBackhaulCategoryChange (124),

 satelliteBackhaulQoSChange (125),

 gEOSatelliteIDCchange (126),

-- Limit per PDU session

 pDUSessionExpiryDataTimeLimit (200),

 pDUSessionExpiryDataVolumeLimit (201),

 pDUSessionExpiryDataEventLimit (202),

 pDUSessionExpiryChargingConditionChanges (203),

-- Limit per Rating group

 ratingGroupDataTimeLimit (300),

 ratingGroupDataVolumeLimit (301),

 ratingGroupDataEventLimit (302),

-- Quota management

 timeThresholdReached (400),

 volumeThresholdReached (401),

 unitThresholdReached (402),

 timeQuotaExhausted (403),

 volumeQuotaExhausted (404),

 unitQuotaExhausted (405),

 expiryOfQuotaValidityTime (406),

 reAuthorizationRequest (407),

 startOfServiceDataFlowNoValidQuota (408),

 otherQuotaType (409),

 expiryOfQuotaHoldingTime (410),

 startOfSDFAdditionalAccessNoValidQuota (411),

-- Others

 terminationOfServiceDataFlow (500),

 managementIntervention (501),

 unitCountInactivityTime (502),

 endOfPDUSession (503),

 cHFResponseWithSessionTermination (504),

 cHFAbortRequest (505),

 abnormalRelease (506),

 notProvidedBySMF (507), -- used if not provided by SMF

-- Limit per QoS Flow

 qoSFlowExpiryDataTimeLimit (600),

 qoSFlowExpiryDataVolumeLimit (601),

-- interworking with EPC

 eCGIChange (700),

 tAIChange (701),

 handoverCancel (702),

 handoverStart (703),

 handoverComplete (704),

-- GERAN/UTRAN access

 cGI-SAIChange (705),

 rAIChange (706)

}

-- See TS 32.255 [15] for details.

SMReplyPathRequested ::= ENUMERATED

{

 noReplyPathSet (0),

 replyPathSet (1)

}

SMServiceType ::= INTEGER

{

-- 0 to 10 VAS4SMS Short Message, see TS 22.142 [105] for details

 contentProcessing (0),

 forwarding (1),

 forwardingMultipleSubscriptions (2),

 filtering (3),

 receipt (4),

 networkStorage (5),

 toMultipleDestinations (6),

 virtualPrivateNetwork (7),

 autoreply (8),

 personalSignature (9),

 deferredDelivery (10)

-- 11 to 99 Reserved for 3GPP defined SM services

-- 100 to 199 Vendor specific SM services

}

SmsIndication ::= ENUMERATED

{

 sMSSupported (0),

 sMSNotSupported (1)

}

SNPNInformation ::= SET

{

 sNPNID [0] PlmnIdNid,

 accessType [1] AccessType OPTIONAL,

 n3IWFFQDN [2] NodeAddress OPTIONAL

}

SoftwareImageInfo ::= SEQUENCE

{

 minimumDisk [0] INTEGER OPTIONAL,

 minimumRAM [1] INTEGER OPTIONAL,

 swImageRef [2] UTF8String OPTIONAL,

 diskFormat [3] UTF8String OPTIONAL,

 operatingSystem [4] UTF8String OPTIONAL

}

SSCMode ::= INTEGER

{

 sSCMode1 (1),

 sSCMode2 (2),

 sSCMode3 (3)

}

-- See 3GPP TS 23.501 [247] for details.

Ssm ::= SEQUENCE

-- See 3GPP TS 29.571 [249] for details.

{

 sourceIpAddr [0] IPAddress，

 destIpAddr [1] IPAddress

}

SteerModeValue ::= ENUMERATED

{

 activeStandby (0),

 loadBalancing (1),

 smallestDelay (2),

 priorityBased (3)

}

SubscribedQoSInformation ::= SEQUENCE

--

-- See TS 32.291 [58] for more information

--

{

 fiveQi [1] INTEGER OPTIONAL,

 aRP [2] AllocationRetentionPriority OPTIONAL,

 priorityLevel [3] INTEGER OPTIONAL

}

SvcExperience ::= SEQUENCE

{

 mos [0] INTEGER OPTIONAL,

 upperRange [1] INTEGER OPTIONAL,

 lowerRange [2] INTEGER OPTIONAL

}

SynchronizationState ::= ENUMERATED

{

 locked (0),

 holdover (1),

 freerun (2)

}

SatelliteBackhaulInformation ::= SEQUENCE

{

 satelliteBackhaulCategory [0] SatelliteBackhaulCategory OPTIONAL,

 gEOSatelliteID [1] UTF8String OPTIONAL

}

-- See 3GPP TS 29.571 [249] for details.

SatelliteBackhaulCategory ::= ENUMERATED

{

 gEO (0),

 mEO (1),

 lEO (2),

 oTHERSAT (3),

 dYNAMICGEO (4),

 dYNAMICMEO (5),

 dYNAMICLEO (6),

 dYNAMICOTHERSAT (7),

 nONSATELLITE (8)

}

--

-- T

--

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

TAI ::= SEQUENCE

{

 pLMNId [0] PLMN-Id,

 tac [1] TAC

}

TenantIdentifier ::= OCTET STRING

Throughput ::= SEQUENCE

{

 guaranteedThpt [0] Bitrate,

 maximumThpt [1] Bitrate

}

TimeDistributionMethod ::= ENUMERATED

{

 gPTP (0),

 aSTI (1)

}

TimeSource ::= ENUMERATED

--

-- See 3GPP TS 29.571 [249] for details

--

{

 pTP (0),

 gNSS (1),

 atomicClock (2),

 terrestrialRadio (3),

 serialTimeCode (4),

 nTP (5),

 handSet (6),

 other (7)

}

TimeSynchronizationInformation ::= SEQUENCE

{

 distributionMethod [1] TimeDistributionMethod OPTIONAL,

 tSNtimeDomainNumber [2] INTEGER OPTIONAL,

 temporalValidityInformation [3] CallDuration OPTIONAL,

 spatialValidityInformation [4] SEQUENCE OF TAI OPTIONAL,

 timeSynchronizationErrorBudget [5] INTEGER OPTIONAL,

 synchronizationState [6] SynchronizationState OPTIONAL,

 clockQuality [7] ClockQuality OPTIONAL,

 parentTimeSource [8] TimeSource OPTIONAL

}

TNAPId ::= UTF8String

--

-- See 3GPP TS 29.571 [249] for details

--

TngfId ::= UTF8String

TopologicalLocation ::= SEQUENCE

{

 cellIdList [0] SEQUENCE OF Ncgi OPTIONAL,

 trackingAreaIdList [1] SEQUENCE OF TAI OPTIONAL,

 servingPLMN [2] SEQUENCE OF PLMN-Id

}

--

-- See 3GPP TS 29.571 [249] for details

--

TrafficForwardingWay ::= ENUMERATED

{

 n6 (0),

 n19 (1),

 localSwitch (2)

}

Trigger ::= CHOICE

{

 sMFTrigger [0] SMFTrigger,

 mBSMFTrigger [1] MBSMFTrigger,

 nSACFTrigger [2] NSACFTrigger,

 iMSTrigger [3] IMSTrigger

}

TriggerCategory ::= ENUMERATED

{

 immediateReport (0),

 deferredReport (1)

}

TSCAssistanceInformation ::= SEQUENCE

{

 flowDirection [1] TSCFlowDirection OPTIONAL,

 periodicity [2] INTEGER OPTIONAL

}

TSCFlowDirection ::= ENUMERATED

{

 uplink (0),

 downlink (1)

}

TSNQoSInformation ::= SEQUENCE

{

 priority [1] INTEGER OPTIONAL,

 bridgeDelay [2] SEQUENCE OF INTEGER OPTIONAL

}

TWAPId ::= UTF8String

--

-- See 3GPP TS 29.571 [249] for details

--

--

-- U

--

UsedUnitContainer ::= SEQUENCE

{

 serviceIdentifier [0] ServiceIdentifier OPTIONAL,

 time [1] CallDuration OPTIONAL,

 triggers [2] SEQUENCE OF Trigger OPTIONAL,

 triggerTimeStamp [3] TimeStamp OPTIONAL,

 dataTotalVolume [4] DataVolumeOctets OPTIONAL,

 dataVolumeUplink [5] DataVolumeOctets OPTIONAL,

 dataVolumeDownlink [6] DataVolumeOctets OPTIONAL,

 serviceSpecificUnits [7] INTEGER OPTIONAL,

 eventTimeStamp [8] TimeStamp OPTIONAL,

 localSequenceNumber [9] LocalSequenceNumber OPTIONAL,

 ratingIndicator [10] RatingIndicator OPTIONAL,

 pDUContainerInformation [11] PDUContainerInformation OPTIONAL,

 quotaManagementIndicator [12] BOOLEAN OPTIONAL,

 quotaManagementIndicatorExt [13] QuotaManagementIndicator OPTIONAL,

 nSPAContainerInformation [14] NSPAContainerInformation OPTIONAL,

 eventTimeStampExt [15] SEQUENCE OF TimeStamp OPTIONAL,

 pC5ContainerInformation [16] PC5ContainerInformation OPTIONAL,

 mBSContainerInformation [17] MbsContainerInformation OPTIONAL

}

--

-- UserLocationInformationStructured is an alternative ASN.1 format to UserLocationInformation

--

UserLocationInformation ::= OCTET STRING

UserLocationInformationStructured ::= SEQUENCE

{

 eutraLocation [0] EutraLocation OPTIONAL,

 nrLocation [1] NrLocation OPTIONAL,

 n3gaLocation [2] N3gaLocation OPTIONAL,

 utraLocation [3] UtraLocation OPTIONAL,

 geraLocation [4] GeraLocation OPTIONAL

}

UtraLocation ::= SEQUENCE

{

 cgi [0] CellGlobalId OPTIONAL,

 sai [1] ServiceAreaId OPTIONAL,

 lai [2] LocationAreaId OPTIONAL,

 rai [3] RoutingAreaId OPTIONAL,

 ageOfLocationInformation [4] AgeOfLocationInformation OPTIONAL,

 ueLocationTimestamp [5] TimeStamp OPTIONAL,

 geographicalInformation [6] GeographicalInformation OPTIONAL,

 geodeticInformation [7] GeodeticInformation OPTIONAL

}

--

-- This data is converted from JSON format of the User Location as described in TS 29.571 [249].

--

--

-- V

--

VirtualResource ::= SEQUENCE

{

 virtualMemory [0] INTEGER OPTIONAL,

 virtualDisk [1] INTEGER OPTIONAL,

 virtualResource [2] OCTET STRING OPTIONAL

}

VlrNumber ::= UTF8String

--

-- See 3GPP TS 29.571 [249] for details

--

V2XCommunicationModeIndicator ::= ENUMERATED

{

 v2XComSupported (0),

 v2XComNotSupported (1)

}

--

-- W

WAgfId ::= UTF8String

--

-- See 3GPP TS 29.571 [249] for details

--

.#END

|  |
| --- |
| **End of change** |