**3GPP TSG-SA5 Meeting #143-e *S5-223462rev1***

**e-meeting, 9 - 17 May 2022**

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| *CR-Form-v12.0* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  |  | **CR** | **0405** | **rev** | **1** | **Current version:** | **0** |  |
|  | | | | | | | | |
| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* | | | | | | | | |
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| ***Proposed change affects:*** | UICC apps |  | ME |  | Radio Access Network |  | Core Network | **X** |

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|  | | | | | | | | | | |
| ***Title:*** | Update Nchf\_ConvergedCharging service API for Edge Computing | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Intel | | | | | | | | | |
| ***Source to TSG:*** | S5 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | EDGE\_CH | | | | |  | ***Date:*** | | | 28 |
|  |  | | | |  | |  | | |  |
| ***Category:*** |  |  | | | | | ***Release:*** | | | Rel-17 |
|  | *Use one of the following categories:* ***F*** *(correction)* ***A*** *(mirror corresponding to a change in an earlier release)* ***B*** *(addition of feature),* ***C*** *(functional modification of feature)* ***D*** *(editorial modification)*  Detailed explanations of the above categories 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)*  *Rel-17 (Release 17)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | The Edge Computing domain charging has been defined in TS 32.257, the Nchf\_ConvergedCharging service API needs to be updated accordingly. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Added bindings for Edge Computing domain charging;  Updated Nchf\_ConvergedCharging service API for Edge Computing domain charging. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | The Nchf\_ConvergedCharging service API cannot support Edge Computing domain charging. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 2, 6.1.6.1,6.1.6.2.x.1, 7.x, A.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:*** | |  | | | | | | | | |

|  |
| --- |
| **Start of modification** |

# 2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non‑specific.

- For a specific reference, subsequent revisions do not apply.

- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[1] 3GPP TS 32.240: "Telecommunication management; Charging management; Charging architecture and principles".

[2] - [13] Void.

[14] 3GPP TS 32.254: "Telecommunication management; Charging management; Exposure function Northbound Application Program Interfaces (APIs) charging ".

[15] - [28] Void.

[29] 3GPP TS 32.274: "Telecommunication management; Charging management;Short Message Service (SMS) charging".

[30] 3GPP TS 32.255: "Telecommunication management; Charging management; 5G Data connectivity domain charging; stage 2".

[31] 3GPP TS 32.256: "Telecommunication management; Charging management; 5G connection and mobility domain charging; stage 2".

[32] 3GPP TS 32.260: "Telecommunication management; Charging management; IP Multimedia Subsystem (IMS) charging".

[33] 3GPP TS 32.275: "Telecommunication management; Charging management; MultiMedia Telephony (MMTel) charging".

[34] 3GPP TS 32.281: "Telecommunication management; Charging management; Announcement

[35] 3GPP TS 32.257: "Telecommunication management; Charging management; Edge computing domain charging; stage 2".

[36] - [49] Void.

[50] - [57] Void.

[58] 3GPP TS 32.290: "Telecommunication management; Charging management; 5G system; Services, operations and procedures of charging using Service Based Interface (SBI).

[59] - [69] Void.[70] 3GPP TS 28.201: "Charging management; Network slice performance and analytics charging in the 5G System (5GS); Stage 2".

[71] 3GPP TS 28.202: "Charging management; Network slice management charging in the 5G System (5GS); Stage 2".

[72] - [99] Void.

[100] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[101] 3GPP TR 21.900: "Technical Specification Group working methods".

[102] 3GPP TS 24.605: "Conference (CONF) using IP Multimedia (IM) Core Network (CN) subsystem; Protocol specification".

[103] - [199] Void

[200] - [252] Void

[253] 3GPP TS 28.532: "Management and orchestration; Management services".

[254] 3GPP TS 28.541: "Management and orchestration; 5G Network Resource Model (NRM); Stage 2 and stage 3".

[255] 3GPP TS 32.300: "Telecommunication management; Configuration Management (CM); Name convention for Managed Objects".

[256] 3GPP TS 28.554: "Management and orchestration;5G end to end Key Performance Indicators (KPI)".

[257] 3GPP TS 28.623: "Telecommunication management; Generic Network Resource Model (NRM) Integration Reference Point (IRP); Solution Set (SS) definitions".

[258] 3GPP TS 24.229: "IP Multimedia Call Control Protocol based on SIP and SDP; Stage 3".

[259] 3GPP TS 29.078: "Customised Applications for Mobile network Enhanced Logic (CAMEL); CAMEL Application Part (CAP) specification".".

[260] 3GPP TS 29.228: "IP Multimedia (IM) Subsystem Cx and Dx interface; signalling flows and message contents".

[261] 3GPP TS 29.002: "Mobile Application Part (MAP) specification".

[262] 3GPP TS 28.550: "Management and orchestration; Performance assurance ".

[263] 3GPP TS 28.552: "Management and orchestration; 5G performance measurements ".

[262] - [298] Void

[299] 3GPP TS 29.500: "5G System; Technical Realization of Service Based Architecture; Stage 3".

[300] 3GPP TS 29.501: "5G System; Principles and Guidelines for Services Definition; Stage 3".

[301] 3GPP TS 29.594: "5G System; Spending Limit Control Service; Stage 3".

[302] 3GPP TS 29.512: "5G System; Session Management Policy Control Service; Stage 3".

[303] 3GPP TS 24.501: "Non-Access-Stratum (NAS) Protocol for 5G System (5GS); Stage 3".

[304] 3GPP TS 38.413: "NG-RAN; NG Application Protocol (NGAP)".

[305] 3GPP TS 29.510: "Network Function Repository Services; Stage 3".

[306] 3GPP TS 29.520: "5G System; Network Data Analytics Services;Stage 3".

[307] 3GPP TS 29.558: "Enabling Edge Applications; Application Programming Interface (API) specification; stage 3".

[308] 3GPP TS 32.538: "Management and orchestration; Edge Computing Management".

[309] 3GPP TS 24.558: "Enabling Edge Applications; Protocol specification".

[310] - [370] Void

[371] 3GPP TS 29.571: "5G System; Common Data Types for Service Based Interfaces; Stage 3".

[372] - [389] Void

[390] 3GPP TS 33.501: "Security architecture and procedures for 5G System".

[391] - [399] Void

[400] Void.

[401] IETF RFC 7540: "Hypertext Transfer Protocol Version 2 (HTTP/2) ".

[402] IETF RFC 8259: "The JavaScript Object Notation (JSON) Data Interchange Format ".

[403] IETF RFC 6749: "The OAuth 2.0 Authorization Framework".

[404] IETF RFC 3986: "Uniform Resource Identifiers (URI): Generic Syntax".

[405] IETF RFC 7315: "Private Extensions to the Session Initiation Protocol (SIP) for the 3rd Generation Partnership Projects (3GPP)".

[406] IETF RFC 3261: "SIP: Session Initiation Protocol".

[407] IETF RFC 8866: "SDP: Session Description Protocol".

[408] IETF RFC 5646: "Tags for Identifying Languages".

[409] - [499] Void.

[500] OpenAPI: "OpenAPI 3.0.0 Specification", <https://github.com/OAI/OpenAPI-Specification/blob/master/versions/3.0.0.md>.

[501] - [599] Void.

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| **Next modification** |

#### 6.1.6.1 General

This subclause specifies the application data model supported by the API.

The Nchf\_ConvergedCharging Service API allows the NF consumer to consume the converged charging service from the CHF as defined in 3GPP TS 32.290 [58].

Table 6.1.6.1-1 specifies the data types defined for the ConvergedCharging service based interface protocol.

Table 6.1.6.1-1: Nchf\_ ConvergedCharging specific Data Types

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Data type | | Section defined | | Description | | Applicability | |
| ChargingDataRequest | | 6.1.6.2.1.1  6.1.6.2.2.1 | | Describes the attributes of Charging Data Request to CHF for initial, update and termination of the charging session. | |  | |
| ChargingDataResponse | | 6.1.6.2.1.2  6.1.6.2.2.2 | | Describes the attributes of Charging Data Response from CHF on charging session initial, update and termination. | |  | |
| ChargingNotifyRequest | | 6.1.6.2.1.3 | | Describes Notifications about events that occurred in request message. | |  | |
| ChargingNotifyResponse | | 6.1.6.2.1.16 | | Describes the response of notification. | |  | |

Table 6.1.6.1-2 specifies data types re-used by the Nchf\_ConvergedCharging service based interface protocol from other specifications, including a reference to their respective specifications and when needed, a short description of their use within the Nchf\_ConvergedCharging service based interface.

Table 6.1.6.1-2: Nchf\_ConvergedCharging re-used Data Types

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Data type | | Reference | | Comments | | Applicability | |
| Supi | | 3GPP TS 29.571 [371] | | The identification of the user (i.e. IMSI, NAI, GLI, GCI).  (NOTE 1) | |  | |
| Uint32 | | 3GPP TS 29.571 [371] | | Unsigned 32-bit integers | |  | |
| Uint64 | | 3GPP TS 29.571 [371] | | Unsigned 64-bit integers | |  | |
| PduSessionId | | 3GPP TS 29.571 [371] | | The identification of the PDU session. | |  | |
| PduSessionType | | 3GPP TS 29.571 [371] | | the type of a PDU session | |  | |
| Uri | | 3GPP TS 29.571 [371] | | String providing an URI | |  | |
| AccessType | | 3GPP TS 29.571 [371] | | The identification of the type of access network. | |  | |
| DateTime | | 3GPP TS 29.571 [371] | | The time. | |  | |
| ChargingId | | 3GPP TS 29.571 [371] | | Charging identifier allowing correlation of charging information | |  | |
| RatType | | 3GPP TS 29.571 [371] | | The identification of the RAT type. | |  | |
| RatingGroup | | 3GPP TS 29.571 [371] | | The identification of the rating group | |  | |
| Ipv4Addr | | 3GPP TS 29.571 [371] | | Ipv4 address. | |  | |
| Ipv6Prefix | | 3GPP TS 29.571 [371] | | The Ipv6 prefix allocated for the user. | |  | |
| Ipv6Addr | | 3GPP TS 29.571 [371] | | Ipv6 Address. | |  | |
| Pei | | 3GPP TS 29.571 [371] | | The Identification of a Permanent Equipment. | |  | |
| TimeZone | | 3GPP TS 29.571 [371] | | Time zone information | |  | |
| NfInstanceId | | 3GPP TS 29.571 [371] | | String uniquely identifying a NF instance. | |  | |
| Gpsi | | 3GPP TS 29.571 [371] | | String identifying a Gpsi | |  | |
| DefaultQosInformation | | 3GPP TS 29.571 [371] | | Identifies the information of the default QoS. | |  | |
| SubscribedDefaultQos | | 3GPP TS 29.571 [371] | | subscribed default QoS. | |  | |
| AuthorizedDefaultQos | | 3GPP TS 29.512 [302] | | Authorized default QoS. | |  | |
| Ambr | | 3GPP TS 29.571 [371] | | Aggregate Maximum Bit rate | |  | |
| QosData | | 3GPP TS 29.512 [302] | | Contains QoS parameters | |  | |
| UserLocation | | 3GPP TS 29.571 [371] | | User location information | |  | |
| PlmnId | | 3GPP TS 29.571 [371] | | PLMN id | |  | |
| Guami | | 3GPP TS 29.571 [371] | | Globally Unique AMF Identifier | |  | |
| DurationSec | | 3GPP TS 29.571 [371] | | Identifies a period of time in units of seconds. | |  | |
| Snssai | | 3GPP TS 29.571 [371] | | SNSSAI | |  | |
| ProblemDetails | | 3GPP TS 29.571 [371] | | additional details of the error | |  | |
| ServiceId | | 3GPP TS 29.571 [371] | | Identifier of service | |  | |
| SscMode | | 3GPP TS 29.571 [371] | | SSC Mode type | |  | |
| PresenceInfo | | 3GPP TS 29.571 [371] | | PRA information including PRAId, PRA element list and PRA status | |  | |
| Qfi | | 3GPP TS 29.571 [371] | | QoS flow identifier designated as "Qfi". | |  | |
| AmfId | | 3GPP TS 29.571 [371] | | AMF identifier | |  | |
| Dnn | | 3GPP TS 29.571 [371] | | Data Network Name | |  | |
| GroupId | | 3GPP TS 29.571 [371] | | Network internal Identifier for a group of IMSIs | |  | |
| ExternalGroupId | | 3GPP TS 29.571 [371] | | External Group Identifier for one or more subscriptions associated to a group of IMSIs | |  | |
| Bytes | | 3GPP TS 29.571 [371] | | String with format "byte" | |  | |
| Tai | | 3GPP TS 29.571 [371] | | Tracking Area Identifier | |  | |
| Area | | 3GPP TS 29.571 [371] | | List of TACs or Operator specific codes | |  | |
| CoreNetworkType | | 3GPP TS 29.571 [371] | | 5GC or EPC | |  | |
| ServiceAreaRestriction | | 3GPP TS 29.571 [371] | | Service Area restriction | |  | |
| GlobalRanNodeId | | 3GPP TS 29.571 [371] | | Global RAN Node Id | |  | |
| QosCharacteristics | | 3GPP TS 29.512 [302] | | Map of QoS characteristics for non standard 5QIs and non-preconfigured 5QIs. | |  | |
| SupportedFeatures | | 3GPP TS 29.571 [371] | | See 3GPP TS 29.500 [4] clause 6.6 | |  | |
| NsiLoadLevelInfo | | 3GPP TS 29.520 [306] | | Represents the load level information for an S-NSSAI and the associated network slice instance | |  | |
| ServiceExperienceInfo | | 3GPP TS 29.520 [306] | | ServiceExperience | |  | |
| ApplicationChargingId | | 3GPP TS 29.571 [371] | | Application provided charging identifier allowing correlation of charging information. | | AF\_Charging\_Identifier | |
| SharingLevel | | 3GPP TS 28.541 [254] | | Ressources sharing level | |  | |
| MobilityLevel | | 3GPP TS 28.541 [254] | | UE mobility Level | |  | |
| SsT | | 3GPP TS 28.541 [254] | | Slice Service type (SST) | |  | |
| Support | | 3GPP TS 28.541 [254] | | Supported, Not Supported indicator | |  | |
| Float | | 3GPP TS 29.571 [371] | | Number with format "float" | |  | |
| MaPduIndication | | 3GPP TS 29.512 [302] | | MA PDU session indication | | ATSSS | |
| AtsssCapability | | 3GPP TS 29.571 [371] | | ATSSS capabilities | | ATSSS | |
| SteeringFunctionality | | 3GPP TS 29.571 [371] | | Steering functionalities for MA PDU session | | ATSSS | |
| SteeringMode | | 3GPP TS 29.512 [302] | | Steering mode for MA PDU session | | ATSSS | |
| OperationalState | | 3GPP TS 28.623 [257] | | Operational state | |  | |
| AdministrativeState | | 3GPP TS 28.623 [257] | | Administrative state | |  | |
| RanNasRelCause | | 3GPP TS 29.512 [302] | | Indicates the RAN or NAS release cause code information. | | EnhancedDiagnostics | |
| Ecgi | | 3GPP TS 29.571 [371] | | E-UTRA Cell Id | |  | |
| Ncgi | | 3GPP TS 29.571 [371] | | NR Cell Id | |  | |
| Dnai | | 3GPP TS 29.571 [371] | | DNAI (Data network access identifier) | | EdgeComputing | |
| RouteToLocation | | 3GPP TS 29.571 [371] | |  | |  | |
| NOTE 1: A SUPI containing GLI or GCI is used to support 5G-RG and FN-RG in scenarios of wireline network. | | | | | | | |

##### 6.1.6.2.x Edge computing domain charging specified data type

###### 6.1.6.2.x.1 Type ChargingDataRequest

This clause is additional attributes of the type ChargingDataRequest defined in clause 6.1.6.2.1.1 for edge computing domain charging described in TS 32.257 [35].

Table 6.1.6.2.x.1-1: Edge computing domain specified attribute of type ChargingDataRequest

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| edgeInfrastructureUsageChargingInformation | EdgeInfrastructureUsageChargingInformation | OC | 0..1 | This field holds the edge enabling infrastructure resource usage charging specific information. | EdgeComputing |
| eASDeploymentChargingInformation | EASDeploymentChargingInformatio | OC | 0..1 | This field holds the EAS deployment charging specific information. | EdgeComputing |
| directEdgeEnablingServiceChargingInformation | DirectEdgeEnablingServiceChargingInformation | OC | 0..1 | This field holds the charging information the edge enabling services directly provided by EES, only used if structured charging information is required. | EdgeComputing |
| nEFCharging Information | NEFChargingInformation | OC | 0..1 | This field may hold both the charging information of the 5G NF services exposed by EES as well as the edge enabling services directly provided by the EES. | EdgeComputing |

Editor’s note: all attribute names and data types are FFS dependent TS 24.558 [309] and TS 29.558 [307] release.

###### 6.1.6.2.x.2 Type ChargingDataResponse

This clause specifies additional attributes of the type ChargingDataResponse defined in clause 6.1.6.2.1.2 for edge computing domain charging described in TS 32.257 [35].

Table 6.1.6.2.x.2-1: Edge computing domain specified attribute of type ChargingDataResponse

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
|  |  |  |  |  |  |

###### 6.1.6.2.x.3 Type EdgeInfrastructureUsageChargingInformation

Table  6.1.6.2.x.3-2: Definition of type EdgeInfrastructureUsageChargingInformation

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| meanVirtualCPUUsage | Float | OC | 0..1 | This field holds the information of mean virtual CPU usage for the EAS, see VR.VCpuUsageMean in clause 5.7.1.1.1 of T TS 28.552 [263]. |  |
| meanVirtualMemoryUsage | Float | OC | 0..1 | This field holds the information of mean virtual memory usage for the EAS, see VR.VMemoryUsageMean in clause 5.7.1.2.1 of TS 28.552 [263]. |  |
| meanVirtualDiskUsage | Float | OC | 0..1 | This field holds the information of mean virtual disk usage for the EAS, see VR.VDiskUsageMean in clause 5.7.1.2.1 of TS 28.552 [263]. |  |
| durationStartTime | DateTime | OC | 0..1 | This field holds the start time of the collection period, see TS 28.550 [262]. |  |
| durationEndTime | DateTime | OC | 0..1 | This field holds the end time of the collection period, see TS 28.550 [262]. |  |

###### 6.1.6.2.x.4 Type EASDeploymentChargingInformation

Table  6.1.6.2.x.4-2: Definition of type DirectEdgeEnablingServiceChargingInformation

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| eEASDeploymentRequirements | EASRequirements | OC | 0..1 | This field holds the EAS Deployment Requirements, see TS 23.558 [9], including the Required EAS Serving Location, Software Image Info, Affinity Anti Affinity and Service Continuity. |  |
| lCMStartTime | DateTime | OM | 0..1 | This field holds the start time of the EAS LCM process, see Start Time in clause 8.3.6.5 Type measJobInfo-ResourceType in TS 28.550 [262]. |  |
| lCMEndTime | DateTime | OM | 0..1 | This field holds the end time of the EAS LCM process, see Stop Time in clause 8.3.6.5 Type measJobInfo-ResourceType in TS 28.550 [262]. |  |

###### 6.1.6.2.x.5 Type DirectEdgeEnablingServiceChargingInformation

Table  6.1.6.2.x.5-2: Definition of type DirectEdgeEnablingServiceChargingInformation

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
|  |  |  |  |  |  |
| uEIdentifier | Gpsi | OC | 0..1 |  |  |
| uELocation | LocationInfo | OC | 0..1 |  |  |
| tEASDNAIs | Arry(Dnai) | OC | 0..1 |  |  |
| eASProfiles | array(EASProfile) | OC | 1..N | List of the profile information of the EAS(s). |  |
| aCInfs | array(ACInformation) | OC | 1..N |  |  |
| aCId | string | OC | 0..1 |  |  |
| tEasEndpoint | EndPoint | OC | 0..1 |  |  |
| sEasEndpoint | EndPoint | OC | 0..1 |  |  |
| prevTEasEndpoint | EndPoint | OC | 0..1 |  |  |
| routeReq | RouteToLocation | OC | 0..1 |  |  |
| eECContext | EECContext | OC | 0..1 |  |  |
| actResult | ACTResultInfo | OC | 0..1 |  |  |

###### 6.1.6.2.2.X Type EASRequirements

Table 6.1.6.2.2.10-1: Definition of type EASRequirements

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
|  |  |  |  |  |  |

###### 6.1.6.2.2.X Type EASProfile

Table 6.1.6.2.2.10-1: Definition of type EASProfile

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
|  |  |  |  |  |  |

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| **Next modification** |

### 6.1.8 Feature negotiation

The optional features in table 6.1.8-1 are defined for the Nchf\_ConvergedCharging API. They shall be negotiated using the extensibility mechanism defined in subclause 6.6 of 3GPP TS 29.500 [299].

Table 6.1.8-1: Supported Features

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Feature number | | Feature Name | | Description | |
| 1 | | CHFCQM | | CHF-controlled quota management i.e. support for temporary offline | |
| 2 | | AF\_Charging\_Identifier | | Indicates the support of long character strings as charging identifiers. | |
| 3 | | 5GIEPC\_CH | | 5GS interworking with EPC | |
| 4 | | ATSSS | | This feature indicates support of Access Traffic Steering, Switching, Splitting (ATSSS). | |
| 5 | | ETSUN | | This feature indicates support of Enhancing Topology of SMF and UPF in 5G Networks (ETSUN). | |
| 6 | | EnhancedDiagnostics | | Support the enhanced diagnostics | |
| 7 | | AMF\_subs\_PRA | | PRA(s) subscription by CHF in AMF | |
| 8 | | FilterRuleList | | Support of multiple filter rules in the final unit indication | |
| 9 | | TEI17\_NIESGU | | This feature indicates support of GERAN/UTRAN access | |
| 10 | | IMS | | This feature indicates support of IMS. | |
| 11 | | QoSMonitoring | | This feature indicates support of QoS Monitoring | |
| 12 | | Announcement | | This feature indicates support of announcements. | |
| 13 | | 5GLAN | | This feature indicates support of 5G LAN-type services. | |
| 13 | | URLLC | | This feature indicates support of URLLC. | |
| 14 | | NotifyInfoResponse | | This feature indicates support of response with information for a notification. | |
| 15 | | ES4xx | | Extended Support of HTTP 400, 403, 404 allowing use of either ChargingDataResponse or ProblemDetails in the response. | |
| 16 | | EdgeComputing | | This feature indicates support of edge computing domain charging. | |

|  |
| --- |
| **Next modification** |

## 7.x Bindings for Edge Computing domain charging

Table 7.x-1: Bindings of Edge Computing domain charging CDR field, Information Element and Resource Attribute

| Information Element | CDR Field | Resource Attribute |
| --- | --- | --- |
|  |  | **ChargingDataRequest** |
| Edge Enabling Infrastructure Resource Usage Charging Information | Edge Enabling Infrastructure Resource Usage Charging Information | /edgeInfrastructureUsageChargingInformation |
| Mean Virtual CPU Usage | Mean Virtual CPU Usage | /edgeInfrastructureUsageChargingInformation/meanVirtualCPUUsage |
| Mean Virtual Memory Usage | Mean Virtual Memory Usage | /edgeInfrastructureUsageChargingInformation/meanVirtualMemoryUsage |
| Mean Virtual Disk Usage | Mean Virtual Disk Usage | /edgeInfrastructureUsageChargingInformation/meanVirtualDiskUsage |
| Duration Start Time | Duration Start Time | /edgeInfrastructureUsageChargingInformation/durationStartTime |
| Duration End Time | Duration End Time | /edgeInfrastructureUsageChargingInformation/durationEndTime |
| EAS Deployment Charging Information | EAS Deployment Charging Information | /eASDeploymentChargingInformation |
| EAS Deployment Requirements | EAS Deployment Requirements | /eASDeploymentChargingInformation/eASDeploymentRequirements |
| LCM Start Time | LCM Start Time | /eASDeploymentChargingInformation/lCMStartTime |
| LCM End Time | LCM End Time | /eASDeploymentChargingInformation/lCMEndTime |
| Direct Edge Enabling Service Charging Information | Direct Edge Enabling Service Charging Information | / directEdgeEnablingServiceChargingInformation |
| UE Identifier | UE Identifier | / directEdgeEnablingServiceChargingInformation/uEIdentifier |
| UE Location | UE Location | / directEdgeEnablingServiceChargingInformation/uELocation |
| DNAI of the T-EAS | DNAI of the T-EAS | / directEdgeEnablingServiceChargingInformation/tEASDNAI |
| EAS Profiles | EAS Profiles | directEdgeEnablingServiceChargingInformation/eASProfiles |
| AC Info | AC Info | directEdgeEnablingServiceChargingInformation/aCInfs |
| T-EAS Endpoint | T-EAS Endpoint | directEdgeEnablingServiceChargingInformation/tEASEndpoint |
| S-EAS Endpoint | S-EAS Endpoint | directEdgeEnablingServiceChargingInformation/sEasEndpoint |
| Previous T-EAS Endpoint | Previous T-EAS Endpoint | directEdgeEnablingServiceChargingInformation/prevTEasEndpoint |
| Route Req | Route Req | directEdgeEnablingServiceChargingInformation/routeReq |
| AC Id | AC Id | directEdgeEnablingServiceChargingInformation/acId |
| EEC Context | EEC Context | / directEdgeEnablingServiceChargingInformation/eECContext |
| ACT Result | ACT Result | / directEdgeEnablingServiceChargingInformation/aCTResult |
| Exposed Edge Enabling Service Charging Information | ExposureFunctionAPIInformation | /nEFChargingInformation |
| UE Identifier | externalIndividualIdentifier | /nEFChargingInformation/externalIndividualIdentifier |
| API Direction | aPIDirection | /nEFChargingInformation/aPIDirection |
| API Target Network Function | aPITargetNetworkFunction | /nEFChargingInformation/aPITargetNetworkFunction |
| API Result Code | aPIResultCode | /nEFChargingInformation/aPIResultCode |
| API Name | aPIName | /nEFChargingInformation/aPIName |
| API Reference | aPIReference | /nEFChargingInformation/aPIReference |
| API Content | aPIContent | /nEFChargingInformation/aPIContent |
|  |  | **ChargingDataResponse** |
| - | - | - |

|  |
| --- |
| **Next modification** |

## A.2 Nchf\_ConvergedCharging API

openapi: 3.0.0

info:

title: Nchf\_ConvergedCharging

version: 3.1.0-alpha.3

description: |

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externalDocs:

description: >

3GPP TS 32.291 V17.2.0: Telecommunication management; Charging management;

5G system, charging service; Stage 3.

url: 'http://www.3gpp.org/ftp/Specs/archive/32\_series/32.291/'

servers:

- url: '{apiRoot}/nchf-convergedcharging/v3'

variables:

apiRoot:

default: https://example.com

description: apiRoot as defined in subclause 4.4 of 3GPP TS 29.501.

security:

- {}

- oAuth2ClientCredentials:

- nchf-convergedcharging

paths:

/chargingdata:

post:

requestBody:

required: true

content:

application/json:

schema:

$ref: '#/components/schemas/ChargingDataRequest'

responses:

'201':

description: Created

content:

application/json:

schema:

$ref: '#/components/schemas/ChargingDataResponse'

'400':

description: Bad request

content:

application/problem+json:

schema:

oneOf:

- $ref: 'TS29571\_CommonData.yaml#/components/schemas/ProblemDetails'

- $ref: '#/components/schemas/ChargingDataResponse'

'401':

$ref: 'TS29571\_CommonData.yaml#/components/responses/401'

'403':

description: Forbidden

content:

application/problem+json:

schema:

oneOf:

- $ref: 'TS29571\_CommonData.yaml#/components/schemas/ProblemDetails'

- $ref: '#/components/schemas/ChargingDataResponse'

'404':

description: Not Found

content:

application/problem+json:

schema:

oneOf:

- $ref: 'TS29571\_CommonData.yaml#/components/schemas/ProblemDetails'

- $ref: '#/components/schemas/ChargingDataResponse'

'405':

$ref: 'TS29571\_CommonData.yaml#/components/responses/405'

'408':

$ref: 'TS29571\_CommonData.yaml#/components/responses/408'

'410':

$ref: 'TS29571\_CommonData.yaml#/components/responses/410'

'411':

$ref: 'TS29571\_CommonData.yaml#/components/responses/411'

'413':

$ref: 'TS29571\_CommonData.yaml#/components/responses/413'

'500':

$ref: 'TS29571\_CommonData.yaml#/components/responses/500'

'503':

$ref: 'TS29571\_CommonData.yaml#/components/responses/503'

default:

$ref: 'TS29571\_CommonData.yaml#/components/responses/default'

callbacks:

chargingNotification:

'{$request.body#/notifyUri}':

post:

requestBody:

required: true

content:

application/json:

schema:

$ref: '#/components/schemas/ChargingNotifyRequest'

responses:

'200':

description: OK.

content:

application/ json:

schema:

$ref: '#/components/schemas/ChargingNotifyResponse'

'204':

description: 'No Content, Notification was succesfull'

'400':

description: Bad request

content:

application/problem+json:

schema:

oneOf:

- $ref: TS29571\_CommonData.yaml#/components/schemas/ProblemDetails

- $ref: '#/components/schemas/ChargingNotifyResponse'

default:

$ref: 'TS29571\_CommonData.yaml#/components/responses/default'

'/chargingdata/{ChargingDataRef}/update':

post:

requestBody:

required: true

content:

application/json:

schema:

$ref: '#/components/schemas/ChargingDataRequest'

parameters:

- name: ChargingDataRef

in: path

description: a unique identifier for a charging data resource in a PLMN

required: true

schema:

type: string

responses:

'200':

description: OK. Updated Charging Data resource is returned

content:

application/json:

schema:

$ref: '#/components/schemas/ChargingDataResponse'

'400':

description: Bad request

content:

application/problem+json:

schema:

oneOf:

- $ref: 'TS29571\_CommonData.yaml#/components/schemas/ProblemDetails'

- $ref: '#/components/schemas/ChargingDataResponse'

'401':

$ref: 'TS29571\_CommonData.yaml#/components/responses/401'

'403':

description: Forbidden

content:

application/problem+json:

schema:

oneOf:

- $ref: 'TS29571\_CommonData.yaml#/components/schemas/ProblemDetails'

- $ref: '#/components/schemas/ChargingDataResponse'

'404':

description: Not Found

content:

application/problem+json:

schema:

oneOf:

- $ref: 'TS29571\_CommonData.yaml#/components/schemas/ProblemDetails'

- $ref: '#/components/schemas/ChargingDataResponse'

'405':

$ref: 'TS29571\_CommonData.yaml#/components/responses/405'

'408':

$ref: 'TS29571\_CommonData.yaml#/components/responses/408'

'410':

$ref: 'TS29571\_CommonData.yaml#/components/responses/410'

'411':

$ref: 'TS29571\_CommonData.yaml#/components/responses/411'

'413':

$ref: 'TS29571\_CommonData.yaml#/components/responses/413'

'500':

$ref: 'TS29571\_CommonData.yaml#/components/responses/500'

'503':

$ref: 'TS29571\_CommonData.yaml#/components/responses/503'

default:

$ref: 'TS29571\_CommonData.yaml#/components/responses/default'

'/chargingdata/{ChargingDataRef}/release':

post:

requestBody:

required: true

content:

application/json:

schema:

$ref: '#/components/schemas/ChargingDataRequest'

parameters:

- name: ChargingDataRef

in: path

description: a unique identifier for a charging data resource in a PLMN

required: true

schema:

type: string

responses:

'204':

description: No Content.

'401':

$ref: 'TS29571\_CommonData.yaml#/components/responses/401'

'404':

description: Not Found

content:

application/problem+json:

schema:

oneOf:

- $ref: 'TS29571\_CommonData.yaml#/components/schemas/ProblemDetails'

- $ref: '#/components/schemas/ChargingDataResponse'

'410':

$ref: 'TS29571\_CommonData.yaml#/components/responses/410'

'411':

$ref: 'TS29571\_CommonData.yaml#/components/responses/411'

'413':

$ref: 'TS29571\_CommonData.yaml#/components/responses/413'

'500':

$ref: 'TS29571\_CommonData.yaml#/components/responses/500'

'503':

$ref: 'TS29571\_CommonData.yaml#/components/responses/503'

default:

$ref: 'TS29571\_CommonData.yaml#/components/responses/default'

components:

securitySchemes:

oAuth2ClientCredentials:

type: oauth2

flows:

clientCredentials:

tokenUrl: '{nrfApiRoot}/oauth2/token'

scopes:

nchf-convergedcharging: Access to the Nchf\_ConvergedCharging API

schemas:

ChargingDataRequest:

type: object

properties:

subscriberIdentifier:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Supi'

tenantIdentifier:

type: string

chargingId:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/ChargingId'

mnSConsumerIdentifier:

type: string

nfConsumerIdentification:

$ref: '#/components/schemas/NFIdentification'

invocationTimeStamp:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/DateTime'

invocationSequenceNumber:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uint32'

retransmissionIndicator:

type: boolean

oneTimeEvent:

type: boolean

oneTimeEventType:

$ref: '#/components/schemas/oneTimeEventType'

notifyUri:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uri'

supportedFeatures:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/SupportedFeatures'

serviceSpecificationInfo:

type: string

multipleUnitUsage:

type: array

items:

$ref: '#/components/schemas/MultipleUnitUsage'

minItems: 0

triggers:

type: array

items:

$ref: '#/components/schemas/Trigger'

minItems: 0

pDUSessionChargingInformation:

$ref: '#/components/schemas/PDUSessionChargingInformation'

roamingQBCInformation:

$ref: '#/components/schemas/RoamingQBCInformation'

sMSChargingInformation:

$ref: '#/components/schemas/SMSChargingInformation'

nEFChargingInformation:

$ref: '#/components/schemas/NEFChargingInformation'

registrationChargingInformation:

$ref: '#/components/schemas/RegistrationChargingInformation'

n2ConnectionChargingInformation:

$ref: '#/components/schemas/N2ConnectionChargingInformation'

locationReportingChargingInformation:

$ref: '#/components/schemas/LocationReportingChargingInformation'

nSPAChargingInformation:

$ref: '#/components/schemas/NSPAChargingInformation'

nSMChargingInformation:

$ref: '#/components/schemas/NSMChargingInformation'

mMTelChargingInformation:

$ref: '#/components/schemas/MMTelChargingInformation'

iMSChargingInformation:

$ref: '#/components/schemas/IMSChargingInformation'

edgeInfrastructureUsageChargingInformation':

$ref: '#/components/schemas/EdgeInfrastructureUsageChargingInformation'

eASDeploymentChargingInformation:

$ref: '#/components/schemas/EASDeploymentChargingInformation'

directEdgeEnablingServiceChargingInformation:

$ref: '#/components/schemas/DirectEdgeEnablingServiceChargingInformation'

required:

- nfConsumerIdentification

- invocationTimeStamp

- invocationSequenceNumber

ChargingDataResponse:

type: object

properties:

invocationTimeStamp:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/DateTime'

invocationSequenceNumber:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uint32'

invocationResult:

$ref: '#/components/schemas/InvocationResult'

sessionFailover:

$ref: '#/components/schemas/SessionFailover'

supportedFeatures:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/SupportedFeatures'

multipleUnitInformation:

type: array

items:

$ref: '#/components/schemas/MultipleUnitInformation'

minItems: 0

triggers:

type: array

items:

$ref: '#/components/schemas/Trigger'

minItems: 0

pDUSessionChargingInformation:

$ref: '#/components/schemas/PDUSessionChargingInformation'

roamingQBCInformation:

$ref: '#/components/schemas/RoamingQBCInformation'

locationReportingChargingInformation:

$ref: '#/components/schemas/LocationReportingChargingInformation'

required:

- invocationTimeStamp

- invocationSequenceNumber

ChargingNotifyRequest:

type: object

properties:

notificationType:

$ref: '#/components/schemas/NotificationType'

reauthorizationDetails:

type: array

items:

$ref: '#/components/schemas/ReauthorizationDetails'

minItems: 0

required:

- notificationType

ChargingNotifyResponse:

type: object

properties:

invocationResult:

$ref: '#/components/schemas/InvocationResult'

NFIdentification:

type: object

properties:

nFName:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/NfInstanceId'

nFIPv4Address:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Ipv4Addr'

nFIPv6Address:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Ipv6Addr'

nFPLMNID:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/PlmnId'

nodeFunctionality:

$ref: '#/components/schemas/NodeFunctionality'

nFFqdn:

type: string

required:

- nodeFunctionality

MultipleUnitUsage:

type: object

properties:

ratingGroup:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/RatingGroup'

requestedUnit:

$ref: '#/components/schemas/RequestedUnit'

usedUnitContainer:

type: array

items:

$ref: '#/components/schemas/UsedUnitContainer'

minItems: 0

uPFID:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/NfInstanceId'

multihomedPDUAddress:

$ref: '#/components/schemas/PDUAddress'

required:

- ratingGroup

InvocationResult:

type: object

properties:

error:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/ProblemDetails'

failureHandling:

$ref: '#/components/schemas/FailureHandling'

Trigger:

type: object

properties:

triggerType:

$ref: '#/components/schemas/TriggerType'

triggerCategory:

$ref: '#/components/schemas/TriggerCategory'

timeLimit:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/DurationSec'

volumeLimit:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uint32'

volumeLimit64:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uint64'

eventLimit:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uint32'

maxNumberOfccc:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uint32'

tariffTimeChange:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/DateTime'

required:

- triggerType

- triggerCategory

MultipleUnitInformation:

type: object

properties:

resultCode:

$ref: '#/components/schemas/ResultCode'

ratingGroup:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/RatingGroup'

grantedUnit:

$ref: '#/components/schemas/GrantedUnit'

triggers:

type: array

items:

$ref: '#/components/schemas/Trigger'

minItems: 0

validityTime:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/DurationSec'

quotaHoldingTime:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/DurationSec'

finalUnitIndication:

$ref: '#/components/schemas/FinalUnitIndication'

timeQuotaThreshold:

type: integer

volumeQuotaThreshold:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uint64'

unitQuotaThreshold:

type: integer

uPFID:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/NfInstanceId'

announcementInformation:

$ref: '#/components/schemas/AnnouncementInformation'

required:

- ratingGroup

RequestedUnit:

type: object

properties:

time:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uint32'

totalVolume:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uint64'

uplinkVolume:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uint64'

downlinkVolume:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uint64'

serviceSpecificUnits:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uint64'

UsedUnitContainer:

type: object

properties:

serviceId:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/ServiceId'

quotaManagementIndicator:

$ref: '#/components/schemas/QuotaManagementIndicator'

triggers:

type: array

items:

$ref: '#/components/schemas/Trigger'

minItems: 0

triggerTimestamp:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/DateTime'

time:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uint32'

totalVolume:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uint64'

uplinkVolume:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uint64'

downlinkVolume:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uint64'

serviceSpecificUnits:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uint64'

eventTimeStamps:

type: array

items:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/DateTime'

minItems: 0

localSequenceNumber:

type: integer

pDUContainerInformation:

$ref: '#/components/schemas/PDUContainerInformation'

nSPAContainerInformation:

$ref: '#/components/schemas/NSPAContainerInformation'

required:

- localSequenceNumber

GrantedUnit:

type: object

properties:

tariffTimeChange:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/DateTime'

time:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uint32'

totalVolume:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uint64'

uplinkVolume:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uint64'

downlinkVolume:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uint64'

serviceSpecificUnits:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uint64'

FinalUnitIndication:

type: object

properties:

finalUnitAction:

$ref: '#/components/schemas/FinalUnitAction'

restrictionFilterRule:

$ref: '#/components/schemas/IPFilterRule'

restrictionFilterRuleList:

type: array

items:

$ref: '#/components/schemas/IPFilterRule'

minItems: 1

filterId:

type: string

filterIdList:

type: array

items:

type: string

minItems: 1

redirectServer:

$ref: '#/components/schemas/RedirectServer'

required:

- finalUnitAction

RedirectServer:

type: object

properties:

redirectAddressType:

$ref: '#/components/schemas/RedirectAddressType'

redirectServerAddress:

type: string

required:

- redirectAddressType

- redirectServerAddress

ReauthorizationDetails:

type: object

properties:

serviceId:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/ServiceId'

ratingGroup:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/RatingGroup'

quotaManagementIndicator:

$ref: '#/components/schemas/QuotaManagementIndicator'

PDUSessionChargingInformation:

type: object

properties:

chargingId:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/ChargingId'

homeProvidedChargingId:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/ChargingId'

userInformation:

$ref: '#/components/schemas/UserInformation'

userLocationinfo:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/UserLocation'

mAPDUNon3GPPUserLocationInfo:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/UserLocation'

non3GPPUserLocationTime:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/DateTime'

mAPDUNon3GPPUserLocationTime:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/DateTime'

presenceReportingAreaInformation:

type: object

additionalProperties:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/PresenceInfo'

minProperties: 0

uetimeZone:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/TimeZone'

pduSessionInformation:

$ref: '#/components/schemas/PDUSessionInformation'

unitCountInactivityTimer:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/DurationSec'  
 rANSecondaryRATUsageReport:

$ref: '#/components/schemas/RANSecondaryRATUsageReport'

UserInformation:

type: object

properties:

servedGPSI:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Gpsi'

servedPEI:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Pei'

unauthenticatedFlag:

type: boolean

roamerInOut:

$ref: '#/components/schemas/RoamerInOut'

PDUSessionInformation:

type: object

properties:

networkSlicingInfo:

$ref: '#/components/schemas/NetworkSlicingInfo'

pduSessionID:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/PduSessionId'

pduType:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/PduSessionType'

sscMode:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/SscMode'

hPlmnId:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/PlmnId'

servingNetworkFunctionID:

$ref: '#/components/schemas/ServingNetworkFunctionID'

ratType:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/RatType'

mAPDUNon3GPPRATType:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/RatType'

dnnId:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Dnn'

dnnSelectionMode:

$ref: '#/components/schemas/dnnSelectionMode'

chargingCharacteristics:

type: string

pattern: '^[0-9a-fA-F]{1,4}$'

chargingCharacteristicsSelectionMode:

$ref: '#/components/schemas/ChargingCharacteristicsSelectionMode'

startTime:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/DateTime'

stopTime:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/DateTime'

3gppPSDataOffStatus:

$ref: '#/components/schemas/3GPPPSDataOffStatus'

sessionStopIndicator:

type: boolean

pduAddress:

$ref: '#/components/schemas/PDUAddress'

diagnostics:

$ref: '#/components/schemas/Diagnostics'

authorizedQoSInformation:

$ref: 'TS29512\_Npcf\_SMPolicyControl.yaml#/components/schemas/AuthorizedDefaultQos'

subscribedQoSInformation:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/SubscribedDefaultQos'

authorizedSessionAMBR:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Ambr'

subscribedSessionAMBR:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Ambr'

servingCNPlmnId:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/PlmnId'

mAPDUSessionInformation:

$ref: '#/components/schemas/MAPDUSessionInformation'

enhancedDiagnostics:

$ref: '#/components/schemas/EnhancedDiagnostics5G'

redundantTransmissionType:

$ref: '#/components/schemas/RedundantTransmissionType'

pDUSessionPairID:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uint32'

qosMonitoringReport:

type: array

items:

$ref: '#/components/schemas/QosMonitoringReport'

minItems: 0

5GLANTypeService:

$ref: '#/components/schemas/5GLANTypeService'

required:

- pduSessionID

- dnnId

PDUContainerInformation:

type: object

properties:

timeofFirstUsage:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/DateTime'

timeofLastUsage:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/DateTime'

qoSInformation:

$ref: 'TS29512\_Npcf\_SMPolicyControl.yaml#/components/schemas/QosData'

qoSCharacteristics:

$ref: 'TS29512\_Npcf\_SMPolicyControl.yaml#/components/schemas/QosCharacteristics'

afChargingIdentifier:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/ChargingId'

afChargingIdString:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/ApplicationChargingId'

userLocationInformation:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/UserLocation'

uetimeZone:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/TimeZone'

rATType:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/RatType'

servingNodeID:

type: array

items:

$ref: '#/components/schemas/ServingNetworkFunctionID'

minItems: 0

presenceReportingAreaInformation:

type: object

additionalProperties:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/PresenceInfo'

minProperties: 0

3gppPSDataOffStatus:

$ref: '#/components/schemas/3GPPPSDataOffStatus'

sponsorIdentity:

type: string

applicationserviceProviderIdentity:

type: string

chargingRuleBaseName:

type: string

mAPDUSteeringFunctionality:

$ref: 'TS29512\_Npcf\_SMPolicyControl.yaml#/components/schemas/SteeringFunctionality'

mAPDUSteeringMode:

$ref: 'TS29512\_Npcf\_SMPolicyControl.yaml#/components/schemas/SteeringMode'

trafficForwardingWay:

$ref: '#/components/schemas/TrafficForwardingWay'

NSPAContainerInformation:

type: object

properties:

latency:

type: integer

throughput:

$ref: '#/components/schemas/Throughput'

maximumPacketLossRate:

type: string

serviceExperienceStatisticsData:

$ref: 'TS29520\_Nnwdaf\_EventsSubscription.yaml#/components/schemas/ServiceExperienceInfo'

theNumberOfPDUSessions:

type: integer

theNumberOfRegisteredSubscribers:

type: integer

loadLevel:

$ref: 'TS29520\_Nnwdaf\_EventsSubscription.yaml#/components/schemas/NsiLoadLevelInfo'

NSPAChargingInformation:

type: object

properties:

singleNSSAI:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Snssai'

required:

- singleNSSAI

NetworkSlicingInfo:

type: object

properties:

sNSSAI:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Snssai'

required:

- sNSSAI

PDUAddress:

type: object

properties:

pduIPv4Address:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Ipv4Addr'

pduIPv6AddresswithPrefix:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Ipv6Addr'

pduAddressprefixlength:

type: integer

iPv4dynamicAddressFlag:

type: boolean

iPv6dynamicPrefixFlag:

type: boolean

addIpv6AddrPrefixes:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Ipv6Prefix'

ServingNetworkFunctionID:

type: object

properties:

servingNetworkFunctionInformation:

$ref: '#/components/schemas/NFIdentification'

aMFId:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/AmfId'

required:

- servingNetworkFunctionInformation

RoamingQBCInformation:

type: object

properties:

multipleQFIcontainer:

type: array

items:

$ref: '#/components/schemas/MultipleQFIcontainer'

minItems: 0

uPFID:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/NfInstanceId'

roamingChargingProfile:

$ref: '#/components/schemas/RoamingChargingProfile'

MultipleQFIcontainer:

type: object

properties:

triggers:

type: array

items:

$ref: '#/components/schemas/Trigger'

minItems: 0

triggerTimestamp:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/DateTime'

time:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uint32'

totalVolume:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uint64'

uplinkVolume:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uint64'

downlinkVolume:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uint64'

localSequenceNumber:

type: integer

qFIContainerInformation:

$ref: '#/components/schemas/QFIContainerInformation'

required:

- localSequenceNumber

QFIContainerInformation:

type: object

properties:

qFI:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Qfi'

reportTime:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/DateTime'

timeofFirstUsage:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/DateTime'

timeofLastUsage:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/DateTime'

qoSInformation:

$ref: 'TS29512\_Npcf\_SMPolicyControl.yaml#/components/schemas/QosData'

qoSCharacteristics:

$ref: 'TS29512\_Npcf\_SMPolicyControl.yaml#/components/schemas/QosCharacteristics'

userLocationInformation:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/UserLocation'

uetimeZone:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/TimeZone'

presenceReportingAreaInformation:

type: object

additionalProperties:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/PresenceInfo'

minProperties: 0

rATType:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/RatType'

servingNetworkFunctionID:

type: array

items:

$ref: '#/components/schemas/ServingNetworkFunctionID'

minItems: 0

3gppPSDataOffStatus:

$ref: '#/components/schemas/3GPPPSDataOffStatus'

3gppChargingId:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/ChargingId'

diagnostics:

$ref: '#/components/schemas/Diagnostics'

enhancedDiagnostics:

type: array

items:

type: string

required:

- reportTime

RoamingChargingProfile:

type: object

properties:

triggers:

type: array

items:

$ref: '#/components/schemas/Trigger'

minItems: 0

partialRecordMethod:

$ref: '#/components/schemas/PartialRecordMethod'

SMSChargingInformation:

type: object

properties:

originatorInfo:

$ref: '#/components/schemas/OriginatorInfo'

recipientInfo:

type: array

items:

$ref: '#/components/schemas/RecipientInfo'

minItems: 0

userEquipmentInfo:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Pei'

roamerInOut:

$ref: '#/components/schemas/RoamerInOut'

userLocationinfo:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/UserLocation'

uetimeZone:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/TimeZone'

rATType:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/RatType'

sMSCAddress:

type: string

sMDataCodingScheme:

type: integer

sMMessageType:

$ref: '#/components/schemas/SMMessageType'

sMReplyPathRequested:

$ref: '#/components/schemas/ReplyPathRequested'

sMUserDataHeader:

type: string

sMStatus:

type: string

pattern: '^[0-7]?[0-9a-fA-F]$'

sMDischargeTime:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/DateTime'

numberofMessagesSent:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uint32'

sMServiceType:

$ref: '#/components/schemas/SMServiceType'

sMSequenceNumber:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uint32'

sMSresult:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uint32'

submissionTime:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/DateTime'

sMPriority:

$ref: '#/components/schemas/SMPriority'

messageReference:

type: string

messageSize:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uint32'

messageClass:

$ref: '#/components/schemas/MessageClass'

deliveryReportRequested:

$ref: '#/components/schemas/DeliveryReportRequested'

OriginatorInfo:

type: object

properties:

originatorSUPI:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Supi'

originatorGPSI:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Gpsi'

originatorOtherAddress:

$ref: '#/components/schemas/SMAddressInfo'

originatorReceivedAddress:

$ref: '#/components/schemas/SMAddressInfo'

originatorSCCPAddress:

type: string

sMOriginatorInterface:

$ref: '#/components/schemas/SMInterface'

sMOriginatorProtocolId:

type: string

RecipientInfo:

type: object

properties:

recipientSUPI:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Supi'

recipientGPSI:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Gpsi'

recipientOtherAddress:

$ref: '#/components/schemas/SMAddressInfo'

recipientReceivedAddress:

$ref: '#/components/schemas/SMAddressInfo'

recipientSCCPAddress:

type: string

sMDestinationInterface:

$ref: '#/components/schemas/SMInterface'

sMrecipientProtocolId:

type: string

SMAddressInfo:

type: object

properties:

sMaddressType:

$ref: '#/components/schemas/SMAddressType'

sMaddressData:

type: string

sMaddressDomain:

$ref: '#/components/schemas/SMAddressDomain'

RecipientAddress:

type: object

properties:

recipientAddressInfo:

$ref: '#/components/schemas/SMAddressInfo'

sMaddresseeType:

$ref: '#/components/schemas/SMAddresseeType'

MessageClass:

type: object

properties:

classIdentifier:

$ref: '#/components/schemas/ClassIdentifier'

tokenText:

type: string

SMAddressDomain:

type: object

properties:

domainName:

type: string

3GPPIMSIMCCMNC:

type: string

SMInterface:

type: object

properties:

interfaceId:

type: string

interfaceText:

type: string

interfacePort:

type: string

interfaceType:

$ref: '#/components/schemas/InterfaceType'

RANSecondaryRATUsageReport:

type: object

properties:

rANSecondaryRATType:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/RatType'

qosFlowsUsageReports:

type: array

items:

$ref: '#/components/schemas/QosFlowsUsageReport'

Diagnostics:

type: integer

IPFilterRule:

type: string

QosFlowsUsageReport:

type: object

properties:

qFI:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Qfi'

startTimestamp:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/DateTime'

endTimestamp:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/DateTime'

uplinkVolume:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uint64'

downlinkVolume:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uint64'

5GLANTypeService:

type: object

properties:

internalGroupIdentifier:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/GroupId'

NEFChargingInformation:

type: object

properties:

externalIndividualIdentifier:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Gpsi'

externalGroupIdentifier:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/ExternalGroupId'

groupIdentifier:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/GroupId'

aPIDirection:

$ref: '#/components/schemas/APIDirection'

aPITargetNetworkFunction:

$ref: '#/components/schemas/NFIdentification'

aPIResultCode:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uint32'

aPIName:

type: string

aPIReference:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uri'

aPIContent:

type: string

required:

- aPIName

RegistrationChargingInformation:

type: object

properties:

registrationMessagetype:

$ref: '#/components/schemas/RegistrationMessageType'

userInformation:

$ref: '#/components/schemas/UserInformation'

userLocationinfo:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/UserLocation'

pSCellInformation:

$ref: '#/components/schemas/PSCellInformation'

uetimeZone:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/TimeZone'

rATType:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/RatType'

5GMMCapability:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Bytes'

mICOModeIndication:

$ref: '#/components/schemas/MICOModeIndication'

smsIndication:

$ref: '#/components/schemas/SmsIndication'

taiList:

type: array

items:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Tai'

minItems: 0

serviceAreaRestriction:

type: array

items:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/ServiceAreaRestriction'

minItems: 0

requestedNSSAI:

type: array

items:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Snssai'

minItems: 0

allowedNSSAI:

type: array

items:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Snssai'

minItems: 0

rejectedNSSAI:

type: array

items:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Snssai'

minItems: 0

nSSAIMapList:

type: array

items:

$ref: '#/components/schemas/NSSAIMap'

minItems: 0

amfUeNgapId:

type: integer

ranUeNgapId:

type: integer

ranNodeId:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/GlobalRanNodeId'

required:

- registrationMessagetype

PSCellInformation:

type: object

properties:

nrcgi:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Ncgi'

ecgi:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Ecgi'

NSSAIMap:

type: object

properties:

servingSnssai:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Snssai'

homeSnssai:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Snssai'

required:

- servingSnssai

- homeSnssai

N2ConnectionChargingInformation:

type: object

properties:

n2ConnectionMessageType:

$ref: '#/components/schemas/N2ConnectionMessageType'

userInformation:

$ref: '#/components/schemas/UserInformation'

userLocationinfo:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/UserLocation'

pSCellInformation:

$ref: '#/components/schemas/PSCellInformation'

uetimeZone:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/TimeZone'

rATType:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/RatType'

amfUeNgapId:

type: integer

ranUeNgapId:

type: integer

ranNodeId:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/GlobalRanNodeId'

restrictedRatList:

type: array

items:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/RatType'

minItems: 0

forbiddenAreaList:

type: array

items:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Area'

minItems: 0

serviceAreaRestriction:

type: array

items:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/ServiceAreaRestriction'

minItems: 0

restrictedCnList:

type: array

items:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/CoreNetworkType'

minItems: 0

allowedNSSAI:

type: array

items:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Snssai'

minItems: 0

rrcEstCause:

type: string

pattern: '^[0-9a-fA-F]+$'

required:

- n2ConnectionMessageType

LocationReportingChargingInformation:

type: object

properties:

locationReportingMessageType:

$ref: '#/components/schemas/LocationReportingMessageType'

userInformation:

$ref: '#/components/schemas/UserInformation'

userLocationinfo:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/UserLocation'

pSCellInformation:

$ref: '#/components/schemas/PSCellInformation'

uetimeZone:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/TimeZone'

rATType:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/RatType'

presenceReportingAreaInformation:

type: object

additionalProperties:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/PresenceInfo'

minProperties: 0

required:

- locationReportingMessageType

N2ConnectionMessageType:

type: integer

LocationReportingMessageType:

type: integer

NSMChargingInformation:

type: object

properties:

managementOperation:

$ref: '#/components/schemas/ManagementOperation'

idNetworkSliceInstance:

type: string

listOfserviceProfileChargingInformation:

type: array

items:

$ref: '#/components/schemas/ServiceProfileChargingInformation'

minItems: 0

managementOperationStatus:

$ref: '#/components/schemas/ManagementOperationStatus'

# To be introduced once the reference to 'generic.yaml is resolved

# managementOperationalState:

# $ref: 'genericNrm.yaml#/components/schemas/OperationalState'

# managementAdministrativeState:

# $ref: 'genericNrm.yaml#/components/schemas/AdministrativeState'

required:

- managementOperation

ServiceProfileChargingInformation:

type: object

properties:

serviceProfileIdentifier:

type: string

sNSSAIList:

type: array

items:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Snssai'

minItems: 0

# To be introduced once the reference to 'nrNrm.yaml is resolved

# sST:

# $ref: 'nrNrm.yaml#/components/schemas/Sst'

latency:

type: integer

availability:

type: number

# To be introduced once the reference to sliceNrm.yaml is resolved

# resourceSharingLevel:

# $ref: 'sliceNrm.yaml#/components/schemas/SharingLevel'

jitter:

type: integer

reliability:

type: string

maxNumberofUEs:

type: integer

coverageArea:

type: string

# To be introduced once the reference to sliceNrm.yaml is resolved

# uEMobilityLevel:

# $ref: 'sliceNrm.yaml#/components/schemas/MobilityLevel'

# delayToleranceIndicator:

# $ref: 'sliceNrm.yaml#/components/schemas/Support'

dLThptPerSlice:

$ref: '#/components/schemas/Throughput'

dLThptPerUE:

$ref: '#/components/schemas/Throughput'

uLThptPerSlice:

$ref: '#/components/schemas/Throughput'

uLThptPerUE:

$ref: '#/components/schemas/Throughput'

maxNumberofPDUsessions:

type: integer

kPIMonitoringList:

type: string

supportedAccessTechnology:

type: integer

# To be introduced once the reference to sliceNrm.yaml is resolved

# v2XCommunicationModeIndicator:

# $ref: 'sliceNrm.yaml#/components/schemas/Support'

addServiceProfileInfo:

type: string

Throughput:

type: object

properties:

guaranteedThpt:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Float'

maximumThpt:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Float'

MAPDUSessionInformation:

type: object

properties:

mAPDUSessionIndicator:

$ref: 'TS29512\_Npcf\_SMPolicyControl.yaml#/components/schemas/MaPduIndication'

aTSSSCapability:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/AtsssCapability'

EnhancedDiagnostics5G:

$ref: '#/components/schemas/RanNasCauseList'

RanNasCauseList:

type: array

items:

$ref: 'TS29512\_Npcf\_SMPolicyControl.yaml#/components/schemas/RanNasRelCause'

QosMonitoringReport:

description: Contains reporting information on QoS monitoring.

type: object

properties:

ulDelays:

type: array

items:

type: integer

minItems: 0

dlDelays:

type: array

items:

type: integer

minItems: 0

rtDelays:

type: array

items:

type: integer

minItems: 0

AnnouncementInformation:

type: object

properties:

announcementIdentifier:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uint32'

announcementReference:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uri'

variableParts:

type: array

items:

$ref: '#/components/schemas/VariablePart'

minItems: 0

timeToPlay:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/DurationSec'

quotaConsumptionIndicator:

$ref: '#/components/schemas/QuotaConsumptionIndicator'

announcementPriority:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uint32'

playToParty:

$ref: '#/components/schemas/PlayToParty'

announcementPrivacyIndicator:

$ref: '#/components/schemas/AnnouncementPrivacyIndicator'

Language:

$ref: '#/components/schemas/Language'

VariablePart:

type: object

properties:

variablePartType:

$ref: '#/components/schemas/VariablePartType'

variablePartValue:

type: array

items:

type: string

minItems: 1

variablePartOrder:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uint32'

required:

- variablePartType

- variablePartValue

Language:

type: string

MMTelChargingInformation:

type: object

properties:

supplementaryServices:

type: array

items:

$ref: '#/components/schemas/SupplementaryService'

minItems: 1

SupplementaryService:

type: object

properties:

supplementaryServiceType:

$ref: '#/components/schemas/SupplementaryServiceType'

supplementaryServiceMode:

$ref: '#/components/schemas/SupplementaryServiceMode'

numberOfDiversions:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uint32'

associatedPartyAddress:

type: string

conferenceId:

type: string

participantActionType:

$ref: '#/components/schemas/ParticipantActionType'

changeTime:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/DateTime'

numberOfParticipants:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uint32'

cUGInformation:

$ref: '#/components/schemas/OctetString'

IMSChargingInformation:

type: object

properties:

eventType:

$ref: '#/components/schemas/SIPEventType'

iMSNodeFunctionality:

$ref: '#/components/schemas/IMSNodeFunctionality'

roleOfNode:

$ref: '#/components/schemas/RoleOfIMSNode'

userInformation:

$ref: '#/components/schemas/UserInformation'

userLocationInfo:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/UserLocation'

ueTimeZone:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/TimeZone'

3gppPSDataOffStatus:

$ref: '#/components/schemas/3GPPPSDataOffStatus'

isupCause:

$ref: '#/components/schemas/ISUPCause'

controlPlaneAddress:

$ref: '#/components/schemas/IMSAddress'

vlrNumber:

$ref: '#/components/schemas/E164'

mscAddress:

$ref: '#/components/schemas/E164'

userSessionID:

type: string

outgoingSessionID:

type: string

sessionPriority:

$ref: '#/components/schemas/IMSSessionPriority'

callingPartyAddresses:

type: array

items:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uri'

minItems: 1

calledPartyAddress:

type: string

numberPortabilityRoutinginformation:

type: string

carrierSelectRoutingInformation:

type: string

alternateChargedPartyAddress:

type: string

requestedPartyAddress:

type: array

items:

type: string

minItems: 1

calledAssertedIdentities:

type: array

items:

type: string

minItems: 1

calledIdentityChange:

$ref: '#/components/schemas/CalledIdentityChange'

associatedURI:

type: array

items:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uri'

minItems: 1

timeStamps:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/DateTime'

applicationServerInformation:

type: array

items:

type: string

minItems: 1

interOperatorIdentifier:

type: array

items:

$ref: '#/components/schemas/InterOperatorIdentifier'

minItems: 1

imsChargingIdentifier:

type: string

relatedICID:

type: string

relatedICIDGenerationNode:

type: string

transitIOIList:

type: array

items:

type: string

minItems: 1

earlyMediaDescription:

type: array

items:

$ref: '#/components/schemas/EarlyMediaDescription'

minItems: 1

sdpSessionDescription:

type: array

items:

type: string

minItems: 1

sdpMediaComponent:

type: array

items:

$ref: '#/components/schemas/SDPMediaComponent'

minItems: 1

servedPartyIPAddress:

$ref: '#/components/schemas/IMSAddress'

serverCapabilities:

$ref: '#/components/schemas/ServerCapabilities'

trunkGroupID:

$ref: '#/components/schemas/TrunkGroupID'

bearerService:

type: string

imsServiceId:

type: string

messageBodies:

type: array

items:

$ref: '#/components/schemas/MessageBody'

minItems: 1

accessNetworkInformation:

type: array

items:

type: string

minItems: 1

additionalAccessNetworkInformation:

type: string

cellularNetworkInformation:

type: string

accessTransferInformation:

type: array

items:

$ref: '#/components/schemas/AccessTransferInformation'

minItems: 1

accessNetworkInfoChange:

type: array

items:

$ref: '#/components/schemas/AccessNetworkInfoChange'

minItems: 1

imsCommunicationServiceID:

type: string

imsApplicationReferenceID:

type: string

causeCode:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uint32'

reasonHeader:

type: array

items:

type: string

minItems: 1

initialIMSChargingIdentifier:

type: string

nniInformation:

type: array

items:

$ref: '#/components/schemas/NNIInformation'

minItems: 1

fromAddress:

type: string

imsEmergencyIndication:

type: boolean

imsVisitedNetworkIdentifier:

type: string

sipRouteHeaderReceived:

type: string

sipRouteHeaderTransmitted:

type: string

tadIdentifier:

$ref: '#/components/schemas/TADIdentifier'

feIdentifierList:

type: string

EdgeInfrastructureUsageChargingInformation:

type: object

properties:

meanVirtualCPUUsage:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Float'

meanVirtualMemoryUsage:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Float'

meanVirtualDiskUsage:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Float'

durationStartTime:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/DateTime'

durationEndTime:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/DateTime'

EASDeploymentChargingInformation:

type: object

properties:

# To be introduced once the reference to EdgeNrm.yaml is resolved

# eEASDeploymentRequirements:

# $ref: 'EdgeNrm.yaml#/components/schemas/EASRequirements'

lCMStartTime:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/DateTime'

lCMEndTime:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/DateTime'

DirectEdgeEnablingServiceChargingInformation:

type: object

properties:

uEIdentifier:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Gpsi'

uELocation:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/LocationArea5G'

tEASDNAI:

type: array

items:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Dnai'

minItems: 1

easProfiles:

type: array

items:

$ref: 'TS29558\_Eecs\_EESRegistration.yaml#/components/schemas/EASProfile'

minItems: 1

acInfs:

type: array

items:

$ref: 'TS29558\_Eees\_AppClientInformation.yaml#/components/schemas/ACInformation'

minItems: 1

acId:

type: string

tEasEndpoint:

$ref: 'TS29558\_Eees\_EASRegistration.yaml#/components/schemas/EndPoint'

sEasEndpoint:

$ref: 'TS29558\_Eees\_EASRegistration.yaml#/components/schemas/EndPoint'

prevTEasEndpoint:

$ref: 'TS29558\_Eees\_EASRegistration.yaml#/components/schemas/EndPoint'

routeReq :

$ref: 'TS29571\_CommonData.yaml#/components/schemas/RouteToLocation'

eECContext:

$ref: 'TS29558\_Eees\_EECContextRelocation.yaml#/components/schemas/EECContext'

aCTResult:

$ref: 'TS29558\_Eees\_ACRStatusUpdate.yaml#/components/schemas/ACTResult'

EASProfile:

$ref: 'TS29558\_Eecs\_EESRegistration.yaml#/components/schemas/EASProfile'

OctetString:

type: string

pattern: '^[0-9a-fA-F]+$'

E164:

type: string

pattern: '^[0-9a-fA-F]+$'

IMSAddress:

type: object

properties:

ipv4Addr:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Ipv4Addr'

ipv6Addr:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Ipv6Addr'

e164:

$ref: '#/components/schemas/E164'

anyOf:

- required: [ ipv4Addr ]

- required: [ ipv6Addr ]

- required: [ e164 ]

ServingNodeAddress:

type: object

properties:

ipv4Addr:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Ipv4Addr'

ipv6Addr:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Ipv6Addr'

anyOf:

- required: [ ipv4Addr ]

- required: [ ipv6Addr ]

SIPEventType:

type: object

properties:

sIPMethod:

type: string

eventHeader:

type: string

expiresHeader:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uint32'

ISUPCause:

type: object

properties:

iSUPCauseLocation:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uint32'

iSUPCauseValue:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uint32'

iSUPCauseDiagnostics:

$ref: '#/components/schemas/OctetString'

CalledIdentityChange:

type: object

properties:

calledIdentity:

type: string

changeTime:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/DateTime'

InterOperatorIdentifier:

type: object

properties:

originatingIOI:

type: string

terminatingIOI:

type: string

EarlyMediaDescription:

type: object

properties:

sDPTimeStamps:

$ref: '#/components/schemas/SDPTimeStamps'

sDPMediaComponent:

type: array

items:

$ref: '#/components/schemas/SDPMediaComponent'

minItems: 0

sDPSessionDescription:

type: array

items:

type: string

minItems: 0

SDPTimeStamps:

type: object

properties:

sDPOfferTimestamp:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/DateTime'

sDPAnswerTimestamp:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/DateTime'

SDPMediaComponent:

type: object

properties:

sDPMediaName:

type: string

SDPMediaDescription:

type: array

items:

type: string

minItems: 0

localGWInsertedIndication:

type: boolean

ipRealmDefaultIndication:

type: boolean

transcoderInsertedIndication:

type: boolean

mediaInitiatorFlag:

$ref: '#/components/schemas/MediaInitiatorFlag'

mediaInitiatorParty:

type: string

threeGPPChargingId:

$ref: '#/components/schemas/OctetString'

accessNetworkChargingIdentifierValue:

$ref: '#/components/schemas/OctetString'

sDPType:

$ref: '#/components/schemas/SDPType'

ServerCapabilities:

type: object

properties:

mandatoryCapability:

type: array

items:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uint32'

minItems: 0

optionalCapability :

type: array

items:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uint32'

minItems: 0

serverName:

type: array

items:

type: string

minItems: 0

TrunkGroupID:

type: object

properties:

incomingTrunkGroupID:

type: string

outgoingTrunkGroupID:

type: string

MessageBody:

type: object

properties:

contentType:

type: string

contentLength:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uint32'

contentDisposition:

type: string

originator:

$ref: '#/components/schemas/OriginatorPartyType'

required:

- contentType

- contentLength

AccessTransferInformation:

type: object

properties:

accessTransferType:

$ref: '#/components/schemas/AccessTransferType'

accessNetworkInformation:

type: array

items:

$ref: '#/components/schemas/OctetString'

minItems: 0

cellularNetworkInformation:

$ref: '#/components/schemas/OctetString'

interUETransfer:

$ref: '#/components/schemas/UETransferType'

userEquipmentInfo:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Pei'

instanceId:

type: string

relatedIMSChargingIdentifier:

type: string

relatedIMSChargingIdentifierNode:

$ref: '#/components/schemas/IMSAddress'

changeTime:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/DateTime'

AccessNetworkInfoChange:

type: object

properties:

accessNetworkInformation:

type: array

items:

$ref: '#/components/schemas/OctetString'

minItems: 0

cellularNetworkInformation:

$ref: '#/components/schemas/OctetString'

changeTime:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/DateTime'

NNIInformation:

type: object

properties:

sessionDirection:

$ref: '#/components/schemas/NNISessionDirection'

nNIType:

$ref: '#/components/schemas/NNIType'

relationshipMode:

$ref: '#/components/schemas/NNIRelationshipMode'

neighbourNodeAddress:

$ref: '#/components/schemas/IMSAddress'

NotificationType:

anyOf:

- type: string

enum:

- REAUTHORIZATION

- ABORT\_CHARGING

- type: string

NodeFunctionality:

anyOf:

- type: string

enum:

- AMF

- SMF

- SMS

- PGW\_C\_SMF

- NEFF # Included for backwards compatibility, shall not be used

- SGW

- I\_SMF

- ePDG

- CEF

- NEF

- MnS\_Producer

- SGSN

- type: string

ChargingCharacteristicsSelectionMode:

anyOf:

- type: string

enum:

- HOME\_DEFAULT

- ROAMING\_DEFAULT

- VISITING\_DEFAULT

- type: string

TriggerType:

anyOf:

- type: string

enum:

- QUOTA\_THRESHOLD

- QHT

- FINAL

- QUOTA\_EXHAUSTED

- VALIDITY\_TIME

- OTHER\_QUOTA\_TYPE

- FORCED\_REAUTHORISATION

- UNUSED\_QUOTA\_TIMER # Included for backwards compatibility, shall not be used

- UNIT\_COUNT\_INACTIVITY\_TIMER

- ABNORMAL\_RELEASE

- QOS\_CHANGE

- VOLUME\_LIMIT

- TIME\_LIMIT

- EVENT\_LIMIT

- PLMN\_CHANGE

- USER\_LOCATION\_CHANGE

- RAT\_CHANGE

- SESSION\_AMBR\_CHANGE

- UE\_TIMEZONE\_CHANGE

- TARIFF\_TIME\_CHANGE

- MAX\_NUMBER\_OF\_CHANGES\_IN\_CHARGING\_CONDITIONS

- MANAGEMENT\_INTERVENTION

- CHANGE\_OF\_UE\_PRESENCE\_IN\_PRESENCE\_REPORTING\_AREA

- CHANGE\_OF\_3GPP\_PS\_DATA\_OFF\_STATUS

- SERVING\_NODE\_CHANGE

- REMOVAL\_OF\_UPF

- ADDITION\_OF\_UPF

- INSERTION\_OF\_ISMF

- REMOVAL\_OF\_ISMF

- CHANGE\_OF\_ISMF

- START\_OF\_SERVICE\_DATA\_FLOW

- ECGI\_CHANGE

- TAI\_CHANGE

- HANDOVER\_CANCEL

- HANDOVER\_START

- HANDOVER\_COMPLETE

- GFBR\_GUARANTEED\_STATUS\_CHANGE

- ADDITION\_OF\_ACCESS

- REMOVAL\_OF\_ACCESS

- START\_OF\_SDF\_ADDITIONAL\_ACCESS

- REDUNDANT\_TRANSMISSION\_CHANGE

- CGI\_SAI\_CHANGE

- RAI\_CHANGE

- type: string

FinalUnitAction:

anyOf:

- type: string

enum:

- TERMINATE

- REDIRECT

- RESTRICT\_ACCESS

- type: string

RedirectAddressType:

anyOf:

- type: string

enum:

- IPV4

- IPV6

- URL

- type: string

TriggerCategory:

anyOf:

- type: string

enum:

- IMMEDIATE\_REPORT

- DEFERRED\_REPORT

- type: string

QuotaManagementIndicator:

anyOf:

- type: string

enum:

- ONLINE\_CHARGING

- OFFLINE\_CHARGING

- QUOTA\_MANAGEMENT\_SUSPENDED

- type: string

FailureHandling:

anyOf:

- type: string

enum:

- TERMINATE

- CONTINUE

- RETRY\_AND\_TERMINATE

- type: string

SessionFailover:

anyOf:

- type: string

enum:

- FAILOVER\_NOT\_SUPPORTED

- FAILOVER\_SUPPORTED

- type: string

3GPPPSDataOffStatus:

anyOf:

- type: string

enum:

- ACTIVE

- INACTIVE

- type: string

ResultCode:

anyOf:

- type: string

enum:

- SUCCESS

- END\_USER\_SERVICE\_DENIED

- QUOTA\_MANAGEMENT\_NOT\_APPLICABLE

- QUOTA\_LIMIT\_REACHED

- END\_USER\_SERVICE\_REJECTED

- USER\_UNKNOWN

- RATING\_FAILED

- QUOTA\_MANAGEMENT

- type: string

PartialRecordMethod:

anyOf:

- type: string

enum:

- DEFAULT

- INDIVIDUAL

- type: string

RoamerInOut:

anyOf:

- type: string

enum:

- IN\_BOUND

- OUT\_BOUND

- type: string

SMMessageType:

anyOf:

- type: string

enum:

- SUBMISSION

- DELIVERY\_REPORT

- SM\_SERVICE\_REQUEST

- DELIVERY

- type: string

SMPriority:

anyOf:

- type: string

enum:

- LOW

- NORMAL

- HIGH

- type: string

DeliveryReportRequested:

anyOf:

- type: string

enum:

- YES

- NO

- type: string

InterfaceType:

anyOf:

- type: string

enum:

- UNKNOWN

- MOBILE\_ORIGINATING

- MOBILE\_TERMINATING

- APPLICATION\_ORIGINATING

- APPLICATION\_TERMINATING

- type: string

ClassIdentifier:

anyOf:

- type: string

enum:

- PERSONAL

- ADVERTISEMENT

- INFORMATIONAL

- AUTO

- type: string

SMAddressType:

anyOf:

- type: string

enum:

- EMAIL\_ADDRESS

- MSISDN

- IPV4\_ADDRESS

- IPV6\_ADDRESS

- NUMERIC\_SHORTCODE

- ALPHANUMERIC\_SHORTCODE

- OTHER

- IMSI

- type: string

SMAddresseeType:

anyOf:

- type: string

enum:

- TO

- CC

- BCC

- type: string

SMServiceType:

anyOf:

- type: string

enum:

- VAS4SMS\_SHORT\_MESSAGE\_CONTENT\_PROCESSING

- VAS4SMS\_SHORT\_MESSAGE\_FORWARDING

- VAS4SMS\_SHORT\_MESSAGE\_FORWARDING\_MULTIPLE\_SUBSCRIPTIONS

- VAS4SMS\_SHORT\_MESSAGE\_FILTERING

- VAS4SMS\_SHORT\_MESSAGE\_RECEIPT

- VAS4SMS\_SHORT\_MESSAGE\_NETWORK\_STORAGE

- VAS4SMS\_SHORT\_MESSAGE\_TO\_MULTIPLE\_DESTINATIONS

- VAS4SMS\_SHORT\_MESSAGE\_VIRTUAL\_PRIVATE\_NETWORK(VPN)

- VAS4SMS\_SHORT\_MESSAGE\_AUTO\_REPLY

- VAS4SMS\_SHORT\_MESSAGE\_PERSONAL\_SIGNATURE

- VAS4SMS\_SHORT\_MESSAGE\_DEFERRED\_DELIVERY

- type: string

ReplyPathRequested:

anyOf:

- type: string

enum:

- NO\_REPLY\_PATH\_SET

- REPLY\_PATH\_SET

- type: string

oneTimeEventType:

anyOf:

- type: string

enum:

- IEC

- PEC

- type: string

dnnSelectionMode:

anyOf:

- type: string

enum:

- VERIFIED

- UE\_DNN\_NOT\_VERIFIED

- NW\_DNN\_NOT\_VERIFIED

- type: string

APIDirection:

anyOf:

- type: string

enum:

- INVOCATION

- NOTIFICATION

- type: string

RegistrationMessageType:

anyOf:

- type: string

enum:

- INITIAL

- MOBILITY

- PERIODIC

- EMERGENCY

- DEREGISTRATION

- type: string

MICOModeIndication:

anyOf:

- type: string

enum:

- MICO\_MODE

- NO\_MICO\_MODE

- type: string

SmsIndication:

anyOf:

- type: string

enum:

- SMS\_SUPPORTED

- SMS\_NOT\_SUPPORTED

- type: string

ManagementOperation:

anyOf:

- type: string

enum:

- CreateMOI

- ModifyMOIAttributes

- DeleteMOI

- type: string

ManagementOperationStatus:

anyOf:

- type: string

enum:

- OPERATION\_SUCCEEDED

- OPERATION\_FAILED

- type: string

RedundantTransmissionType:

anyOf:

- type: string

enum:

- NON\_TRANSMISSION

- END\_TO\_END\_USER\_PLANE\_PATHS

- N3/N9

- TRANSPORT\_LAYER

- type: string

VariablePartType:

anyOf:

- type: string

enum:

- INTEGER

- NUMBER

- TIME

- DATE

- CURRENCY

- type: string

QuotaConsumptionIndicator:

anyOf:

- type: string

enum:

- QUOTA\_NOT\_USED

- QUOTA\_IS\_USED

- type: string

PlayToParty:

anyOf:

- type: string

enum:

- SERVED

- REMOTE

- type: string

AnnouncementPrivacyIndicator:

anyOf:

- type: string

enum:

- NOT\_PRIVATE

- PRIVATE

- type: string

SupplementaryServiceType:

anyOf:

- type: string

enum:

- OIP

- OIR

- TIP

- TIR

- HOLD

- CB

- CDIV

- CW

- MWI

- CONF

- FA

- CCBS

- CCNR

- MCID

- CAT

- CUG

- PNM

- CRS

- ECT

- type: string

SupplementaryServiceMode:

anyOf:

- type: string

enum:

- CFU

- CFB

- CFNR

- CFNL

- CD

- CFNRC

- ICB

- OCB

- ACR

- BLIND\_TRANFER

- CONSULTATIVE\_TRANFER

- type: string

ParticipantActionType:

anyOf:

- type: string

enum:

- CREATE

- JOIN

- INVITE\_INTO

- QUIT

- type: string

TrafficForwardingWay:

anyOf:

- type: string

enum:

- N6

- N19

- LOCAL\_SWITCH

- type: string

IMSNodeFunctionality:

anyOf:

- type: string

enum:

- S\_CSCF

- P\_CSCF

- I\_CSCF

- MRFC

- MGCF

- BGCF

- AS

- IBCF

- S-GW

- P-GW

- HSGW

- E-CSCF

- MME

- TRF

- TF

- ATCF

- PROXY

- EPDG

- TDF

- TWAG

- SCEF

- IWK\_SCEF

- type: string

RoleOfIMSNode:

anyOf:

- type: string

enum:

- ORIGINATING

- TERMINATING

- FORWARDING

- type: string

IMSSessionPriority:

anyOf:

- type: string

enum:

- PRIORITY\_0

- PRIORITY\_1

- PRIORITY\_2

- PRIORITY\_3

- PRIORITY\_4

- type: string

MediaInitiatorFlag:

anyOf:

- type: string

enum:

- CALLED\_PARTY

- CALLING\_PARTY

- UNKNOWN

- type: string

SDPType:

anyOf:

- type: string

enum:

- OFFER

- ANSWER

- type: string

OriginatorPartyType:

anyOf:

- type: string

enum:

- CALLING

- CALLED

- type: string

AccessTransferType:

anyOf:

- type: string

enum:

- PS\_TO\_CS

- CS\_TO\_PS

- PS\_TO\_PS

- CS\_TO\_CS

- type: string

UETransferType:

anyOf:

- type: string

enum:

- INTRA\_UE

- INTER\_UE

- type: string

NNISessionDirection:

anyOf:

- type: string

enum:

- INBOUND

- OUTBOUND

- type: string

NNIType:

anyOf:

- type: string

enum:

- NON\_ROAMING

- ROAMING\_NO\_LOOPBACK

- ROAMING\_LOOPBACK

- type: string

NNIRelationshipMode:

anyOf:

- type: string

enum:

- TRUSTED

- NON\_TRUSTED

- type: string

TADIdentifier:

anyOf:

- type: string

enum:

- CS

- PS

- type: string

|  |
| --- |
| **End of modifications** |