**3GPP TSG-CT3 Meeting #118e C3-215XXX**

**E-Meeting, 11th – 15th October 2021 (rev of C3-215121)**

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| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
|  |
|  |  | **CR** | **0849** | **rev** | **1** | **Current version:** |  |  |
|  |
| *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:***  | NWDAF instance provisioning to the PCF  |
|  |  |
| ***Source to WG:*** |  |
| ***Source to TSG:*** | CT3 |
|  |  |
| ***Work item code:*** | eNA\_Ph2 |  | ***Date:*** | 2021-09-09 |
|  |  |  |  |  |
| ***Category:*** | B |  | ***Release:*** | Rel-17 |
|  | *Use one of the following categories:****F*** *(correction)****A*** *(mirror corresponding to a change in an earlier release)****B*** *(addition of feature),* ***C*** *(functional modification of feature)****D*** *(editorial modification)*Detailed explanations of the above categories canbe found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | *Use one of the following releases:Rel-8 (Release 8)Rel-9 (Release 9)Rel-10 (Release 10)Rel-11 (Release 11)…Rel-15 (Release 15)Rel-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)* |
|  |  |
| ***Reason for change:*** | TS 23.503, clause 6.1.1.3, states that the SMF may include in the SM Policy Association establishment or modification procedures, the list of NWDAF instance IDs used for the PDU Session and their associated Analytic ID(s) consumed by the SMF. The PCF may select those NWDAF instances as the ones to subscribe for their associated analytic ID(s) for the UE for which those SM Policy Associations are related to or may perform NWDAF discovery if the NWDAF for an Analytics ID not provided by the SMF is needed. |
|  |  |
| ***Summary of change:*** | The CR includes the impacts for the reporting the NWDAF instances identities and NWDAF events consumed by the SMF as part of SM Policy Association establishment and SM Policy Association modification procedures.  |
|  |  |
| ***Consequences if not approved:*** | Misalignment with stage 2. NWDAF discovery based on the info provided by the SMF remains unspecified. |
|  |  |
| ***Clauses affected:*** | 2; 3.2; 4.2.2.2; 4.2.4.2; 5.6.1; 5.6.2.3; 5.6.2.19; 5.6.2.X (new); 5.6.3.6; 5.8; 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 introduces a backward compatible feature in Npcf\_SMPolicyControl API specification. |
|  |  |
| ***This CR's revision history:*** |  |

\* \* \* First Change \* \* \* \*

# 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 TR 21.905: "Vocabulary for 3GPP Specifications".

[2] 3GPP TS 23.501: "System Architecture for the 5G System; Stage 2".

[3] 3GPP TS 23.502: "Procedures for the 5G System; Stage 2".

[4] 3GPP TS 29.500: "5G System; Technical Realization of Service Based Architecture; Stage 3".

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

[6] 3GPP TS 23.503: "Policy and Charging Control Framework for the 5G System; Stage 2".

[7] 3GPP TS 29.513: "5G System; Policy and Charging Control signalling flows and QoS parameter mapping; Stage 3".

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

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

[10] OpenAPI: "OpenAPI Specification Version 3.0.0", <https://spec.openapis.org/oas/v3.0.0>.

[11] 3GPP TS 29.571: "5G System; Common Data Types for Service Based Interfaces; Stage 3".

[12] 3GPP TS 29.508: "5G System; Session Management Event Exposure Service; Stage 3".

[13] 3GPP TS 29.244: "Interface between the Control Plane and the User Plane of EPC Nodes".

[14] Void.

[15] 3GPP TS 29.519: "5G System; Usage of the Unified Data Repository service for Policy Control Data, Application Data and Structured Data for Exposure; Stage 3".

[16] 3GPP TS 23.228: "IP multimedia subsystem; Stage 2".

[17] 3GPP TS 29.514: "5G System; Policy Authorization Service; Stage 3".

[18] 3GPP TS 29.214: "Policy and Charging Control over Rx reference point 5".

[19] 3GPP TS 32.291: "5G System; Charging service; Stage 3".

[20] 3GPP TS 24.501: "Non-Access-Stratum (NAS) protocol for 5G System (5GS); Stage 3".

[21] 3GPP TS 23.380: "IMS Restoration Procedures".

[22] 3GPP TS 29.502: "5G System; Session Management Services; Stage 3".

[23] 3GPP TS 29.212: "Policy and Charging Control (PCC); Reference points".

[24] 3GPP TS 32.422: "Telecommunication management; Subscriber and equipment trace; Trace control and configuration management".

[25] 3GPP TS 29.507: "5G System; Access and Mobility Policy Control Service; Stage 3".

[26] 3GPP TS 23.060: "General Packet Radio Service (GPRS); Service description; Stage 2".

[27] 3GPP TS 33.501: "Security architecture and procedures for 5G system".

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

[29] 3GPP TS 29.510: "Network Function Repository Services; Stage 3".

[30] 3GPP TS 32.290: "5G system; Services, operations and procedures of charging using Service Based Interface (SBI)".

[31] IETF RFC 7807: "Problem Details for HTTP APIs".

[32] 3GPP TS 29.122: "T8 reference point for Northbound APIs".

[33] 3GPP TS 23.527: "5G System; Restoration Procedures".

[34] 3GPP TS 29.503: "5G System; Unified Data Management Services; Stage 3".

[35] 3GPP TS 32.255: "Charging management; 5G data connectivity domain charging; stage 2".

[36] 3GPP TS 29.518: "5G System; Access and Mobility Management Services; Stage 3".

[37] 3GPP TS 29.274: "3GPP Evolved Packet System (EPS); Evolved General Packet Radio Service (GPRS) Tunnelling Protocol for Control plane (GTPv2-C); Stage 3".

[38] 3GPP TR 21.900: "Technical Specification Group working methods".

[39] 3GPP TS 29.521: "5G System; Binding Support Management Service; Stage 3".

[40] 3GPP TS 29.524: "Cause codes mapping between 5GC interfaces; Stage 3".

[41] 3GPP TS 24.008: "Mobile radio interface Layer 3 specification".

[42] 3GPP TS 23.316: "Wireless and wireline convergence access support for the 5G System (5GS)".

[43] 3GPP TS 24.193: "Access Traffic Steering, Switching and Splitting (ATSSS); Stage 3".

[44] 3GPP TS 24.519: "Time-Sensitive Networking (TSN) Application Function (AF) to Device-Side TSN Translator (DS-TT) and Network-Side TSN Translator (NW-TT) protocol aspects; Stage 3".

[45] IEEE 802.1Q: "Virtual Bridged Local Area Networks".

[46] 3GPP TS 29.551: "5G System; Packet Flow Description Management Service; Stage 3".

[47] BBF TR-456: "AGF Functional Requirements".

[48] CableLabs WR-TR-5WWC-ARCH: "5G Wireless Wireline Converged Core Architecture".

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

\* \* \* Second Change \* \* \* \*

## 3.2 Abbreviations

For the purposes of the present document, the abbreviations given in 3GPP TR 21.905 [1] and the following apply. An abbreviation defined in the present document takes precedence over the definition of the same abbreviation, if any, in 3GPP TR 21.905 [1].

ADC Application Detection and Control

5G-RG 5G Residential Gateway

AF Application Function

AMF Access and Mobility Management Function

API Application Programming Interface

ATSSS Access Traffic Steering, Switching, Splitting

ATSSS-LL ATSSS Low-Layer

BBF Broadband Forum

CHEM Coverage and Handoff Enhancements using Multimedia error robustness feature

CHF Charging Function

DDD Downlink Data Delivery

DDN Downlink Data Notification

DN-AAA Data Network Authentication, Authorization and Accounting

DNN Data Network Name

DS-TT Device-side TSN translator

DTS Data Transport Service

ePDG evolved Packet Data Gateway

FN-RG Fixed Network Residential Gateway

GEO Geosynchronous Orbit

GFBR Guaranteed Flow Bit Rate

GUAMI Globally Unique AMF Identifier

HFC Hybrid Fiber Coax

HTTP Hypertext Transfer Protocol

LEO Low Earth Orbit

MA Multi-Access

MEO Medium Earth Orbit

MPTCP Multi-Path TCP Protocol

NAS Non-Access-Stratum

NEF Network Exposure Function

NF Network Function

NID Network Identifier

NRF Network Repository Function

NWDAF Network Data Analytics Function

NW-TT Network-side TSN translator

PCC Policy and Charging Control

PCF Policy Control Function

PFD Packet Flow Description

PFDF Packet Flow Description Function

PMIC Port Management Information Container

PSAP Public Safety Answering Point

QoS Quality of Service

RTT Round-Trip Time

SDF Service Data Flow

SMF Session Management Function

SNPN Stand-alone Non-Public Network

S-NSSAI Single Network Slice Selection Assistance Information

SUPL Secure User Plane for Location

TNAN Trusted Non-3GPP Access Network

TWAN Trusted WLAN Access Network

TSC Time Sensitive Communication

TSCAI Time Sensitive Communication Assistance Information

TSCTSF Time Sensitive Communication and Time Synchronization Function

TSN Time Sensitive Networking

TSN GM TSN Grand Master

UDM Unified Data Management

UDR Unified Data Repository

UE User Equipment

UMIC User plane node Management Information Container

URLLC Ultra Reliable Low Latency Communication

W-5GAN Wireline 5G Access Network

W-5GBAN Wireline BBF Access Network

W-5GCAN Wireline 5G Cable Access Network

W-AGF Wireline Access Gateway Function

\* \* \* Third Change \* \* \* \*

#### 4.2.2.2 SM Policy Association establishment



Figure 4.2.2.2-1: SM Policy Association establishment

When the NF service consumer receives the Nsmf\_PDUSession\_CreateSMContext Request as defined in subclause 5.2.2.2 of 3GPP TS 29.502 [22], if the NF service consumer was requested not to interact with the PCF, the NF service consumer shall not interact with the PCF. Otherwise, the NF service consumer shall send an HTTP POST request to the PCF to create an "Individual SM Policy" resource as described in step 1of figure 4.2.2.2-1.

NOTE 1: The decision to not interact with the PCF applies for the entire lifetime of the PDU session.

NOTE 2: The indicator to not interact with the PCF is configured in the UDM. It is delivered by the UDM to the NF service consumer within the Charging Characteristics using the Session Management Subscription Data Retrieval service operation as described in 3GPP TS 29.503 [34]. The indicator is operator specific, therefore it can only be used in non-roaming and home routed roaming cases.

The NF service consumer shall include the "SmPolicyContextData" data structure in the payload body of the HTTP POST request in order to request the creation of a representation of the "Individual SM Policy" resource as described below.

The NF service consumer shall include (if available) in the "SmPolicyContextData" data structure:

- SUPI of the user within the "supi" attribute;

- PDU Session Id within the "pduSessionId" attribute;

- DNN within the "dnn" attribute;

- DNN selection mode within the "dnnSelMode" attribute, if the "DNNSelectionMode" feature is supported;

- URL identifying the recipient of SM policies update notifications within the "notificationUri" attribute;

- PDU Session Type within the "pduSessionType" attribute;

- PEI within the "pei" attribute;

- Internal Group Id(s) within the "interGrpIds" attribute;

- type of access within the "accessType" attribute;

- type of the radio access technology within the "ratType" attribute;

- the combination of additional access type and RAT type within the "addAccessInfo" attribute, if the ATSSS feature is supported;

- the UE Ipv4 address within the "ipv4Address" attribute and/or the UE Ipv6 prefix within the "ipv6AddressPrefix" attribute;

- the UE time zone information within the "ueTimeZone" attribute;

- the UDM subscribed Session-AMBR or, if the "DN-Authorization" feature is supported, the DN-AAA authorized Session-AMBR within the "subsSessAmbr" attribute;

NOTE 3: When both, the UDM subscribed Session-AMBR and the DN-AAA authorized Session-AMBR are available in the NF service consumer, the NF service consumer includes the DN-AAA authorized Session-AMBR.

- if the "VPLMN-QoS-Control" feature is supported, the highest Session-AMBR and the default QoS supported in the VPLMN within the "vplmnQos" attribute, if available;

NOTE 4: In home routed roaming, the H-SMF may provide the QoS constraints received from the VPLMN (defined in 3GPP TS 23.502 [3] clause 4.3.2.2.2) to the PCF.

- the DN-AAA authorization profile index within the "authProfIndex" attribute, if the "DN-Authorization" feature is supported;

- subscribed Default QoS Information within the "subsDefQos" attribute;

- the number of supported packet filters for signalled QoS rules within the "numOfPackFilter" attribute;

- the online charging status within the "online" attribute;

- the offline charging status within the "offline" attribute;

- the charging characteristics within the "chargingCharacteristics" attribute;

- the access network charging identifier within the "accNetChId" attribute;

- the address of the network entity performing charging within the "chargEntityAddr" attribute;

- the 3GPP PS data off status within the "3gppPsDataOffStatus" attribute, if the "3GPP-PS-Data-Off" feature is supported;

- indication of UE support of reflective QoS within the "refQosIndication" attribute;

- user location(s) information within the "userLocationInfo" attribute;

NOTE 5: The SMF encodes both 3GPP and non-3GPP access UE location in the "userLocationInfo" attribute when they are both received from the AMF.

- the S-NSSAI corresponding to the network slice to which the PDU session is allocated within the "sliceInfo" attribute;

- the required QoS flow usage for the default QoS flow within the "qosFlowUsage" attribute;

- the MA PDU session indication within the "maPduInd" attribute, if the "ATSSS" feature is supported;

- the ATSSS capability within the "atsssCapab" attribute, if the "ATSSS" feature is supported;

- the identifier of the serving network (the PLMN Identifier or the SNPN Identifier) within the "servingNetwork" attribute;

NOTE 6: The SNPN Identifier consists of the PLMN Identifier and the NID.

- one or more framed routes within the "ipv4FrameRouteList" attribute for IPv4 and/or one or more framed routes within the "ipv6FrameRouteList" attribute.

NOTE 7: When both, the UDM subscribed framed routes and the DN-AAA authorized framed routes are available in the NF service consumer, the NF service consumer includes the DN-AAA authorized framed routes. If the UDM or DN-AAA updates the framed routes during the lifetime of the PDU Session, the NF service consumer releases the PDU Session as defined in subclause 4.2.5.2.

- the serving network function identifier within the "servNfId" attribute;

- when the "SatBackhaulCategoryChg" feature is supported, the satellite backhaul category within the "satBackhaulCategory" attribute;

- trace control and configuration parameters information within the "traceReq" attribute; and

- when the "EneNA" feature is supported, the list of NWDAF instance IDs used for the PDU Session within the "nwdafInstanceIds" and their associated Analytic ID(s) within "nwdafEvents" consumed by the NF service consumer, included within the "nwdafDatas" attribute.

The NF service consumer may include in the "SmPolicyContextData" data structure the IPv4 address domain identity within the "ipDomain" attribute.

NOTE 8: The "ipDomain" attribute is helpful when within a network slice, there are several separate IP address domains, with SMF/UPF(s) that allocate Ipv4 IP addresses out of the same private address range to UE PDU Sessions. The same IP address can thus be allocated to UE PDU sessions served by SMF/UPFs in different IPv4 address domains. If one PCF controls several SMF/UPFs in different IP address domains, the UE IP address is thus not sufficient for the AF session binding procedure, as described in 3GPP TS 29.514 [17]. The SMF assists the PCF in the session binding supplying an "ipDomain" attribute denoting the IPv4 address domain identity of the allocated UE IPv4 address.

When the PCF receives the HTTP POST request from the NF service consumer, the PCF shall make a policy authorization based on the information received from the NF service consumer and, if available, information received from the AMF, the CHF, the AF, the UDR and/or the NWDAF and operator policies pre-configured at the PCF. If the policy authorization is successful, the PCF shall create a new resource, which represents a new "Individual SM Policy" instance, addressed by a URI as defined in subclause 5.3.3.2 and containing a PCF created resource identifier. The PCF shall respond to the NF service consumer with an HTTP 201 Created response, including:

- a Location header field containing the URI of the created resource; and

- a response body providing the session management related policies, e.g. provisioning of PCC rules as defined in subclause 4.2.6.2, provisioning of policy control request triggers as defined in subclause 4.2.6.4.

The NF service consumer shall use the URI received in the Location header in subsequent requests to the PCF to refer to the created "Individual SM Policy" resource resource.

If the PCF received the list of NWDAF instance IDs used for the PDU Session in "nwdafInstanceIds" attribute and their associated Analytic IDs in "nwdafEvents" attribute included within the "nwdafDatas" attribute the PCF may select those NWDAF instances as described in 3GPP TS 29.513 [7].

It the PCF received a "traceReq" attribute in the HTTP POST request from the SMF, it shall perform trace procedures as defined in 3GPP TS 32.422 [24].

If errors occur when processing the HTTP POST request, the PCF shall apply the error handling procedures specified in subclause 5.7.

If the user information received within the "supi" attribute is unknown, the PCF shall reject the request with an HTTP "400 Bad Request" response message including the "cause" attribute of the ProblemDetails data structure set to "USER\_UNKNOWN".

If the PCF is not able, due to incomplete, erroneous or missing information (e.g. QoS, RAT type, subscriber information), to provision a policy decision as response to the request for PCC rules from the NF service consumer, the PCF may reject the request with an HTTP "400 Bad Request" response message including the "cause" attribute of the ProblemDetails data structure set to "ERROR\_INITIAL\_PARAMETERS".

If the NF service consumer receives an HTTP response with the above error codes, the NF service consumer shall reject the PDU session establishment procedure that initiated the HTTP POST Request.

If the PCF, based on local configuration and/or operator policies, denies the creation of the Individual SM Policy resource, the PCF may reject the request with in an HTTP "403 Forbidden" response message including the "cause" attribute of the ProblemDetails data structure set to "POLICY\_CONTEXT\_DENIED". At reception of this error code and based on configured failure actions, the NF service consumer may reject or allow, by applying local policies, the PDU session establishment.

If the "SamePcf" feature as defined in subclause 5.8 is supported, when the PCF determines that the same PCF shall be selected for the SM Policy associations to the same UE ID, S-NSSAI and DNN combination in the non-roaming or home-routed scenario and there is no SM Policy association for the UE ID, S-NSSAI and DNN combination, the PCF, after determining whether the BSF supports the "SamePcf" or the "ExtendedSamePcf" feature as described in 3GPP TS 29.521 [39], shall request the BSF to check if there is an existing PCF binding information for the same UE ID, S-NSSAI and DNN combination registered by other PCF(s) as defined in subclause 4.2.2.2 of 3GPP TS 29.521 [39]. If the PCF receives the from the BSF "403 Forbidden" status code with the "cause" attribute of the ProblemDetails data structure set to "EXISTING\_BINDING\_INFO\_FOUND" and the FQDN or description of IP endpoints of the Npcf\_SMPolicyControl service of the existing PCF (i.e. that handles SM Policy association(s) to the same UE ID, S-NSSAI and DNN combination) within the "pcfSmFqdn" attribute or the "pcfSmIpEndPoints" attribute of the BindingResp data structure respectively as defined in subclause 4.2.2.2 of 3GPP TS 29.521 [39], the PCF shall reply to the SMF with an HTTP "308 Permanent Redirect" error response and the Location header containing aURI as defined in subclause 5.3.2.2, with the FQDN or IP endpoint of this PCF's Npcf\_SMPolicyControl service as {apiRoot}. Upon reception of the response, the NF service consumer shall initiate a new HTTP POST request based on the returned URI.

The forwarding of the Origination Time Stamp parameter shall apply as described hereafter, if the NF service consumer supports the detection and handling of late arriving requests as specified in subclause 5.2.3.3 of 3GPP TS 29.502 [22] and the procedure is enabled by the operator. If the NF service consumer receives a request to create an SM Context or a PDU session context, which includes the 3gpp-Sbi-Origination-Timestamp header as defined in subclause 5.2.3.2, the NF service consumer shall forward this header to the PCF as HTTP custom header. See also subclause 4.2.7 for the handling at the PCF, when the PCF receives the 3gpp-Sbi-Origination-Timestamp header.

\* \* \* Fourth Change \* \* \* \*

#### 4.2.4.2 Requesting the update of the Session Management related policies



Figure 4.2.4.2-1: Requesting the update of the Session Management related policies

When the NF service consumer detects that one or more policy control request triggers are met, the NF service consumer shall send a POST request to the PCF to update an Individual SM Policy resource. The {smPolicyId} in the URI identifies the Individual SM Policy resource to be updated. The NF service consumer include SmPolicyUpdateContextData data structure in the payload body of the HTTP POST to request a update of representation of the "Individual SM Policy" resource. The NF service consumer shall include the met policy control request trigger(s) within the "repPolicyCtrlReqTriggers" attribute and applicable updated value(s) in the corresponding attribute(s).

The NF service consumer shall include (if the corresponding policy control request trigger is met and the applicable information is available) in SmPolicyUpdateContextData data structure:

- type of access within the "accessType" attribute;

- type of the radio access technology within the "ratType" attribute;

- the new allocated UE Ipv4 address within the "ipv4Address" attribute and/or the UE Ipv6 prefix within the "ipv6AddressPrefix" attribute;

- multiple new allocated UE Ipv6 prefixes within the "addIpv6AddrPrefixes" attribute, if the "MultiIpv6AddrPrefix" feature is supported;

- the released UE Ipv4 address within the "relIpv4Address" attribute and/or the UE Ipv6 prefix within the "relIpv6AddressPrefix" attribute;

- multiple released UE Ipv6 prefixes within the "addRelIpv6AddrPrefixes" attribute, if the "MultiIpv6AddrPrefix feature" is supported;

- the UE MAC address within the "ueMac" attribute;

- the released UE MAC address within the "relUeMac" attribute;

- the indication of UE supporting reflective QoS within the "refQosIndication" attribute;

- access network charging identifier within the "accNetChIds" attribute;

- the 3GPP PS data off status within the "3gppPsDataOffStatus" attribute, if the "3GPP-PS-Data-Off" feature is supported;

- the UE time zone information within the "ueTimeZone" attribute;

- the UDM subscribed Session-AMBR or, if the "DN-Authorization" feature is supported, the DN-AAA authorized Session-AMBR within the "subsSessAmbr" attribute;

NOTE 1: When both, the UDM subscribed Session-AMBR and the DN-AAA authorized Session-AMBR are available in the NF service consumer, the NF service consumer includes the DN-AAA authorized Session-AMBR.

- if the "VPLMN-QoS-Control" feature is supported, the highest Session-AMBR and the default QoS supported in the VPLMN within the "vplmnQos" attribute, if available;

NOTE 2: In home routed roaming, the H-SMF may provide the QoS constraints received from the VPLMN (defined in 3GPP TS 23.502 [3] clause 4.3.2.2.2) to the PCF.

- if the "DN-Authorization" feature is supported, the DN-AAA authorization profile index within the "authProfIndex" attribute;

- subscribed Default QoS Information within the "subsDefQos" attribute;

- detected application information within the "appDetectionInfos" attribute;

- if the "UMC" feature is supported, the accumulated usage reports within the "accuUsageReports" attribute;

- if the "PRA" feature is supported, the reported presence reporting area information within the "repPraInfos" attribute;

- the QoS flow usage required of the default QoS flow within the "qosFlowUsage" attribute;

- indication whether the QoS targets of one or more SDFs are not guaranteed or guaranteed again within the "qncReports" attribute;

- user location(s) information within the "userLocationInfo" attribute;

NOTE 3: The SMF encodes both 3GPP and non-3GPP access UE location in the "userLocationInfo" attribute when they are both received from the AMF.

- if the "GroupIdListChange" feature is supported, the Internal Group Identifier(s) of the served UE within the "interGrpIds " attribute;

- if the "SatBackhaulCategoryChg" feature is supported, the satellite backhaul category or non-satellite backhaul within the "satBackhaulCategory" attribute;

- serving network function identifier within the "servNfId" attribute;

- identifier of the serving network within the "servingNetwork" attribute; and

- when the "EneNA" feature is supported, the list of NWDAF instance IDs used for the PDU Session within the "nwdafInstanceIds" and their associated Analytic ID(s) within "nwdafEvents" updated with the new values included within the "nwdafDatas" attribute.

NOTE x: The NF service consumer provides the complete updated list of NWDAF instance IDs and associated Analytic ID(s) used for the PDU session. If all NWDAF data is deleted an empty list is included.

The NF service consumer may include in "SmPolicyUpdateContextData" data structure the IPv4 address domain identity within the "ipDomain" attribute.

In case of a successful update, "200 OK" response shall be returned. The PCF shall include in the "200 OK" response the representation of the updated policies within the SmPolicyDecision data structure. Detailed procedures related to the provisioning and enforcement of the policy decisions within the SmPolicyDecision data structure are contained in subclause 4.2.6.

NOTE y: An empty SmPolicyDecision data structure is included in the "200 OK" response when the PCF decides not to update policies.

If the PCF received a new list of NWDAF instance IDs used for the PDU Session in "nwdafInstanceIds" attribute and their associated Analytic IDs in "nwdafEvents" attribute included within the "nwdafDatas" attribute the PCF may select those NWDAF instances based on this new list as described in 3GPP TS 29.513 [7].

If errors occur when processing the HTTP POST request, the PCF shall send an HTTP error response as specified in subclause 5.7.

If the feature "ES3XX" is supported, and the PCF determines the received HTTP POST request needs to be redirected, the PCF shall send an HTTP redirect response as specified in subclause 6.10.9 of 3GPP TS 29.500 [4].

If the PCF is, due to incomplete, erroneous or missing information (e.g. QoS, RAT type, subscriber information) not able to provision a policy decision as response to the request for PCC rules by the NF service consumer, the PCF may reject the request and include in an HTTP "400 Bad Request " response message the "cause" attribute of the ProblemDetails data structure set to "ERROR\_INITIAL\_PARAMETERS".

If the PCF receives the set of session information which is sent in the message originated due to a trigger being met is incoherent with the previous set of session information for the same session (E.g. trigger met was RAT changed, and the RAT notified is the same as before), the PCF may reject the request and include in an HTTP "400 Bad Request" response message the "cause" attribute of the ProblemDetails data structure set to "ERROR\_TRIGGER\_EVENT".

If the PCF detects that the packet filters in the request for new PCC rules received from the NF service consumer is covered by the packet filters of outstanding PCC rules that the PCF is provisioning to the NF service consumer, the PCF may reject the request and include in an HTTP "403 Forbidden" response message the "cause" attribute of the ProblemDetails data structure set to "ERROR\_CONFLICTING\_REQUEST".

If the PCF does not accept one or more of the traffic mapping filters provided by the NF service consumer in an HTTP POST request (e.g. because the PCF does not allow the UE to request enhanced QoS for services not known to the PCF), the PCF shall reject the request and include in an HTTP "403 Forbidden" response message the "cause" attribute of the ProblemDetails data structure set to "ERROR\_TRAFFIC\_MAPPING\_INFO\_REJECTED".

If the NF service consumer receives HTTP response with these codes, the NF service consumer shall reject the PDU session modification that initiated the HTTP Request.

The PCF shall not combine a rejection with provisioning of PCC rule operations in the same HTTP response message.

\* \* \* Fifth Change \* \* \* \*

### 5.6.1 General

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

The Npcf\_SMPolicyControl API allows the NF service consumer to retrieve the session management related policy from the PCF as defined in 3GPP TS 23.503 [6].

Table 5.6.1-1 specifies the data types defined for the Npcf\_SMPolicyControl service based interface protocol.

Table 5.6.1-1: Npcf\_SMPolicyControl specific Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Section defined | Description | Applicability |
| 5GSmCause | 5.6.3.2 | Indicates the 5GSM cause code value. | RAN-NAS-Cause |
| AdditionalAccessInfo | 5.6.2.43 | Indicates the combination of additional Access Type and RAT Type for MA PDU session | ATSSS |
| AccNetChargingAddress | 5.6.2.35 | Identifies the address of the network node performing charging and used for charging applications. |  |
| AccNetChId | 5.6.2.23 | Contains the access network charging identifier for the PCC rule(s) or whole PDU session. |  |
| AccuUsageReport | 5.6.2.18 | Contains the accumulated usage report information. | UMC |
| AfSigProtocol | 5.6.3.10 | Indicates the protocol used for signalling between the UE and the AF. | ProvAFsignalFlow |
| AppDetectionInfo | 5.6.2.22 | Contains the detected application's traffic information. | ADC |
| ApplicationDescriptor | 5.6.3.2 | Defines the Application Descriptor for an ATSSS rule. | ATSSS |
| AtsssCapability | 5.6.3.26 | Contains the ATSSS capability supported for the MA PDU Session. | ATSSS |
| AuthorizedDefaultQos | 5.6.2.34 | Authorized Default QoS. |  |
| BridgeManagementContainer | 5.6.2.47 | Contains the UMIC. | TimeSensitiveNetworking |
| ChargingData | 5.6.2.11 | Contains charging related parameters. |  |
| ChargingInformation | 5.6.2.17 | Contains the addresses, and if available, the instance ID and set ID, of the charging functions. |  |
| ConditionData | 5.6.2.9 | Contains conditions for applicability of a rule. |  |
| CreditManagementStatus | 5.6.3.16 | Indicates the reason of the credit management session failure. |  |
| DownlinkDataNotificationControl | 5.6.2.48 | Contains the downlink data notification control information. | DDNEventPolicyControl |
| DownlinkDataNotificationControlRm | 5.6.2.49 | This data type is defined in the same way as the "DownlinkDataNotificationControl" data type, but with the OpenAPI "nullable: true" property. | DDNEventPolicyControl2 |
| EpsRanNasRelCause | 5.6.3.2 | Indicates the RAN or NAS release cause code information in 3GPP-EPS access type or indicates the TWAN or untrusted WLAN release cause code information in Non-3GPP-EPS access type. | RAN-NAS-Cause |
| ErrorReport | 5.6.2.36 | Contains the rule reports. |  |
| FailureCause | 5.6.3.14 | Indicates the cause of the failure in a Partial Success Report. |  |
| FailureCode | 5.6.3.9 | Indicates the reason of the PCC rule failure. |  |
| FlowDescription | 5.6.3.2 | Defines a packet filter for an IP flow. |  |
| FlowDirection | 5.6.3.3 | Indicates the direction of the service data flow. |  |
| FlowDirectionRm | 5.6.3.15 | This data type is defined in the same way as the "FlowDirection" data type, but allows null value. |  |
| FlowInformation | 5.6.2.14 | Contains the flow information. |  |
| IpMulticastAddressInfo | 5.6.2.46 | Contains the IP multicast addressing information | WWC |
| MaPduIndication | 5.6.3.25 | Contains the MA PDU session indication, i.e., MA PDU Request or MA PDU Network-Upgrade Allowed. | ATSSS |
| MeteringMethod | 5.6.3.5 | Indicates the metering method. |  |
| MulticastAccessControl | 5.6.3.20 | Indicates whether the service data flow, corresponding to the service data flow template, is allowed or not allowed. | WWC |
| NetLocAccessSupport | 5.6.3.27 | Indicates the access network support of the report of the requested access network information. | NetLoc |
| NotificationControlIndication | 5.6.3.29 | Indicates the notification of DDD Status is requested and/or notification of DDN Failure is requested. | DDNEventPolicyControl |
| NwdafData | 5.6.2.x | Indicates the list of NWDAF instance IDs used for the PDU Session and their associated Analytics ID(s) consumed by the NF service consumer. | EneNA |
| PacketFilterContent | 5.6.3.2 | Defines a packet filter for an IP flow. |  |
| PacketFilterInfo | 5.6.2.30 | Contains the information from a single packet filter sent from the NF service consumer to the PCF. |  |
| PartialSuccessReport | 5.6.2.33 | Includes the information reported by the NF service consumer when some of the PCC rules and/or session rules are not successfully installed/activated. |  |
| PccRule | 5.6.2.6 | Contains the PCC rule information. |  |
| PduSessionRelCause | 5.6.3.24 | Contains the NF service consumer PDU Session release cause.  | PDUSessionRelCause,ImmediateTermination |
| PolicyControlRequestTrigger | 5.6.3.6 | Contains the policy control request trigger(s). |  |
| PolicyDecisionFailureCode | 5.6.3.28 | Indicates the type of the failed policy decision and/or condition data. | PolicyDecisionErrorHandling |
| PortManagementContainer | 5.6.2.45 | Contains the port management information container for a port. | TimeSensitiveNetworking |
| QosCharacteristics | 5.6.2.16 | Contains QoS characteristics for a non-standardized or non-configured 5QI. |  |
| QosData | 5.6.2.8 | Contains the QoS parameters. |  |
| QosFlowUsage | 5.6.3.13 | Indicates a QoS flow usage information. |  |
| QosMonitoringData | 5.6.2.40 | Contains QoS monitoring related control information. | QosMonitoring |
| QosMonitoringReport | 5.6.2.42 | Contains QoS monitoring reporting information. | QosMonitoring |
| QosNotificationControlInfo | 5.6.2.32 | Contains the QoS Notification Control Information. |  |
| RanNasRelCause | 5.6.2.28 | Contains the RAN/NAS release cause. | RAN-NAS-Cause |
| RedirectAddressType | 5.6.3.12 | Indicates the redirect address type. | ADC |
| RedirectInformation | 5.6.2.13 | Contains the redirect information. | ADC |
| ReportingFrequency | 5.6.3.22 | Indicates the frequency for the reporting | QosMonitoring |
| ReportingLevel | 5.6.3.4 | Indicates the reporting level. |  |
| RequestedQos | 5.6.2.31 | Contains the QoS information requested by the UE. |  |
| RequestedQosMonitoringParameter | 5.6.3.21 | Indicates the requested QoS monitoring parameters to be measured. | QosMonitoring |
| RequestedRuleData | 5.6.2.24 | Contains rule data requested by the PCF to receive information associated with PCC rules.  |  |
| RequestedRuleDataType | 5.6.3.7 | Contains the type of rule data requested by the PCF. |  |
| RequestedUsageData | 5.6.2.25 | Contains usage data requested by the PCF requesting usage reports for the corresponding usage monitoring data instances.  | UMC |
| RuleOperation | 5.6.3.11 | Indicates a UE initiated resource operation that causes a request for PCC rules. |  |
| RuleReport | 5.6.2.27 | Reports the status of PCC. |  |
| RuleStatus | 5.6.3.8 | Indicates the status of PCC or session rule. |  |
| SatelliteBackhaulCategory | 5.6.3.30 | Indicates the satellite backhaul category or non-satellite backhaul. | SatBackhaulCategoryChg |
| ServingNfIdenty | 5.6.2.38 | Contains the serving Network Function identity. |  |
| SessionRule | 5.6.2.7 | Contains session level policy information. |  |
| SessionRuleFailureCode | 5.6.3.17 | Indicates the reason of the session rule failure. | SessionRuleErrorHandling |
| SessionRuleReport | 5.6.2.37 | Reports the status of session rule. | SessionRuleErrorHandling |
| SgsnAddress | 5.6.2.50 | Contains the serving SGSN address. | 2G3GIWK |
| SmPolicyAssociationReleaseCause | 5.6.3.23 | Represents the cause why the PCF requests the termination of the SM policy association. |  |
| SmPolicyControl | 5.6.2.2 | Contains the parameters to request the SM policies and the SM policies authorized by the PCF. |  |
| SmPolicyContextData | 5.6.2.3 | Contains the parameters to create individual SM policy resource. |  |
| SmPolicyDecision | 5.6.2.4 | Contains the SM policies authorized by the PCF. |  |
| SmPolicyNotification | 5.6.2.5 | Contains the update of the SM policies. |  |
| SmPolicyDeleteData | 5.6.2.15 | Contains the parameters to be sent to the PCF when the individual SM policy is deleted. |  |
| SmPolicyUpdateContextData | 5.6.2.19 | Contains the met policy control request trigger(s) and corresponding new value(s) or the error report of the policy enforcement. |  |
| SteeringFunctionality | 5.6.3.18 | Indicates functionality to support traffic steering, switching and splitting determined by the PCF. | ATSSS |
| SteeringMode | 5.6.2.39 | Contains the steering mode value and parameters determined by the PCF. | ATSSS |
| SteerModeIndicator | 5.6.3.31 | Contains Autonomous load-balance indicator or UE-assistance indicator. | EnATSSS |
| SteerModeValue | 5.6.3.19 | Indicates the steering mode value determined by the PCF. | ATSSS |
| TerminationNotification | 5.6.2.21 | Termination Notification. |  |
| ThresholdValue | 5.6.2.52 | Contains the threshold value(s) for RTT and/or Packet Loss Rate. | EnATSSS |
| TrafficControlData | 5.6.2.10 | Contains parameters determining how flows associated with a PCCRule are treated (blocked, redirected, etc). |  |
| TsnBridgeInfo | 5.6.2.41 | Contains parameters that describe and identify the TSC user plane node. | TimeSensitiveNetworking,TimeSensitiveCommunication |
| TsnPortNumber | 5.6.3.2 | Contains a port number. | TimeSensitiveNetworking |
| UeCampingRep | 5.6.2.26 | Contains the current applicable values corresponding to the policy control request triggers. |  |
| UeInitiatedResourceRequest | 5.6.2.29 | Indicates a UE requests specific QoS handling for selected SDF. |  |
| UpPathChgEvent | 5.6.2.20 | Contains the UP path change event subscription from the AF. | TSC |
| UsageMonitoringData | 5.6.2.12 | Contains usage monitoring related control information. | UMC |
| UserPlaneLatencyRequirements | 5.6.2.51 | The user plane latency requirements. | EnEDGE |

Table 5.6.1-2 specifies data types re-used by the Npcf\_SMPolicyControl 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 Npcf\_SMPolicyControl service based interface.

Table 5.6.1-2: Npcf\_SMPolicyControl re-used Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Reference | Comments | Applicability |
| 5GMmCause | 3GPP TS 29.571 [11] | Contains the cause value of 5GMM protocol. | RAN-NAS-Cause |
| 5Qi | 3GPP TS 29.571 [11] | Unsigned integer representing a 5G QoS Identifier (see subclause 5.7.2.1 of 3GPP TS 23.501 [2]), within the range 0 to 255. |  |
| 5QiPriorityLevel | 3GPP TS 29.571 [11] | Unsigned integer indicating the 5QI Priority Level (see subclauses 5.7.3.3 and 5.7.4 of 3GPP TS 23.501 [2]), within the range 1 to 127.Values are ordered in decreasing order of priority, i.e. with 1 as the highest priority and 127 as the lowest priority. |  |
| 5QiPriorityLevelRm | 3GPP TS 29.571 [11] | This data type is defined in the same way as the "5QiPriorityLevel" data type, but with the OpenAPI "nullable: true" property. |  |
| AccessType | 3GPP TS 29.571 [11] | The identification of the type of access network. |  |
| AccessTypeRm | 3GPP TS 29.571 [11] | This data type is defined in the same way as the "AccessType" data type, but with the OpenAPI "nullable: true" property. | ATSSS |
| Ambr | 3GPP TS 29.571 [11] | Session AMBR. |  |
| AnGwAddress | 3GPP TS 29.514 [17] | Carries the control plane address of the access network gateway. (NOTE 1) |  |
| ApplicationChargingId | 3GPP TS 29.571 [11] | Application provided charging identifier allowing correlation of charging information. | AF\_Charging\_Identifier |
| Arp | 3GPP TS 29.571 [11] | ARP. |  |
| AverWindow | 3GPP TS 29.571 [11] | Averaging Window. |  |
| AverWindowRm | 3GPP TS 29.571 [11] | This data type is defined in the same way as the "AverWindow" data type, but with the OpenAPI "nullable: true" property. |  |
| Bytes | 3GPP TS 29.571 [11] | String with format "byte". | TimeSensitiveNetworking |
| BitRate | 3GPP TS 29.571 [11] | String representing a bit rate that shall be formatted as follows:pattern: "^\d+(\.\d+)? (bps|Kbps|Mbps|Gbps|Tbps)$"Examples: "125 Mbps", "0.125 Gbps", "125000 Kbps". |  |
| BitRateRm | 3GPP TS 29.571 [11] | This data type is defined in the same way as the "BitRate" data type, but with the OpenAPI "nullable: true" property. |  |
| ChargingId | 3GPP TS 29.571 [11] | Charging identifier allowing correlation of charging information. |  |
| ContentVersion | 3GPP TS 29.514 [17] | Indicates the content version of a PCC rule. It uniquely identifies a version of the PCC rule as defined in subclause 4.2.6.2.14. | RuleVersioning |
| DateTime | 3GPP TS 29.571 [11] | String with format "date-time" as defined in OpenAPI Specification [10]. |  |
| DateTimeRm | 3GPP TS 29.571 [11] | This data type is defined in the same way as the "DateTime" data type, but with the OpenAPI "nullable: true" property. |  |
| DddTrafficDescriptor | 3GPP TS 29.571 [11] | Traffic Descriptor | DDNEventPolicyControl |
| DlDataDeliveryStatus | 3GPP TS 29.571 [11] | Downlink data delivery status. | DDNEventPolicyControl |
| DnaiChangeType | 3GPP TS 29.571 [11] | Describes the types of DNAI change. |  |
| Dnn | 3GPP TS 29.571 [11] | The DNN the user is connected to. |  |
| DnnSelectionMode | 3GPP TS 29.502 [22] | DNN selection mode. | DNNSelectionMode |
| DurationSec | 3GPP TS 29.571 [11] | Identifies a period of time in units of seconds. |  |
| DurationSecRm | 3GPP TS 29.571 [11] | This data type is defined in the same way as the "DurationSec" data type, but with the OpenAPI "nullable: true" property. |  |
| EthFlowDescription | 3GPP TS 29.514 [17] | Defines a packet filter for an Ethernet flow. (NOTE 2) |  |
| ExtMaxDataBurstVol | 3GPP TS 29.571 [11] | Maximum Data Burst Volume. | EMDBV |
| ExtMaxDataBurstVolRm | 3GPP TS 29.571 [11] | This data type is defined in the same way as the "ExtMaxDataBurstVol" data type, but with the OpenAPI "nullable: true" property. | EMDBV |
| FinalUnitAction | 3GPP TS 32.291 [19] | Indicates the action to be taken when the user's account cannot cover the service cost. |  |
| FlowStatus | 3GPP TS 29.514 [17] | Describes whether the IP flow(s) are enabled or disabled. The value "REMOVED" is not applicable to Npcf\_SMPolicyControl service. |  |
| Gpsi | 3GPP TS 29.571 [11] | Identifies a GPSI. |  |
| GroupId | 3GPP TS 29.571 [11] | Identifies a group of internal globally unique ID. |  |
| Guami | 3GPP TS 29.571 [11] | Globally Unique AMF Identifier. |  |
| InvalidParam | 3GPP TS 29.571 [11] | Invalid Parameters for the reported failed policy decisions | ExtPolicyDecisionErrorHandling |
| IpIndex | 3GPP TS 29.519 [15] | Information that identifies which IP pool or external server is used to allocate the IP address. |  |
| Ipv4Addr | 3GPP TS 29.571 [11]  | Identifies an Ipv4 address. |  |
| Ipv4AddrMask | 3GPP TS 29.571 [11] | String identifying an IPv4 address mask. |  |
| Ipv6Addr | 3GPP TS 29.571 [11] | Identifies an IPv6 address. |  |
| Ipv6Prefix | 3GPP TS 29.571 [11] | The Ipv6 prefix allocated for the user. |  |
| MacAddr48 | 3GPP TS 29.571 [11] | MAC Address. |  |
| MaxDataBurstVol | 3GPP TS 29.571 [11] | Maximum Data Burst Volume. |  |
| MaxDataBurstVolRm | 3GPP TS 29.571 [11] | This data type is defined in the same way as the "MaxDataBurstVol" data type, but with the OpenAPI "nullable: true" property. |  |
| NfInstanceId | 3GPP TS 29.571 [11] | The NF instance identifier. |  |
| NfSetId | 3GPP TS 29.571 [11] | The NF set identifier. |  |
| NgApCause | 3GPP TS 29.571 [11] | Contains the cause value of NgAP protocol. | RAN-NAS-Cause |
| NullValue | 3GPP TS 29.571 [11] | JSON's null value, used as an explicit value of an enumeration. |  |
| NwdafEvent | 3GPP TS 29.520 [xx] | Analytics ID consumed by the NF service consumer. | EneNA |
| PacketDelBudget | 3GPP TS 29.571 [11] | Packet Delay Budget. |  |
| PacketErrRate | 3GPP TS 29.571 [11] | Packet Error Rate. |  |
| PacketLossRateRm | 3GPP TS 29.571 [11] | This data type is defined in the same way as the "PacketLossRate" data type, but with the OpenAPI "nullable: true" property. |  |
| PduSessionId | 3GPP TS 29.571 [11] | The identification of the PDU session. |  |
| PduSessionType | 3GPP TS 29.571 [11] | Indicate the type of a PDU session. |  |
| Pei | 3GPP TS 29.571 [11] | The Identification of a Permanent Equipment. |  |
| PlmnIdNid | 3GPP TS 29.571 [11] | The identification of the Network: The PLMN Identifier (the mobile country code and the mobile network code) or the SNPN Identifier (the PLMN Identifier and the NID). |  |
| PresenceInfo  | 3GPP TS 29.571 [11] | Contains the information which describes a Presence Reporting Area. | PRA |
| PresenceInfoRm | 3GPP TS 29.571 [11] | This data type is defined in the same way as the "PresenceInfo" data type, but with the OpenAPI "nullable: true" property. | PRA |
| ProblemDetails | 3GPP TS 29.571 [11] | Contains a detailed information about an error. |  |
| QosNotifType | 3GPP TS 29.514 [17] | Indicates whether the GBR targets for the indicated SDFs are "NOT\_GUARANTEED" or "GUARANTEED" again. |  |
| QosResourceType | 3GPP TS 29.571 [11] | Indicates whether the resource type is GBR, delay critical GBR, or non-GBR. |  |
| RatingGroup | 3GPP TS 29.571 [11] | Identifier of a rating group. |  |
| RatType | 3GPP TS 29.571 [11] | The identification of the RAT type. |  |
| RedirectResponse | 3GPP TS 29.571 [11] | Contains redirection related information. | ES3XX |
| RouteToLocation | 3GPP TS 29.571 [11] | A traffic routes to applications location. | TSC |
| ServiceId | 3GPP TS 29.571 [11] | Identifier of a service. |  |
| Snssai | 3GPP TS 29.571 [11] | Identifies the S-NSSAI. |  |
| SubscribedDefaultQos | 3GPP TS 29.571 [11] | Subscribed Default QoS. |  |
| Supi | 3GPP TS 29.571 [11] | The identification of the user (i.e. IMSI, NAI). |  |
| SupportedFeatures | 3GPP TS 29.571 [11] | Used to negotiate the applicability of the optional features defined in table 5.8-1. |  |
| TraceData | 3GPP TS 29.571 [11] |  |  |
| TimeZone | 3GPP TS 29.571 [11] | Contains the user time zone information. |  |
| TscaiInputContainer | 3GPP TS 29.514 [17] | TSCAI Input information. | TimeSensitiveNetworking |
| Uinteger | 3GPP TS 29.571 [11] | Unsigned Integer. | TimeSensitiveNetworking |
| UintegerRm | 3GPP TS 29.571 [11] | This data type is defined in the same way as the "Uinteger" data type, but with the OpenAPI "nullable: true" property. | EnATSSS |
| Uint64 | 3GPP TS 29.571 [11] | Unsigned 64-bit integers. | TimeSensitiveNetworking |
| Uri | 3GPP TS 29.571 [11] | URI. |  |
| UserLocation | 3GPP TS 29.571 [11] | Contains the user location(s). |  |
| Volume | 3GPP TS 29.122 [32] | Unsigned integer identifying a volume in units of bytes. |  |
| VolumeRm | 3GPP TS 29.122 [32] | This data type is defined in the same way as the "Volume" data type, but with the OpenAPI "nullable: true" property. |  |
| VplmnQos | 3GPP TS 29.502 [22] | QoS constraints in the VPLMN. | VPLMN-QoS-Control |
| NOTE 1: "AnGwAddr" data structure is only applicable to the 5GS and EPC/E-UTRAN interworking scenario as defined in Annex B.NOTE 2: In order to support a set of MAC addresses with a specific range in the traffic filter, feature MacAddressRange as specified in subclause 5.8 shall be supported. |

\* \* \* Sixth Change \* \* \*

#### 5.6.2.3 Type SmPolicyContextData

Table 5.6.2.3-1: Definition of type SmPolicyContextData

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| accNetChId | AccNetChId | O | 0..1 | Indicates the access network charging identifier for default QoS flow or whole PDU session. |  |
| chargEntityAddr | AccNetChargingAddress | O | 0..1 | Address of the network entity performing charging. |  |
| gpsi | Gpsi | O | 0..1 | Gpsi shall contain either an External Id or an MSISDN. |  |
| supi | Supi | M | 1 | Subscription Permanent Identifier.(NOTE 2) |  |
| invalidSupi | boolean | C | 0..1 | When this attribute is included and set to true, it indicates that the "supi" attribute contains an invalid value. This attribute shall be present if the SUPI is not available in the NF service consumer, or the SUPI is unauthenticated. When present it shall be set as follows:- true: invalid SUPI.- false (default): valid SUPI. |  |
| pduSessionId | PduSessionId | M | 1 | PDU session Id. |  |
| dnn | Dnn | M | 1 | The DNN of the PDU session, a full DNN with both the Network Identifier and Operator Identifier, or a DNN with the Network Identifier only. |  |
| dnnSelMode | DnnSelectionMode | O | 0..1 | Indicates whether the requested DNN corresponds to an explicitly subscribed DNN. | DNNSelectionMode |
| interGrpIds | array(GroupId) | O | 1..N | The internal Group Id(s). |  |
| notificationUri | Uri | M | 1 | Identifies the recipient of SM policies update notifications sent by the PCF. |  |
| pduSessionType | PduSessionType | M | 1 | Indicates the type of a PDU session. |  |
| accessType | AccessType | O | 0..1 | The Access Type where the served UE is camping. |  |
| ratType | RatType | O | 0..1 | The RAT Type where the served UE is camping. |  |
| addAccessInfo | AdditionalAccessInfo | O | 0..1 | Indicates the combination of additional Access Type and RAT Type for MA PDU session. | ATSSS |
| servingNetwork | PlmnIdNid | O | 0..1 | The serving network (a PLMN or an SNPN) where the served UE is camping. For the SNPN the NID together with the PLMN ID identifies the SNPN. |  |
| userLocationInfo | UserLocation | O | 0..1 | The location where the served UE is camping. (NOTE 3) |  |
| ueTimeZone | TimeZone | O | 0..1 | The time zone where the served UE is camping. |  |
| pei | Pei | O | 0..1 | The Permanent Equipment Identifier of the served UE. |  |
| ipv4Address | Ipv4Addr | O | 0..1 | The IPv4 Address of the served UE. |  |
| ipv6AddressPrefix | Ipv6Prefix | O | 0..1 | The Ipv6 Address Prefix of the served UE. |  |
| ipDomain | string | O | 0..1 | IPv4 address domain identifier.(NOTE 1) |  |
| subsSessAmbr | Ambr | O | 0..1 | UDM subscribed or DN-AAA authorized Session-AMBR. |  |
| authProfIndex | string | O | 0..1 | DN-AAA authorization profile index. | DN-Authorization |
| subsDefQos | SubscribedDefaultQos | O | 0..1 | Subscribed Default QoS Information. |  |
| vplmnQos | VplmnQos | O | 0..1 | QoS constraints in a VPLMN. | VPLMN-QoS-Control |
| numOfPackFilter | integer | O | 0..1 | Contains the number of supported packet filter for signalled QoS rules. |  |
| online | boolean | O | 0..1 | If it is included and set to true, the online charging is applied to the PDU session. |  |
| offline | boolean | O | 0..1 | If it is included and set to true, the offline charging is applied to the PDU session. |  |
| chargingCharacteristics | string | O | 0..1 | Contains the Charging Characteristics applied to the PDU session. Functional requirements for the Charging Characteristics are defined in 3GPP TS 32.255 [35] Annex A.The charging characteristics are encoded as specified in 3GPP TS 29.503 [34]. |  |
| 3gppPsDataOffStatus | boolean | O | 0..1 | If it is included and set to true, the 3GPP PS Data Off is activated by the UE. | 3GPP-PS-Data-Off |
| refQosIndication | boolean | O | 0..1 | If it is included and set to true, the reflective QoS is supported by the UE. |  |
| sliceInfo | Snssai | M | 1 | Identifies the S-NSSAI. |  |
| qosFlowUsage | QosFlowUsage | O | 0..1 | Indicates the required usage for default QoS flow. |  |
| servNfId | ServingNfIdentity | O | 0..1 | Contains the serving network function identity. |  |
| suppFeat | SupportedFeatures | C | 0..1 | Indicates the list of Supported features used as described in subclause 5.8.This parameter shall be supplied by the NF service consumer in the POST request that requested the creation of an individual SM policy resource. |  |
| traceReq | TraceData | O | 0..1 | Trace control and configuration parameters information defined in 3GPP TS 32.422 [24]. |  |
| smfId | NfInstanceId | O | 0..1 | SMF instance identifier. |  |
| recoveryTime | DateTime | O | 0..1 | It includes the recovery time of the NF service consumer. |  |
| maPduInd | MaPduIndication | O | 0..1 | Contains the MA PDU session indication, i.e., MA PDU Request or MA PDU Network-Upgrade Allowed. | ATSSS |
| atsssCapab | AtsssCapability | O | 0..1 | Contains the ATSSS capability supported for the MA PDU Session. | ATSSS |
| ipv4FrameRouteList | array(Ipv4AddrMask) | O | 1..N | List of Framed Route information of IPv4. |  |
| ipv6FrameRouteList | array(Ipv6Prefix) | O | 1..N | List of Framed Route information of IPv6. |  |
| satBackhaulCategory | SatelliteBackhaulCategory | O | 0..1 | Satellite backhaul category or non-satellite backhaul used for the PDU session. | SatBackhaulCategoryChg |
| nwdafDatas | array(NwdafData) | O | 1..N | List of NWDAF Instance IDs and their associated Analytics IDs consumed by the NF service consumer. | EneNA |
| NOTE 1: The value provided in this attribute is implementation specific. The only constraint is that the NF service consumer shall supply a different identifier for each overlapping address domain (e.g. the SMF NF instance identifier).NOTE 2: For an emergency session, when the SUPI is not available in the NF service consumer, or if available, the SUPI is unauthenticated, the value provided in the "supi" attribute is implementation specific.NOTE 3: The SMF may encode both 3GPP and non-3GPP access UE location in the "userLocationInfo" attribute. |

\* \* \* Seventh Change \* \* \*

#### 5.6.2.19 Type SmPolicyUpdateContextData

Table 5.6.2.19-1: Definition of type SmPolicyUpdateContextData

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| repPolicyCtrlReqTriggers | array(PolicyControlRequestTrigger) | C | 1..N | The policy control request triggers which are met. It is omitted if no triggers are met such as in subclauses 4.2.4.7 and 4.2.4.15. |  |
| accNetChIds | array(AccNetChId) | O | 1..N | Indicates the access network charging identifier for the PCC rule(s) or whole PDU session. |  |
| accessType | AccessType | O | 0..1 | The Access Type where the served UE is camping. |  |
| ratType | RatType | O | 0..1 | The RAT Type where the served UE is camping. |  |
| addAccessInfo | AdditionalAccessInfo | O | 0..1 | Indicates the combination of added Access Type and RAT Type for MA PDU session. | ATSSS |
| relAccessInfo | AdditionalAccessInfo | O | 0..1 | Indicates the combination of released Access Type and RAT Type for MA PDU session. | ATSSS |
| servingNetwork | PlmnIdNid | O | 0..1 | The serving network (a PLMN or an SNPN) where the served UE is camping. For the SNPN the NID together with the PLMN ID identifies the SNPN. |  |
| userLocationInfo | UserLocation | O | 0..1 | The location(s) where the served UE is camping. (NOTE 4) |  |
| ueTimeZone | TimeZone | O | 0..1 | The time zone where the served UE is camping. |  |
| ipv4Address | Ipv4Addr | O | 0..1 | The IPv4 Address of the served UE. |  |
| ipDomain | string | O | 0..1 | IPv4 address domain identifier.(NOTE 2) |  |
| relIpv4Address | Ipv4Addr | O | 0..1 | Indicates the released IPv4 Address of the served UE. |  |
| ipv6AddressPrefix | Ipv6Prefix | O | 0..1 | The Ipv6 Address Prefix of the served UE. |  |
| relIpv6AddressPrefix | Ipv6Prefix | O | 0..1 | Indicates the released IPv6 Address Prefix of the served UE in multi-homing case. |  |
| relUeMac | MacAddr48 | O | 0..1 | Indicates the released MAC Address of the served UE. |  |
| ueMac | MacAddr48 | O | 0..1 | The MAC Address of the served UE. |  |
| subsSessAmbr | Ambr | O | 0..1 | UDM subscribed or DN-AAA authorized Session-AMBR. |  |
| authProfIndex | string | O | 0..1 | DN-AAA authorization profile index. | DN-Authorization |
| subsDefQos | SubscribedDefaultQos | O | 0..1 | Subscribed Default QoS Information. |  |
| vplmnQos | VplmnQos | O | 0..1 | QoS constraints in a VPLMN | VPLMN-QoS-Control |
| numOfPackFilter | integer | O | 0..1 | Contains the number of supported packet filter for signalled QoS rules.(NOTE 1) |  |
| accuUsageReports | array(AccuUsageReport) | O | 1..N | Contains the accumulated usage report(s). | UMC |
| 3gppPsDataOffStatus | boolean | O | 0..1 | If it is included and set to true, the 3GPP PS Data Off is activated by the UE. | 3GPP-PS-Data-Off  |
| appDetectionInfos | array(AppDetectionInfo) | O | 1..N | Reports the start/stop of the application traffic and detected SDF descriptions if applicable. | ADC |
| ruleReports | array(RuleReport) | O | 1..N | Used to report the PCC rule failure. |  |
| sessRuleReports | array(SessionRuleReport) | O | 1..N | Used to report the session rule failure. | SessionRuleErrorHandling |
| qncReports | array(QosNotificationControlInfo) | O | 1..N | QoS Notification Control information. |  |
| qosMonReports | array(QosMonitoringReport) | O | 1..N | QoS Monitoring reporting information. | QosMonitoring |
| userLocationInfoTime | DateTime | O | 0..1 | Contains the NTP time at which the UE was last known to be in the location. (NOTE 3) |  |
| repPraInfos | map(PresenceInfo) | O | 1..N | Reports the changes of presence reporting area. The "praId" attribute within the PresenceInfo data type shall also be the key of the map. The "presenceState" attribute within the PresenceInfo data type shall be supplied. The "additionalPraId" attribute within the PresenceInfo data type shall not be supplied. | PRA |
| ueInitResReq | UeInitiatedResourceRequest | O | 0..1 | Indicates a UE requests specific QoS handling for selected SDF. |  |
| refQosIndication | boolean | O | 0..1 | If it is included and set to true, the reflective QoS is supported by the UE. If it is included and set to false, the reflective QoS is revoked by the UE. |  |
| qosFlowUsage | QosFlowUsage | O | 0..1 | Indicates the required usage for default QoS flow. |  |
| creditManageStatus | CreditManagementStatus | O | 0..1 | Indicates the reason of the credit management session failure. |  |
| servNfId | ServingNfIdentity | O | 0..1 | Contains the serving network function identity. |  |
| traceReq | TraceData | C | 0..1 | It shall be included if trace is required to be activated, modified or deactivated (see 3GPP TS 32.422 [24]). For trace modification, it shall contain a complete replacement of trace data.For trace deactivation, it shall contain the Null value. |  |
| addIpv6AddrPrefixes | array(Ipv6Prefix) | O | 1..N | The Ipv6 Address Prefixes of the served UE. | MultiIpv6AddrPrefix |
| addRelIpv6AddrPrefixes | array(Ipv6Prefix) | O | 1..N | Indicates the released IPv6 Address Prefixes of the served UE in multi-homing case. | MultiIpv6AddrPrefix |
| tsnBridgeInfo | TsnBridgeInfo | O | 0..1 | Transports TSN bridge information. | TimeSensitiveNetworking |
| tsnBridgeManCont | BridgeManagementContainer | O | 0..1 | Transports TSN bridge management information. | TimeSensitiveNetworking |
| tsnPortManContDstt | PortManagementContainer | O | 0..1 | Transports TSN port management information for the DS-TT port. | TimeSensitiveNetworking |
| tsnPortManContNwtts | array(PortManagementContainer) | O | 1..N | Transports TSN port management information for one or more NW-TT ports. | TimeSensitiveNetworking |
| maPduInd | MaPduIndication | O | 0..1 | Contains the MA PDU session indication, i.e., MA PDU Request or MA PDU Network-Upgrade Allowed. (NOTE 1) | ATSSS |
| atsssCapab | AtsssCapability | O | 0..1 | Contains the ATSSS capability supported for the MA PDU session. (NOTE 1) | ATSSS |
| mulAddrInfos | array(IpMulticastAddressInfo) | O | 1..N | Contains the IP multicast address information. | WWC |
| policyDecFailureReports | array(PolicyDecisionFailureCode) | O | 1..N | Indicates the type(s) of the failed policy decision and/or condition data. | PolicyDecisionErrorHandling |
| invalidPolicyDecs | array(InvalidParam) | O | 1..N | Indicates the invalid parameters for the reported type(s) of the failed policy decision and/or condition data. | ExtPolicyDecisionErrorHandling |
| trafficDescriptors | array(DddTrafficDescriptor) | O | 1..N | Contains the traffic descriptor(s) | DDNEventPolicyControl |
| typesOfNotif | array(DlDataDeliveryStatus) | O | 1..N | Contains the type of notification of DDD Status. | DDNEventPolicyControl |
| pccRuleId | string | O | 0..1 | Contains the identifier of the PCC rule which is used for traffic detection of event (e.g. DDN failure). | DDNEventPolicyControl2 |
| interGrpIds | array(GroupId) | O | 1..N | Internal Group Identifier(s) of the served UE. | GroupIdListChange |
| satBackhaulCategory | SatelliteBackhaulCategory | O | 0..1 | Satellite backhaul category used for the PDU session. | SatBackhaulCategoryChg |
| nwdafDatas | array(NwdafData) | O | 1..N | List of NWDAF Instance IDs and their associated Analytics IDs consumed by the NF service consumer. | EneNA |
| NOTE 1: This attribute is only applicable to the 5GS and EPC/E-UTRAN interworking scenario as defined in Annex B.NOTE 2: The value provided in this attribute is implementation specific. The only constraint is that the NF service consumer shall supply a different identifier for each overlapping address domain (e.g. the SMF NF instance identifier).NOTE 3: The age of UE location included within the "userLocationInfoTime" attribute is the age of the 3GPP access UE location received from the AMF and shall be included only when the reported "userLocationInfo" attribute includes the UE location in the 3GPP access.NOTE 4: The SMF may encode both 3GPP and non-3GPP access UE location in the "userLocationInfo" attribute. |

\* \* \* Eighth Change \* \* \*

#### 5.6.2.x Type NwdafData

Table 5.6.2.x-1: Definition of type NwdafData

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| nwdafInstanceId | NfInstanceId | M | 1 | Uniquely identifies the NWDAF Instance ID consumed by the NF service consumer. |  |
| nwdafevents | array(NwdafEvent) | O | 1..N | List of Analytics IDs consumed by the NF service consumer. |  |

\* \* \* Nineth Change \* \* \*

#### 5.6.3.6 Enumeration: PolicyControlRequestTrigger

Table 5.6.3.6-1: Enumeration PolicyControlRequestTrigger

|  |  |  |
| --- | --- | --- |
| Enumeration value | Description | Applicability |
| PLMN\_CH | PLMN Change. |  |
| RES\_MO\_RE | A request for resource modification has been received by the NF service consumer. (NOTE) |  |
| AC\_TY\_CH | Access Type Change. It also indicates the addition or removal of Access Type for MA PDU session. |  |
| UE\_IP\_CH | UE IP address change. (NOTE) |  |
| UE\_MAC\_CH | A new UE MAC address is detected or a used UE MAC address is inactive for a specific period. |  |
| AN\_CH\_COR | Access Network Charging Correlation Information. |  |
| US\_RE | The PDU Session or the Monitoring key specific resources consumed by a UE either reached the threshold or needs to be reported for other reasons. | UMC |
| APP\_STA | The start of application traffic has been detected. | ADC |
| APP\_STO | The stop of application traffic has been detected. | ADC |
| AN\_INFO | Access Network Information report. | NetLoc |
| CM\_SES\_FAIL | Credit management session failure. |  |
| PS\_DA\_OFF | The NF service consumer reports when the 3GPP PS Data Off status changes. (NOTE) | 3GPP-PS-Data-Off |
| DEF\_QOS\_CH | Default QoS Change. (NOTE) |  |
| SE\_AMBR\_CH | Session AMBR Change. (NOTE) |  |
| QOS\_NOTIF | The NF service consumer notify the PCF when receiving notification from RAN that QoS targets of the QoS Flow cannot be guaranteed or can be guaranteed. |  |
| NO\_CREDIT | Out of credit. |  |
| REALLO\_OF\_CREDIT | Reallocation of credit | ReallocationOfCredit |
| PRA\_CH | Change of UE presence in Presence Reporting Area. | PRA |
| SAREA\_CH | Location Change with respect to the Serving Area. |  |
| SCNN\_CH | Location Change with respect to the Serving CN node. |  |
| RE\_TIMEOUT | Indicates the NF service consumer generated the request because there has been a PCC revalidation timeout (i.e. Enforced PCC rule request defined in table 6.1.3.5.-1 of 3GPP TS 23.503 [6]). |  |
| RES\_RELEASE | Indicates that the NF service consumer can inform the PCF of the outcome of the release of resources for those rules that require so. | RAN-NAS-Cause |
| SUCC\_RES\_ALLO | Indicates that the NF service consumer shall inform the PCF of the successful resource allocation for those rules that requires so. |  |
| RAT\_TY\_CH | RAT type change. |  |
| REF\_QOS\_IND\_CH | Reflective QoS indication Change. |  |
| NUM\_OF\_PACKET\_FILTER | Indicates that the NF service consumer shall report the number of supported packet filter for signalled QoS rules. (NOTE) Only applicable to the interworking scenario as defined in Annex B. |  |
| UE\_STATUS\_RESUME | Indicates that the UE’s status is resumed. Only applicable to the interworking scenario as defined in Annex B. | PolicyUpdateWhenUESuspends |
| UE\_TZ\_CH | UE Time Zone Change. |  |
| AUTH\_PROF\_CH | Indicates that the DN-AAA authorization profile index has changed. (NOTE) | DN-Authorization |
| TSN\_BRIDGE\_INFO | Indicates the NF service consumer has detected information about new TSC user plane node port(s), and/or new/updated UMIC and/or PMIC(s). | TimeSensitiveNetworking |
| QOS\_MONITORING | Indicate that the NF service consumer notifies the PCF of the QoS Monitoring information. | QosMonitoring |
| SCELL\_CH | Location Change with respect to the Serving Cell. |  |
| USER\_LOCATION\_CH | Indicates that user location has changed, applicable to serving area change and serving cell change. | AggregatedUELocChanges |
| EPS\_FALLBACK | EPS Fallback report is enabled in the NF service consumer. Only applicable to the interworking scenario as defined is Annex B. | EPSFallbackReport |
| MA\_PDU | Indicates that the NF service consumer notifies the PCF of the MA PDU session request. Only applicable to the interworking scenario as defined in Annex B. (NOTE) | ATSSS |
| 5G\_RG\_JOIN | The 5G-RG has joined to an IP Multicast Group. | WWC |
| 5G\_RG\_LEAVE | The 5G-RG has left an IP Multicast Group. | WWC |
| DDN\_FAILURE | Indicates that the NF service consumer requests policies from PCF if it received an event subscription for DDN Failure event. | DDNEventPolicyControl |
| DDN\_DELIVERY\_STATUS | Indicates that the NF service consumer requests policies from PCF if it received an event subscription for DDN Delievery Status event. | DDNEventPolicyControl |
| GROUP\_ID\_LIST\_CHG | UE Internal Group Identifier(s) has changed: the NF service consumer reports that UDM provided list of group Ids has changed. (NOTE) | GroupIdListChange |
| DDN\_FAILURE\_CANCELLATION | Indicates that the event subscription for DDN Failure event is cancelled. | DDNEventPolicyControl2 |
| DDN\_DELIVERY\_STATUS\_CANCELLATION | Indicates that the event subscription for DDD STATUS is cancelled. | DDNEventPolicyControl2 |
| VPLMN\_QOS\_CH | Change of the QoS supported in the VPLMN. (NOTE) | VPLMN-QoS-Control |
| SUCC\_QOS\_UPDATE | Indicates that the NF service consumer notifies the PCF of the successful update of the QoS for MPS.  | MPSforDTS |
| SAT\_CATEGORY\_CHG | Indicates that the SMF has detected a change between different satellite category, or non-satellite backhaul. | SatBackhaulCategoryChg |
| NWDAF\_DATA\_CHG | Indicates that the NWDAF instance IDs used for the PDU session and/or associated Analytics IDs have changed. | EneNA |
| NOTE: The NF service consumer always reports to the PCF. |

The PCF may provision the values of policy control request trigger which are not always reported by the NF service consumer as defined in subclause 4.2.6.4.

When the NF service consumer detects the corresponding policy control request trigger(s), the NF service consumer shall report the detected trigger(s) to the PCF as defined in subclause 4.2.4.1 with the additional information for different independent policy control request triggers as follows:

If the "PLMN\_CH" is provisioned, when the NF service consumer detects a change of the serving network (a PLMN or an SNPN), the NF service consumer shall include the "PLMN\_CH" within the "repPolicyCtrlReqTriggers" attribute and the current identifier of the serving network within the "servingNetwork" attribute.

When the NF service consumer receives the resource modification request from the UE, the NF service consumer shall include the "RES\_MO\_RE" within the "repPolicyCtrlReqTriggers" attribute and the information for requesting the PCC rule as defined in subclause 4.2.4.17.

If the "AC\_TY\_CH" is provisioned, when the NF service consumer detects a change of access type, the NF service consumer shall include the "AC\_TY\_CH" within the "repPolicyCtrlReqTriggers" attribute and the current access type within the "accessType" attribute. The RAT type encoded in the "ratType" attribute shall also be provided when applicable to the specific access type. Specific attributes for the EPC interworking case are described in Annex B. If the ATSSS feature is supported, when the NF service consumer detects an access is added or released for MA PDU session, the NF service consumer shall include the added Access Type or released Access type encoded as "accessType" attribute within the AdditionalAccessInfo data structure. The RAT type encoded in the "ratType" attribute shall also be provided within the AdditionalAccessInfo data structure when applicable to the added access type or released access type.

When the NF service consumer detects an IPv4 address and/or an IPv6 prefix is allocated or released, the NF service consumer shall include the "UE\_IP\_CH" within the "repPolicyCtrlReqTriggers" attribute and new allocated UE Ipv4 address within the "ipv4Address" attribute and/or the UE Ipv6 prefix within the "ipv6AddressPrefix" attribute or the released UE Ipv4 address within the "relIpv4Address" attribute and/or the UE Ipv6 prefix within the "relIpv6AddressPrefix" attribute. If the "MultiIpv6AddrPrefix" feature is supported ,and if multiple allocated or released IPv6 prefixes are detected, the NF service consumer shall include the new allocated UE Ipv6 prefixes within the "addIpv6AddrPrefixes" attribute and the released UE Ipv6 prefixes within the "addRelIpv6AddrPrefixes" attribute.

When the NF service consumer detects a new UE MAC address or a used UE MAC address is not used any more, the NF service consumer shall include the "UE\_MAC\_CH" within the "repPolicyCtrlReqTriggers" attribute and new detected UE MAC address within the "ueMac" attribute or the not used UE MAC address within the "relUeMac" attribute.

If the "AN\_CH\_COR" is provisioned, when the NF service consumer is provisioned with the PCC rule as defined in subclause 4.2.6.5.1, the NF service consumer shall notify the PCF of access network charging identifier associated with the PCC rules as defined in subclause 4.2.4.13.

If the "US\_RE" is provisioned, when the NF service consumer receives the usage report from the UPF, the NF service consumer shall notify the PCF of the accumulated usage as defined in subclause 4.2.4.10. Applicable to functionality introduced with the UMC feature as described in subclause 5.8.

If the "APP\_STA" is provisioned, when the NF service consumer receives the application start report from the UPF, the NF service consumer shall notify the PCF of the application start report as defined in subclause 4.2.4.6. Applicable to functionality introduced with the ADC feature as described in subclause 5.8.

If the "APP\_STO" is provisioned, when the NF service consumer receives the application stop report from the UPF, the NF service consumer shall notify the PCF of the application stop report as defined in subclause 4.2.4.6. Applicable to functionality introduced with the ADC feature as described in subclause 5.8.

If the "AN\_INFO" is provisioned, when the NF service consumer receives the reported access network information from the access network, the NF service consumer shall notify the PCF of the access network information as defined in subclause 4.2.4.9. Applicable to functionality introduced with the NetLoc feature as described in subclause 5.8.

If the "CM\_SES\_FAIL" is provisioned, when the NF service consumer receives a detected transient/permanent failure from the CHF, the NF service consumer shall include the "CM\_SES\_FAIL" within the "repPolicyCtrlReqTriggers" attribute. If the failure does not apply to all PCC Rules, the affected PCC Rules are indicated within the "ruleReports" attribute, with the "ruleStatus" attribute set to value ACTIVE and the "failureCode" attribute set to the corresponding value as reported by the CHF; otherwise if the failure applies to the session, the "creditManageStatus" shall be set to the corresponding value as reported by the CHF.

If the "PS\_DA\_OFF" is provisioned, when the NF service consumer receives a change of 3GPP PS Data Off status from the UE, the NF service consumer shall notify the PCF as defined in subclause 4.2.4.8. Applicable to functionality introduced with the 3GPP-PS-Data-Off feature as described in subclause 5.8.

When the NF service consumer detects a change of subscribed default QoS, the NF service consumer shall include the "DEF\_QOS\_CH" within the "repPolicyCtrlReqTriggers" attribute and the new subscribed default QoS within the "subsDefQos" attribute.

When the NF service consumer detects a change of Session-AMBR, the NF service consumer shall include the "SE\_AMBR\_CH" within the "repPolicyCtrlReqTriggers" attribute and the new Session-AMBR within the "subsSessAmbr" attribute.

If the "QOS\_NOTIF" is provisioned, when the NF service consumer receives a notification from access network that QoS targets of the QoS Flow cannot be guaranteed or can be guaranteed again, the NF service consumer shall send the notification as defined in subclause 4.2.4.20.

If the "NO\_CREDIT" is provisioned, when the NF service consumer detects the credit for the PCC rule(s) is no longer available, the NF service consumer shall include the "NO\_CREDIT" within the "repPolicyCtrlReqTriggers" attribute, the termination action the NF service consumer applies to the PCC rules as instructed by the CHF within the "finUnitAct" attribute and the affected PCC rules within the "ruleReports" attribute.

When the "ReallocationOfCredit" feature is supported, if the "REALLO\_OF\_CREDIT" is provisioned, when the NF service consumer detects the credit for the PCC rule(s) is reallocated, the NF service consumer shall include the "REALLO\_OF\_CREDIT" within the "repPolicyCtrlReqTriggers" attribute and include the affected PCC rules for which credit has been reallocated after credit was no longer available and the "ruleStatus" attribute set to value ACTIVE within the "ruleReports" attribute.

If the "PRA\_CH" is provisioned, to detect when the UE enters/leaves certain presence reporting areas, the NF service consumer is provisioned the presence reporting area information as defined in subclause 4.2.6.5.6. When the NF service consumer receives the presence reporting area information from the serving node, the NF service consumer shall notify the PCF of the reported presence area information as defined in subclause 4.2.4.16. This report includes reporting the initial status at the time the request for reports is initiated. Applicable to the functionality introduced by the PRA or ePRA feature as described in subclause 5.8.

If the "SAREA\_CH" is provisioned, when the NF service consumer detects a change of serving area (i.e. tracking area, or if the feature "2G3GIWK" is supported routing area), the NF service consumer shall include the "SAREA\_CH" within the "repPolicyCtrlReqTriggers" attribute and the current TAI within the "userLocationInfo" attribute in either the "eutraLocation" or "nrLocation", or the current Routing Area within the "userLocationInfo" attribute in the "utraLocation" attribute when UTRAN access, or in the "geraLocation" attribute when GERAN access, as applicable. Non-3GPP access user location is reported in the "n3gaLocation" attribute when applicable. The attributes used in case of EPC interworking are described in Annex B.

If the "SCNN\_CH" is provisioned, when the NF service consumer detects a change of serving Network Function (i.e. the AMF, ePDG, S-GW or if the feature "2G3GIWK" is supported SGSN), the NF service consumer shall include the "SCNN\_CH" within the "repPolicyCtrlReqTriggers" attribute and the current serving Network Function in the "servNfId" attribute if available. When the serving Network Function is an AMF, the NF service consumer shall include the AMF Network Function Instance Identifier within the "servNfInstId" attribute and the Globally Unique AMF Identifier within the "guami" attribute. The attributes included in case of EPC interworking are described in Annex B.

NOTE 1: In the home-routed roaming case, if the AMF change is unknown to the H-SMF, then the AMF change is not reported.

If the "RE\_TIMEOUT" is provisioned, when the NF service consumer is provisioned with the revalidation time by the PCF, the NF service consumer shall request the policy before the indicated revalidation time is reached as defined in subclause 4.2.4.3.

If the "RES\_RELEASE" is provisioned, when the NF service consumer receives the request of PCC rule removal as defined in subclause 4.2.6.5.2, the NF service consumer shall report the outcome of resource release as defined in subclause 4.2.4.12. Applicable to functionality introduced with the RAN-NAS-Cause feature as described in subclause 5.8.

When "SUCC\_RES\_ALLO" is provisioned and PCC rules are provisioned according to subclause 4.2.6.5.5, the NF service consumer shall inform the PCF of the successful resource allocation as defined in subclause 4.2.4.14.

If the feature "2G3GIWK" is supported, and if the "RAI\_CH" is provisioned, when the NF service consumer detects a change of routing area, the NF service consumer shall include the "RAI\_CH" within the "repPolicyCtrlReqTriggers" attribute and the current RAI within the "userLocationInfo" attribute as described in Annex B.

If the "RAT\_TY\_CH" is provisioned, when the NF service consumer detects a change of the RAT type, the NF service consumer shall include the "RAT\_TY\_CH" within the "repPolicyCtrlReqTriggers" attribute and the current RAT type within the "ratType" attribute. For MA PDU session, the NF service consumer shall include the current RAT type at the SmPolicyUpdateContextData data type level or AdditionalAccessInfo data type level. If the RAT type is provided at the SmPolicyUpdateContextData data type level, the NF service consumer shall also provide the associated access type within the SmPolicyUpdateContextData data structure.

If the "REF\_QOS\_IND\_CH" is provisioned, when the NF service consumer receives a change of reflective QoS indication from the UE, the NF service consumer shall include the "REF\_QOS\_IND\_CH" within the "repPolicyCtrlReqTriggers" attribute and the indication within the "refQosIndication" attribute.

When the NF service consumer receives the number of supported packet filter for signalled QoS rules for the PDU session from the UE during the PDU Session Modification procedure after the first inter-system change from EPS to 5GS for a PDU Session established in EPS and transferred from EPS with N26 interface, the NF service consumer shall include the "NUM\_OF\_PACKET\_FILTER" within the "repPolicyCtrlReqTriggers" attribute and the number of supported packet filter for signalled QoS rules within the "numOfPackFilter" attribute. Only applicable to the interworking scenario as defined in Annex B.

If the "UE\_STATUS\_RESUME" is provisioned, when the NF service consumer detected the UE’s status is resumed from suspend state, the NF service consumer shall inform the PCF of the UE status including the "UE\_STATUS\_RESUME" within "repPolicyCtrlReqTriggers" attribute. The PCF shall after this update the NF service consumer with PCC Rules or session rules if necessary. Applicable to functionality introduced with the PolicyUpdateWhenUESuspends feature as described in subclause 5.8.

If the "UE\_TZ\_CH" is provisioned, when the NF service consumer detects a change of the UE Time Zone, the NF service consumer shall include the "UE\_TZ\_CH" within the "repPolicyCtrlReqTriggers" attribute and the current UE Time Zone within the "ueTimeZone" attribute.

If the "DN-Authorization" feature is supported, when the NF service consumer detects a change of DN-AAA authorization profile index, the NF service consumer shall include the "AUTH\_PROF\_CH" within the "repPolicyCtrlReqTriggers" attribute and the new DN-AAA authorization profile index within the "authProfIndex" attribute.

If the "TimeSensitiveNetworking" or "TimeSensitiveCommunication" feature is supported and "TSN\_BRIDGE\_INFO" is provisioned, when the NF service consumer detects:

- there is information about new TSC user plane node port(s), e.g. a new manageable Ethernet port, the NF service consumer shall include the "TSN\_BRIDGE\_INFO" within the "repPolicyCtrlReqTriggers" attribute and the updated TSC user plane node information within the "tsnBridgeInfo" attribute; and/or

- the NF service consumer detects a UMIC or PMIC, the NF service consumer shall include the "TSN\_BRIDGE\_INFO" within the "repPolicyCtrlReqTriggers" attribute and the UMIC, if available, within the "tsnBridgeManCont" attribute, and/or the PMIC(s), if available, within the "tsnPortManContDstt" and the "tsnPortManContNwtts" attributes.

NOTE 2: When the NF service consumer detects updated Port Management Information of the NW-TT ports, the NF service consumer includes the PMIC within the "tsnPortManContNwtts" attribute of SmPolicyUpdateContextData data type.

If the "QOS\_MONITORING" is provisioned, upon receiving the QoS Monitoring report from the UPF, the NF service consumer shall send the QoS monitoring report to the PCF as defined in subclause 4.2.4.24.

If the "SCELL\_CH" is provisioned, when the NF service consumer detects a change of serving cell, the NF service consumer shall include the "SCELL\_CH" within the "repPolicyCtrlReqTriggers" attribute and the current cell Id within the "userLocationInfo" attribute either in the "eutraLocation" attribute when EPC/E-UTRAN access or "nrLocation" attribute when NR access or "geraLocation" attribute when GERAN access or "utraLocation" attribute when UTRAN access, as applicable.

NOTE 3: Location change of serving cell can increase signalling load on multiple interfaces. Hence, it is recommended that any such serving cell changes event trigger subscription is only applied for a limited number of subscribers.

If the "AggregatedUELocChanges" feature is supported and the "USER\_LOCATION\_CH" is provisioned, when the NF service consumer detects a change of serving cell and/or a change of serving area (i.e. tracking area), the NF service consumer shall include the "USER\_LOCATION\_CH" within the "repPolicyCtrlReqTriggers" attribute and the current serving area and/or cell Id within the "userLocationInfo" attribute in the "eutraLocation" attribute or "nrLocation" attribute or "geraLocation" attribute or "utraLocation" attribute, as applicable.

NOTE 4: The access network can be configured to report location changes only when transmission resources are established in the radio access network.

If the "EPSFallbackReport" feature is supported and the "EPS\_FALLBACK" is provisioned and there is a PCC rule installed that required the reporting, when the NF service consumer receives a PDU session modification response indicating the rejection of the establishment of the QoS flow with 5QI=1, the NF service consumer shall notify the PCF of EPS fallback as defined in subclause B.3.4.6.

When the NF service consumer receives the MA PDU Request Indication or MA PDU Network-Upgrade Allowed Indication and ATSSS Capability from the UE during the PDU Session Modification procedure after the first inter-system change from EPS to 5GS for a PDU Session established in EPS and transferred from EPS with N26 interface, the NF service consumer shall include the "MA\_PDU" within the "repPolicyCtrlReqTriggers" attribute, the MA PDU session Indication in the "maPduInd" attribute, the ATSSS capability of the MA PDU session within the "atsssCapab" attribute. Only applicable to the interworking scenario as defined in Annex B.

If the "WWC" feature is supported and "5G\_RG\_JOIN" is provisioned and when the NF service consumer detects a 5G-RG has joined to an IP Multicast Group, the NF service consumer shall include the "5G\_RG\_JOIN" within the "repPolicyCtrlReqTriggers" attribute and the IP multicast addressing information within the "mulAddrInfos" attribute.

If the "WWC" feature is supported and "5G\_RG\_LEAVE" is provisioned and when the NF service consumer detects a 5G-RG has left an IP Multicast Group, the NF service consumer shall include the "5G\_RG\_LEAVE" within the "repPolicyCtrlReqTriggers" attribute and the IP multicast addressing information within the "mulAddrInfos" attribute.

If "DDNEventPolicyControl" feature is supported, and if "DDN\_FAILURE" is provisioned, when the NF service consumer receives an event subscription for DDN Failure event including the traffic descriptors, the NF service consumer shall include the "DDN\_FAILURE" within the "repPolicyCtrlReqTriggers" attribute and traffic descriptor(s) within the "trafficDescriptors" attribute.

If "DDNEventPolicyControl" feature is supported, and if "DDN\_DELIVERY\_STATUS" is provisioned, when the NF service consumer receives an event subscription for DDD Status event including the traffic descriptors, the NF service consumer shall include the "DDN\_DELIVERY\_STATUS" within the "repPolicyCtrlReqTriggers" attribute and traffic descriptor(s) within the "trafficDescriptors" attribute and the requested type(s) of notifications (notifications about downlink packets being buffered, and/or discarded).

If "GroupIdListChange" feature is supported, when the SMF receives the updated Internal Group Identifier(s) from the UDM, the SMF shall include the "GROUP\_ID\_LIST\_CHG" within the "repPolicyCtrlReqTriggers" attribute and the Internal Group Identifier(s) of the served UE within the "interGrpIds" attribute.

If "DDNEventPolicyControl2" feature is supported, and if "DDN\_FAILURE\_CANCELLATION" is provisioned, when the SMF receives a cancellation of event subscription for DDN Failure event, the SMF shall include the "DDN\_FAILURE\_CANCELLATION" within the "repPolicyCtrlReqTriggers" attribute and the PCC rule identifier of the PCC rule which is used for traffic detection of DDN failure event within the "pccRuleId" attribute.

If "DDNEventPolicyControl2" feature is supported, and if "DDN\_DELIVERY\_STATUS\_CANCELLATION" is provisioned, when the SMF receives a cancellation of event subscription for DDD Status event, the SMF shall include the "DDN\_DELIVERY\_STATUS\_CANCELLATION" within the "repPolicyCtrlReqTriggers" attribute and the PCC rule identifier of the PCC rule which is used for traffic detection of DDD status event within the "pccRuleId" attribute.

When the "VPLMN-QoS-Control" feature is supported and the NF service consumer receives a new QoS value supported in the VPLMN, the NF service consumer shall include the "VPLMN\_QOS\_CH" within the "repPolicyCtrlReqTriggers" attribute and the received QoS constraints within the "vplmnQos" attribute.

If the "MPSforDTS" feature is supported, and if "SUCC\_QOS\_UPDATE" is provisioned, when the resources for the MPS for DTS invocation/revocation are successfully allocated for MPS for DTS, the NF service consumer shall include the "SUCC\_QOS\_UPDATE" within the "policyCtrlReqTriggers" attribute.

If "SatBackhaulCategoryChg" feature is supported, and if "SAT\_CATEGORY\_CHG" is provisioned, the NF service consumer notifies the PCF when there is a change of the backhaul which is used for the PDU session between different satellite backhaul categories (i.e., GEO, MEO, LEO, or other satellite) or between a satellite backhaul and a non-satellite backhaul. The NF service consumer shall include the satellite backhaul category or non-satellite backhaul within the "satBackhaulCategory" attribute together with the "SAT\_CATEGORY\_CHG" policy control request trigger within the "repPolicyCtrlReqTriggers" attribute.

NOTE 5: The type (i.e. GEO, MEO, LEO or other satellite) of the satellite involved in the backhaul is referred as the satellite backhaul category. Only a single backhaul category can be indicated.

If "EneNA" feature is supported, and if "NWDAF\_DATA\_CHG" is provisioned, the NF service consumer notifies the PCF when there is a change in the list of NWDAF Instance IDs used for the PDU Session and/or associated Analytics IDs.

Editor’s Note: Support of the report of port management information for other Time Sensitive Communication applications than TSN needs to be completed.

\* \* \* Tenth Change \* \* \* \*

## 5.8 Feature negotiation

The optional features in table 5.8-1 are defined for the Npcf\_SMPolicyControl API. They shall be negotiated using the extensibility mechanism defined in subclause 6.6 of 3GPP TS 29.500 [4].

Table 5.8-1: Supported Features

|  |  |  |
| --- | --- | --- |
| Feature number | Feature Name | Description |
| 1 | TSC | This feature indicates support for traffic steering control in the (S)Gi-LAN, steering the 5G-LAN type of services or routing of the user traffic to a local Data Network identified by the DNAI per AF request. If the NF service consumer supports this feature, the PCF shall behave as described in subclause 4.2.6.2.6. |
| 2 | ResShare | This feature indicates the support of service data flows that share resources. If the NF service consumer supports this feature, the PCF shall behave as described in subclause 4.2.6.2.8. |
| 3 | 3GPP-PS-Data-Off | This feature indicates the support of 3GPP PS Data off status change reporting. |
| 4 | ADC | This feature indicates the support of application detection and control. |
| 5 | UMC | Indicates that the usage monitoring control is supported. |
| 6 | NetLoc | This feature indicates the support of the Access Network Information Reporting for 5GS. |
| 7 | RAN-NAS-Cause | This feature indicates the support for the detailed release cause code information from the access network.(NOTE) |
| 8 | ProvAFsignalFlow | This feature indicates support for the feature of IMS Restoration as described in subclause 4.2.3.17. If NF service consumer supports this feature the PCF may provision AF signalling IP flow information. |
| 9 | PCSCF-Restoration-Enhancement | This feature indicates support of P-CSCF Restoration Enhancement. It is used for the NF service consumer to indicate if it supports P-CSCF Restoration Enhancement. |
| 10 | PRA | This feature indicates the support of presence reporting area change reporting. The support of the update of a UE Dedicated Presence Reporting Area is unspecified. |
| 11 | RuleVersioning | This feature indicates the support of PCC rule versioning as defined in subclause 4.2.6.7. |
| 12 | SponsoredConnectivity | This feature indicates support for sponsored data connectivity feature. If the NF service consumer supports this feature, the PCF may authorize sponsored data connectivity to the subscriber. |
| 13 | RAN-Support-Info | This feature indicates the support of maximum packet loss rate value(s) for uplink and/or downlink voice service data flow(s). |
| 14 | PolicyUpdateWhenUESuspends | This feature indicates the support of report when the UE is suspended and then resumed from suspend state. Only applicable to the interworking scenario as defined in Annex B. |
| 15 | AccessTypeCondition | This feature indicates the support of access type conditioned authorized session AMBR as defined in subclause 4.2.6.3.2.4. |
| 16 | MultiIpv6AddrPrefix | This feature indicates the support of multiple Ipv6 address prefixes reporting. |
| 17 | SessionRuleErrorHandling | This feature indicates the support of session rule error handling. |
| 18 | AF\_Charging\_Identifier | This feature indicates the support of long character strings as charging identifiers. |
| 19 | ATSSS | This feature indicates the support of the access traffic switching, steering and splitting functionality as defined in subclauses 4.2.6.2.17 and 4.2.6.3.4. |
| 20 | PendingTransaction | This feature indicates support for the race condition handling as defined in 3GPP TS 29.513 [7]. |
| 21 | URLLC | This feature indicates support of Ultra-Reliable Low-Latency Communication (URLLC) requirements, i.e. AF application relocation acknowledgement requirement and UE address(es) preservation. The TSC feature shall be supported in order to support this feature. |
| 22 | MacAddressRange | Indicates the support of a set of MAC addresses with a specific range in the traffic filter. |
| 23 | WWC | Indicates support of wireless and wireline convergence access as defined in annex C. |
| 24 | QosMonitoring | Indicates support of QoS monitoring as defined in subclause 4.2.3.25 and 4.2.4.24. |
| 25 | AuthorizationWithRequiredQoS | Indicates support of policy authorization for the AF session with required QoS as defined in subclause 4.2.3.22. |
| 26 | EnhancedBackgroundDataTransfer | Indicates the support of applying the Background Data Transfer Policy to a future PDU session. |
| 27 | DN-Authorization | This feature indicates the support of DN-AAA authorization data for policy control. |
| 28 | PDUSessionRelCause | Indicates the support of "PS\_TO\_CS\_HO" PDU session release cause. |
| 29 | SamePcf | This feature indicates the support of same PCF selection for the parameter's combination. |
| 30 | ADCmultiRedirection | This feature indicates support for multiple redirection information in application detection and control. It requires the support of ADC feature. |
| 31 | RespBasedSessionRel | Indicates support of handling PDU session termination functionality as defined in subclause 4.2.4.22. |
| 32 | TimeSensitiveNetworking | Indicates that the 5G System is integrated within the external network as a TSN bridge. |
| 33 | EMDBV | This feature indicates the support of the ExtMaxDataBurstVol data type defined in 3GPP TS 29.571 [11]. The use of this data type is specified in subclause 4.2.2.1. |
| 34 | DNNSelectionMode | This feature indicates the support of DNN selection mode. |
| 35 | EPSFallbackReport | This feature indicates the support of the report of EPS Fallback as defined in subclauses B.3.3.2 and B.3.4.6. |
| 36 | PolicyDecisionErrorHandling | This feature indicates the support of the error report of the policy decision and/or condition data which is not referred by any PCC rule or session rule as defined in subclause 4.2.3.26 and 4.2.4.26. |
| 37 | DDNEventPolicyControl | This feature indicates the support for policy control in the case of DDN Failure and Delivery Status events as defined in subclause 4.2.4.27. |
| 38 | ReallocationOfCredit | This feature indicates the support of notifications of reallocation of credit. |
| 39 | BDTPolicyRenegotiation | This feature indicates the support of the BDT policy re-negotiation. |
| 40 | ExtPolicyDecisionErrorHandling | This feature indicates the support of the error report of a faulty SM policy decision parameter as defined in subclause 4.2.3.26 and 4.2.4.26. It requires the support of PolicyDecisionErrorHandling feature. |
| 41 | ImmediateTermination | This feature indicates the support of the termination the PDU session when the NF service consumer cannot ensure the UE, RAN, AMF, or UPF can revert to the status before the PDU session modification occurred, as defined in subclause 4.2.4.21. |
| 42 | AggregatedUELocChanges | This feature indicates the support of notifications of serving area (i.e. tracking area) and/or serving cell changes. |
| 43 | ES3XX | Extended Support for 3xx redirections. This feature indicates the support of redirection for any service operation, according to Stateless NF procedures as specified in subclauses 6.5.3.2 and 6.5.3.3 of 3GPP TS 29.500 [4] and according to HTTP redirection principles for indirect communication, as specified in subclause 6.10.9 of 3GPP TS 29.500 [4].  |
| 44 | GroupIdListChange | This feature indicates the support for the notification of changes in the list of internal group identifiers. |
| 45 | DisableUENotification | Indicates the support of disabling QoS flow parameters signalling to the UE when the SMF is notified by the NG-RAN of changes in the fulfilled QoS situation. This feature requires that the AuthorizationWithRequiredQoS featute is also supported. |
| 46 | OfflineChOnly | This feature enables the PCF to signal the "PDU Session with offline charging only" indication as defined in subclause 4.2.2.3.3. |
| 47 | Dual-Connectivity-redundant-UP-paths | Indicates the support of policy authorization of end to end redundant user plane path using dual connectivity as described in subclause 4.2.2.20. |
| 48 | DDNEventPolicyControl2 | This feature indicates the support for the policy control removal in the case of DDN Failure and/or Delivery Status event(s) is cancelled as defined in subclause 4.2.4.27. The DDNEventPolicyControl feature shall be supported in order to support this feature. |
| 49 | VPLMN-QoS-Control | Indicates the support of QoS constraints from the VPLMN for the derivation of the authorized session AMBR and authorized default QoS. |
| 50 | 2G3GIWK | This feature indicates the support of GERAN and UTRAN access over N7 interface. |
| 51 | TimeSensitiveCommunication | Indicates that the 5G System is integrated within the external network as a TSC user plane node to enable the Time Sensitive Communications and Time Synchronization. This feature requires that the TimeSensitiveNetworking feature is also supported. |
| 52 | EnEDGE | This feature indicates the support of Edge relocation considering user plane latency and EAS IP address replacement in 5GC. This feature requires that the TSC feature is also supported. |
| 53 | SatBackhaulCategoryChg | This feature indicates the support of notification of a change between different satellite backhaul categories, or between satellite backhaul and non-satellite backhaul. |
| 54 | CHFsetSupport | Indicates the support of CHF redundancy and failover mechanisms based on CHF instance availability within a CHF Set, as described in subclause 4.2.2.3.1. |
| 55 | EnATSSS | Indicates the support of ATSSS enhancement. It requires the support of ATSSS feature. |
| 56 | MPSforDTS | Indicates support of the MPSfor DTS feature as described in subclause 4.2.6.2.12.4. |
| 57 | RoutingInfoRemoval | Indicates the support of the removal of the "routeToLocs" attribute from the TrafficControlData instance. |
| 58 | ePRA | This feature indicates the support of presence reporting area change reporting. It additionally supports the update of the elements of a UE Dedicated Presence Reporting Area by the full replacement of the previously provided one comparing with the PRA feature.  |
| XX | EneNA | This feature indicates the support of NWDAF data reporting. |
| NOTE: 5GS and EPS release cause code information is supported. The EPS release cause code information from the access network is only applicable to EPS interworking scenarios as specified in Annex B. |

Editor’s Note: Feature support for the support of other Time Sensitive Communication applications than TSN may change.

\* \* \* Eleventh Change \* \* \* \*

# A.2 Npcf\_SMPolicyControl API

openapi: 3.0.0

info:

 title: Npcf\_SMPolicyControl API

 version: 1.2.0-alpha.4

 description: |

 Session Management Policy Control Service

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externalDocs:

 description: 3GPP TS 29.512 V17.4.0; 5G System; Session Management Policy Control Service.

 url: 'http://www.3gpp.org/ftp/Specs/archive/29\_series/29.512/'

security:

 - {}

 - oAuth2ClientCredentials:

 - npcf-smpolicycontrol

servers:

 - url: '{apiRoot}/npcf-smpolicycontrol/v1'

 variables:

 apiRoot:

 default: https://example.com

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

paths:

 /sm-policies:

 post:

 summary: Create a new Individual SM Policy

 operationId: CreateSMPolicy

 tags:

 - SM Policies (Collection)

 requestBody:

 required: true

 content:

 application/json:

 schema:

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

 responses:

 '201':

 description: Created

 content:

 application/json:

 schema:

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

 headers:

 Location:

 description: 'Contains the URI of the newly created resource'

 required: true

 schema:

 type: string

 '308':

 description: Permanent Redirect

 headers:

 Location:

 description: 'Contains the URI of the PCF within the existing PCF binding information stored in the BSF for the same UE ID, S-NSSAI and DNN combination '

 required: true

 schema:

 type: string

 '400':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/400'

 '401':

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

 '403':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/403'

 '404':

 description: Not Found

 '411':

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

 '413':

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

 '415':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/415'

 '429':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/429'

 '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:

 SmPolicyUpdateNotification:

 '{$request.body#/notificationUri}/update':

 post:

 requestBody:

 required: true

 content:

 application/json:

 schema:

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

 responses:

 '200':

 description: OK. The current applicable values corresponding to the policy control request trigger is reported

 content:

 application/json:

 schema:

 oneOf:

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

 - type: array

 items:

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

 minItems: 1

 - type: array

 items:

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

 minItems: 1

 '204':

 description: No Content, Notification was succesfull

 '307':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/307'

 '308':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/308'

 '400':

 description: Bad Request.

 content:

 application/json:

 schema:

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

 '401':

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

 '403':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/403'

 '404':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/404'

 '411':

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

 '413':

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

 '415':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/415'

 '429':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/429'

 '500':

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

 '503':

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

 default:

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

 SmPolicyControlTerminationRequestNotification:

 '{$request.body#/notificationUri}/terminate':

 post:

 requestBody:

 required: true

 content:

 application/json:

 schema:

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

 responses:

 '204':

 description: No Content, Notification was successful

 '307':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/307'

 '308':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/308'

 '400':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/400'

 '401':

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

 '403':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/403'

 '404':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/404'

 '411':

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

 '413':

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

 '415':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/415'

 '429':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/429'

 '500':

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

 '503':

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

 default:

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

 /sm-policies/{smPolicyId}:

 get:

 summary: Read an Individual SM Policy

 operationId: GetSMPolicy

 tags:

 - Individual SM Policy (Document)

 parameters:

 - name: smPolicyId

 in: path

 description: Identifier of a policy association

 required: true

 schema:

 type: string

 responses:

 '200':

 description: OK. Resource representation is returned

 content:

 application/json:

 schema:

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

 '307':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/307'

 '308':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/308'

 '400':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/400'

 '401':

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

 '403':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/403'

 '404':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/404'

 '406':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/406'

 '429':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/429'

 '500':

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

 '503':

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

 default:

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

 /sm-policies/{smPolicyId}/update:

 post:

 summary: Update an existing Individual SM Policy

 operationId: UpdateSMPolicy

 tags:

 - Individual SM Policy (Document)

 requestBody:

 required: true

 content:

 application/json:

 schema:

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

 parameters:

 - name: smPolicyId

 in: path

 description: Identifier of a policy association

 required: true

 schema:

 type: string

 responses:

 '200':

 description: OK. Updated policies are returned

 content:

 application/json:

 schema:

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

 '307':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/307'

 '308':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/308'

 '400':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/400'

 '401':

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

 '403':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/403'

 '404':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/404'

 '411':

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

 '413':

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

 '415':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/415'

 '429':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/429'

 '500':

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

 '503':

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

 default:

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

 /sm-policies/{smPolicyId}/delete:

 post:

 summary: Delete an existing Individual SM Policy

 operationId: DeleteSMPolicy

 tags:

 - Individual SM Policy (Document)

 requestBody:

 required: true

 content:

 application/json:

 schema:

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

 parameters:

 - name: smPolicyId

 in: path

 description: Identifier of a policy association

 required: true

 schema:

 type: string

 responses:

 '204':

 description: No content

 '307':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/307'

 '308':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/308'

 '400':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/400'

 '401':

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

 '403':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/403'

 '404':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/404'

 '411':

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

 '413':

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

 '415':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/415'

 '429':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/429'

 '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:

 npcf-smpolicycontrol: Access to the Npcf\_SMPolicyControl API

 schemas:

 SmPolicyControl:

 description: Contains the parameters used to request the SM policies and the SM policies authorized by the PCF.

 type: object

 properties:

 context:

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

 policy:

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

 required:

 - context

 - policy

 SmPolicyContextData:

 description: Contains the parameters used to create an Individual SM policy resource.

 type: object

 properties:

 accNetChId:

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

 chargEntityAddr:

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

 gpsi:

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

 supi:

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

 invalidSupi:

 type: boolean

 description: When this attribute is included and set to true, it indicates that the supi attribute contains an invalid value.This attribute shall be present if the SUPI is not available in the SMF or the SUPI is unauthenticated. When present it shall be set to true for an invalid SUPI and false (default) for a valid SUPI.

 interGrpIds:

 type: array

 items:

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

 minItems: 1

 pduSessionId:

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

 pduSessionType:

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

 chargingcharacteristics:

 type: string

 dnn:

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

 dnnSelMode:

 $ref: 'TS29502\_Nsmf\_PDUSession.yaml#/components/schemas/DnnSelectionMode'

 notificationUri:

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

 accessType:

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

 ratType:

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

 addAccessInfo:

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

 servingNetwork:

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

 userLocationInfo:

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

 ueTimeZone:

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

 pei:

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

 ipv4Address:

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

 ipv6AddressPrefix:

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

 ipDomain:

 type: string

 description: Indicates the IPv4 address domain

 subsSessAmbr:

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

 authProfIndex:

 type: string

 description: Indicates the DN-AAA authorization profile index

 subsDefQos:

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

 vplmnQos:

 $ref: 'TS29502\_Nsmf\_PDUSession.yaml#/components/schemas/VplmnQos'

 numOfPackFilter:

 type: integer

 description: Contains the number of supported packet filter for signalled QoS rules.

 online:

 type: boolean

 description: If it is included and set to true, the online charging is applied to the PDU session.

 offline:

 type: boolean

 description: If it is included and set to true, the offline charging is applied to the PDU session.

 3gppPsDataOffStatus:

 type: boolean

 description: If it is included and set to true, the 3GPP PS Data Off is activated by the UE.

 refQosIndication:

 type: boolean

 description: If it is included and set to true, the reflective QoS is supported by the UE.

 traceReq:

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

 sliceInfo:

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

 qosFlowUsage:

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

 servNfId:

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

 suppFeat:

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

 smfId:

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

 recoveryTime:

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

 maPduInd:

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

 atsssCapab:

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

 ipv4FrameRouteList:

 type: array

 items:

 $ref: 'TS29571\_CommonData.yaml#/components/schemas/Ipv4AddrMask'

 minItems: 1

 ipv6FrameRouteList:

 type: array

 items:

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

 minItems: 1

 satBackhaulCategory:

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

 nwdafDatas:

 type: array

 items:

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

 minItems: 1

 required:

 - supi

 - pduSessionId

 - pduSessionType

 - dnn

 - notificationUri

 - sliceInfo

 SmPolicyDecision:

 description: Contains the SM policies authorized by the PCF.

 type: object

 properties:

 sessRules:

 type: object

 additionalProperties:

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

 minProperties: 1

 description: A map of Sessionrules with the content being the SessionRule as described in subclause 5.6.2.7. The key used in this map for each entry is the sessRuleId attribute of the corresponding SessionRule.

 pccRules:

 type: object

 additionalProperties:

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

 minProperties: 1

 description: A map of PCC rules with the content being the PCCRule as described in subclause 5.6.2.6. The key used in this map for each entry is the pccRuleId attribute of the corresponding PccRule.

 nullable: true

 pcscfRestIndication:

 type: boolean

 description: If it is included and set to true, it indicates the P-CSCF Restoration is requested.

 qosDecs:

 type: object

 additionalProperties:

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

 minProperties: 1

 description: Map of QoS data policy decisions. The key used in this map for each entry is the qosId attribute of the corresponding QosData.

 chgDecs:

 type: object

 additionalProperties:

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

 minProperties: 1

 description: Map of Charging data policy decisions. The key used in this map for each entry is the chgId attribute of the corresponding ChargingData.

 nullable: true

 chargingInfo:

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

 traffContDecs:

 type: object

 additionalProperties:

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

 minProperties: 1

 description: Map of Traffic Control data policy decisions. The key used in this map for each entry is the tcId attribute of the corresponding TrafficControlData.

 umDecs:

 type: object

 additionalProperties:

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

 minProperties: 1

 description: Map of Usage Monitoring data policy decisions. The key used in this map for each entry is the umId attribute of the corresponding UsageMonitoringData.

 nullable: true

 qosChars:

 type: object

 additionalProperties:

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

 minProperties: 1

 description: Map of QoS characteristics for non standard 5QIs. This map uses the 5QI values as keys.

 qosMonDecs:

 type: object

 additionalProperties:

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

 minProperties: 1

 description: Map of QoS Monitoring data policy decisions. The key used in this map for each entry is the qmId attribute of the corresponding QosMonitoringData.

 nullable: true

 reflectiveQoSTimer:

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

 conds:

 type: object

 additionalProperties:

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

 minProperties: 1

 description: A map of condition data with the content being as described in subclause 5.6.2.9. The key used in this map for each entry is the condId attribute of the corresponding ConditionData.

 nullable: true

 revalidationTime:

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

 offline:

 type: boolean

 description: Indicates the offline charging is applicable to the PDU session when it is included and set to true.

 online:

 type: boolean

 description: Indicates the online charging is applicable to the PDU session when it is included and set to true.

 offlineChOnly:

 type: boolean

 default: false

 description: Indicates that the online charging method shall never be used for any PCC rule activated during the lifetime of the PDU session.

 policyCtrlReqTriggers:

 type: array

 items:

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

 minItems: 1

 description: Defines the policy control request triggers subscribed by the PCF.

 nullable: true

 lastReqRuleData:

 type: array

 items:

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

 minItems: 1

 description: Defines the last list of rule control data requested by the PCF.

 lastReqUsageData:

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

 praInfos:

 type: object

 additionalProperties:

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

 minProperties: 1

 description: Map of PRA information. The praId attribute within the PresenceInfo data type is the key of the map.

 nullable: true

 ipv4Index:

 $ref: 'TS29519\_Policy\_Data.yaml#/components/schemas/IpIndex'

 ipv6Index:

 $ref: 'TS29519\_Policy\_Data.yaml#/components/schemas/IpIndex'

 qosFlowUsage:

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

 relCause:

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

 suppFeat:

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

 tsnBridgeManCont:

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

 tsnPortManContDstt:

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

 tsnPortManContNwtts:

 type: array

 items:

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

 minItems: 1

 redSessIndication:

 type: boolean

 description: Indicates whether the PDU session is a redundant PDU session. If absent it means the PDU session is not a redundant PDU session.

 SmPolicyNotification:

 description: Represents a notification on the update of the SM policies.

 type: object

 properties:

 resourceUri:

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

 smPolicyDecision:

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

 PccRule:

 description: Contains a PCC rule information.

 type: object

 properties:

 flowInfos:

 type: array

 items:

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

 minItems: 1

 description: An array of IP flow packet filter information.

 appId:

 type: string

 description: A reference to the application detection filter configured at the UPF.

 appDescriptor:

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

 contVer:

 $ref: 'TS29514\_Npcf\_PolicyAuthorization.yaml#/components/schemas/ContentVersion'

 pccRuleId:

 type: string

 description: Univocally identifies the PCC rule within a PDU session.

 precedence:

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

 afSigProtocol:

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

 appReloc:

 type: boolean

 description: Indication of application relocation possibility.

 refQosData:

 type: array

 items:

 type: string

 minItems: 1

 maxItems: 1

 description: A reference to the QosData policy decision type. It is the qosId described in subclause 5.6.2.8.

 refAltQosParams:

 type: array

 items:

 type: string

 minItems: 1

 description: A Reference to the QosData policy decision type for the Alternative QoS parameter sets of the service data flow.

 refTcData:

 type: array

 items:

 type: string

 minItems: 1

 maxItems: 1

 description: A reference to the TrafficControlData policy decision type. It is the tcId described in subclause 5.6.2.10.

 refChgData:

 type: array

 items:

 type: string

 minItems: 1

 maxItems: 1

 description: A reference to the ChargingData policy decision type. It is the chgId described in subclause 5.6.2.11.

 nullable: true

 refChgN3gData:

 type: array

 items:

 type: string

 minItems: 1

 maxItems: 1

 description: A reference to the ChargingData policy decision type only applicable to Non-3GPP access if "ATSSS" feature is supported. It is the chgId described in subclause 5.6.2.11.

 nullable: true

 refUmData:

 type: array

 items:

 type: string

 minItems: 1

 maxItems: 1

 description: A reference to UsageMonitoringData policy decision type. It is the umId described in subclause 5.6.2.12.

 nullable: true

 refUmN3gData:

 type: array

 items:

 type: string

 minItems: 1

 maxItems: 1

 description: A reference to UsageMonitoringData policy decision type only applicable to Non-3GPP access if "ATSSS" feature is supported. It is the umId described in subclause 5.6.2.12.

 nullable: true

 refCondData:

 type: string

 description: A reference to the condition data. It is the condId described in subclause 5.6.2.9.

 nullable: true

 refQosMon:

 type: array

 items:

 type: string

 minItems: 1

 maxItems: 1

 description: A reference to the QosMonitoringData policy decision type. It is the qmId described in subclause 5.6.2.40.

 nullable: true

 addrPreserInd:

 type: boolean

 nullable: true

 tscaiInputDl:

 $ref: 'TS29514\_Npcf\_PolicyAuthorization.yaml#/components/schemas/TscaiInputContainer'

 tscaiInputUl:

 $ref: 'TS29514\_Npcf\_PolicyAuthorization.yaml#/components/schemas/TscaiInputContainer'

 tscaiTimeDom:

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

 ddNotifCtrl:

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

 ddNotifCtrl2:

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

 disUeNotif:

 type: boolean

 nullable: true

 required:

 - pccRuleId

 nullable: true

 SessionRule:

 description: Contains session level policy information.

 type: object

 properties:

 authSessAmbr:

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

 authDefQos:

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

 sessRuleId:

 type: string

 description: Univocally identifies the session rule within a PDU session.

 refUmData:

 type: string

 description: A reference to UsageMonitoringData policy decision type. It is the umId described in subclause 5.6.2.12.

 nullable: true

 refUmN3gData:

 type: string

 description: A reference to UsageMonitoringData policy decision type to apply for Non-3GPP access. It is the umId described in subclause 5.6.2.12.

 nullable: true

 refCondData:

 type: string

 description: A reference to the condition data. It is the condId described in subclause 5.6.2.9.

 nullable: true

 required:

 - sessRuleId

 nullable: true

 QosData:

 description: Contains the QoS parameters.

 type: object

 properties:

 qosId:

 type: string

 description: Univocally identifies the QoS control policy data within a PDU session.

 5qi:

 $ref: 'TS29571\_CommonData.yaml#/components/schemas/5Qi'

 maxbrUl:

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

 maxbrDl:

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

 gbrUl:

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

 gbrDl:

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

 arp:

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

 qnc:

 type: boolean

 description: Indicates whether notifications are requested from 3GPP NG-RAN when the GFBR can no longer (or again) be guaranteed for a QoS Flow during the lifetime of the QoS Flow.

 priorityLevel:

 $ref: 'TS29571\_CommonData.yaml#/components/schemas/5QiPriorityLevelRm'

 averWindow:

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

 maxDataBurstVol:

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

 reflectiveQos:

 type: boolean

 description: Indicates whether the QoS information is reflective for the corresponding service data flow.

 sharingKeyDl:

 type: string

 description: Indicates, by containing the same value, what PCC rules may share resource in downlink direction.

 sharingKeyUl:

 type: string

 description: Indicates, by containing the same value, what PCC rules may share resource in uplink direction.

 maxPacketLossRateDl:

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

 maxPacketLossRateUl:

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

 defQosFlowIndication:

 type: boolean

 description: Indicates that the dynamic PCC rule shall always have its binding with the QoS Flow associated with the default QoS rule

 extMaxDataBurstVol:

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

 packetDelayBudget:

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

 packetErrorRate:

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

 required:

 - qosId

 nullable: true

 ConditionData:

 description: Contains conditions of applicability for a rule.

 type: object

 properties:

 condId:

 type: string

 description: Uniquely identifies the condition data within a PDU session.

 activationTime:

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

 deactivationTime:

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

 accessType:

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

 ratType:

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

 required:

 - condId

 nullable: true

 TrafficControlData:

 description: Contains parameters determining how flows associated with a PCC Rule are treated (e.g. blocked, redirected, etc).

 type: object

 properties:

 tcId:

 type: string

 description: Univocally identifies the traffic control policy data within a PDU session.

 flowStatus:

 $ref: 'TS29514\_Npcf\_PolicyAuthorization.yaml#/components/schemas/FlowStatus'

 redirectInfo:

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

 addRedirectInfo:

 type: array

 items:

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

 minItems: 1

 muteNotif:

 type: boolean

 description: Indicates whether applicat'on's start or stop notification is to be muted.

 trafficSteeringPolIdDl:

 type: string

 description: Reference to a pre-configured traffic steering policy for downlink traffic at the SMF.

 nullable: true

 trafficSteeringPolIdUl:

 type: string

 description: Reference to a pre-configured traffic steering policy for uplink traffic at the SMF.

 nullable: true

 routeToLocs:

 type: array

 items:

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

 minItems: 1

 description: A list of location which the traffic shall be routed to for the AF request

 nullable: true

 upLatReq:

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

 traffCorreInd:

 type: boolean

 upPathChgEvent:

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

 steerFun:

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

 steerModeDl:

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

 steerModeUl:

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

 mulAccCtrl:

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

 required:

 - tcId

 nullable: true

 ChargingData:

 description: Contains charging related parameters.

 type: object

 properties:

 chgId:

 type: string

 description: Univocally identifies the charging control policy data within a PDU session.

 meteringMethod:

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

 offline:

 type: boolean

 description: Indicates the offline charging is applicable to the PCC rule when it is included and set to true.

 online:

 type: boolean

 description: Indicates the online charging is applicable to the PCC rule when it is included and set to true.

 sdfHandl:

 type: boolean

 description: Indicates whether the service data flow is allowed to start while the SMF is waiting for the response to the credit request.

 ratingGroup:

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

 reportingLevel:

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

 serviceId:

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

 sponsorId:

 type: string

 description: Indicates the sponsor identity.

 appSvcProvId:

 type: string

 description: Indicates the application service provider identity.

 afChargingIdentifier:

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

 afChargId:

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

 required:

 - chgId

 nullable: true

 UsageMonitoringData:

 description: Contains usage monitoring related control information.

 type: object

 properties:

 umId:

 type: string

 description: Univocally identifies the usage monitoring policy data within a PDU session.

 volumeThreshold:

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

 volumeThresholdUplink:

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

 volumeThresholdDownlink:

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

 timeThreshold:

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

 monitoringTime:

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

 nextVolThreshold:

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

 nextVolThresholdUplink:

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

 nextVolThresholdDownlink:

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

 nextTimeThreshold:

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

 inactivityTime:

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

 exUsagePccRuleIds:

 type: array

 items:

 type: string

 minItems: 1

 description: Contains the PCC rule identifier(s) which corresponding service data flow(s) shall be excluded from PDU Session usage monitoring. It is only included in the UsageMonitoringData instance for session level usage monitoring.

 nullable: true

 required:

 - umId

 nullable: true

 RedirectInformation:

 description: Contains the redirect information.

 type: object

 properties:

 redirectEnabled:

 type: boolean

 description: Indicates the redirect is enable.

 redirectAddressType:

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

 redirectServerAddress:

 type: string

 description: Indicates the address of the redirect server. If "redirectAddressType" attribute indicates the IPV4\_ADDR, the encoding is the same as the Ipv4Addr data type defined in 3GPP TS 29.571.If "redirectAddressType" attribute indicates the IPV6\_ADDR, the encoding is the same as the Ipv6Addr data type defined in 3GPP TS 29.571.If "redirectAddressType" attribute indicates the URL or SIP\_URI, the encoding is the same as the Uri data type defined in 3GPP TS 29.571.

 FlowInformation:

 description: Contains the flow information.

 type: object

 properties:

 flowDescription:

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

 ethFlowDescription:

 $ref: 'TS29514\_Npcf\_PolicyAuthorization.yaml#/components/schemas/EthFlowDescription'

 packFiltId:

 type: string

 description: An identifier of packet filter.

 packetFilterUsage:

 type: boolean

 description: The packet shall be sent to the UE.

 tosTrafficClass:

 type: string

 description: Contains the Ipv4 Type-of-Service and mask field or the Ipv6 Traffic-Class field and mask field.

 nullable: true

 spi:

 type: string

 description: the security parameter index of the IPSec packet.

 nullable: true

 flowLabel:

 type: string

 description: the Ipv6 flow label header field.

 nullable: true

 flowDirection:

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

 SmPolicyDeleteData:

 description: Contains the parameters to be sent to the PCF when an individual SM policy is deleted.

 type: object

 properties:

 userLocationInfo:

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

 ueTimeZone:

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

 servingNetwork:

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

 userLocationInfoTime:

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

 ranNasRelCauses:

 type: array

 items:

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

 minItems: 1

 description: Contains the RAN and/or NAS release cause.

 accuUsageReports:

 type: array

 items:

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

 minItems: 1

 description: Contains the usage report

 pduSessRelCause:

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

 qosMonReports:

 type: array

 items:

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

 minItems: 1

 QosCharacteristics:

 description: Contains QoS characteristics for a non-standardized or a non-configured 5QI.

 type: object

 properties:

 5qi:

 $ref: 'TS29571\_CommonData.yaml#/components/schemas/5Qi'

 resourceType:

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

 priorityLevel:

 $ref: 'TS29571\_CommonData.yaml#/components/schemas/5QiPriorityLevel'

 packetDelayBudget:

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

 packetErrorRate:

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

 averagingWindow:

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

 maxDataBurstVol:

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

 extMaxDataBurstVol:

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

 required:

 - 5qi

 - resourceType

 - priorityLevel

 - packetDelayBudget

 - packetErrorRate

 ChargingInformation:

 description: Contains the addresses of the charging functions.

 type: object

 properties:

 primaryChfAddress:

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

 secondaryChfAddress:

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

 primaryChfSetId:

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

 primaryChfInstanceId:

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

 secondaryChfSetId:

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

 secondaryChfInstanceId:

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

 required:

 - primaryChfAddress

 AccuUsageReport:

 description: Contains the accumulated usage report information.

 type: object

 properties:

 refUmIds:

 type: string

 description: An id referencing UsageMonitoringData objects associated with this usage report.

 volUsage:

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

 volUsageUplink:

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

 volUsageDownlink:

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

 timeUsage:

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

 nextVolUsage:

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

 nextVolUsageUplink:

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

 nextVolUsageDownlink:

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

 nextTimeUsage:

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

 required:

 - refUmIds

 SmPolicyUpdateContextData:

 description: Contains the policy control request trigger(s) that were met and the corresponding new value(s) or the error report of the policy enforcement.

 type: object

 properties:

 repPolicyCtrlReqTriggers:

 type: array

 items:

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

 minItems: 1

 description: The policy control reqeust trigges which are met.

 accNetChIds:

 type: array

 items:

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

 minItems: 1

 description: Indicates the access network charging identifier for the PCC rule(s) or whole PDU session.

 accessType:

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

 ratType:

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

 addAccessInfo:

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

 relAccessInfo:

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

 servingNetwork:

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

 userLocationInfo:

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

 ueTimeZone:

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

 relIpv4Address:

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

 ipv4Address:

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

 ipDomain:

 type: string

 description: Indicates the IPv4 address domain

 ipv6AddressPrefix:

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

 relIpv6AddressPrefix:

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

 addIpv6AddrPrefixes:

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

 addRelIpv6AddrPrefixes:

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

 relUeMac:

 $ref: 'TS29571\_CommonData.yaml#/components/schemas/MacAddr48'

 ueMac:

 $ref: 'TS29571\_CommonData.yaml#/components/schemas/MacAddr48'

 subsSessAmbr:

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

 authProfIndex:

 type: string

 description: Indicates the DN-AAA authorization profile index

 subsDefQos:

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

 vplmnQos:

 $ref: 'TS29502\_Nsmf\_PDUSession.yaml#/components/schemas/VplmnQos'

 numOfPackFilter:

 type: integer

 description: Contains the number of supported packet filter for signalled QoS rules.

 accuUsageReports:

 type: array

 items:

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

 minItems: 1

 description: Contains the usage report

 3gppPsDataOffStatus:

 type: boolean

 description: If it is included and set to true, the 3GPP PS Data Off is activated by the UE.

 appDetectionInfos:

 type: array

 items:

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

 minItems: 1

 description: Report the start/stop of the application traffic and detected SDF descriptions if applicable.

 ruleReports:

 type: array

 items:

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

 minItems: 1

 description: Used to report the PCC rule failure.

 sessRuleReports:

 type: array

 items:

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

 minItems: 1

 description: Used to report the session rule failure.

 qncReports:

 type: array

 items:

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

 minItems: 1

 description: QoS Notification Control information.

 qosMonReports:

 type: array

 items:

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

 minItems: 1

 userLocationInfoTime:

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

 repPraInfos:

 type: object

 additionalProperties:

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

 minProperties: 1

 description: Reports the changes of presence reporting area. The praId attribute within the PresenceInfo data type is the key of the map.

 ueInitResReq:

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

 refQosIndication:

 type: boolean

 description: If it is included and set to true, the reflective QoS is supported by the UE. If it is included and set to false, the reflective QoS is revoked by the UE.

 qosFlowUsage:

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

 creditManageStatus:

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

 servNfId:

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

 traceReq:

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

 maPduInd:

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

 atsssCapab:

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

 tsnBridgeInfo:

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

 tsnBridgeManCont:

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

 tsnPortManContDstt:

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

 tsnPortManContNwtts:

 type: array

 items:

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

 minItems: 1

 mulAddrInfos:

 type: array

 items:

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

 minItems: 1

 policyDecFailureReports:

 type: array

 items:

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

 minItems: 1

 description: Contains the type(s) of failed policy decision and/or condition data.

 invalidPolicyDecs:

 type: array

 items:

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

 minItems: 1

 description: Indicates the invalid parameters for the reported type(s) of the failed policy decision and/or condition data.

 trafficDescriptors:

 type: array

 items:

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

 minItems: 1

 pccRuleId:

 type: string

 description: Contains the identifier of the PCC rule which is used for traffic detection of event.

 typesOfNotif:

 type: array

 items:

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

 minItems: 1

 interGrpIds:

 type: array

 items:

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

 minItems: 1

 nwdafDatas:

 type: array

 items:

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

 minItems: 1

 nullable: true

 UpPathChgEvent:

 description: Contains the UP path change event subscription from the AF.

 type: object

 properties:

 notificationUri:

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

 notifCorreId:

 type: string

 description: It is used to set the value of Notification Correlation ID in the notification sent by the SMF.

 dnaiChgType:

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

 afAckInd:

 type: boolean

 required:

 - notificationUri

 - notifCorreId

 - dnaiChgType

 nullable: true

 TerminationNotification:

 description: Represents a Termination Notification.

 type: object

 properties:

 resourceUri:

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

 cause:

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

 required:

 - resourceUri

 - cause

 AppDetectionInfo:

 description: Contains the detected application's traffic information.

 type: object

 properties:

 appId:

 type: string

 description: A reference to the application detection filter configured at the UPF

 instanceId:

 type: string

 description: Identifier sent by the SMF in order to allow correlation of application Start and Stop events to the specific service data flow description, if service data flow descriptions are deducible.

 sdfDescriptions:

 type: array

 items:

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

 minItems: 1

 description: Contains the detected service data flow descriptions if they are deducible.

 required:

 - appId

 AccNetChId:

 description: Contains the access network charging identifier for the PCC rule(s) or for the whole PDU session.

 type: object

 properties:

 accNetChaIdValue:

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

 refPccRuleIds:

 type: array

 items:

 type: string

 minItems: 1

 description: Contains the identifier of the PCC rule(s) associated to the provided Access Network Charging Identifier.

 sessionChScope:

 type: boolean

 description: When it is included and set to true, indicates the Access Network Charging Identifier applies to the whole PDU Session

 required:

 - accNetChaIdValue

 AccNetChargingAddress:

 description: Describes the network entity within the access network performing charging

 type: object

 anyOf:

 - required: [anChargIpv4Addr]

 - required: [anChargIpv6Addr]

 properties:

 anChargIpv4Addr:

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

 anChargIpv6Addr:

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

 RequestedRuleData:

 description: Contains rule data requested by the PCF to receive information associated with PCC rule(s).

 type: object

 properties:

 refPccRuleIds:

 type: array

 items:

 type: string

 minItems: 1

 description: An array of PCC rule id references to the PCC rules associated with the control data.

 reqData:

 type: array

 items:

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

 minItems: 1

 description: Array of requested rule data type elements indicating what type of rule data is requested for the corresponding referenced PCC rules.

 required:

 - refPccRuleIds

 - reqData

 RequestedUsageData:

 description: Contains usage data requested by the PCF requesting usage reports for the corresponding usage monitoring data instances.

 type: object

 properties:

 refUmIds:

 type: array

 items:

 type: string

 minItems: 1

 description: An array of usage monitoring data id references to the usage monitoring data instances for which the PCF is requesting a usage report. This attribute shall only be provided when allUmIds is not set to true.

 allUmIds:

 type: boolean

 description: This boolean indicates whether requested usage data applies to all usage monitoring data instances. When it's not included, it means requested usage data shall only apply to the usage monitoring data instances referenced by the refUmIds attribute.

 UeCampingRep:

 description: Contains the current applicable values corresponding to the policy control request triggers.

 type: object

 properties:

 accessType:

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

 ratType:

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

 servNfId:

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

 servingNetwork:

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

 userLocationInfo:

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

 ueTimeZone:

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

 netLocAccSupp:

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

 RuleReport:

 description: Reports the status of PCC.

 type: object

 properties:

 pccRuleIds:

 type: array

 items:

 type: string

 minItems: 1

 description: Contains the identifier of the affected PCC rule(s).

 ruleStatus:

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

 contVers:

 type: array

 items:

 $ref: 'TS29514\_Npcf\_PolicyAuthorization.yaml#/components/schemas/ContentVersion'

 minItems: 1

 description: Indicates the version of a PCC rule.

 failureCode:

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

 finUnitAct:

 $ref: 'TS32291\_Nchf\_ConvergedCharging.yaml#/components/schemas/FinalUnitAction'

 ranNasRelCauses:

 type: array

 items:

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

 minItems: 1

 description: indicates the RAN or NAS release cause code information.

 altQosParamId:

 type: string

 required:

 - pccRuleIds

 - ruleStatus

 RanNasRelCause:

 description: Contains the RAN/NAS release cause.

 type: object

 properties:

 ngApCause:

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

 5gMmCause:

 $ref: 'TS29571\_CommonData.yaml#/components/schemas/5GMmCause'

 5gSmCause:

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

 epsCause:

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

 UeInitiatedResourceRequest:

 description: Indicates that a UE requests specific QoS handling for the selected SDF.

 type: object

 properties:

 pccRuleId:

 type: string

 ruleOp:

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

 precedence:

 type: integer

 packFiltInfo:

 type: array

 items:

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

 minItems: 1

 reqQos:

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

 required:

 - ruleOp

 - packFiltInfo

 PacketFilterInfo:

 description: Contains the information from a single packet filter sent from the SMF to the PCF.

 type: object

 properties:

 packFiltId:

 type: string

 description: An identifier of packet filter.

 packFiltCont:

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

 tosTrafficClass:

 type: string

 description: Contains the Ipv4 Type-of-Service and mask field or the Ipv6 Traffic-Class field and mask field.

 spi:

 type: string

 description: The security parameter index of the IPSec packet.

 flowLabel:

 type: string

 description: The Ipv6 flow label header field.

 flowDirection:

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

 RequestedQos:

 description: Contains the QoS information requested by the UE.

 type: object

 properties:

 5qi:

 $ref: 'TS29571\_CommonData.yaml#/components/schemas/5Qi'

 gbrUl:

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

 gbrDl:

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

 required:

 - 5qi

 QosNotificationControlInfo:

 description: Contains the QoS Notification Control Information.

 type: object

 properties:

 refPccRuleIds:

 type: array

 items:

 type: string

 minItems: 1

 description: An array of PCC rule id references to the PCC rules associated with the QoS notification control info.

 notifType:

 $ref: 'TS29514\_Npcf\_PolicyAuthorization.yaml#/components/schemas/QosNotifType'

 contVer:

 $ref: 'TS29514\_Npcf\_PolicyAuthorization.yaml#/components/schemas/ContentVersion'

 altQosParamId:

 type: string

 required:

 - refPccRuleIds

 - notifType

 PartialSuccessReport:

 description: Includes the information reported by the SMF when some of the PCC rules and/or session rules are not successfully installed/activated.

 type: object

 properties:

 failureCause:

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

 ruleReports:

 type: array

 items:

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

 minItems: 1

 description: Information about the PCC rules provisioned by the PCF not successfully installed/activated.

 sessRuleReports:

 type: array

 items:

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

 minItems: 1

 description: Information about the session rules provisioned by the PCF not successfully installed.

 ueCampingRep:

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

 policyDecFailureReports:

 type: array

 items:

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

 minItems: 1

 description: Contains the type(s) of failed policy decision and/or condition data.

 invalidPolicyDecs:

 type: array

 items:

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

 minItems: 1

 description: Indicates the invalid parameters for the reported type(s) of the failed policy decision and/or condition data.

 required:

 - failureCause

 AuthorizedDefaultQos:

 description: Represents the Authorized Default QoS.

 type: object

 properties:

 5qi:

 $ref: 'TS29571\_CommonData.yaml#/components/schemas/5Qi'

 arp:

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

 priorityLevel:

 $ref: 'TS29571\_CommonData.yaml#/components/schemas/5QiPriorityLevelRm'

 averWindow:

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

 maxDataBurstVol:

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

 maxbrUl:

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

 maxbrDl:

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

 gbrUl:

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

 gbrDl:

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

 extMaxDataBurstVol:

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

 ErrorReport:

 description: Contains the rule error reports.

 type: object

 properties:

 error:

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

 ruleReports:

 type: array

 items:

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

 minItems: 1

 description: Used to report the PCC rule failure.

 sessRuleReports:

 type: array

 items:

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

 minItems: 1

 description: Used to report the session rule failure.

 polDecFailureReports:

 type: array

 items:

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

 minItems: 1

 description: Used to report failure of the policy decision and/or condition data.

 invalidPolicyDecs:

 type: array

 items:

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

 minItems: 1

 description: Indicates the invalid parameters for the reported type(s) of the failed policy decision and/or condition data.

 SessionRuleReport:

 description: Represents reporting of the status of a session rule.

 type: object

 properties:

 ruleIds:

 type: array

 items:

 type: string

 minItems: 1

 description: Contains the identifier of the affected session rule(s).

 ruleStatus:

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

 sessRuleFailureCode:

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

 policyDecFailureReports:

 type: array

 items:

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

 minItems: 1

 description: Contains the type(s) of failed policy decision and/or condition data.

 required:

 - ruleIds

 - ruleStatus

 ServingNfIdentity:

 description: Contains the serving Network Function identity.

 type: object

 properties:

 servNfInstId:

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

 guami:

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

 anGwAddr:

 $ref: 'TS29514\_Npcf\_PolicyAuthorization.yaml#/components/schemas/AnGwAddress'

 sgsnAddr:

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

 SteeringMode:

 description: Contains the steering mode value and parameters determined by the PCF.

 type: object

 properties:

 steerModeValue:

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

 active:

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

 standby:

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

 3gLoad:

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

 prioAcc:

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

 thresValue:

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

 steerModeInd:

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

 required:

 - steerModeValue

 AdditionalAccessInfo:

 description: Indicates the combination of additional Access Type and RAT Type for a MA PDU session.

 type: object

 properties:

 accessType:

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

 ratType:

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

 required:

 - accessType

 QosMonitoringData:

 description: Contains QoS monitoring related control information.

 type: object

 properties:

 qmId:

 type: string

 description: Univocally identifies the QoS monitoring policy data within a PDU session.

 reqQosMonParams:

 type: array

 items:

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

 minItems: 1

 description: indicates the UL packet delay, DL packet delay and/or round trip packet delay between the UE and the UPF is to be monitored when the QoS Monitoring for URLLC is enabled for the service data flow.

 repFreqs:

 type: array

 items:

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

 minItems: 1

 repThreshDl:

 type: integer

 description: Indicates the period of time in units of miliiseconds for DL packet delay.

 nullable: true

 repThreshUl:

 type: integer

 description: Indicates the period of time in units of miliiseconds for UL packet delay.

 nullable: true

 repThreshRp:

 type: integer

 description: Indicates the period of time in units of miliiseconds for round trip packet delay.

 nullable: true

 waitTime:

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

 repPeriod:

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

 notifyUri:

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

 notifyCorreId:

 type: string

 nullable: true

 directNotifInd:

 type: boolean

 description: Indicates that the direct event notification sent by UPF to the Local NEF or AF is requested if it is included and set to true.

 required:

 - qmId

 - reqQosMonParams

 - repFreqs

 nullable: true

 QosMonitoringReport:

 description: Contains reporting information on QoS monitoring.

 type: object

 properties:

 refPccRuleIds:

 type: array

 items:

 type: string

 minItems: 1

 description: An array of PCC rule id references to the PCC rules associated with the QoS monitoring report.

 ulDelays:

 type: array

 items:

 type: integer

 minItems: 1

 dlDelays:

 type: array

 items:

 type: integer

 minItems: 1

 rtDelays:

 type: array

 items:

 type: integer

 minItems: 1

 required:

 - refPccRuleIds

#

 TsnBridgeInfo:

 description: Contains parameters that describe and identify the TSC user plane node.

 type: object

 properties:

 bridgeId:

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

 dsttAddr:

 $ref: 'TS29571\_CommonData.yaml#/components/schemas/MacAddr48'

 dsttIpv4Addr:

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

 dsttIpv6Addr:

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

 dsttPortNum:

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

 dsttResidTime:

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

#

 PortManagementContainer:

 description: Contains the port management information container for a port.

 type: object

 properties:

 portManCont:

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

 portNum:

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

 required:

 - portManCont

 - portNum

 BridgeManagementContainer:

 description: Contains the UMIC.

 type: object

 properties:

 bridgeManCont:

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

 required:

 - bridgeManCont

 IpMulticastAddressInfo:

 description: Contains the IP multicast addressing information.

 type: object

 properties:

 srcIpv4Addr:

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

 ipv4MulAddr:

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

 srcIpv6Addr:

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

 ipv6MulAddr:

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

 DownlinkDataNotificationControl:

 description: Contains the downlink data notification control information.

 type: object

 properties:

 notifCtrlInds:

 type: array

 items:

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

 minItems: 1

 typesOfNotif:

 type: array

 items:

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

 minItems: 1

 DownlinkDataNotificationControlRm:

 description: This data type is defined in the same way as the DownlinkDataNotificationControl data type, but with the nullable:true property.

 type: object

 properties:

 notifCtrlInds:

 type: array

 items:

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

 minItems: 1

 nullable: true

 typesOfNotif:

 type: array

 items:

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

 minItems: 1

 nullable: true

 nullable: true

 UserPlaneLatencyRequirements:

 description: Contains the user plane latency requirements.

 type: object

 properties:

 maxAllowedUpLat:

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

 upLatPrefer:

 type: integer

 nullable: true

 nullable: true

 ThresholdValue:

 description: Indicates the threshold value(s) for RTT and/or Packet Loss Rate.

 type: object

 properties:

 rttThres:

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

 plrThres:

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

 nullable: true

 NwdafData:

 description: Indicates the list of NWDAF instance IDs used for the PDU Session and their associated Analytic ID(s) consumed by the SMF.

 type: object

 properties:

 nwdafInstanceId:

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

 nwdafevents:

 type: array

 items:

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

 minItems: 1

 required:

 - nwdafInstanceId

 5GSmCause:

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

 EpsRanNasRelCause:

 type: string

 description: Defines the EPS RAN/NAS release cause.

 PacketFilterContent:

 type: string

 description: Defines a packet filter for an IP flow.

 FlowDescription:

 type: string

 description: Defines a packet filter for an IP flow.

 TsnPortNumber:

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

 ApplicationDescriptor:

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

 FlowDirection:

 anyOf:

 - type: string

 enum:

 - DOWNLINK

 - UPLINK

 - BIDIRECTIONAL

 - UNSPECIFIED

 - type: string

 description: >

 This string provides forward-compatibility with future

 extensions to the enumeration but is not used to encode

 content defined in the present version of this API.

 description: >

 Possible values are

 - DOWNLINK: The corresponding filter applies for traffic to the UE.

 - UPLINK: The corresponding filter applies for traffic from the UE.

 - BIDIRECTIONAL: The corresponding filter applies for traffic both to and from the UE.

 - UNSPECIFIED: The corresponding filter applies for traffic to the UE (downlink), but has no specific direction declared. The service data flow detection shall apply the filter for uplink traffic as if the filter was bidirectional. The PCF shall not use the value UNSPECIFIED in filters created by the network in NW-initiated procedures. The PCF shall only include the value UNSPECIFIED in filters in UE-initiated procedures if the same value is received from the SMF.

 FlowDirectionRm:

 description: This data type is defined in the same way as the "FlowDirection" data type, with the only difference that it allows null value.

 anyOf:

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

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

 ReportingLevel:

 anyOf:

 - type: string

 enum:

 - SER\_ID\_LEVEL

 - RAT\_GR\_LEVEL

 - SPON\_CON\_LEVEL

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

 - type: string

 description: >

 This string provides forward-compatibility with future

 extensions to the enumeration but is not used to encode

 content defined in the present version of this API.

 description: >

 Possible values are

 - SER\_ID\_LEVEL: Indicates that the usage shall be reported on service id and rating group combination level.

 - RAT\_GR\_LEVEL: Indicates that the usage shall be reported on rating group level.

 - SPON\_CON\_LEVEL: Indicates that the usage shall be reported on sponsor identity and rating group combination level.

 MeteringMethod:

 anyOf:

 - type: string

 enum:

 - DURATION

 - VOLUME

 - DURATION\_VOLUME

 - EVENT

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

 - type: string

 description: >

 This string provides forward-compatibility with future

 extensions to the enumeration but is not used to encode

 content defined in the present version of this API.

 description: >

 Possible values are

 - DURATION: Indicates that the duration of the service data flow traffic shall be metered.

 - VOLUME: Indicates that volume of the service data flow traffic shall be metered.

 - DURATION\_VOLUME: Indicates that the duration and the volume of the service data flow traffic shall be metered.

 - EVENT: Indicates that events of the service data flow traffic shall be metered.

 PolicyControlRequestTrigger:

 anyOf:

 - type: string

 enum:

 - PLMN\_CH

 - RES\_MO\_RE

 - AC\_TY\_CH

 - UE\_IP\_CH

 - UE\_MAC\_CH

 - AN\_CH\_COR

 - US\_RE

 - APP\_STA

 - APP\_STO

 - AN\_INFO

 - CM\_SES\_FAIL

 - PS\_DA\_OFF

 - DEF\_QOS\_CH

 - SE\_AMBR\_CH

 - QOS\_NOTIF

 - NO\_CREDIT

 - REALLO\_OF\_CREDIT

 - PRA\_CH

 - SAREA\_CH

 - SCNN\_CH

 - RE\_TIMEOUT

 - RES\_RELEASE

 - SUCC\_RES\_ALLO

 - RAI\_CH

 - RAT\_TY\_CH

 - REF\_QOS\_IND\_CH

 - NUM\_OF\_PACKET\_FILTER

 - UE\_STATUS\_RESUME

 - UE\_TZ\_CH

 - AUTH\_PROF\_CH

 - QOS\_MONITORING

 - SCELL\_CH

 - USER\_LOCATION\_CH

 - EPS\_FALLBACK

 - MA\_PDU

 - TSN\_BRIDGE\_INFO

 - 5G\_RG\_JOIN

 - 5G\_RG\_LEAVE

 - DDN\_FAILURE

 - DDN\_DELIVERY\_STATUS

 - GROUP\_ID\_LIST\_CHG

 - DDN\_FAILURE\_CANCELLATION

 - DDN\_DELIVERY\_STATUS\_CANCELLATION

 - VPLMN\_QOS\_CH

 - SUCC\_QOS\_UPDATE

 - SAT\_CATEGORY\_CHG

 - NWDAF\_DATA\_CHG

 - type: string

 description: >

 This string provides forward-compatibility with future

 extensions to the enumeration but is not used to encode

 content defined in the present version of this API.

 description: >

 Possible values are

 - PLMN\_CH: PLMN Change

 - RES\_MO\_RE: A request for resource modification has been received by the SMF. The SMF always reports to the PCF.

 - AC\_TY\_CH: Access Type Change

 - UE\_IP\_CH: UE IP address change. The SMF always reports to the PCF.

 - UE\_MAC\_CH: A new UE MAC address is detected or a used UE MAC address is inactive for a specific period

 - AN\_CH\_COR: Access Network Charging Correlation Information

 - US\_RE: The PDU Session or the Monitoring key specific resources consumed by a UE either reached the threshold or needs to be reported for other reasons.

 - APP\_STA: The start of application traffic has been detected.

 - APP\_STO: The stop of application traffic has been detected.

 - AN\_INFO: Access Network Information report

 - CM\_SES\_FAIL: Credit management session failure

 - PS\_DA\_OFF: The SMF reports when the 3GPP PS Data Off status changes. The SMF always reports to the PCF.

 - DEF\_QOS\_CH: Default QoS Change. The SMF always reports to the PCF.

 - SE\_AMBR\_CH: Session AMBR Change. The SMF always reports to the PCF.

 - QOS\_NOTIF: The SMF notify the PCF when receiving notification from RAN that QoS targets of the QoS Flow cannot be guranteed or gurateed again.

 - NO\_CREDIT: Out of credit

 - REALLO\_OF\_CREDIT: Reallocation of credit

 - PRA\_CH: Change of UE presence in Presence Reporting Area

 - SAREA\_CH: Location Change with respect to the Serving Area

 - SCNN\_CH: Location Change with respect to the Serving CN node

 - RE\_TIMEOUT: Indicates the SMF generated the request because there has been a PCC revalidation timeout

 - RES\_RELEASE: Indicate that the SMF can inform the PCF of the outcome of the release of resources for those rules that require so.

 - SUCC\_RES\_ALLO: Indicates that the requested rule data is the successful resource allocation.

 - RAI\_CH: Location Change with respect to the RAI of GERAN and UTRAN.

 - RAT\_TY\_CH: RAT Type Change.

 - REF\_QOS\_IND\_CH: Reflective QoS indication Change

 - NUM\_OF\_PACKET\_FILTER: Indicates that the SMF shall report the number of supported packet filter for signalled QoS rules

 - UE\_STATUS\_RESUME: Indicates that the UE’s status is resumed.

 - UE\_TZ\_CH: UE Time Zone Change

 - AUTH\_PROF\_CH: The DN-AAA authorization profile index has changed

 - QOS\_MONITORING: Indicate that the SMF notifies the PCF of the QoS Monitoring information.

 - SCELL\_CH: Location Change with respect to the Serving Cell.

 - USER\_LOCATION\_CH: Indicate that user location has been changed, applicable to serving area change and serving cell change.

 - EPS\_FALLBACK: EPS Fallback report is enabled in the SMF.

 - MA\_PDU: UE Indicates that the SMF notifies the PCF of the MA PDU session request

 - TSN\_BRIDGE\_INFO: TSC user plane node information available

 - 5G\_RG\_JOIN: The 5G-RG has joined to an IP Multicast Group.

 - 5G\_RG\_LEAVE: The 5G-RG has left an IP Multicast Group.

 - DDN\_FAILURE: Event subscription for DDN Failure event received.

 - DDN\_DELIVERY\_STATUS: Event subscription for DDN Delivery Status received.

 - GROUP\_ID\_LIST\_CHG: UE Internal Group Identifier(s) has changed: the SMF reports that UDM provided list of group Ids has changed.

 - DDN\_FAILURE\_CANCELLATION: The event subscription for DDN Failure event is cancelled.

 - DDN\_DELIVERY\_STATUS\_CANCELLATION: The event subscription for DDD STATUS is cancelled.

 - VPLMN\_QOS\_CH: Change of the QoS supported in the VPLMN.

 - SUCC\_QOS\_UPDATE: Indicates that the requested MPS Action is successful.

 - SAT\_CATEGORY\_CHG: Indicates that the SMF has detected a change between different satellite backhaul categories, or between a satellite backhaul and a non-satellite backhaul.

 - NWDAF\_DATA\_CHG: Indicates that the NWDAF instance IDs used for the PDU session and/or associated Analytics IDs used for the PDU session and available in the SMF have changed.

 RequestedRuleDataType:

 anyOf:

 - type: string

 enum:

 - CH\_ID

 - MS\_TIME\_ZONE

 - USER\_LOC\_INFO

 - RES\_RELEASE

 - SUCC\_RES\_ALLO

 - EPS\_FALLBACK

 - type: string

 description: >

 This string provides forward-compatibility with future

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 content defined in the present version of this API.

 description: >

 Possible values are

 - CH\_ID: Indicates that the requested rule data is the charging identifier.

 - MS\_TIME\_ZONE: Indicates that the requested access network info type is the UE's timezone.

 - USER\_LOC\_INFO: Indicates that the requested access network info type is the UE's location.

 - RES\_RELEASE: Indicates that the requested rule data is the result of the release of resource.

 - SUCC\_RES\_ALLO: Indicates that the requested rule data is the successful resource allocation.

 - EPS\_FALLBACK: Indicates that the requested rule data is the report of QoS flow rejection due to EPS fallback.

 RuleStatus:

 anyOf:

 - type: string

 enum:

 - ACTIVE

 - INACTIVE

 - type: string

 description: >

 This string provides forward-compatibility with future

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 content defined in the present version of this API.

 description: >

 Possible values are

 - ACTIVE: Indicates that the PCC rule(s) are successfully installed (for those provisioned from PCF) or activated (for those pre-defined in SMF), or the session rule(s) are successfully installed

 - INACTIVE: Indicates that the PCC rule(s) are removed (for those provisioned from PCF) or inactive (for those pre-defined in SMF) or the session rule(s) are removed.

 FailureCode:

 anyOf:

 - type: string

 enum:

 - UNK\_RULE\_ID

 - RA\_GR\_ERR

 - SER\_ID\_ERR

 - NF\_MAL

 - RES\_LIM

 - MAX\_NR\_QoS\_FLOW

 - MISS\_FLOW\_INFO

 - RES\_ALLO\_FAIL

 - UNSUCC\_QOS\_VAL

 - INCOR\_FLOW\_INFO

 - PS\_TO\_CS\_HAN

 - APP\_ID\_ERR

 - NO\_QOS\_FLOW\_BOUND

 - FILTER\_RES

 - MISS\_REDI\_SER\_ADDR

 - CM\_END\_USER\_SER\_DENIED

 - CM\_CREDIT\_CON\_NOT\_APP

 - CM\_AUTH\_REJ

 - CM\_USER\_UNK

 - CM\_RAT\_FAILED

 - UE\_STA\_SUSP

 - UNKNOWN\_REF\_ID

 - INCORRECT\_COND\_DATA

 - REF\_ID\_COLLISION

 - TRAFFIC\_STEERING\_ERROR

 - DNAI\_STEERING\_ERROR

 - type: string

 description: >

 This string provides forward-compatibility with future

 extensions to the enumeration but is not used to encode

 content defined in the present version of this API.

 description: >

 Possible values are

 - UNK\_RULE\_ID: Indicates that the pre-provisioned PCC rule could not be successfully activated because the PCC rule identifier is unknown to the SMF.

 - RA\_GR\_ERR: Indicate that the PCC rule could not be successfully installed or enforced because the Rating Group specified within the Charging Data policy decision which the PCC rule refers to is unknown or, invalid.

 - SER\_ID\_ERR: Indicate that the PCC rule could not be successfully installed or enforced because the Service Identifier specified within the Charging Data policy decision which the PCC rule refers to is invalid, unknown, or not applicable to the service being charged.

 - NF\_MAL: Indicate that the PCC rule could not be successfully installed (for those provisioned from the PCF) or activated (for those pre-defined in SMF) or enforced (for those already successfully installed) due to SMF/UPF malfunction.

 - RES\_LIM: Indicate that the PCC rule could not be successfully installed (for those provisioned from PCF) or activated (for those pre-defined in SMF) or enforced (for those already successfully installed) due to a limitation of resources at the SMF/UPF.

 - MAX\_NR\_QoS\_FLOW: Indicate that the PCC rule could not be successfully installed (for those provisioned from PCF) or activated (for those pre-defined in SMF) or enforced (for those already successfully installed) due to the fact that the maximum number of QoS flows has been reached for the PDU session.

 - MISS\_FLOW\_INFO: Indicate that the PCC rule could not be successfully installed or enforced because neither the "flowInfos" attribute nor the "appId" attribute is specified within the PccRule data structure by the PCF during the first install request of the PCC rule.

 - RES\_ALLO\_FAIL: Indicate that the PCC rule could not be successfully installed or maintained since the QoS flow establishment/modification failed, or the QoS flow was released.

 - UNSUCC\_QOS\_VAL: indicate that the QoS validation has failed or when Guaranteed Bandwidth > Max-Requested-Bandwidth.

 - INCOR\_FLOW\_INFO: Indicate that the PCC rule could not be successfully installed or modified at the SMF because the provided flow information is not supported by the network (e.g. the provided IP address(es) or Ipv6 prefix(es) do not correspond to an IP version applicable for the PDU session).

 - PS\_TO\_CS\_HAN: Indicate that the PCC rule could not be maintained because of PS to CS handover.

 - APP\_ID\_ERR: Indicate that the rule could not be successfully installed or enforced because the Application Identifier is invalid, unknown, or not applicable to the application required for detection.

 - NO\_QOS\_FLOW\_BOUND: Indicate that there is no QoS flow which the SMF can bind the PCC rule(s) to.

 - FILTER\_RES: Indicate that the Flow Information within the "flowInfos" attribute cannot be handled by the SMF because any of the restrictions defined in subclause 5.4.2 of 3GPP TS 29.212 was not met.

 - MISS\_REDI\_SER\_ADDR: Indicate that the PCC rule could not be successfully installed or enforced at the SMF because there is no valid Redirect Server Address within the Traffic Control Data policy decision which the PCC rule refers to provided by the PCF and no preconfigured redirection address for this PCC rule at the SMF.

 - CM\_END\_USER\_SER\_DENIED: Indicate that the charging system denied the service request due to service restrictions (e.g. terminate rating group) or limitations related to the end-user, for example the end-user's account could not cover the requested service.

 - CM\_CREDIT\_CON\_NOT\_APP: Indicate that the charging system determined that the service can be granted to the end user but no further credit control is needed for the service (e.g. service is free of charge or is treated for offline charging).

 - CM\_AUTH\_REJ: Indicate that the charging system denied the service request in order to terminate the service for which credit is requested.

 - CM\_USER\_UNK: Indicate that the specified end user could not be found in the charging system.

 - CM\_RAT\_FAILED: Indicate that the charging system cannot rate the service request due to insufficient rating input, incorrect AVP combination or due to an attribute or an attribute value that is not recognized or supported in the rating.

 - UE\_STA\_SUSP: Indicates that the UE is in suspend state.

 - UNKNOWN\_REF\_ID: Indicates that the PCC rule could not be successfully installed/modified because the referenced identifier to a Policy Decision Data or to a Condition Data is unknown to the SMF.

 - INCORRECT\_COND\_DATA: Indicates that the PCC rule could not be successfully installed/modified because the referenced Condition data are incorrect.

 - REF\_ID\_COLLISION: Indicates that PCC rule could not be successfully installed/modified because the same Policy Decision is referenced by a session rule (e.g. the session rule and the PCC rule refer to the same Usage Monitoring decision data).

 - TRAFFIC\_STEERING\_ERROR: Indicates that enforcement of the steering of traffic to the N6-LAN or 5G-LAN failed; or the dynamic PCC rule could not be successfully installed or modified at the NF service consumer because there are invalid traffic steering policy identifier(s) within the provided Traffic Control Data policy decision to which the PCC rule refers.

 - DNAI\_STEERING\_ERROR: Indicates that the enforcement of the steering of traffic to the indicated DNAI failed; or the dynamic PCC rule could not be successfully installed or modified at the NF service consumer because there is invalid route information for a DNAI(s) (e.g. routing profile id is not configured) within the provided Traffic Control Data policy decision to which the PCC rule refers.

 AfSigProtocol:

 anyOf:

 - type: string

 enum:

 - NO\_INFORMATION

 - SIP

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

 - type: string

 description: >

 This string provides forward-compatibility with future

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 content defined in the present version of this API.

 description: >

 Possible values are

 - NO\_INFORMATION: Indicate that no information about the AF signalling protocol is being provided.

 - SIP: Indicate that the signalling protocol is Session Initiation Protocol.

 RuleOperation:

 anyOf:

 - type: string

 enum:

 - CREATE\_PCC\_RULE

 - DELETE\_PCC\_RULE

 - MODIFY\_PCC\_RULE\_AND\_ADD\_PACKET\_FILTERS

 - MODIFY\_ PCC\_RULE\_AND\_REPLACE\_PACKET\_FILTERS

 - MODIFY\_ PCC\_RULE\_AND\_DELETE\_PACKET\_FILTERS

 - MODIFY\_PCC\_RULE\_WITHOUT\_MODIFY\_PACKET\_FILTERS

 - type: string

 description: >

 This string provides forward-compatibility with future

 extensions to the enumeration but is not used to encode

 content defined in the present version of this API.

 description: >

 Possible values are

 - CREATE\_PCC\_RULE: Indicates to create a new PCC rule to reserve the resource requested by the UE.

 - DELETE\_PCC\_RULE: Indicates to delete a PCC rule corresponding to reserve the resource requested by the UE.

 - MODIFY\_PCC\_RULE\_AND\_ADD\_PACKET\_FILTERS: Indicates to modify the PCC rule by adding new packet filter(s).

 - MODIFY\_ PCC\_RULE\_AND\_REPLACE\_PACKET\_FILTERS: Indicates to modify the PCC rule by replacing the existing packet filter(s).

 - MODIFY\_ PCC\_RULE\_AND\_DELETE\_PACKET\_FILTERS: Indicates to modify the PCC rule by deleting the existing packet filter(s).

 - MODIFY\_PCC\_RULE\_WITHOUT\_MODIFY\_PACKET\_FILTERS: Indicates to modify the PCC rule by modifying the QoS of the PCC rule.

 RedirectAddressType:

 anyOf:

 - type: string

 enum:

 - IPV4\_ADDR

 - IPV6\_ADDR

 - URL

 - SIP\_URI

 - type: string

 description: >

 This string provides forward-compatibility with future

 extensions to the enumeration but is not used to encode

 content defined in the present version of this API.

 description: >

 Possible values are

 - IPV4\_ADDR: Indicates that the address type is in the form of "dotted-decimal" IPv4 address.

 - IPV6\_ADDR: Indicates that the address type is in the form of IPv6 address.

 - URL: Indicates that the address type is in the form of Uniform Resource Locator.

 - SIP\_URI: Indicates that the address type is in the form of SIP Uniform Resource Identifier.

 QosFlowUsage:

 anyOf:

 - type: string

 enum:

 - GENERAL

 - IMS\_SIG

 - type: string

 description: >

 This string provides forward-compatibility with future

 extensions to the enumeration but is not used to encode

 content defined in the present version of this API.

 description: >

 Possible values are

 - GENERAL: Indicate no specific QoS flow usage information is available.

 - IMS\_SIG: Indicate that the QoS flow is used for IMS signalling only.

 FailureCause:

 description: Indicates the cause of the failure in a Partial Success Report.

 anyOf:

 - type: string

 enum:

 - PCC\_RULE\_EVENT

 - PCC\_QOS\_FLOW\_EVENT

 - RULE\_PERMANENT\_ERROR

 - RULE\_TEMPORARY\_ERROR

 - POL\_DEC\_ERROR

 - type: string

 CreditManagementStatus:

 description: Indicates the reason of the credit management session failure.

 anyOf:

 - type: string

 enum:

 - END\_USER\_SER\_DENIED

 - CREDIT\_CTRL\_NOT\_APP

 - AUTH\_REJECTED

 - USER\_UNKNOWN

 - RATING\_FAILED

 - type: string

 SessionRuleFailureCode:

 anyOf:

 - type: string

 enum:

 - NF\_MAL

 - RES\_LIM

 - SESSION\_RESOURCE\_ALLOCATION\_FAILURE

 - UNSUCC\_QOS\_VAL

 - INCORRECT\_UM

 - UE\_STA\_SUSP

 - UNKNOWN\_REF\_ID

 - INCORRECT\_COND\_DATA

 - REF\_ID\_COLLISION

 - type: string

 description: >

 This string provides forward-compatibility with future

 extensions to the enumeration but is not used to encode

 content defined in the present version of this API.

 description: >

 Possible values are

 - NF\_MAL: Indicates that the PCC rule could not be successfully installed (for those provisioned from the PCF) or activated (for those pre-defined in SMF) or enforced (for those already successfully installed) due to SMF/UPF malfunction.

 - RES\_LIM: Indicates that the PCC rule could not be successfully installed (for those provisioned from PCF) or activated (for those pre-defined in SMF) or enforced (for those already successfully installed) due to a limitation of resources at the SMF/UPF.

 - SESSION\_RESOURCE\_ALLOCATION\_FAILURE: Indicates the session rule could not be successfully enforced due to failure during the allocation of resources for the PDU session in the UE, RAN or AMF.

 - UNSUCC\_QOS\_VAL: indicates that the QoS validation has failed.

 - INCORRECT\_UM: The usage monitoring data of the enforced session rule is not the same for all the provisioned session rule(s).

 - UE\_STA\_SUSP: Indicates that the UE is in suspend state.

 - UNKNOWN\_REF\_ID: Indicates that the session rule could not be successfully installed/modified because the referenced identifier to a Policy Decision Data or to a Condition Data is unknown to the SMF.

 - INCORRECT\_COND\_DATA: Indicates that the session rule could not be successfully installed/modified because the referenced Condition data are incorrect.

 - REF\_ID\_COLLISION: Indicates that the session rule could not be successfully installed/modified because the same Policy Decision is referenced by a PCC rule (e.g. the session rule and the PCC rule refer to the same Usage Monitoring decision data).

 SteeringFunctionality:

 anyOf:

 - type: string

 enum:

 - MPTCP

 - ATSSS\_LL

 - type: string

 description: >

 This string provides forward-compatibility with future

 extensions to the enumeration but is not used to encode

 content defined in the present version of this API.

 description: >

 Possible values are

 - MPTCP: Indicates that PCF authorizes the MPTCP functionality to support traffic steering, switching and splitting.

 - ATSSS\_LL: Indicates that PCF authorizes the ATSSS-LL functionality to support traffic steering, switching and splitting.

 SteerModeValue:

 description: Indicates the steering mode value determined by the PCF.

 anyOf:

 - type: string

 enum:

 - ACTIVE\_STANDBY

 - LOAD\_BALANCING

 - SMALLEST\_DELAY

 - PRIORITY\_BASED

 - type: string

 MulticastAccessControl:

 description: Indicates whether the service data flow, corresponding to the service data flow template, is allowed or not allowed.

 anyOf:

 - type: string

 enum:

 - ALLOWED

 - NOT\_ALLOWED

 - type: string

 RequestedQosMonitoringParameter:

 description: Indicates the requested QoS monitoring parameters to be measured.

 anyOf:

 - type: string

 enum:

 - DOWNLINK

 - UPLINK

 - ROUND\_TRIP

 - type: string

 ReportingFrequency:

 description: Indicates the frequency for the reporting.

 anyOf:

 - type: string

 enum:

 - EVENT\_TRIGGERED

 - PERIODIC

 - SESSION\_RELEASE

 - type: string

 SgsnAddress:

 description: describes the address of the SGSN

 type: object

 anyOf:

 - required: [sgsnIpv4Addr]

 - required: [sgsnIpv6Addr]

 properties:

 sgsnIpv4Addr:

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

 sgsnIpv6Addr:

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

 SmPolicyAssociationReleaseCause:

 description: Represents the cause due to which the PCF requests the termination of the SM policy association.

 anyOf:

 - type: string

 enum:

 - UNSPECIFIED

 - UE\_SUBSCRIPTION

 - INSUFFICIENT\_RES

 - VALIDATION\_CONDITION\_NOT\_MET

 - type: string

 PduSessionRelCause:

 description: Contains the SMF PDU Session release cause.

 anyOf:

 - type: string

 enum:

 - PS\_TO\_CS\_HO

 - RULE\_ERROR

 - type: string

 MaPduIndication:

 description: Contains the MA PDU session indication, i.e., MA PDU Request or MA PDU Network-Upgrade Allowed.

 anyOf:

 - type: string

 enum:

 - MA\_PDU\_REQUEST

 - MA\_PDU\_NETWORK\_UPGRADE\_ALLOWED

 - type: string

 AtsssCapability:

 description: Contains the ATSSS capability supported for the MA PDU Session.

 anyOf:

 - type: string

 enum:

 - MPTCP\_ATSSS\_LL\_WITH\_ASMODE\_UL

 - MPTCP\_ATSSS\_LL\_WITH\_EXSDMODE\_DL\_ASMODE\_UL

 - MPTCP\_ATSSS\_LL\_WITH\_ASMODE\_DLUL

 - ATSSS\_LL

 - MPTCP\_ATSSS\_LL

 - type: string

#

 NetLocAccessSupport:

 anyOf:

 - type: string

 enum:

 - ANR\_NOT\_SUPPORTED

 - TZR\_NOT\_SUPPORTED

 - LOC\_NOT\_SUPPORTED

 - type: string

 description: >

 This string provides forward-compatibility with future

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 content defined in the present version of this API.

 description: >

 Possible values are

 - ANR\_NOT\_SUPPORTED: Indicates that the access network does not support the report of access network information.

 - TZR\_NOT\_SUPPORTED: Indicates that the access network does not support the report of UE time zone.

 - LOC\_NOT\_SUPPORTED: Indicates that the access network does not support the report of UE Location (or PLMN Id).

 PolicyDecisionFailureCode:

 description: Indicates the type of the failed policy decision and/or condition data.

 anyOf:

 - type: string

 enum:

 - TRA\_CTRL\_DECS\_ERR

 - QOS\_DECS\_ERR

 - CHG\_DECS\_ERR

 - USA\_MON\_DECS\_ERR

 - QOS\_MON\_DECS\_ERR

 - CON\_DATA\_ERR

 - POLICY\_PARAM\_ERR

 - type: string

#

 NotificationControlIndication:

 description: Indicates that the notification of DDD Status is requested and/or that the notification of DDN Failure is requested.

 anyOf:

 - type: string

 enum:

 - DDN\_FAILURE

 - DDD\_STATUS

 - type: string

#

 SatelliteBackhaulCategory:

 description: Indicates the type of satellite backhaul category or non-satellite backhaul for the PDU session.

 anyOf:

 - type: string

 enum:

 - GEO

 - MEO

 - LEO

 - OTHER\_SAT

 - NON\_SATELLITE

 - type: string

 SteerModeIndicator:

 description: Contains Autonomous load-balance indicator or UE-assistance indicator.

 anyOf:

 - type: string

 enum:

 - AUTO\_LOAD\_BALANCE

 - UE\_ASSISTANCE

 - type: string

#

\* \* \* End of Changes \* \* \* \*