**3GPP TSG-SA5 Meeting #133e *S5-205174***

**e-meeting 12th - 21st October 2020**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.0* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **32.298** | **CR** | **0843** | **rev** | **1** | **Current version:** | **16.6.1** |  |
|  | | | | | | | | |
| *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:*** | Correcting charging id availability for all NF in CHF CDR | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Ericsson | | | | | | | | | |
| ***Source to TSG:*** | S5 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | TEI16 | | | | |  | ***Date:*** | | | 2020-10-02 |
|  |  | | | |  | |  | | |  |
| ***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-12 (Release 12)* *Rel-13 (Release 13) Rel-14 (Release 14) Rel-15 (Release 15) Rel-16 (Release 16)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | The retry mechanism relies on the charging identifiers, this is however not available for all network functions. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Adding Charging Identifier on the top level. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | The retry and duplicate handling will only be possible for the SMF. | | | | | | | | |
|  | |  | | | | | | | | |
| ***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 32.290 CR 0137  TS 32.291 CR 0285 | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | | Revision of S5-205174. | | | | | | | | |

|  |
| --- |
| **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. 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. |
| Recording Network Function ID | OM | This field holds the name of the recording entity, i.e. the CHF id. |
| 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) of the served party as specified in TS 29.571 [249], if available. |
| 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. |
| 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. |
| 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. |
| Rating Group | M | This filed holds the rating group. The parameter corresponds to the Charging Key as specified in TS 23.203 [203] |
| Used Unit Container | OC | This field holds the used units and information connected to the reported units. |
| 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]. |
| 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]. |
| 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 | Time stamp when the PDU session is activated in the SMF or record opening time on subsequent partial records. |
| Duration | M | This field holds the duration of this record. |
| Record Sequence Number | C | Partial record sequence number, only present in case of partial records. |
| Cause for Record Closing | M | The reason for the release of the record. |
| Local Record Sequence Number | OM | Consecutive record number created by the CDF. The number is allocated sequentially including all CDR types. |
| Record Extensions | OC | A set of network operator/manufacturer specific extensions to the record. Conditioned upon the existence of an extension.  This field can be used to capture the specific information for charging. |
| Service Specification Information | OC | Identifies service specific document that applies to the request, e.g. the service specific document ('middle tier' TS) and 3GPP release the service specific document is based upon. |
| 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]. |
| 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]. |

|  |
| --- |
| **Second change** |

#### 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,

EnhancedDiagnostics,

DynamicAddressFlag,

InvolvedParty,

IPAddress,

LocalSequenceNumber,

ManagementExtensions,

MessageClass,

MessageReference,

MSTimeZone,

NodeAddress,

PLMN-Id,

PriorityType,

RecordType,

ServiceSpecificInfo,

Session-Id,

SubscriberEquipmentNumber,

SubscriptionID,

ThreeGPPPSDataOffStatus,

TimeStamp

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

AddressString

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

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,

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)}

;

--

-- 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

}

--

-- 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

}

--

-- Roaming QBC Information

--

RoamingQBCInformation ::= SET

{

multipleQFIcontainer [0] SEQUENCE OF MultipleQFIContainer OPTIONAL,

uPFID [1] NetworkFunctionName OPTIONAL,

roamingChargingProfile [2] RoamingChargingProfile OPTIONAL

}

--

-- SMS Charging Information

--

SMSChargingInformation ::= SET

{

sMSNodeAddress [0] AddressString,

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,

messageSize [33] INTEGER OPTIONAL,

messageClass [34] MessageClass OPTIONAL,

sMdeliveryReportRequested [35] SMdeliveryReportRequested OPTIONAL

}

--

-- Exposure Function API Information

--

ExposureFunctionAPIInformation ::= SET

{

groupIdentifier [0] 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

}

--

-- 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] OCTET STRING OPTIONAL,

userLocationInfoTime [6] TimeStamp OPTIONAL,

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

}

--

-- 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] OCTET STRING OPTIONAL,

userLocationInfoTime [6] TimeStamp OPTIONAL,

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

}

--

-- 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] OCTET STRING OPTIONAL,

userLocationInfoTime [6] TimeStamp OPTIONAL,

uETimeZone [7] MSTimeZone OPTIONAL,

presenceReportingAreaInfo [8] PresenceReportingAreaInfo OPTIONAL,

rATType [9] RATType OPTIONAL

}

--

-- Network Slice Performance and Analytics charging Information

--

NSPAChargingInformation ::= SET

{

singelNSSAI [0] SingleNSSAI

}

--

-- PDU Container Information

--

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

}

--

-- 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

}

--

-- QFI Container Information

--

MultipleQFIContainer ::= SEQUENCE

{

qosFlowId [0] QoSFlowId OPTIONAL,

triggers [1] SEQUENCE OF Trigger,

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

}

--

-- CHF CHARGING TYPES

--

--

-- A

--

AFChargingID ::= UTF8String

--

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

--

AdministrativeState ::= ENUMERATED

{

lOCKED (0),

uNLOCKED (1),

sHUTTINGDOWN (2)

}

AccessType ::= ENUMERATED

{

threeGPPAccess (0),

nonThreeGPPAccess (1)

}

AllocationRetentionPriority ::= SEQUENCE

{

priorityLevel [1] INTEGER,

preemptionCapability [2] PreemptionCapability,

preemptionVulnerability [3] PreemptionVulnerability

}

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

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

AmfUeNgapId ::= INTEGER

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,

aRP [2] AllocationRetentionPriority,

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

--

ChargingSessionIdentifier ::= OCTET STRING

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

CoreNetworkType ::= ENUMERATED

{

fiveGC (0),

ePC (1)

}

--

-- D

--

APIResultCode ::= INTEGER

--

-- See specific API for more information

--

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)

}

--

-- F

--

FiveGMMCapability ::= OCTET STRING

--

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

--

FiveGQoSInformation ::= SEQUENCE

--

-- See TS 32.291 [58] for more information

--

{

fiveQi [1] INTEGER,

aRP [2] AllocationRetentionPriority,

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

}

--

-- G

--

GlobalRanNodeId ::= SEQUENCE

{

pLMNId [0] PLMN-Id OPTIONAL,

n3IwfId [1] N3IwFId OPTIONAL,

gNbId [2] GNbId OPTIONAL,

ngeNbId [3] NgeNbId OPTIONAL

}

GNbId ::= SEQUENCE

{

bitLength [0] INTEGER,

gNbValue [1] IA5String (SIZE(10))

}

--

-- I

--

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

}

--

-- L

--

LocationReportingMessageType ::= INTEGER

--

-- M

--

ManagementOperation ::= ENUMERATED

{

createMOI (0),

modifyMOIAttributes (1),

deleteMOI (2)

}

ManagementOperationStatus ::= ENUMERATED

{

oPERATION-SUCCEEDED (0),

oPERATION-FAILED (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)

}

MobilityLevel ::= ENUMERATED

{

stationary (0),

nomadic (1),

restrictedMobility (2),

fullyMobility (3)

}

MultipleUnitUsage ::= SEQUENCE

{

ratingGroup [0] RatingGroupId,

usedUnitContainers [1] SEQUENCE OF UsedUnitContainer OPTIONAL,

uPFID [2] NetworkFunctionName OPTIONAL

}

--

-- N

--

N2ConnectionMessageType ::= INTEGER

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

--

-- 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 is a reserved value and is not used

sMF (1),

aMF (2),

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)

}

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

}

--

-- 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

}

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.

PreemptionCapability ::= ENUMERATED

{

nOT-PREEMPT (0),

mAY-PREEMPT (1)

}

PreemptionVulnerability ::= ENUMERATED

{

nOT-PREEMPTABLE (0),

pREEMPTABLE (1)

}

--

-- 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)

}

--

-- R

--

RanUeNgapId ::= INTEGER

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

-- 1 reserved for uTRA

-- 2 reserved for gERA

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),

-- 51 is used for NG-RAN

wIRELINE (55),

wIRELINE-CABLE (56),

wIRELINE-BBF (57),

tRUSTED-N3GA (65)

-- 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

}

RrcEstablishmentCause ::= OCTET STRING

--

-- S

--

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

}

ServingNetworkFunctionID ::= SEQUENCE

{

servingNetworkFunctionInformation [0] NetworkFunctionInformation,

aMFIdentifier [1] AMFID OPTIONAL

}

SessionAMBR ::= SEQUENCE

{

ambrUL [1] Bitrate,

ambrDL [2] Bitrate

}

SharingLevel ::= ENUMERATED

{

sHARED (0),

nON-SHARED (1)

}

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),

-- 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),

-- Limit per QoS Flow

qoSFlowExpiryDataTimeLimit (600),

qoSFlowExpiryDataVolumeLimit (601),

-- interworking with EPC

eCGIChange (700),

tAIChange (701),

handoverCancel (702),

handoverStart (703),

handoverComplete (704)

}

-- See TS 32.255 [15] for details.

SMReplyPathRequested ::= ENUMERATED

{

noReplyPathSet (0),

replyPathSet (1)

}

SMServiceType ::= INTEGER

{

-- 0 to 10 VAS4SMS Short Message, see TS TS 22.142 [x] 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)

}

SSCMode ::= INTEGER

{

sSCMode1 (1),

sSCMode2 (2),

sSCMode3 (3)

}

-- See 3GPP TS 29.501 [248] for details.

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

}

--

-- 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

}

Trigger ::= CHOICE

{

sMFTrigger [0] SMFTrigger

}

TriggerCategory ::= ENUMERATED

{

immediateReport (0),

deferredReport (1)

}

--

-- U

--

UsedUnitContainer ::= SEQUENCE

{

serviceIdentifier [0] ServiceIdentifier OPTIONAL,

time [1] CallDuration OPTIONAL,

triggers [2] SEQUENCE OF Trigger,

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

}

UserLocationInformation ::= OCTET STRING

--

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

--

--

-- V

--

V2XCommunicationModeIndicator ::= ENUMERATED

{

v2XComSupported (0),

v2XComNotSupported (1)

}

.#END

|  |
| --- |
| **End of changes** |