**3GPP TSG CT WG3 Meeting #113eC3-210068**

**E-Meeting, 25th – 29th January 2021 *(revision of C3-21xxxx)***

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| --- |
| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
|  |
|  | **29.512** | **CR** | 0650 | **rev** | **-** | **Current version:** | **16.7.0** |  |
|  |
| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* |
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|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Proposed change affects:*** | UICC apps |  | ME |  | Radio Access Network |  | Core Network | **X** |

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| --- |
|  |
| ***Title:***  | Support of stateless NFs |
|  |  |
| ***Source to WG:*** | Huawei |
| ***Source to TSG:*** | CT3 |
|  |  |
| ***Work item code:*** | 5G\_eSBA |  | ***Date:*** | 2021-01-29 |
|  |  |  |  |  |
| ***Category:*** | **F** |  | ***Release:*** | Rel-16 |
|  | *Use one of the following categories:****F*** *(correction)****A*** *(mirror corresponding to a change in an earlier release)****B*** *(addition of feature),* ***C*** *(functional modification of feature)****D*** *(editorial modification)*Detailed explanations of the above categories 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:*** | To support Stateless NF, it was agreed in TS 29.500, 6.5.3.2 and 6.5.3.3 during the last CT4 and CT3 e-meetings (cf. reply LS in C3-205495):* Stateless NF as service consumer:
	+ When the NF service consumer is changed, and if the new NF service consumer does not support handling notifications as specified in the above bullet 5, the new NF service consumer should update the NF service producers with the new Notification URI. For explicit subscriptions, this is achieved by updating the existing subscription or creating a new subscription, depending on the NF service producer's API. For implicit subscriptions, this is carried out via a service update request message
	+ Each NF service consumer within the NF (service) set shall be prepared to receive notifications from the NF service producer, either by handling the notifications to the Notification URI constructed according to the above bullet 5 with its own address as authority part, by handling the notifications to the Notification URI notified in the above bullet 6, or by replying with an HTTP 3xx redirect pointing to a new NF service consumer or with another HTTP error.
* Stateless NF as service producer:
	+ When the NF service producer changes, the new NF service producer may include an updated binding indication in a notification/callback request sent to the NF service consumer. The new NF service producer may also generate a new resource URI and return it to the NF service consumer upon reception of a service request related to the resource from that NF service consumer, e.g. the new NF service producer may reply with an HTTP 3xx redirect status code pointing to the new location of the resource.
 |
|  |  |
| ***Summary of change:*** | OpenAPI file is updated with the support of 307 and 308 responses for the GET method of Individual SM Policy, custom methods, i.e. update and delete, and the methods of Callback URIs.The support of the redirection is specified in the concerned service procedures. The update of the notification/callback Uri is added. |
|  |  |
| ***Consequences if not approved:*** | Lack of full support of the functionality required to become stateless NFs |
|  |  |
| ***Clauses affected:*** | 4.2.3.2, 4.2.3.3, 4.2.4.2, 4.2.5.2, 5.3.3.3.1, 5.3.3.4.2.2, 5.3.3.4.3.2, 5.5.2.2, 5.5.3.2, 5.7.1, 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 backwards compatible correction to the OpenAPI file.To MCC: The feature number shall be the same as the number in rel-17. |
|  |  |
| ***This CR's revision history:*** |  |

**Additional discussion(if needed):**

**…**

**Proposed changes:**

\*\*\* 1st Change \*\*\*

#### 4.2.3.2 SM Policy Association Update request



Figure 4.2.3.2-1: SM Policy Association Update request

The PCF may decide to provision policies without obtaining a request from the SMF, e.g. in response to information provided to the PCF via the Rx or N5 reference point, or in response to an internal trigger within the PCF. The PCF shall send a POST request to the NF Service Consumer (SMF) (../{notificationUri}/update). The payload body of the message shall contain an SmPolicyNotification data structure that contains the representation of the updated policies within the "smPolicyDecision" attribute and the resource URI of individual SM Policy related to the notification within the "resourceUri" attribute. Detailed procedures related to the provisioning and enforcement of the policy decisions within the SmPolicyDecision data structure are contained in subclause 4.2.6.

In case of a successful update of SM policies:

- if the PCF provisioned the policy control request triggers related to access type change, RAT change or location change, a "200 OK" response code and a response body with the corresponding available information in the "UeCampingRep" data structure shall be returned in the response;

- otherwise, a "204 No Content" response code shall be returned in the response.

If errors occur when processing the HTTP POST request, the SMF shall send an HTTP error response or, if the feature "ES3XX" is supported, an HTTP redirect response as specified in subclause 5.7.

If the SMF received one or more PCC rules from the PCF but the validation of all the PCC Rules were unsuccessful, the SMF shall reject the request and include in an HTTP "400 Bad Request" response message the ErrorReport data structure. Within the ErrorReport data structure, SMF shall include the "error" attribute containing the "cause" attribute of the ProblemDetails data structure set to "PCC\_RULE\_EVENT" or "PCC\_QOS\_FLOW\_EVENT" and the "ruleReports" attribute to report the PCC rule status of affected PCC rules as defined in subclause 4.2.3.16.

If the "SessionRuleErrorHandling" feature is supported and if the SMF received one or more PCC rules and/or session rules from the PCF but the validation of all the PCC Rules and/or session rule were unsuccessful, the SMF shall reject the request and include in an HTTP "400 Bad Request" response message the ErrorReport data structure. Within the ErrorReport data structure, SMF shall include the "error" attribute containing the "cause" attribute of the ProblemDetails data structure set to "RULE\_PERMANENT\_ERROR" or "RULE\_TEMPORARY\_ERROR" and the "ruleReports" attribute to report the PCC rule status of affected PCC rules as defined in subclause 4.2.3.16 and/or the "sessRuleReports" attribute to report the session rule status of affected session rules as defined in subclause 4.2.3.20.

If the SMF received one or more PCC rules from the PCF but the validation of some of them were unsuccessful, the SMF shall include an HTTP "200 OK" status code together with one or more RuleReport data structure(s) to report the PCC rule status of affected PCC rules as defined in subclause 4.2.3.16 in the "PartialSuccessReport" data structure included in the response message. The "failureCause" attribute of the "PartialSuccessReport" shall be set to "PCC\_RULE\_EVENT" or "PCC\_QOS\_FLOW\_EVENT".

If the "SessionRuleErrorHandling" feature is supported and if the SMF received one or more PCC rule and/or session rules from the PCF but the validation of some of them were unsuccessful, the SMF shall include an HTTP "200 OK" status code together with the "ruleReports" attribute to report the PCC rule status of affected PCC rules as defined in subclause 4.2.3.16 and/or the "sessRuleReports" attribute to report the session rule status of affected session rules as defined in subclause 4.2.3.20 in the "PartialSuccessReport" data structure included in the response message. The "failureCause" attribute of the "PartialSuccessReport" shall be set to "RULE\_PERMANENT\_ERROR" or "RULE\_TEMPORARY\_ERROR".

If the PCF provisioned policy control request triggers, the SMF may include in the "PartialSuccessReport" data structure the "ueCampingRep" attribute with the corresponding available information. When it is required to report multiple instances of the "PartialSuccessReport" data structure due to different "failureCause" values, the SMF shall use only one instance of the "PartialSuccessReport" data structure to include the ueCampingRep" attribute with the corresponding available information.

\*\*\* Next Change \*\*\*

#### 4.2.3.3 SM Policy Association termination request



Figure 4.2.3.3-1: SM Policy Association termination request

The PCF may request the PDU session termination in the following instances:

- If the PCF decides to terminate a PDU session due to an internal trigger or trigger from the UDR.

- The PCF may also decide to terminate an PDU session upon receiving POST message from the SMF (e.g. when usage quota reached).

The PCF shall send a POST request to the NF Service Consumer (SMF) (../{notificationUri}/terminate) and include the TerminationNotification data structure in the body of the HTTP POST request. Within the TerminationNotification data structure, the PCF shall include the resource URI of the individual SM policy related to the notification within the "resourceUri" attribute and the cause why the PCF requests the termination of the policy association encoded as "cause" attribute.

If the SMF accepted received POST request the SMF shall send "204 No Content" response.

After the successful processing of the HTTP POST request, the SMF shall invoke the Npcf\_SMPolicyControl\_Delete Service Operation defined in subclause 4.2.5 to terminate the policy association and initiate the procedure to terminate the PDU session as defined in 3GPP TS 29.502 [22].

If errors occur when processing the HTTP POST request, the SMF shall send an HTTP error response or, if the feature "ES3XX" is supported, an HTTP redirect response as specified in subclause 5.7.

\*\*\* Next 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 SMF detects that one or more policy control request triggers are met, the SMF 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 SMF 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 SMF shall include the met policy control request trigger(s) within the "repPolicyCtrlReqTriggers" attribute and applicable updated value(s) in the corresponding attribute(s).

The SMF 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;

- 3GPP PS data off status within the "3gppPsDataOffStatus" 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 1: When both, the UDM subscribed Session-AMBR and the DN-AAA authorized Session-AMBR are available in the SMF, the SMF includes the DN-AAA authorized Session-AMBR.

- 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;

- accumulated usage reports within the "accuUsageReports" attribute;

- reported presence reporting area information within the "praInfos" 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 information within the "userLocationInfo" attribute;

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

- identifier of the serving network within the "servingNetwork" attribute.

The SMF 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 2: An empty SmPolicyDecision data structure is included in the "200 OK" response when the PCF decides not to update policies.

If errors occur when processing the HTTP POST request, the PCF shall send an HTTP error response or, if the feature "ES3XX" is supported, an HTTP redirect response as specified in subclause 5.7.

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 SMF, 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 SMF is covered by the packet filters of outstanding PCC rules that the PCF is provisioning to the SMF, 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 SMF 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 SMF receives HTTP response with these codes, the SMF 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.

\*\*\* Next Change \*\*\*

#### 4.2.5.2 SM Policy Association termination



Figure 4.2.5.2-1: SM Policy Association termination

When an individual resource of the SM Policy Association shall be deleted the SMF shall invoke the Npcf\_SMPolicyControl\_DELETE service operation to the PCF using an HTTP POST request, as shown in figure 4.2.5.2-1, step 1.

The SMF shall set the request URI to "{apiRoot}/npcf-smpolicycontrol/v1/sm-policies/{smPolicyId}/delete". The {smPolicyId} in the URI identifies the "Individual SM Policy" to be deleted.

The SMF delete request shall (if available) contain SM Policy Association related information within the SmPolicyDeleteData data structure in the body:

- accumulated usage within the "accuUsageReports" attribute as defined in subclause 4.2.5.3;

- the user location information within the "userLocationInfo" attribute, the information on when the UE was last known to be in that location within the "userLocationInfoTime" attribute, the PLMN identifier and for SNPN also the NID within the "servingNetwork" attribute, the timezone information within the "ueTimeZone" attribute and RAN cause and/or the NAS cause within the "ranNasRelCauses" attribute as defined in subclause 4.2.5.4;

- the "PS\_TO\_CS\_HO" value within the "pduSessRelCause" attribute, if the PDU session is released due to PS to CS handover and the "PDUSessionRelCause" feature defined in subclause 5.8 is supported;

- one or more QoS Monitoring reports within the "qosMonReports" attribute as defined in subclause 4.2.5.5.

When the PCF receives the HTTP POST request from the SMF and if the PCF successfully processed and accepted the received HTTP POST request from the SMF, the PCF shall acknowledge the request by sending an HTTP response message with the corresponding status code. The PCF acknowledged the delete request by sending a "204 No Content" response to the SMF, as shown in figure 4.2.5.2-1, step 2. Further, the PCF shall remove the individual resources linked to the delete request.

If errors occur when processing the HTTP POST request, the PCF shall send an HTTP error response or, if the feature "ES3XX" is supported, an HTTP redirect response as specified in subclause 5.7.

\*\*\* Next Change \*\*\*

##### 5.3.3.3.1 GET

This method shall support the URI query parameters specified in table 5.3.3.3.1-1.

Table 5.3.3.3.1-1: URI query parameters supported by the GET method on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| n/a |  |  |  |  |

This method shall support the request data structures specified in table 5.3.3.3.1-2 and the response data structures and response codes specified in table 5.3.3.3.1-3.

Table 5.3.3.3.1-2: Data structures supported by the GET Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| n/a |  |  |  |

Table 5.3.3.3.1-3: Data structures supported by the GET Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response codes | Description |
| SmPolicyControl | M | 1 | 200 OK | An individual SM Policy resources for the SUPI and PDU session id are returned successfully. |
| ProblemDetails | O | 0..1 | 307 Temporary Redirect | Temporary redirection, during Individual SM policy retrieval. The response shall include a Location header field containing an alternative URI of the resource located in an alternative PCF (service) instance. Applicable if the feature "ES3XX" is supported. |
| ProblemDetails | O | 0..1 | 308 Permanent Redirect | Permanent redirection, during Individual SM policy retrieval. The response shall include a Location header field containing an alternative URI of the resource located in an alternative PCF (service) instance.Applicable if the feature "ES3XX" is supported. |
| NOTE: The mandatory HTTP error status codes for the GET method listed in table 5.2.7.1-1 of 3GPP TS 29.500 [4] shall also apply. |

Table 5.3.3.3.1-3: Headers supported by the 307 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | An alternative URI of the resource located in an alternative PCF (service) instance. |
| 3gpp-Sbi-Target-Nf-Id | string | O | 0..1 | Identifier of the target NF (service) instance towards which the request is redirected. |

Table 5.3.3.3.1-4: Headers supported by the 308 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | An alternative URI of the resource located in an alternative PCF (service) instance. |
| 3gpp-Sbi-Target-Nf-Id | string | O | 0..1 | Identifier of the target NF (service) instance towards which the request is redirected. |

\*\*\* Next Change \*\*\*

###### 5.3.3.4.2.2 Operation Definition

This custom operation deletes an individual SM Policy resource in the PCF.

This operation shall support the request data structures specified in table 5.3.3.4.2.2-1 and the response data structure and response codes specified in table 5.3.3.4.2.2-2.

Table 5.3.3.4.2.2-1: Data structures supported by the POST Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| SmPolicyDeleteData | O | 0..1 | Parameters to be sent by the SMF when the individual SM policy is deleted. |

Table 5.3.3.4.2.2-2: Data structures supported by the POST Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response codes | Description |
| n/a |  |  | 204 No Content | This case represents a successful deletion of the individual SM policy resource. |
| ProblemDetails | O | 0..1 | 307 Temporary Redirect | Temporary redirection, during Individual SM policy deletion. The response shall include a Location header field containing an alternative URI of the resource located in an alternative PCF (service) instance. Applicable if the feature "ES3XX" is supported. |
| ProblemDetails | O | 0..1 | 308 Permanent Redirect | Permanent redirection, during Individual SM policy deletion. The response shall include a Location header field containing an alternative URI of the resource located in an alternative PCF (service) instance.Applicable if the feature "ES3XX" is supported. |
| NOTE: The mandatory HTTP error status codes for the POST method listed in table 5.2.7.1-1 of 3GPP TS 29.500 [4] shall also apply. |

Table 5.3.3.4.2.2-3: Headers supported by the 307 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | An alternative URI of the resource located in an alternative PCF (service) instance. |
| 3gpp-Sbi-Target-Nf-Id | string | O | 0..1 | Identifier of the target NF (service) instance towards which the request is redirected. |

Table 5.3.3.4.2.2-4: Headers supported by the 308 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | An alternative URI of the resource located in an alternative PCF (service) instance. |
| 3gpp-Sbi-Target-Nf-Id | string | O | 0..1 | Identifier of the target NF (service) instance towards which the request is redirected. |

\*\*\* Next Change \*\*\*

###### 5.3.3.4.3.2 Operation Definition

This custom operation updates an individual SM Policy resource in the PCF.

This operation shall support the request data structures specified in table 5.3.3.4.3.2-1 and the response data structure and response codes specified in table 5.3.3.4.3.2-2.

Table 5.3.3.4.3.2-1: Data structures supported by the POST Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| SmPolicyUpdateContextData  | M | 1 | Parameters to be sent by the SMF when the individual SM policy is updated. It indicates the occurred changes. |

Table 5.3.3.4.3.2-2: Data structures supported by the POST Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response codes | Description |
| SmPolicyDecision | M | 1 | 200 OK | An individual SM Policy resources is updated successfully. Response body includes the policy decision changes. |
| ProblemDetails | O | 0..1 | 307 Temporary Redirect | Temporary redirection, during Individual SM policy modification. The response shall include a Location header field containing an alternative URI of the resource located in an alternative PCF (service) instance. Applicable if the feature "ES3XX" is supported. |
| ProblemDetails | O | 0..1 | 308 Permanent Redirect | Permanent redirection, during Individual SM policy modification. The response shall include a Location header field containing an alternative URI of the resource located in an alternative PCF (service) instance.Applicable if the feature "ES3XX" is supported. |
| ProblemDetails | O | 0..1 | 400 Bad Request | (NOTE 2) |
| ProblemDetails | O | 0..1 | 403 Forbidden | (NOTE 2) |
| NOTE 1: The mandatory HTTP error status codes for the POST method listed in table 5.2.7.1-1 of 3GPP TS 29.500 [4] shall also apply.NOTE 2: Failure cases are described in subclause 5.7. |

Table 5.3.3.4.3.2-3: Headers supported by the 307 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | An alternative URI of the resource located in an alternative PCF (service) instance. |
| 3gpp-Sbi-Target-Nf-Id | string | O | 0..1 | Identifier of the target NF (service) instance towards which the request is redirected. |

Table 5.3.3.4.3.2-4: Headers supported by the 308 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | An alternative URI of the resource located in an alternative PCF (service) instance. |
| 3gpp-Sbi-Target-Nf-Id | string | O | 0..1 | Identifier of the target NF (service) instance towards which the request is redirected. |

\*\*\* Next Change \*\*\*

#### 5.5.2.2 Operation Definition

This operation shall support the request data structures specified in table 5.5.2.2-1 and the response data structure and response codes specified in table 5.5.2.2-2.

Table 5.5.2.2-1: Data structures supported by the POST Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| SmPolicyNotification | M | 1 | Update the SM policies provided by the PCF |

Table 5.5.2.2-2: Data structures supported by the POST Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response codes | Description |
| n/a |  |  | 204 No Content | The SM policies are updated successfully. |
| UeCampingRep | O | 0..1 | 200 OK | The current applicable values corresponding to the policy control request trigger is reported. |
| array(PartialSuccessReport) | O | 1..N | 200 OK | Some of the PCC rules and/or session rule provisioned by the PCF are not installed/activated successfully. |
| ProblemDetails | O | 0..1 | 307 Temporary Redirect | Temporary redirection, during SM policy notification. The response shall include a Location header field containing an alternative URI representing the end point of an alternative NF consumer (service) instance where the notification should be sent.Applicable if the feature "ES3XX" is supported. |
| ProblemDetails | O | 0..1 | 308 Permanent Redirect | Permanent redirection, during SM policy notification. The response shall include a Location header field containing an alternative URI representing the end point of an alternative NF consumer (service) instance where the notification should be sent.Applicable if the feature "ES3XX" is supported. |
| ErrorReport | M | 1 | 400 Bad Request | The SM policies including all the PCC rules and session rules provisioned by the PCF are not installed/activated successfully. |
| array(PolicyDecisionFailureCode) | O | 1..N | 200 OK | Provisioning of some of the policy decision and/ condition data which are not referred by any PCC rules or session rule are failure. |
| NOTE 1: The mandatory HTTP error status codes for the POST method listed in table 5.2.7.1-1 of 3GPP TS 29.500 [4] shall also apply.NOTE 2: Failure cases are described in subclause 5.7. |

Table 5.5.2.2-3: Headers supported by the 307 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | An alternative URI representing the end point of an alternative NF consumer (service) instance towards which the notification should be redirected. |
| 3gpp-Sbi-Target-Nf-Id | string | O | 0..1 | Identifier of the target NF (service) instance towards which the notification request is redirected. |

Table 5.5.2.2-4: Headers supported by the 308 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | An alternative URI representing the end point of an alternative NF consumer (service) instance towards which the notification should be redirected. |
| 3gpp-Sbi-Target-Nf-Id | string | O | 0..1 | Identifier of the target NF (service) instance towards which the notification request is redirected. |

\*\*\* Next Change \*\*\*

#### 5.5.3.2 Operation Definition

This operation shall support the request data structures specified in table 5.5.3.2-1 and the response data structure and response codes specified in table 5.5.3.2-2.

Table 5.5.3.2-1: Data structures supported by the POST Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| TerminationNotification | M | 1 | Request to terminate the policy association. |

Table 5.5.3.2-2: Data structures supported by the POST Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response codes | Description |
| n/a |  |  | 204 No Content | The request for policy association termination was received. |
| ProblemDetails | O | 0..1 | 307 Temporary Redirect | Temporary redirection, during SM policy termination notification. The response shall include a Location header field containing an alternative URI representing the end point of an alternative NF consumer (service) instance where the notification should be sent.Applicable if the feature "ES3XX" is supported. |
| ProblemDetails | O | 0..1 | 308 Permanent Redirect | Permanent redirection, during SM policy termination notification. The response shall include a Location header field containing an alternative URI representing the end point of an alternative NF consumer (service) instance where the notification should be sent.Applicable if the feature "ES3XX" is supported. |
| NOTE: The mandatory HTTP error status codes for the POST method listed in table 5.2.7.1-1 of 3GPP TS 29.500 [4] shall also apply. |

Table 5.5.3.2-3: Headers supported by the 307 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | An alternative URI representing the end point of an alternative NF consumer (service) instance towards which the notification should be redirected. |
| 3gpp-Sbi-Target-Nf-Id | string | O | 0..1 | Identifier of the target NF (service) instance towards which the notification request is redirected. |

Table 5.5.3.2-4: Headers supported by the 308 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | An alternative URI representing the end point of an alternative NF consumer (service) instance towards which the notification should be redirected. |
| 3gpp-Sbi-Target-Nf-Id | string | O | 0..1 | Identifier of the target NF (service) instance towards which the notification request is redirected. |

\*\*\* Next Change \*\*\*

### 5.7.1 General

HTTP error handling shall be supported as specified in subclause 5.2.4 of 3GPP TS 29.500 [4].

For the Npcf\_SMPolicyControl API, HTTP error responses shall be supported as specified in subclause 4.8 of 3GPP TS 29.501 [5].

Protocol errors and application errors specified in table 5.2.7.2-1 of 3GPP TS 29.500 [4] shall be supported for an HTTP method if the corresponding HTTP status codes are specified as mandatory for that HTTP method in table 5.2.7.1-1 of 3GPP TS 29.500 [4].

Protocol errors and application errors specified in table 5.2.7.2-1 of 3GPP TS 29.500 [4] for HTTP redirections shall be supported if the feature "ES3XX" is supported.

In addition, the requirements in the following subclauses shall apply.

\*\*\* Next 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 or routing of the user traffic to a local Data Network identified by the DNAI per AF request. If the SMF 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 SMF 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 SMF 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 SMF to indicate if it supports P-CSCF Restoration Enhancement. |
| 10 | PRA | This feature indicates the support of presence reporting area change reporting. |
| 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 SMF 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 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. |
| x1 | 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].  |
| 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. |

\*\*\* Next Change \*\*\*

# A.2 Npcf\_SMPolicyControl API

openapi: 3.0.0

info:

 title: Npcf\_SMPolicyControl API

 version: 1.1.3

 description: |

 Session Management Policy Control Service

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externalDocs:

 description: 3GPP TS 29.512 V16.7.0; 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':

 description: Temporary Redirect

 content:

 application/problem+json:

 schema:

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

 headers:

 Location:

 required: true

 description: 'A URI pointing to the endpoint of an alternative NF consumer (service) instance towards which the notification should be redirected.'

 schema:

 type: string

 3gpp-Sbi-Target-Nf-Id:

 description: 'Identifier of the target NF (service) instance towards which the notification request is redirected'

 schema:

 type: string

 '308':

 description: Permanent Redirect

 content:

 application/problem+json:

 schema:

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

 headers:

 Location:

 required: true

 description: 'A URI pointing to the endpoint of an alternative NF consumer (service) instance towards which the notification should be redirected.'

 schema:

 type: string

 3gpp-Sbi-Target-Nf-Id:

 description: 'Identifier of the target NF (service) instance towards which the notification request is redirected'

 schema:

 type: string

 '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':

 description: Temporary Redirect

 content:

 application/problem+json:

 schema:

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

 headers:

 Location:

 required: true

 description: 'A URI pointing to the endpoint of an alternative NF consumer (service) instance towards which the notification should be redirected.'

 schema:

 type: string

 3gpp-Sbi-Target-Nf-Id:

 description: 'Identifier of the target NF (service) instance towards which the notification request is redirected'

 schema:

 type: string

 '308':

 description: Permanent Redirect

 content:

 application/problem+json:

 schema:

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

 headers:

 Location:

 required: true

 description: 'A URI pointing to the endpoint of an alternative NF consumer (service) instance towards which the notification should be redirected.'

 schema:

 type: string

 3gpp-Sbi-Target-Nf-Id:

 description: 'Identifier of the target NF (service) instance towards which the notification request is redirected'

 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':

 $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':

 description: Temporary Redirect

 content:

 application/problem+json:

 schema:

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

 headers:

 Location:

 description: 'An alternative URI of the resource located on an alternative PCF (service) instance.'

 required: true

 schema:

 type: string

 3gpp-Sbi-Target-Nf-Id:

 description: 'Identifier of the target NF (service) instance towards which the request is redirected'

 schema:

 type: string

 '308':

 description: Permanent Redirect

 content:

 application/problem+json:

 schema:

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

 headers:

 Location:

 description: 'An alternative URI of the resource located on an alternative PCF (service) instance.'

 required: true

 schema:

 type: string

 3gpp-Sbi-Target-Nf-Id:

 description: 'Identifier of the target NF (service) instance towards which the request is redirected'

 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':

 $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':

 description: Temporary Redirect

 content:

 application/problem+json:

 schema:

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

 headers:

 Location:

 description: 'An alternative URI of the resource located on an alternative PCF (service) instance.'

 required: true

 schema:

 type: string

 3gpp-Sbi-Target-Nf-Id:

 description: 'Identifier of the target NF (service) instance towards which the request is redirected'

 schema:

 type: string

 '308':

 description: Permanent Redirect

 content:

 application/problem+json:

 schema:

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

 headers:

 Location:

 description: 'An alternative URI of the resource located on an alternative PCF (service) instance.'

 required: true

 schema:

 type: string

 3gpp-Sbi-Target-Nf-Id:

 description: 'Identifier of the target NF (service) instance towards which the request is redirected'

 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':

 $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':

 description: Temporary Redirect

 content:

 application/problem+json:

 schema:

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

 headers:

 Location:

 description: 'An alternative URI of the resource located on an alternative PCF (service) instance.'

 required: true

 schema:

 type: string

 3gpp-Sbi-Target-Nf-Id:

 description: 'Identifier of the target NF (service) instance towards which the request is redirected'

 schema:

 type: string

 '308':

 description: Permanent Redirect

 content:

 application/problem+json:

 schema:

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

 headers:

 Location:

 description: 'An alternative URI of the resource located on an alternative PCF (service) instance.'

 required: true

 schema:

 type: string

 3gpp-Sbi-Target-Nf-Id:

 description: 'Identifier of the target NF (service) instance towards which the request is redirected'

 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':

 $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:

 type: object

 properties:

 context:

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

 policy:

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

 required:

 - context

 - policy

 SmPolicyContextData:

 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'

 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

 required:

 - supi

 - pduSessionId

 - pduSessionType

 - dnn

 - notificationUri

 - sliceInfo

 SmPolicyDecision:

 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.

 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.

 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.

 chgDecs:

 type: object

 additionalProperties:

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

 minProperties: 1

 description: Map of Charging data policy decisions.

 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.

 umDecs:

 type: object

 additionalProperties:

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

 minProperties: 1

 description: Map of Usage Monitoring data policy decisions.

 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.

 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.

 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.

 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.

 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

 SmPolicyNotification:

 type: object

 properties:

 resourceUri:

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

 smPolicyDecision:

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

 PccRule:

 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'

 required:

 - pccRuleId

 nullable: true

 SessionRule:

 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:

 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:

 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:

 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

 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:

 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:

 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:

 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:

 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:

 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:

 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:

 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

 - secondaryChfAddress

 AccuUsageReport:

 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:

 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'

 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.

 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.

 trafficDescriptors:

 type: array

 items:

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

 minItems: 1

 UpPathChgEvent:

 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:

 type: object

 properties:

 resourceUri:

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

 cause:

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

 required:

 - resourceUri

 - cause

 AppDetectionInfo:

 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:

 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:

 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:

 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: Thooleanean 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:

 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:

 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.

 required:

 - pccRuleIds

 - ruleStatus

 RanNasRelCause:

 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:

 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:

 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:

 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:

 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:

 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.

 required:

 - failureCause

 AuthorizedDefaultQos:

 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'

 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.

 extMaxDataBurstVol:

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

 ErrorReport:

 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.

 altQosParamId:

 type: string

 SessionRuleReport:

 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:

 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'

 SteeringMode:

 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'

 required:

 - steerModeValue

 AdditionalAccessInfo:

 type: object

 properties:

 accessType:

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

 ratType:

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

 required:

 - accessType

 QosMonitoringData:

 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: Unsigned integer identifying a period of time in units of miliiseconds for DL packet delay.

 nullable: true

 repThreshUl:

 type: integer

 description: Unsigned integer identifying a period of time in units of miliiseconds for UL packet delay.

 nullable: true

 repThreshRp:

 type: integer

 description: Unsigned integer identifying a 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/Uri'

 notifyCorreId:

 type: string

 required:

 - qmId

 - reqQosMonParams

 - repFreqs

 nullable: true

 QosMonitoringReport:

 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:

 type: object

 properties:

 bridgeId:

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

 dsttAddr:

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

 dsttPortNum:

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

 dsttResidTime:

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

#

 PortManagementContainer:

 type: object

 properties:

 portManCont:

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

 portNum:

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

 required:

 - portManCont

 - portNum

 BridgeManagementContainer:

 type: object

 properties:

 bridgeManCont:

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

 required:

 - bridgeManCont

 IpMulticastAddressInfo:

 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'

 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:

 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

 - RAT\_TY\_CH

 - REF\_QOS\_IND\_CH

 - NUM\_OF\_PACKET\_FILTER

 - UE\_STATUS\_RESUME

 - UE\_TZ\_CH

 - AUTH\_PROF\_CH

 - QOS\_MONITORING

 - SCELL\_CH

 - EPS\_FALLBACK

 - MA\_PDU

 - TSN\_BRIDGE\_INFO

 - 5G\_RG\_JOIN

 - 5G\_RG\_LEAVE

 - DDN\_FAILURE

 - DDN\_DELIVERY\_STATUS

 - 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.

 - 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.

 - 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: 5GS Bridge 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.

 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

 extensions to the enumeration but is not used to encode

 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

 extensions to the enumeration but is not used to encode

 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

 - 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.

 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

 extensions to the enumeration but is not used to encode

 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:

 anyOf:

 - type: string

 enum:

 - PCC\_RULE\_EVENT

 - PCC\_QOS\_FLOW\_EVENT

 - RULE\_PERMANENT\_ERROR

 - RULE\_TEMPORARY\_ERROR

 - POL\_DEC\_ERROR

 - type: string

 CreditManagementStatus:

 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

 - UNSUCC\_QOS\_VAL

 - UE\_STA\_SUSP

 - 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: 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.

 - UNSUCC\_QOS\_VAL: indicate that the QoS validation has failed.

 - UE\_STA\_SUSP: Indicates that the UE is in suspend state.

 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:

 anyOf:

 - type: string

 enum:

 - ACTIVE\_STANDBY

 - LOAD\_BALANCING

 - SMALLEST\_DELAY

 - PRIORITY\_BASED

 - type: string

 MulticastAccessControl:

 anyOf:

 - type: string

 enum:

 - ALLOWED

 - NOT\_ALLOWED

 - type: string

 RequestedQosMonitoringParameter:

 anyOf:

 - type: string

 enum:

 - DOWNLINK

 - UPLINK

 - ROUND\_TRIP

 - type: string

 ReportingFrequency:

 anyOf:

 - type: string

 enum:

 - EVENT\_TRIGGERED

 - PERIODIC

 - SESSION\_RELEASE

 - type: string

 SmPolicyAssociationReleaseCause:

 anyOf:

 - type: string

 enum:

 - UNSPECIFIED

 - UE\_SUBSCRIPTION

 - INSUFFICIENT\_RES

 - VALIDATION\_CONDITION\_NOT\_MET

 - type: string

 PduSessionRelCause:

 anyOf:

 - type: string

 enum:

 - PS\_TO\_CS\_HO

 - type: string

 MaPduIndication:

 anyOf:

 - type: string

 enum:

 - MA\_PDU\_REQUEST

 - MA\_PDU\_ NETWORK\_UPGRADE ALLOWED

 - type: string

 AtsssCapability:

 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

 extensions to the enumeration but is not used to encode

 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:

 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

 - type: string

#

\*\*\* End of Changes \*\*\*