**3GPP TSG- Meeting #**

**, , -**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.3* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  |  | **CR** |  | **rev** |  | **Current version:** |  |  |
|  | | | | | | | | |
| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* | | | | | | | | |
|  | | | | | | | | |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Proposed change affects:*** | UICC apps |  | ME |  | Radio Access Network |  | Core Network | **X** |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | | | | | |
| ***Title:*** | N6 delay consideration indication | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Nokia, Huawei | | | | | | | | | |
| ***Source to TSG:*** | CT3 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | eEDGE\_5GC\_Ph3 | | | | |  | ***Date:*** | | | 2024-11-11 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **B** |  | | | | | ***Release:*** | | | Rel-19 |
|  | *Use one of the following categories:* ***F*** *(correction)* ***A*** *(mirror corresponding to a change in an earlier release)* ***B*** *(addition of feature),* ***C*** *(functional modification of feature)* ***D*** *(editorial modification)*  Detailed explanations of the above categories can be found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | | | | | | | | *Use one of the following releases: Rel-8 (Release 8) Rel-9 (Release 9) Rel-10 (Release 10) Rel-11 (Release 11) … Rel-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)  Rel-20 (Release 20)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | S2-2411263 added the “Indication of considering N6 delay” to the Traffic Influence inputs, which shall be sent to PCF via N5 or forwarded to the UDR (so that it is taken from there by the PCF and put into the respective PCC rule elements as per S2-2410940). | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | The N6 delay consideration indication is added to the PCC rule. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Not fulfilled stage 2 requirements and inability to consider N6 delay triggered by traffic influence requests. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 4.1.4.2.1, 4.1.4.4.2, 4.2.6.2.6.2, 5.6.2.10, 5.8, A.2 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | | **X** |  | Other core specifications | | | | TS 23.503 CR 1325 | | |
| ***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 feature into the OpenAPI file of the Npcf\_SMPolicyControl API. | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

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

4.1.4.2.1 PCC rules definition

A PCC rule is a set of information elements enabling the detection of a service data flow and providing parameters for policy control and/or charging control. There are two different types of PCC rules as defined in 3GPP TS 23.503 [6]:

- Dynamic PCC rules: PCC rules that are dynamically provisioned by the PCF to the SMF. These PCC rules may be either predefined or dynamically generated in the PCF. Dynamic PCC rules can be installed, modified and removed at any time.

- Predefined PCC rules: PCC rules that are preconfigured in the SMF. Predefined PCC rules can be activated or deactivated by the PCF at any time. Predefined PCC rules within the PCF may be grouped allowing the PCF to dynamically activate a set of PCC rules.

Additionally, predefined PCC rules may be grouped within the SMF as predefined PCC rule bases which allow the PCF to dynamically activate these sets of rules. In this case, the PCC rule identifier is used to hold the predefined PCC rule base identifier.

NOTE 1: When the SMF interacts with the PCF for a PCC rule base, the PCF has no way of knowing which individual PCC rule of the PCC rule base caused the interaction. If such knowledge is required for specific PCC rules, then these PCC rules need to be implemented either as dynamic PCC rules or as predefined PCC rules that are not grouped in a PCC rule base. The SMF decision logic for interacting (or not) with the PCF about an event related to a PCC rule base is up to implementation and depends on the specific issue that triggered this interaction.

NOTE 2: The operator can define a predefined PCC rule, to be activated by the SMF. Such a predefined rule is not explicitly known in the PCF.

A PCC rule consists of:

**Table 4.1.4.2.1-1: PCC rule information elements**

|  |  |  |
| --- | --- | --- |
| **Information name** | **Description** | **Category** |
| Rule identifier | Uniquely identifies the PCC rule, within a PDU Session.  It is used between PCF and SMF for referencing PCC rules. | Mandatory |
|  | **Service data flow detection** |  |
| Precedence | Determines the order, in which the service data flow templates are applied at service data flow detection, enforcement and charging. | Mandatory |
| Service Data Flow Template | For IP PDU traffic: Either a list of service data flow filters or an application identifier that references the corresponding application detection filter for the detection of the service data flow.  For Ethernet PDU traffic: Combination of traffic patterns of the Ethernet PDU traffic. | Mandatory |
| Mute for notification | Defines whether application's start or stop notification is to be muted. | Optional |
|  | **Charging** |  |
| Charging key | The charging system (CHF) uses the charging key to determine the tariff to apply to the service data flow. | Optional |
| Service identifier | The identity of the service or service component the service data flow in a rule relates to. | Optional |
| Sponsor Identifier | An identifier, provided from the AF, which identifies the Sponsor, used for sponsored flows to correlate measurements from different users for accounting purposes. | Optional |
| Application Service Provider Identifier | An identifier, provided from the AF, which identifies the Application Service Provider, used for sponsored flows to correlate measurements from different users for accounting purposes. | Optional |
| Charging method | Indicates the required charging method for the PCC rule.  Values: online or offline or none. | Optional |
| Service Data flow handling while requesting credit | Indicates whether the service data flow is allowed to start while the SMF is waiting for the response to the credit request.  Only applicable for charging method online. | Optional |
| Measurement method | Indicates whether the service data flow data volume, duration, combined volume/duration or event shall be measured.  This is applicable to reporting, if the charging method is online or offline.  Note: Event based charging is only applicable to predefined PCC rules and PCC rules used for application detection filter (i.e. with an application identifier). | Optional |
| Application Function Record Information | An identifier, provided from the AF, correlating the measurement for the Charging key/Service identifier values in this PCC rule with application level reports. | Optional |
| Service identifier level reporting | Indicates that separate usage reports shall be generated for this Service identifier.  Values: mandated or not required. | Optional |
|  | **Policy control** |  |
| 5QI | Identifier of the authorized QoS parameters for the service data flow. | Mandatory |
| ARP | The Allocation and Retention Priority for the service data flow consisting of the priority level, the pre-emption capability and the pre-emption vulnerability. | Mandatory |
| Gate status | The gate status indicates whether the service data flow, detected by the service data flow template, may pass (Gate is open) or shall be discarded (Gate is closed). | Optional |
| QoS Notification Control (QNC) | 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. | Optional |
| Reflective QoS Control | Indicates to apply reflective QoS for the SDF. | Optional |
| MBR (UL/DL) | The uplink/downlink maximum bitrate authorized for the service data flow. | Optional |
| GBR (UL/DL) | The uplink/downlink guaranteed bitrate authorized for the service data flow. | Optional |
| UL sharing indication | Indicates resource sharing in uplink direction with service data flows having the same value in their PCC rule. | Optional |
| DL sharing indication | Indicates resource sharing in downlink direction with service data flows having the same value in their PCC rule. | Optional |
| Redirect | Redirect state of the service data flow (enabled/disabled). | Optional |
| Redirect Destination | Controlled Address to which the service data flow is redirected when redirect is enabled. | Optional |
| Bind to default QoS Flow | Indicates that the dynamic PCC rule shall always have its binding with the default QoS Flow. | Optional |
| Priority Level | Indicates a priority in scheduling resources among QoS Flows. | Optional |
| Averaging Window | Represents the duration over which the guaranteed and maximum bitrate shall be calculated. | Optional |
| Maximum Data Burst Volume | Denotes the largest amount of data that is required to be transferred within a period of 5G-AN PDB. | Optional |
| Disable UE notifications at changes related to Alternative QoS Profiles | Indicates to disable QoS flow parameters signalling to the UE when the SMF is notified by the NG-RAN of changes in the fulfilled QoS situation. The fulfilled situation is either the QoS profile or an Alternative QoS Profile. | Optional |
| Precedence for TFT packet filter allocation | Determines the order of TFT packet filter allocation for PCC rules | Optional |
| ECN marking for L4S | The ECN marking for L4S indicates that the UL and/or DL of the service data flow, detected by the service data flow template, supports ECN marking for L4S and enables ECN marking for L4S support.  (NOTE 6) | Optional |
|  | **Access Network Information Reporting** |  |
| User Location Required | The UE location(s) (e.g. the serving cell of the UE) is to be reported. When the corresponding QoS flow is deactivated, and if available, information on when the UE was last known to be in that location is also to be reported. | Optional |
| UE Timezone Required | The time zone of the UE is to be reported. | Optional |
|  | **Usage Monitoring Control** |  |
| Monitoring key | The PCF uses the monitoring key to group services that share a common allowed usage. | Optional |
|  | **N6-LAN Traffic Steering Enforcement Control** |  |
| Traffic steering policy identifier(s) | Reference to a pre-configured traffic steering policy at the SMF. | Optional |
| Metadata | Metadata of traffic for service fuction chaining handling | Optional |
|  | **Application Function influence on traffic routing Enforcement Control** |  |
| Data Network Access Identifier | Identifier of the target Data Network Access. | Optional |
| Per DNAI: Traffic steering policy identifier | Reference to a pre-configured traffic steering policy at the SMF. | Optional |
| Per DNAI: N6 traffic routing information | Describes the information necessary for traffic steering to the DNAI. | Optional |
| Information on AF subscription to UP path changes events | Indicates whether a notification in case of UP path change is requested, as well as the destination(s) for where to provide the notification. | Optional |
| Indication of UE IP address preservation | Indicates UE IP address should be preserved. | Optional |
| Indication of traffic correlation | Indicates that the target PDU Sessions should be correlated via a common DNAI in the user plane. (NOTE 5) | Optional |
| Information on User Plane Latency requirements | Indicates the user plane latency requirements. | Optional |
| EAS IP replacement information | Contains EAS IP replacement information (i.e. IP addresses and port numbers of source and target EAS). | Optional |
| Indication for simultaneous connectivity at edge relocation | Indicates request from the AF for temporary simultaneous connectivity over source and target PSA at edge relocation. It may provide AF guidance to determine when the connectivity over the source PSA can be removed. | Optional |
| Traffic Correlation ID | Identification of a set of UEs accessing the application identified by the Service data flow template | Optional |
| Common EAS IP address | IP address of the common EAS for the application identified by the Service Data Flow Template for the UEs the AF request aims at | Optional |
| FQDN(s) | FQDN(s) for the application indicated in the PCC rule. | Optional |
| NEF information | Notification Endpoint of NEF subscription to be notified with information related to UE members of the set of UEs identified by traffic correlation ID. | Optional |
| Indication of EAS rediscovery | Indicates the rediscovery of EAS. | Optional |
| Indication of considering N6 delay | Indicates whether to consider the N6 delay measurement or not. | Optional |
|  | **RAN support information** |  |
| UL Maximum Packet Loss Rate | The maximum rate for lost packets that can be tolerated in the uplink direction for the service data flow. | Optional |
| DL Maximum Packet Loss Rate | The maximum rate for lost packets that can be tolerated in the downlink direction for the service data flow. | Optional |
|  | **MA PDU Session Control** |  |
| Application descriptors | Identifies the application traffic for which MA PDU Session control is required based on the Steering functionality, the Steering mode, the Steering mode indicator and the Threshold values. | Optional |
| Steering Functionality | Indicates the applicable traffic steering functionality. | Optional |
| Steering mode (UL/DL) | Indicates the UL and/or DL traffic distribution rules between the 3GPP and Non-3GPP accesses together with associated parameters (when applicable) for the traffic matching the service data flow. | Optional |
| Steering mode indicator | Indicates either autonomous load-balance operation or UE-assistance operation, if the steering mode is set to "LOAD\_BALANCING". | Optional |
| Threshold value(s) | Indicates, as applicable for the steering mode, the threshold value(s) for maximum RTT or maximum Packet Loss Rate, or both. | Optional |
| Charging for Non-3GPP access | Indicates parameters used for charging packets carried via Non-3GPP access for a MA PDU Session. The same set of parameters as for the Charging information above applies. If a parameter is not included here, the value provided in the Charging information above applies. | Optional |
| Usage Monitoring for Non-3GPP access | Indicates parameters used to monitor usage of the packets carried via Non-3GPP access for a MA PDU Session. The same set of parameters as for the Usage Monitoring information above applies. If a parameter is not included here, the value provided in the Usage Monitoring information above applies. | Optional |
| Transport Mode | The Transport Mode indicates the transport mode for transimitting a UDP flow between UE and UPF. The transport mode should be applied by the MPQUIC functionality for the matching traffic. It shall only be included when the steering functionality is MPQUIC functionality. | Conditional |
|  | **IPTV (NOTE 1)** |  |
| IP Multicast traffic control information | Indicates whether the service data flow, corresponding to the service data flow template, is allowed or not allowed. | Optional |
|  | **QoS Monitoring** |  |
| QoS parameter(s) to be measured | Indicates the QoS parameters to be monitored, e.g.UL packet delay, DL packet delay or round trip packet delay. | Optional |
| Reporting frequency | Defines the frequency for the reporting, such as event triggered or periodic. | Optional |
| Target of reporting | Defines the target of the QoS Monitoring reports; it corresponds tor the AF, as decided by the PCF or included when the indication of direct event notification is received from the AF. | Optional |
| Indication of direct event notification | Indicates that the QoS Monitoring event shall be reported by the UPF directly to the AF or Local NEF indicated by the Target of reporting. | Optional |
| Data Collection Application Identifier | Indicates that the PCC Rule is associated to a QoS monitoring event exposure subscription initiated by the NF service consumer (e.g. NWDAF) that provides an application identifier that matches this value. | Optional |
|  | **Alternative QoS Parameter Sets (NOTE 2)** |  |
| Packet Delay Budget | Indicates the packet delay budget in this Alternative QoS Parameter Set. | Optional |
| Packet Error Rate | Indicates the packet error rate in this Alternative QoS Parameter Set. | Optional |
| GBR (UL/DL) | The uplink/downlink guaranteed bitrate authorized for the service data flow in this Alternative QoS Parameter Set. | Optional |
|  | **TSCAI Input container** |  |
| Burst Arrival Time | Indicates the burst arrival time in reference to TSN GM for TSN or external GM for non-TSN applications at ingress port. | Optional |
| Periodicity | The time period (in reference to TSN GM for TSN or external GM for non-TSN applications) between start of two bursts. | Optional |
| Flow Direction | Direction of the flow. | Optional |
| Survival Time | It refers to the time period an application can survive without any burst. It is expressed in reference to the TSN GM for TSN and external GM for non-TSN applications. | Optional |
| Time Domain | Indicate the (g)PTP domain the (TSN)AF is located in. | Optional |
| Burst Arrival Time window | Indicates the acceptable earliest and latest arrival time of the data burst in reference to the external GM for non-TSN applications at ingress port. | Optional |
| Capability for BAT adaptation | Indicates the capability for AF to adjust the burst sending time according to the network provided Burst Arrival Time offset. | Optional |
| Periodicity Range | Indicates the capability for AF to adjust the periodicity and provides either the acceptable periodicity range or the acceptable periodicity set. It can be formulated as lower bound and upper bound of the periodicity for the acceptable periodicity range, or as a list of value(s) of the periodicity for the acceptable periodicity set. | Optional |
|  | **Traffic Parameter Information** |  |
| Periodicity (UL/DL) | Indicates the time period between start of two data bursts in UL/DL direction (represents Traffic Parameter information for power saving as specified in clause 5.37.8 of 3GPP TS 23.501 [2]). | Optional |
|  | **Traffic Parameter Measurement** |  |
| Traffic Parameter(s) to be measured | Indicates to measure the N6 Jitter information associated with DL Periodicity and, optionally, the UL/DL Periodicity. | Optional |
| Reporting condition | Defines the condition for the reporting, such as event triggered or periodic, frequency. | Optional |
|  | **Indirect Feature Negotiation** |  |
| Supported Features of NF Service Consumer | Network Function Service Consumer features supported per service. | Optional |
| **PDU Set Control Information** | | |
| PDU Set QoS parameters (UL/DL) | The UL and/or DL PDU Set QoS parameter(s), including both PDU Set Delay Budget and PDU Set Error Rate, and/or PDU Set Integrated Handling Information, authorized for the service data flow (See clause 5.7.7 of 3GPP TS 23.501 [2]). | Optional |
| **Protocol Description** | | |
| Protocol Description (UL/DL) | Indicates the protocol used by the application server. It is used to detect PDU Set Information of packets and/or last packet of the Data Burst (See 3GPP TS 23.501 [2] clause 5.37.5 and clause 5.37.8). | Optional |
| **Data Burst Handling Information** | | |
| End of Data Burst Marking Indication | Indicates to detect last PDU of the data burst and to mark End of Data Burst Indication (See clause 5.37.8 of TS 23.501 [2]) on the last PDU. | Optional |
| NOTE 1: Only applicable to the 5G-RG connecting to the 5GC via NG-RAN as defined in Annex C.  NOTE 2: Only applicable for GBR service data flow with QoS Notification Control enabled.  NOTE 3: The parameter "Bind to QoS Flow associated with the default QoS rule and apply PCC rule parameters" defined in table 6.3.1 of 3GPP TS 23.503 [6] is implemented as follows: a default QoS with a GBR type or delay critical GBR type 5QI and a PCC rule bound to the default QoS flow are provisioned as defined in clause 4.2.6.2.1.  NOTE 4: The parameter "Indication of exclusion from session level monitoring" defined in table 6.3.1 of 3GPP TS 23.503 [6] is implemented as follows: a PCC rule identifier is included within the "exUsagePccRuleIds" attribute of the UsageMonitoringData instance of PDU session level usage monitoring to indicate that the service data flow shall be excluded from PDU Session usage monitoring as defined in clause 4.2.6.5.3.  NOTE 5: The indication of traffic correlation shall be provided only when all the PDU sessions related to the 5G VN group member UEs should be correlated by a common DNAI in the user plane for the traffic as described in 3GPP TS 23.501 [2], clause 5.6.7.1 and clause 5.29.  NOTE 6: When the "L4S" feature is supported, the indication of ECN marking for L4S shall be provided only when the PCF is configured to provide an explicit indicator to the SMF to enable ECN marking for L4S for the traffic identified by the SDF template. | | |

The above information is organized into a set of decision data objects as defined in clause 4.1.4.4. The exact encoding of PCC rules is defined in clause 5.6.2.6.

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

4.1.4.4.2 Traffic control data definition

Traffic control data defines how traffic data flows associated with a rule are treated (e.g. blocked, redirected). The traffic control data encoding table is defined in clause 5.6.2.10.

Traffic control data shall include:

- Traffic Control Data ID.

Traffic control data may include:

- Flow status;

- ECN marking for L4S support indication;

- Redirect Information;

- Mute Notification;

- Traffic Steering Policy ID UL;

- Traffic Steering Policy ID DL;

- Metadata;

- Routing requirements;

- UP path change event subscription from the AF;

- Information on User Plane Latency requirements;

- EAS IP replacement information;

- Indication of traffic correlation;

- Correlation information for common EAS and DNAI selection potentially together with the NEF information for the notification related to UE members of the set of UEs identified by traffic correlation ID;

- Indication of simultaneous connectivity temporarily maintained for source and target PSA during edge relocation and guidance about when the connectivity over the source PSA can be removed;

- Indication of whether to consider N6 delay or not;

- Access Traffic Steering Functionality;

- Transport Mode, if the steering functionality is MPQUIC functionality;

- Access Traffic Steering Mode DL;

- Access Traffic Steering Mode; and

- Optionally, Access Traffic Steering Mode Indicator or Access Traffic Steering Mode Threshold;

- Access Traffic Steering Mode UL; and

- Access Traffic Steering Mode; and

- Optionally, Access Traffic Steering Mode Indicator or Access Traffic Steering Mode Threshold;

- Multicast Access Control; and

- The data burst end marking indication.

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

4.2.6.2.6.2 Steering the traffic to a local access of the data network

This procedure is only applicable in non-roaming and visited access (i.e. LBO) scenarios.

The PCF shall determine if the ongoing PDU Session is impacted by the routing of traffic to a local access to a data network as follows:

- If the AF request includes the individual IP address/ prefix allocated to a UE or the UE MAC address, the PCF shall store the received traffic routing information and perform session binding as defined in clause 6.2 of 3GPP TS 29.513 [7] to determine the impacted PDU session.

- Otherwise, the PCF fetches from the UDR, as defined in 3GPP TS 29.519 [15], the traffic routing data information applicable for a UE, any UE or one or more Internal Group Id(s) (if received in the SMF request) and/or subscriber category(ies).

NOTE 1: If the UDR provides as part of the traffic routing data information a list of Internal Group Id(s), this information applies to all the PDU sessions related to UEs that belong to every one of these groups, i.e. a single UE needs to be a member of every group in the list of Internal Group Id(s). If the list of subscriber category(ies) is part of the traffic routing data information, this information applies to all the PDU sessions related to the UEs that belong to every one of these Subscriber Categories.

Then the PCF authorizes the request for influencing SMF routing decisions. For the impacted PDU Session that corresponds to the AF request, the PCF shall take into account, if available, the local routing indication stored in the policy data subscription information in the UDR, as defined in 3GPP TS 29.519 [15], to determine whether it is allowed to generate PCC rules with traffic routing information. When allowed, the PCC rules are generated based on the AF request as follows:

- When the request is for influencing SMF routing decisions, based on traffic routing information, operator's policy, etc., the PCF determines the traffic steering policy. The traffic steering policy indicates, for each DNAI, a traffic steering policy identifier configured in the SMF and/or if the N6 routing information associated to the application is explicitly provided by the AF, the N6 routing information (as provided by the AF). The traffic steering policy identifier is derived by the PCF from the routing profile Id provided by the AF and is related to the mechanism enabling traffic steering to the DN. Then:

- The PCF shall include within each PccRule data structure the necessary information to identify the concerned traffic within either the "flowInfos" attribute or the "appId" attribute, and include within the TrafficControlData data type that the PCC rule refers to a list of locations that the traffic shall be routed to in the "routeToLocs" attribute, and, if the "AF\_latency" feature is supported, the PCF shall include the maximum allowed user plane latency within the "maxAllowedUpLat" attribute if available. If "EASIPreplacement" feature is supported, the PCF shall include the EAS IP replacement information within the "easIpReplaceInfos" attribute if available.

- Within each RouteToLocation instance, the PCF shall include a DNAI in the "dnai" attribute to indicate the location of the application towards which the traffic routing is applied, and a traffic steering policy identifier in the "routeProfId" attribute, to indicate the traffic steering policy that applies to the indicated DNAI, and/ or the explicit N6 traffic routing information in the "routeInfo" attribute.

- If the AF provides both a routing profile Id and N6 routing information for a DNAI, the PCF may include a RouteToLocation instance with the required information or may include two RouteToLocation instances with the same DNAI within the "dnai" attribute and a traffic steering policy identifier within the "routeProfId" attribute in one instance and explicit routing information within the "routeInfo" attribute in the other instance.

NOTE 2: The N6 traffic routing requirements are related to the mechanism enabling traffic steering in the local access to the DN. The routing profile ID refers to a pre-agreed policy between the AF and the 5GC. This policy may refer to different steering policy identifier(s) sent to the SMF and e.g. based on time of the day, etc.

NOTE 3: When per DNAI both, the "routeProfId" and the "routeInfo"attributes are provided, if the pre-configured traffic steering policy referenced by the "routeProfId" attribute contains information that is overlapping with the N6 traffic routing information provided in the "routeInfo" attribute, the N6 traffic routing information takes precedence.

NOTE 4: In this release of the specification, either a traffic steering policy identifier for UL or a traffic steering policy identifier for DL can be defined per DNAI.

- When the request is for subscribing to UP path change events of the PDU session, the PCF shall include the information on AF subscription to UP path change events within the PCC rule(s) to request the SMF to create a subscription to such notifications for the AF. In order to do so, the PCF shall include within each PccRule data structure the necessary information to identify the concerned traffic within either the "flowInfos" attribute or the "appId" attribute, and include within the Traffic Control Data decision that the PCC rule refers to the information on AF subscription to events within the "upPathChgEvent" attribute. Within this "upPathChgEvent" attribute, the PCF shall include the "dnaiChgType" attribute to indicate the type of notification (i.e. early notification, late notification or both), the notification URI within the "notificationUri" attribute, the notification correlation Id within the "notifCorreId" attribute, and if the URLLC feature is supported, an indication of AF acknowledgement to be expected within the "afAckInd" attribute. In order to enable the AF to identify the AF request to which the notification corresponds when the AF receives a UP path change notification from the SMF, as defined in clause 4.2.2.2 of 3GPP TS 29.508 [12], the PCF shall set the values of the "notificationUri" attribute and "notifCorreId" attribute respectively as follows:

- If the PCF fetches the traffic routing data information from the UDR, the PCF shall set the value of the "notificationUri" attribute to the value of the "upPathChgNotifUri" attribute of the TrafficInfluData data structure and set the value of the "notifCorreId" attribute to the value of the "upPathChgNotifCorreId" attribute of the TrafficInfluData data structure as defined in 3GPP TS 29.519 [15].

- If the PCF receives the traffic routing data information from the AF via N5 interface, the PCF shall set the values of the "notificationUri" attribute and the "notifCorreId" attribute according to the "upPathChgSub" attribute within the AfRoutingRequirement data structure as defined in 3GPP TS 29.514 [17].

If the NEF/AF provided information about the feature support on Nsmf\_EventExposure service as described in 3GPP TS 29.514 [17] (AF request applies an individual UE address) or 3GPP TS 29.519[15] (AF request applies to PDU sessions not identified by a UE address), the PCF may also include this information within the "nscSuppFeats" attribute included within the PccRule data type.

- If the AF request includes an indication that application relocation is not possible, the PCF shall include within the PccRule data instance(s) the necessary information to identify the traffic within either the "flowInfos" attribute or the "appId" attribute and the "appReloc" attribute set to true. In this case, the SMF shall ensure that for the traffic related with the concerned application, no DNAI change takes place once selected initially for this application.

- If the "EASDiscovery" feature is supported and the AF request includes an indication that EAS rediscovery is required, the PCF shall include within the PccRule data instance(s) the necessary information to identify the traffic within the "appId" attribute and the "easRedisInd" attribute set to true.

- If the URLLC feature is supported and the AF request includes an indication that the UE IP address preservation should be considered, the PCF shall include within the concerned PccRule data instance(s) the "addrPreserInd" attribute set to true.

- If the AF request includes an indication that the PDU session should be correlated via a common DNAI for a given traffic, the PCF shall include within the TrafficControlData data instance provisioned for one or more PCC rule(s), the "traffCorreInd" attribute set to true.

NOTE 5: The indication of traffic correlation can be provided together with the traffic routing information by the AF for all the members of the 5G VN group. Referred to clause 5.29.4 of 3GPP TS 23.501 [2].

- If the feature "SimultConnectivity" is supported and the AF request includes an indication that the simultaneous connectivity may be temporarily maintained for the target and the source PSA during the edge re-location procedure, the PCF may include within the TrafficControlData data instance provisioned for one or more PCC rule(s) the "simConnInd" attribute set to true, as indicated by the AF. If the feature "SimultConnectivity" is supported and the AF request includes the time interval to be considered for inactivity of the traffic routed through the source PSA after which the simultaneous connectivity can be terminated, the PCF may also include the received duration within the "simConnTerm" attribute.

- If the feature "N6DelayMeasurement" is supported and AF includes an indication to consider the N6 delay, the PCF may include within the TrafficControlData data instance provisioned for one or more PCC rule(s) the "n6DelayInd" attribute set to true, as indicated by the AF.

- If the feature "CommonEASDNAI" is supported and AF includes a traffic correlation information within "tfcCorreInfo" attribute, and

- if the AF request also includes an indication that the PDU session should be correlated via a common DNAI, the PCF shall include the TrafficControlData data instance provisioned for one or more PCC rule(s), "COMMON\_DNAI" within the "corrType" attribute and the identification of a set of UEs accessing the application identified by the service data flow template within the "tfcCorrId" attribute. If the NEF has added its information in the AF request in order to be notified with information related to UE members of the set of UEs identified by traffic correlation ID, then the PCF shall include also the "notifUri" and "notifCorrId" attributes within the "tfcCorreInfo" attribute of the TrafficControlData; or

- if the AF request also includes an indication that a common EAS for the application identified by the service data flow template should be selected, the PCF shall include the TrafficControlData data instance provisioned for one or more PCC rule(s), the "COMMON\_EAS" within the "corrType" attribute, the identification of a set of UEs accessing the application identified by the service data flow template within the "tfcCorrId" attribute, the common EAS address(s) within the "comEasIpv4Addr" attribute and/or "comEasIpv6Addr" attribute and/or the FQDN range corresponding to the application within the "fqdnRange" attribute. If the NEF has added its information in the AF request in order to be notified with information related to UE members of the set of UEs identified by traffic correlation ID, then the PCF shall include also the "notifUri" and "notifCorrId" attributes within the "tfcCorreInfo" attribute of the TrafficControlData.

NOTE 6: Common EAS selection means the common DNAI is selected.

The PCF shall provide the PCC rule(s) as defined in clause 4.2.6.2.1.

If the temporal validity condition is received, the PCF shall evaluate the temporal validity condition of the AF request and inform the SMF to install or remove the corresponding PCC rule(s) according to the evaluation result. When policies specific to the PDU Session and policies general to multiple PDU Sessions exist, the PCF gives precedence to the PDU Session specific policies over the general policies.

If the spatial validity condition is received, the PCF considers the latest known UE location to determine the PCC rules provided to the SMF. In order to do that, the PCF shall request the SMF to report the notifications about change of UE location in an area of interest (i.e. Presence Reporting Area) as defined in clauses 4.2.2.13 or 4.2.3.19. The subscribed area of interest may be the same as the one provided in spatial validity condition, or may be a subset of the spatial validity condition (e.g. a list of TAs) based on the latest known UE location. When the SMF detects that the UE entered the area of interest subscribed by the PCF, the SMF notifies the PCF and the PCF provides to the SMF the PCC rule(s) described above. When the SMF becomes aware that the UE left the area subscribed by the PCF, the SMF notifies the PCF and the PCF may remove or provide updated PCC rule(s) to the SMF.

When the PCC rules are installed, the SMF may, based on local policies, take the information in the PCC rule(s) into account to:

- if the PDU Session is of IP type and the "addrPreserInd" attribute is included and set to true in the PCC rule(s), the SMF should preserve the UE IP address and, if necessary, not reselect the related PSA UPF for the traffic identified in the PCC rule once the PSA UPF is selected; otherwise, the SMF (re)selects UPF(s) as it might be required for PDU Sessions.

- activate mechanisms for traffic multi-homing or enforcement of an UL Classifier (UL CL).

- inform the AF of the (re)selection of the UP path (change of DNAI) and/or the candidate DNAI(s) for the PDU Session if the "CommonEASDNAI" feature is supported and the "candDnaiInd" attribute was set to "true".

- determine the target DNAI(s) for the current UE location, which may imply I-SMF selection or removal to be requested to the AMF as defined in 3GPP TS 29.502 [22].

- if the "traffCorreInd" attribute set to true is included in the TrafficControlData data type referenced by a set of PCC rules, based on SMF implementation and local configuration, the SMF should select a common DNAI from the list of DNAI included in the "routeToLocs" attribute for the identified traffic of the PDU session.

- if the "simConnInd" attribute set to true is included in the TrafficControlData data type referenced by a set of PCC rules, the SMF may temporarily maintain simultaneous connectivity for the source and target PSA at edge relocation procedure, and may influence the establishment of a temporary N9 forwarding tunnel between the source UL CL and target UL CL. If the "simConnTerm" attribute is also included, the SMF may consider the indicated time interval as the minimum one to be considered for inactivity for the described traffic before the connectivity over the source PSA may be removed.

- if the "maxAllowedUpLat" attribute is received, SMF may use this value to decide whether edge relocation is needed to ensure that the user plane latency does not exceed the value and whether to relocate the PSA UPF to satisfy the user plane latency.

- if the "easIpReplaceInfos" attribute is received, the SMF may instruct the local PSA UPF with the EAS IP replacement information using "Outer Header Creation" as defined in 3GPP TS 29.244 [13] clause 8.2.56 and "Outer Header Removal" as defined in 3GPP TS 29.244 [13] clause 8.2.64. The PSA UPF shall be configured by the SMF to perform one creation and one removal of the appropriate outer header(s) both in the uplink and in the downlink direction in a way that the address information indicated by the "source" attribute (within "easIpReplaceInfos") is used in the headers of the packets towards the UE and the address information indicated by the "target" attribute (within "easIpReplaceInfos") is used in the headers of the packets towards the DN.

- if the "easRedisInd" attribute set to true is included, the SMF may indicate the UE to refresh the cached EAS information as defined in clause 6.3.2 of 3GPP TS 24.501 [20].

- if the "n6DelayInd" attribute set to true is included, the SMF may trigger N6 delay measurements and consider the results for traffic steering decisions.

- if the "tfcCorreInfo" attribute is received, and,

- if the "COMMON\_DNAI" is included within the "corrType" attribute in the TrafficControlData data type referenced by a set of PCC rules, based on SMF implementation and local configuration, the SMF should select a common DNAI from the list of DNAI included in the "routeToLocs" attribute for the traffic of the PDU session which have the same traffic correlation Id within the "tfcCorrId" attribute as defined in clause 6.2.3.2.6 of TS 23.548 [62]. The SMF shall use the provided DNAI as the common DNAI when only one is included in the "routeToLocs" attribute; or

- if the "COMMON\_EAS" is included within the "corrType" attribute in the TrafficControlData data type referenced by a set of PCC rules, the SMF should use the value within the "fqdnRange" if received to match the FQDN received from the EASDF via the Neasdf\_DNSContext\_Notify request. If they are matched, the SMF may indicate the UE the common EAS address(s) received within the "comEasIpv4Addr" attribute and/or "comEasIpv6Addr" attribute.

NOTE 7: In order for the SMF to initiate the EASDF-based EAS discovery procedure, the SMF will use the FQDN information received within the "fqdnRange" attribute for setting traffic route and finding DNAI. The "flowInfos" attribute or the "appId" attribute will not be considered for that purpose.

- if the "notifUri" attribute and "notifCorrId" attribute are included, the SMF shall notify the 5GC determined information for a set of UEs identified by Traffic Correlation ID.

NOTE 8: Common EAS selection means the common DNAI is selected.

If routing of traffic to a local access to a data network policy provided in the "routeToLocs" attribute is invalid, unknown or not applicable, or the enforcement of the steering of the traffic to the indicated DNAI failed, the SMF shall return a PCC Rule Error Report, as specified in clauses 4.2.3.16 and 4.2.4.15, and set the "failureCode" attribute to "DNAI\_STEERING\_ERROR".

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

5.6.2.10 Type TrafficControlData

**Table 5.6.2.10-1: Definition of type TrafficControlData**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Attribute name** | **Data type** | **P** | **Cardinality** | **Description** | **Applicability** |
| tcId | string | M | 1 | Univocally identifies the traffic control policy data within a PDU session. |  |
| l4sInd | UplinkDownlinkSupport | O | 0..1 | When provided, it represents an explicit indication of whether ECN marking for L4S support is supported for the UL, the DL or both, UL and DL. | L4S |
| flowStatus | FlowStatus | O | 0..1 | Enum determining what action to perform on traffic. Possible values are: [enable, disable, enable\_uplink, enable\_downlink]. The default value "ENABLED" shall apply, if the attribute is not present and has not been supplied previously.  (NOTE 3) |  |
| redirectInfo | RedirectInformation | O | 0..1 | It indicates whether the detected application traffic should be redirected to another controlled address. | ADC |
| addRedirectInfo | array(RedirectInformation) | O | 1..N | Additional redirection information.  Each element indicates whether the detected application traffic should be redirected to another controlled address. | ADCmultiRedirection |
| muteNotif | boolean | O | 0..1 | Indicates whether application's start or stop notifications are to be muted.  It shall be set to true to indicate application’s start or stop notifications are muted. When it is set to false, it indicates application’s start or stop notifications are not muted. The default value false shall apply, if the attribute is not present and has not been supplied previously. | ADC |
| trafficSteeringPolIdDl  (NOTE 1) | string | O | 0..1 | Reference to a pre-configured traffic steering policy for downlink traffic at the SMF. | TSC |
| trafficSteeringPolIdUl  (NOTE 1) | string | O | 0..1 | Reference to a pre-configured traffic steering policy for uplink traffic at the SMF. | TSC |
| metadata | Metadata | O | 0..1 | This datatype contains opaque information for the service functions in the N6-LAN that is provided by AF and transparently sent to UPF. May be only provided when "trafficSteeringPolIdDl" and/or "trafficSteeringPolIdUl" are provided for the first time. | SFC |
| routeToLocs  (NOTE 1) | array(RouteToLocation) | O | 1..N | A list of location(s) to which the traffic shall be routed for the AF request. | TSC |
| maxAllowedUpLat | UintegerRm | O | 0..1 | Indicates the target user plane latency in units of milliseconds. The SMF may use this value to decide whether edge relocation is needed to ensure that the user plane latency does not exceed the value. | AF\_latency |
| easIpReplaceInfos | array(EasIpReplacementInfo) | O | 1..N | Contains EAS IP replacement information. | EASIPreplacement |
| traffCorreInd | boolean | O | 0..1 | Indication of traffic correlation. If it is included and set to "true", traffic should be correlated; The default value "false" applies, if the attribute is not present and has not been supplied previously. (NOTE 2) |  |
| tfcCorreInfo | TrafficCorrelationInfo | O | 0..1 | Contains the information for traffic correlation. | CommonEASDNAI |
| simConnInd | boolean | O | 0..1 | Indication of simultaneous connectivity temporarily maintained for the source and target PSA. If it is included and set to "true", temporary simultaneous connectivity should be kept. The default value "false" applies, if the attribute is not present and has not been supplied previously. | SimultConnectivity |
| simConnTerm | DurationSec | C | 0..1 | Indication of the minimum time interval to be considered for inactivity of the traffic routed via the source PSA during the edge re-location procedure.  It may be included when the "simConnInd" attribute is set to true. | SimultConnectivity |
| n6DelayInd | boolean | O | 0..1 | Indicates whether the N6 delay is requested to be considered or not.  - "true" indicates that the N6 delay is requested to be considered.  - "false" indicates that the N6 delay is not requested to be considered.  - The default value is “false”, if omitted. | N6DelayMeasurement |
| upPathChgEvent | UpPathChgEvent | O | 0..1 | Contains the information about the AF subscription to UP path change events. | TSC |
| steerFun | SteeringFunctionality | O | 0..1 | Indicates the applicable traffic steering functionality. | ATSSS |
| transMode | TransportMode | C | 0..1 | It identifies the transport mode for transmitting a UDP flow between the UE and the UPF. The transport mode shall be included if the steering functionality indicated in the "steerFun" attribute is MPQUIC. Otherwise, if the steering functionality is not MPQUIC, the transport mode shall not be included. | EnATSSS\_v2 |
| steerModeDl | SteeringMode | O | 0..1 | Determines the traffic distribution rule across 3GPP and Non-3GPP accesses to apply for downlink traffic. | ATSSS |
| steerModeUl | SteeringMode | O | 0..1 | Determines the traffic distribution rule across 3GPP and Non-3GPP accesses to apply for uplink traffic. | ATSSS |
| mulAccCtrl | MulticastAccessControl | O | 0..1 | Indicates whether the service data flow, corresponding to the service data flow template, is allowed or not allowed. The default value "NOT\_ALLOWED" applies, if the attribute is not present and has not been supplied previously. | WWC |
| candDnaiInd | boolean | O | 0..1 | Indication of reporting candidate DNAI(s). If it is included and set to "true", the candidate DNAI(s) for the PDU session need to be reported. Otherwise set to "false" or omitted. | CommonEASDNAI |
| datEndMarkInd | boolean | O | 0..1 | The data burst end marking is enabled if it is set to "true". Default value is "false" if omitted. | PowerSaving |
| NOTE 1: If SFC feature is not supported, traffic steering policy identifier(s) (i.e. "trafficSteeringPolIdDl" attribute and/or "trafficSteeringPolIdUl" attribute) and N6 traffic routing requirements (i.e. "routeToLocs" attribute) are mutually exclusive; otherwise, they can be provided simultaneously.  NOTE 2: The TSC feature shall be supported in order to support this attribute. The Indication of traffic correlation shall be provided only when all the PDU sessions related to the 5G VN group member UEs should be correlated by a common DNAI in the user plane for the traffic as described in 3GPP TS 23.501 [2], clause 5.6.7.1 and clause 5.29.  NOTE 3: The "flowStatus" attribute and the "mulAccCtrl" attribute are mutually exclusive. | | | | | |

\*\*\* 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 clause 6.6 of 3GPP TS 29.500 [4].

**Table 5.8-1: Supported Features**

|  |  |  |
| --- | --- | --- |
| **Feature number** | **Feature Name** | **Description** |
| 1 | TSC | This feature indicates support for traffic steering control in the (S)Gi-LAN, steering the 5G-LAN type of services or routing of the user traffic to a local Data Network identified by the DNAI per AF request. If the NF service consumer supports this feature, the PCF shall behave as described in clause 4.2.6.2.6. |
| 2 | ResShare | This feature indicates the support of service data flows that share resources. If the NF service consumer supports this feature, the PCF shall behave as described in clause 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 clause 4.2.3.17. If NF service consumer supports this feature the PCF may provision AF signalling IP flow information. |
| 9 | PCSCF-Restoration-Enhancement | This feature indicates support of P-CSCF Restoration Enhancement. It is used for the NF service consumer to indicate if it supports P-CSCF Restoration Enhancement. |
| 10 | PRA | This feature indicates the support of presence reporting area change reporting. The support of the update of a UE Dedicated Presence Reporting Area is unspecified. |
| 11 | RuleVersioning | This feature indicates the support of PCC rule versioning as defined in clause 4.2.6.2.14. |
| 12 | SponsoredConnectivity | This feature indicates support for sponsored data connectivity feature. If the NF service consumer supports this feature, the PCF may authorize sponsored data connectivity to the subscriber. |
| 13 | RAN-Support-Info | This feature indicates the support of maximum packet loss rate value(s) for uplink and/or downlink voice service data flow(s). |
| 14 | PolicyUpdateWhenUESuspends | This feature indicates the support of report when the UE is suspended and then resumed from suspend state. Only applicable to the interworking scenario as defined in Annex B. |
| 15 | AccessTypeCondition | This feature indicates the support of access type conditioned authorized Session-AMBR as defined in clause 4.2.6.3.2.4. |
| 16 | MultiIpv6AddrPrefix | This feature indicates the support of additional new/removed (up to two) 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 clauses 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 clause 4.2.3.25 and 4.2.4.24. Reporting of monitoring data applies to packet delay information when only this feature is supported. |
| 25 | AuthorizationWithRequiredQoS | Indicates support of policy authorization for the AF session with required QoS as defined in clause 4.2.3.22. |
| 26 | EnhancedBackgroundDataTransfer | Indicates the support of applying the Background Data Transfer Policy to a future PDU session. |
| 27 | DN-Authorization | This feature indicates the support of DN-AAA authorization data for policy control. |
| 28 | PDUSessionRelCause | Indicates the support of "PS\_TO\_CS\_HO" PDU session release cause. |
| 29 | SamePcf | This feature indicates the support of same PCF selection for the parameter's combination. |
| 30 | ADCmultiRedirection | This feature indicates support for multiple redirection information in application detection and control. It requires the support of ADC feature. |
| 31 | RespBasedSessionRel | Indicates support of handling PDU session termination functionality as defined in clause 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 clause 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 clauses 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 clause 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 clause 4.2.4.27. |
| 38 | ReallocationOfCredit | This feature indicates the support of notifications of reallocation of credit. |
| 39 | BDTPolicyRenegotiation | This feature indicates the support of the BDT policy re-negotiation. |
| 40 | ExtPolicyDecisionErrorHandling | This feature indicates the support of the error report of a faulty SM policy decision parameter as defined in clause 4.2.3.26 and 4.2.4.26. It requires the support of PolicyDecisionErrorHandling feature. |
| 41 | ImmediateTermination | This feature indicates the support of the termination the PDU session when the NF service consumer cannot ensure the UE, RAN, AMF, or UPF can revert to the status before the PDU session modification occurred, as defined in clause 4.2.4.21. |
| 42 | AggregatedUELocChanges | This feature indicates the support of notifications of serving area (i.e. tracking area) and/or serving cell changes. |
| 43 | ES3XX | Extended Support for 3xx redirections. This feature indicates the support of redirection for any service operation, according to Stateless NF procedures as specified in clauses 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 clause 6.10.9 of 3GPP TS 29.500 [4]. |
| 44 | GroupIdListChange | This feature indicates the support for the notification of changes in the list of internal group identifiers. |
| 45 | DisableUENotification | Indicates the support of disabling QoS flow parameters signalling to the UE when the SMF is notified by the NG-RAN of changes in the fulfilled QoS situation. This feature requires that the AuthorizationWithRequiredQoS featute is also supported. |
| 46 | OfflineChOnly | This feature enables the PCF to signal the "PDU Session with offline charging only" indication as defined in clause 4.2.2.3.3. |
| 47 | Dual-Connectivity-redundant-UP-paths | Indicates the support of policy authorization of end to end redundant user plane path using dual connectivity as described in clause 4.2.2.20. |
| 48 | DDNEventPolicyControl2 | This feature indicates the support for the policy control removal in the case of DDN Failure and/or Delivery Status event(s) is cancelled as defined in clause 4.2.4.27. The DDNEventPolicyControl feature shall be supported in order to support this feature. |
| 49 | VPLMN-QoS-Control | Indicates the support of QoS constraints from the VPLMN for the derivation of the authorized Session-AMBR and authorized default QoS. |
| 50 | 2G3GIWK | This feature indicates the support of GERAN and UTRAN access over N7 interface. |
| 51 | TimeSensitiveCommunication | Indicates that the 5G System is integrated within the external network as a TSC user plane node to enable the Time Sensitive Communications and Time Synchronization. This feature requires that the TimeSensitiveNetworking feature is also supported. |
| 52 | AF\_latency | This feature indicates the support of Edge relocation considering user plane latency. This feature requires that the TSC feature is also supported. |
| 53 | SatBackhaulCategoryChg | This feature indicates the support of notification of a change between different satellite backhaul categories, or between satellite backhaul and non-satellite backhaul. |
| 54 | CHFsetSupport | Indicates the support of CHF redundancy and failover mechanisms based on CHF instance availability within a CHF Set, as described in clause 4.2.2.3.1. |
| 55 | EnATSSS | Indicates the support of ATSSS enhancement. It requires the support of ATSSS feature. |
| 56 | MPSforDTS | Indicates support of the MPSfor DTS feature as described in clause 4.2.6.2.12.4. |
| 57 | RoutingInfoRemoval | Indicates the support of the removal of the "routeToLocs" attribute from the TrafficControlData instance. |
| 58 | ePRA | This feature indicates the support of presence reporting area change reporting. It additionally supports the update of the elements of a UE Dedicated Presence Reporting Area by the full replacement of the previously provided one comparing with the PRA feature. |
| 59 | AMInfluence | Indicates the support of the delivery of the PCF for the UE request to be notified by the PCF for the PDU session about PDU session established/terminated events. |
| 60 | PvsSupport | This feature indicates the support of SNPN UE Remote Provisioning via User Plane as described in clause 4.2.2.21. |
| 61 | EneNA | This feature indicates the support of NWDAF data reporting. |
| 62 | BIUMR | This feature bit indicates whether the NF Service Consumer (e.g. SMF) and PCF supports Binding Indication Update for multiple resource contexts specified in clauses 6.12.1 and 5.2.3.2.6 of 3GPP TS 29.500 [4]. |
| 63 | EASIPreplacement | This feature indicates the support of EAS IP replacement. This feature requires that the TSC feature is also supported. |
| 64 | ExposureToEAS | This feature indicates the support of exposure of QoS monitoring results to local AF. This feature requires that QosMonitoring feature is also supported. |
| 65 | SimultConnectivity | This feature indicates the support of temporary simultaneously connectivity at edge relocation. This feature requires that the TSC feature is also supported. |
| 66 | SGWRest | This feature indicates the support of SGW Restoration procedures. Only applicable to the interworking scenario as defined in Annex B. |
| 67 | ReleaseToReactivate | This feature indicates that the PCF can request the SMF for reactivation of a PDU session based on an SM Policy Association release cause. |
| 68 | EASDiscovery | This feature indicates the support of EAS (re)discovery. |
| 69 | AccNetChargId\_String | This feature indicates the support of long character strings as access network charging identifier. |
| 70 | WLAN\_Location | This feature indicates the support of the report of the WLAN location information received from the ePDG/EPC, if available. It is only applicable to EPS interworking scenarios as specified in Annex B. |
| 71 | PackFiltAllocPrecedence | This feature indicates the support of the control of the maximum number of packet filters in the EPS network in the EPS interworking scenarios as described in Annex B. |
| 72 | SatBackhaulCategoryChg\_v2 | This feature indicates the support of the indication of satellite backhaul categories, or the indication of non-satellite backhaul during the response to the update notify request. |
| 73 | PacketDelayFailureReport | Indicates the support of packet delay failure report as part of QoS Monitoring procedures. This feature requires that QosMonitoring feature is supported. |
| 74 | AltQoSProfilesSupportReport | This feature indicates the support of the report of whether Alternative QoS parameters are supported by NG-RAN. This feature requires that AuthorizationWithRequiredQoS feature is also supported. |
| 75 | Ext2PolicyDecisionErrorHandling | 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 when no PCC rules and no session rules are provided and the handling of partial errors.  It requires the support of ExtPolicyDecisionErrorHandling feature. |
| 76 | UEUnreachable | This feature indicates the support for the reporting of UE temporarily unavailable. |
| 77 | EnTSCAC | Indicates the support of extensions to TSCAC and the RAN feedback for BAT offset and adjusted periodicity.  This feature requires that TimeSensitiveCommunication feature is also supported. |
| 78 | MTU\_Size | This feature indicates the support of the report of the MTU size of the device side port. This feature requires that the TimeSensitiveCommunication feature is also supported. |
| 79 | EnSatBackhaulCatChg | This feature indicates the support of notification of dynamic satellite backhaul categories.  It requires the support of SatBackhaulCategoryChg and SatBackhaulCategoryChg\_v2 features. |
| 80 | SFC | This feature indicates support for application function influence on service function chaining(s).  It requires the support of TSC feature. |
| 81 | EpsUrsp | This feature indicates the support of URSP provisioning in EPS. Only applicable to the interworking scenario as defined in Annex B. |
| 82 | CommonEASDNAI | This feature controls the support of the common EAS/DNAI selection. It requires the support of TSC feature. |
| 83 | UnlimitedMultiIpv6Prefix | This feature indicates the support of multiple Ipv6 address prefixes reporting. |
| 84 | NscSupportedFeatures | This feature indicates the support of provisioning of the Network Function Service Consumer features supported in Nsmf\_EventExposure service as described in 3GPP TS 29.508 [12]. |
| 85 | URSPEnforcement | This feature indicates the support of awareness of URSP rule enforcement |
| 86 | VBCforIMS | This feature indicates the support of provisioning of the caller and callee informations in volume based charging for IMS as defined in clause A.16 of 3GPP TS 29.214 [18] (replacing PCRF with PCF). |
| 87 | ExposureToTSC | This feature indicates the support of the direct event notification of TSC management information from the UPF to the TSCTSF or TSN AF in 5GC.  This feature requires that TimeSensitiveCommunication feature is also supported. |
| 88 | NetSliceRepl | This feature indicates the support of the network slice replacement functionality introduced in this specification as part of the end-to-end network slicing functionality.  The following functionalities are supported:  - Support the reporting of the network slice replacement information to the PCF. |
| 89 | SessQoSModEnforcementFailure | This feature indicates the support of the report PDU session modification failure because the enforcement of the default QoS modification or session-AMBR modification of the active session rule failed. |
| 90 | HR-SBO | This feature indicates the support of VPLMN specific Offloading policy in Home Routed deployments with Session Breakout (HR-SBO). |
| 91 | EnATSSS\_v2 | Indicates the support of ATSSS enhancements which includes REDUNDANT steering mode, MPQUIC steering functionality and MA PDU session interworking enhancements. It requires the support of the EnATSSS features. |
| 92 | NetSliceUsageCtrl | This feature indicates the support of the network slice usage control functionality introduced in this specification as part of the end-to-end network slicing functionality.  The following functionalities are supported:  - Support the provisioning by the PCF of the network slice usage control information (e.g., slice PDU session inactivity timer value). |
| 93 | VPLMN-5QIPrioLevel | Indicates the support of the indication of the VPLMN supported 5QI priority level when the required 5QI Priority Level is different from the standardized Default Priority Level value in the QoS characteristics Table 5.7.4-1 in 3GPP TS 23.501 [2].  This feature requires that VPLMN-QoS-Control feature is also supported. |
| 94 | PDUSetHandling | This feature indicates the support of PDU Set handling. This feature may be used for eXtended Reality (XR) and interactive media services. |
| 95 | EnQoSMon | This feature indicates the support of enhanced QoS monitoring functionality, i.e. the report of the congestion information, and/or, the data rate information monitoring.  This feature requires that QosMonitoring feature is supported. |
| 96 | PowerSaving | This feature indicates the PCC support for UE Power Saving management.  The following functionalities are supported:  - Policy provisioning of Periodicity and N6 Traffic Parameters to be measured.  - End of Data Burst Handling. |
| 97 | L4S | This feature indicates the support of the PCF indication of ECN marking for L4S support. |
| 98 | UPEAS | This feature indicates the support of UPF enhancements for exposure related to the identification of QoS monitoring event exposure subscription. |
| 99 | QoSMonCapRepo | This feature indicates the support QoS Monitoring Capability Report.  This feature requires that QosMonitoring feature is supported. |
| 100 | N6DelayMeasurement | This feature indicates the support of considering N6 delay for traffic steering. |
| NOTE: 5GS and EPS release cause code information is supported. The EPS release cause code information from the access network is only applicable to EPS interworking scenarios as specified in Annex B. | | |

Editor's Note: Whether the QoSMonCapRepo feature can be applied or depended separately to/on QosMonitoring or Rel-18 QoS Monitoring functinaly(e.g. EnQoSMon) is FFS.

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

A.2 Npcf\_SMPolicyControl API

openapi: 3.0.0

info:

title: Npcf\_SMPolicyControl API

version: 1.4.0-alpha

description: |

Session Management Policy Control Service

© 2024, 3GPP Organizational Partners (ARIB, ATIS, CCSA, ETSI, TSDSI, TTA, TTC).

All rights reserved.

externalDocs:

description: 3GPP TS 29.512 V19.0.0; 5G System; Session Management Policy Control Service.

url: 'https://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 clause 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':

$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'

'502':

$ref: 'TS29571\_CommonData.yaml#/components/responses/502'

'503':

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

default:

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

callbacks:

SmPolicyUpdateNotification:

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

post:

requestBody:

required: true

content:

application/json:

schema:

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

responses:

'200':

description: >

OK. The current applicable values corresponding to the policy control request

trigger is reported.

content:

application/json:

schema:

oneOf:

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

- type: array

items:

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

minItems: 1

- type: array

items:

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

minItems: 1

'204':

description: No Content, Notification was succesfull

'307':

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

'308':

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

'400':

description: Bad Request.

content:

application/json:

schema:

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

'401':

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

'403':

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

'404':

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

'411':

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

'413':

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

'415':

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

'429':

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

'500':

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

'502':

$ref: 'TS29571\_CommonData.yaml#/components/responses/502'

'503':

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

default:

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

SmPolicyControlTerminationRequestNotification:

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

post:

requestBody:

required: true

content:

application/json:

schema:

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

responses:

'204':

description: No Content, Notification was successful

'307':

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

'308':

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

'400':

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

'401':

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

'403':

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

'404':

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

'411':

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

'413':

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

'415':

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

'429':

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

'500':

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

'502':

$ref: 'TS29571\_CommonData.yaml#/components/responses/502'

'503':

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

default:

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

/sm-policies/{smPolicyId}:

get:

summary: Read an Individual SM Policy

operationId: GetSMPolicy

tags:

- Individual SM Policy (Document)

parameters:

- name: smPolicyId

in: path

description: Identifier of a policy association.

required: true

schema:

type: string

responses:

'200':

description: OK. Resource representation is returned.

content:

application/json:

schema:

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

'307':

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

'308':

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

'400':

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

'401':

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

'403':

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

'404':

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

'406':

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

'429':

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

'500':

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

'502':

$ref: 'TS29571\_CommonData.yaml#/components/responses/502'

'503':

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

default:

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

/sm-policies/{smPolicyId}/update:

post:

summary: Update an existing Individual SM Policy

operationId: UpdateSMPolicy

tags:

- Individual SM Policy (Document)

requestBody:

required: true

content:

application/json:

schema:

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

parameters:

- name: smPolicyId

in: path

description: Identifier of a policy association.

required: true

schema:

type: string

responses:

'200':

description: OK. Updated policies are returned

content:

application/json:

schema:

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

'307':

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

'308':

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

'400':

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

'401':

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

'403':

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

'404':

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

'411':

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

'413':

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

'415':

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

'429':

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

'500':

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

'502':

$ref: 'TS29571\_CommonData.yaml#/components/responses/502'

'503':

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

default:

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

/sm-policies/{smPolicyId}/delete:

post:

summary: Delete an existing Individual SM Policy.

operationId: DeleteSMPolicy

tags:

- Individual SM Policy (Document)

requestBody:

required: true

content:

application/json:

schema:

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

parameters:

- name: smPolicyId

in: path

description: Identifier of a policy association.

required: true

schema:

type: string

responses:

'204':

description: No content

'307':

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

'308':

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

'400':

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

'401':

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

'403':

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

'404':

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

'411':

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

'413':

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

'415':

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

'429':

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

'502':

$ref: 'TS29571\_CommonData.yaml#/components/responses/502'

'500':

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

'503':

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

default:

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

components:

securitySchemes:

oAuth2ClientCredentials:

type: oauth2

flows:

clientCredentials:

tokenUrl: '{nrfApiRoot}/oauth2/token'

scopes:

npcf-smpolicycontrol: Access to the Npcf\_SMPolicyControl API

schemas:

SmPolicyControl:

description: >

Contains the parameters used to request the SM policies and the SM policies authorized by

the PCF.

type: object

properties:

context:

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

policy:

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

required:

- context

- policy

SmPolicyContextData:

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

type: object

properties:

accNetChId:

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

chargEntityAddr:

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

gpsi:

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

supi:

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

invalidSupi:

type: boolean

description: >

When this attribute is included and set to true, it indicates that the supi attribute

contains an invalid value.This attribute shall be present if the SUPI is not available

in the SMF or the SUPI is unauthenticated. When present it shall be set to true for an

invalid SUPI and false (default) for a valid SUPI.

interGrpIds:

type: array

items:

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

minItems: 1

pduSessionId:

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

pduSessionType:

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

chargingcharacteristics:

type: string

dnn:

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

dnnSelMode:

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

notificationUri:

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

accessType:

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

ratType:

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

addAccessInfo:

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

servingNetwork:

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

userLocationInfo:

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

ueTimeZone:

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

pei:

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

ipv4Address:

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

ipv6AddressPrefix:

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

ipDomain:

type: string

description: Indicates the IPv4 address domain

subsSessAmbr:

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

authProfIndex:

type: string

description: Indicates the DN-AAA authorization profile index

subsDefQos:

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

vplmnQos:

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

numOfPackFilter:

type: integer

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

online:

type: boolean

description: >

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

offline:

type: boolean

description: >

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

3gppPsDataOffStatus:

type: boolean

description: >

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

refQosIndication:

type: boolean

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

traceReq:

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

sliceInfo:

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

altSliceInfo:

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

qosFlowUsage:

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

servNfId:

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

suppFeat:

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

smfId:

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

recoveryTime:

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

maPduInd:

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

atsssCapab:

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

ipv4FrameRouteList:

type: array

items:

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

minItems: 1

ipv6FrameRouteList:

type: array

items:

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

minItems: 1

satBackhaulCategory:

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

pcfUeInfo:

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

pvsInfo:

type: array

items:

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

minItems: 1

onboardInd:

type: boolean

description: >

If it is included and set to true, it indicates that the PDU session is used for

UE Onboarding.

nwdafDatas:

type: array

items:

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

minItems: 1

urspEnfInfo:

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

sscMode:

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

ueReqDnn:

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

ueReqPduSessionType:

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

hrsboInd:

type: boolean

description: >

HR-SBO support indication. If present and set to "true", it indicates that the HR-SBO is

supported. Default value is "false" if omitted.

uePolFailReport:

$ref: 'TS29525\_Npcf\_UEPolicyControl.yaml#/components/schemas/UePolicyTransferFailureCause'

required:

- supi

- pduSessionId

- pduSessionType

- dnn

- notificationUri

- sliceInfo

SmPolicyDecision:

description: Contains the SM policies authorized by the PCF.

type: object

properties:

sessRules:

type: object

additionalProperties:

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

minProperties: 1

description: >

A map of Sessionrules with the content being the SessionRule as described in

clause 5.6.2.7. The key used in this map for each entry is the sessRuleId

attribute of the corresponding SessionRule.

pccRules:

type: object

additionalProperties:

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

minProperties: 1

description: >

A map of PCC rules with the content being the PCCRule as described in

clause 5.6.2.6. The key used in this map for each entry is the pccRuleId

attribute of the corresponding PccRule.

nullable: true

pcscfRestIndication:

type: boolean

description: >

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

qosDecs:

type: object

additionalProperties:

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

minProperties: 1

description: >

Map of QoS data policy decisions. The key used in this map for each entry is the qosId

attribute of the corresponding QosData.

chgDecs:

type: object

additionalProperties:

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

minProperties: 1

description: >

Map of Charging data policy decisions. The key used in this map for each entry

is the chgId attribute of the corresponding ChargingData.

nullable: true

chargingInfo:

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

traffContDecs:

type: object

additionalProperties:

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

minProperties: 1

description: >

Map of Traffic Control data policy decisions. The key used in this map for each entry

is the tcId attribute of the corresponding TrafficControlData.

umDecs:

type: object

additionalProperties:

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

minProperties: 1

description: >

Map of Usage Monitoring data policy decisions. The key used in this map for each entry

is the umId attribute of the corresponding UsageMonitoringData.

nullable: true

qosChars:

type: object

additionalProperties:

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

minProperties: 1

description: >

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

qosMonDecs:

type: object

additionalProperties:

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

minProperties: 1

description: >

Map of QoS Monitoring data policy decisions. The key used in this map for each entry

is the qmId attribute of the corresponding QosMonitoringData.

nullable: true

reflectiveQoSTimer:

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

conds:

type: object

additionalProperties:

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

minProperties: 1

description: >

A map of condition data with the content being as described in clause 5.6.2.9. The key

used in this map for each entry is the condId attribute of the corresponding

ConditionData.

nullable: true

revalidationTime:

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

offline:

type: boolean

description: >

Indicates the offline charging is applicable to the PDU session when it is included and

set to true.

online:

type: boolean

description: >

Indicates the online charging is applicable to the PDU session when it is included and

set to true.

offlineChOnly:

type: boolean

default: false

description: >

Indicates that the online charging method shall never be used for any PCC rule activated

during the lifetime of the PDU session.

policyCtrlReqTriggers:

type: array

items:

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

minItems: 1

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

nullable: true

lastReqRuleData:

type: array

items:

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

minItems: 1

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

lastReqUsageData:

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

praInfos:

type: object

additionalProperties:

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

minProperties: 1

description: >

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

of the map.

nullable: true

ipv4Index:

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

ipv6Index:

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

qosFlowUsage:

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

relCause:

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

suppFeat:

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

tsnBridgeManCont:

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

tsnPortManContDstt:

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

tsnPortManContNwtts:

type: array

items:

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

minItems: 1

tscNotifUri:

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

tscNotifCorreId:

type: string

description: >

Correlation identifier for TSC management information notifications.

redSessIndication:

type: boolean

description: >

Indicates whether the PDU session is a redundant PDU session. If absent it means the PDU

session is not a redundant PDU session.

uePolCont:

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

sliceUsgCtrlInfo:

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

vplmnOffloadInfos:

type: array

items:

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

minItems: 1

description: List of VPLMN Specific offloading information.

nullable: true

vplmnDlAmbr:

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

SmPolicyNotification:

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

type: object

properties:

resourceUri:

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

smPolicyDecision:

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

PccRule:

description: Contains a PCC rule information.

type: object

properties:

flowInfos:

type: array

items:

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

minItems: 1

description: An array of IP flow packet filter information.

appId:

type: string

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

appDescriptor:

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

contVer:

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

protoDescDl:

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

protoDescUl:

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

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.

easRedisInd:

type: boolean

description: Indicates the EAS rediscovery is required.

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

clause 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

clause 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

clause 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 clause 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

clause 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 clause 5.6.2.12.

nullable: true

refCondData:

type: string

description: >

A reference to the condition data. It is the condId described in clause 5.6.2.9.

nullable: true

refQosMon:

type: array

items:

type: string

minItems: 1

description: >

A reference to the QosMonitoringData policy decision type. It is the qmId described in

clause 5.6.2.40.

nullable: true

addrPreserInd:

type: boolean

nullable: true

tscaiInputDl:

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

tscaiInputUl:

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

tscaiTimeDom:

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

capBatAdaptation:

type: boolean

description: >

Indicates the capability for AF to adjust the burst sending time, when it is provided

and set to "true". The default value is "false" if omitted.

ddNotifCtrl:

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

ddNotifCtrl2:

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

disUeNotif:

type: boolean

nullable: true

packFiltAllPrec:

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

nscSuppFeats:

type: object

additionalProperties:

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

minProperties: 1

description: >

Identifies a list of Network Function Service Consumer supported per service. The key

used in this map for each entry is the ServiceName value as defined in

3GPP TS 29.510[29].

callInfo:

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

traffParaData:

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

required:

- pccRuleId

nullable: true

SessionRule:

description: Contains session level policy information.

type: object

properties:

authSessAmbr:

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

authDefQos:

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

sessRuleId:

type: string

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

refUmData:

type: string

description: >

A reference to UsageMonitoringData policy decision type. It is the umId described in

clause 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 clause 5.6.2.12.

nullable: true

refCondData:

type: string

description: >

A reference to the condition data. It is the condId described in clause 5.6.2.9.

nullable: true

required:

- sessRuleId

nullable: true

QosData:

description: Contains the QoS parameters.

type: object

properties:

qosId:

type: string

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

5qi:

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

maxbrUl:

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

maxbrDl:

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

gbrUl:

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

gbrDl:

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

arp:

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

qnc:

type: boolean

description: >

Indicates whether notifications are requested from 3GPP NG-RAN when the GFBR can no longer

(or again) be guaranteed for a QoS Flow during the lifetime of the QoS Flow.

priorityLevel:

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

averWindow:

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

maxDataBurstVol:

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

reflectiveQos:

type: boolean

description: >

Indicates whether the QoS information is reflective for the corresponding service data

flow.

sharingKeyDl:

type: string

description: >

Indicates, by containing the same value, what PCC rules may share resource in downlink

direction.

sharingKeyUl:

type: string

description: >

Indicates, by containing the same value, what PCC rules may share resource in uplink

direction.

maxPacketLossRateDl:

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

maxPacketLossRateUl:

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

defQosFlowIndication:

type: boolean

description: >

Indicates that the dynamic PCC rule shall always have its binding with the QoS Flow

associated with the default QoS rule

extMaxDataBurstVol:

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

packetDelayBudget:

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

packetErrorRate:

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

pduSetQosDl:

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

pduSetQosUl:

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

required:

- qosId

nullable: true

ConditionData:

description: Contains conditions of applicability for a rule.

type: object

properties:

condId:

type: string

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

activationTime:

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

deactivationTime:

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

accessType:

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

ratType:

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

required:

- condId

nullable: true

TrafficControlData:

description: >

Contains parameters determining how flows associated with a PCC Rule are treated (e.g.

blocked, redirected, etc).

type: object

properties:

tcId:

type: string

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

l4sInd:

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

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

metadata:

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

routeToLocs:

type: array

items:

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

minItems: 1

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

nullable: true

maxAllowedUpLat:

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

easIpReplaceInfos:

type: array

items:

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

minItems: 1

description: Contains EAS IP replacement information.

nullable: true

traffCorreInd:

type: boolean

tfcCorreInfo:

$ref: 'TS29519\_Application\_Data.yaml#/components/schemas/TrafficCorrelationInfo'

simConnInd:

type: boolean

description: >

Indicates whether simultaneous connectivity should be temporarily maintained for the

source and target PSA.

simConnTerm:

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

n6DelayInd:

type: boolean

description: >

Indicates whether the N6 delay is requested to be considered for traffic steering.

upPathChgEvent:

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

steerFun:

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

transMode:

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

steerModeDl:

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

steerModeUl:

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

mulAccCtrl:

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

candDnaiInd:

type: boolean

description: >

Indication of reporting candidate DNAI(s). If it is included and set to "true", the

candidate DNAI(s) for the PDU session need to be reported. Otherwise set to "false" or

omitted.

datEndMarkInd:

type: boolean

description: >

The data burst end marking is enabled if it is set to "true". Default value is "false" if

omitted.

required:

- tcId

nullable: true

ChargingData:

description: Contains charging related parameters.

type: object

properties:

chgId:

type: string

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

meteringMethod:

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

offline:

type: boolean

description: >

Indicates the offline charging is applicable to the PCC rule when it is included and set

to true.

online:

type: boolean

description: >

Indicates the online charging is applicable to the PCC rule when it is included and set

to true.

sdfHandl:

type: boolean

description: >

Indicates whether the service data flow is allowed to start while the SMF is waiting for

the response to the credit request.

ratingGroup:

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

reportingLevel:

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

serviceId:

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

sponsorId:

type: string

description: Indicates the sponsor identity.

appSvcProvId:

type: string

description: Indicates the application service provider identity.

afChargingIdentifier:

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

afChargId:

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

required:

- chgId

nullable: true

UsageMonitoringData:

description: Contains usage monitoring related control information.

type: object

properties:

umId:

type: string

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

volumeThreshold:

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

volumeThresholdUplink:

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

volumeThresholdDownlink:

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

timeThreshold:

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

monitoringTime:

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

nextVolThreshold:

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

nextVolThresholdUplink:

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

nextVolThresholdDownlink:

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

nextTimeThreshold:

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

inactivityTime:

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

exUsagePccRuleIds:

type: array

items:

type: string

minItems: 1

description: >

Contains the PCC rule identifier(s) which corresponding service data flow(s) shall be

excluded from PDU Session usage monitoring. It is only included in the

UsageMonitoringData instance for session level usage monitoring.

nullable: true

required:

- umId

nullable: true

RedirectInformation:

description: Contains the redirect information.

type: object

properties:

redirectEnabled:

type: boolean

description: Indicates the redirect is enable.

redirectAddressType:

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

redirectServerAddress:

type: string

description: >

Indicates the address of the redirect server. If "redirectAddressType" attribute

indicates the IPV4\_ADDR, the encoding is the same as the Ipv4Addr data type defined in

3GPP TS 29.571.If "redirectAddressType" attribute indicates the IPV6\_ADDR, the encoding

is the same as the Ipv6Addr data type defined in 3GPP TS 29.571.If "redirectAddressType"

attribute indicates the URL or SIP\_URI, the encoding is the same as the Uri data type

defined in 3GPP TS 29.571.

FlowInformation:

description: Contains the flow information.

type: object

properties:

flowDescription:

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

ethFlowDescription:

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

packFiltId:

type: string

description: An identifier of packet filter.

packetFilterUsage:

type: boolean

description: The packet shall be sent to the UE.

tosTrafficClass:

type: string

description: >

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

mask field.

nullable: true

spi:

type: string

description: the security parameter index of the IPSec packet.

nullable: true

flowLabel:

type: string

description: the Ipv6 flow label header field.

nullable: true

flowDirection:

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

SmPolicyDeleteData:

description: >

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

type: object

properties:

userLocationInfo:

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

ueTimeZone:

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

servingNetwork:

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

userLocationInfoTime:

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

ranNasRelCauses:

type: array

items:

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

minItems: 1

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

accuUsageReports:

type: array

items:

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

minItems: 1

description: Contains the usage report

pduSessRelCause:

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

QosCharacteristics:

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

type: object

properties:

5qi:

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

resourceType:

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

priorityLevel:

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

packetDelayBudget:

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

packetErrorRate:

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

averagingWindow:

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

maxDataBurstVol:

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

extMaxDataBurstVol:

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

required:

- 5qi

- resourceType

- priorityLevel

- packetDelayBudget

- packetErrorRate

ChargingInformation:

description: Contains the addresses of the charging functions.

type: object

properties:

primaryChfAddress:

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

secondaryChfAddress:

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

primaryChfSetId:

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

primaryChfInstanceId:

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

secondaryChfSetId:

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

secondaryChfInstanceId:

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

required:

- primaryChfAddress

AccuUsageReport:

description: Contains the accumulated usage report information.

type: object

properties:

refUmIds:

type: string

description: >

An id referencing UsageMonitoringData objects associated with this usage report.

volUsage:

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

volUsageUplink:

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

volUsageDownlink:

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

timeUsage:

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

nextVolUsage:

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

nextVolUsageUplink:

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

nextVolUsageDownlink:

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

nextTimeUsage:

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

required:

- refUmIds

SmPolicyUpdateContextData:

description: >

Contains the policy control request trigger(s) that were met and the corresponding new

value(s) or the error report of the policy enforcement.

type: object

properties:

repPolicyCtrlReqTriggers:

type: array

items:

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

minItems: 1

description: The policy control reqeust trigges which are met.

accNetChIds:

type: array

items:

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

minItems: 1

description: >

Indicates the access network charging identifier for the PCC rule(s) or whole PDU

session.

accessType:

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

ratType:

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

addAccessInfo:

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

relAccessInfo:

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

servingNetwork:

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

userLocationInfo:

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

ueTimeZone:

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

relIpv4Address:

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

ipv4Address:

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

ipDomain:

type: string

description: Indicates the IPv4 address domain

ipv6AddressPrefix:

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

relIpv6AddressPrefix:

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

addIpv6AddrPrefixes:

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

addRelIpv6AddrPrefixes:

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

multiIpv6Prefixes:

type: array

items:

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

minItems: 1

description: The multiple allocated IPv6 prefixes of the served UE.

multiRelIpv6Prefixes:

type: array

items:

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

minItems: 1

description: The multiple released IPv6 prefixes of the served UE.

relUeMac:

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

ueMac:

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

subsSessAmbr:

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

authProfIndex:

type: string

description: Indicates the DN-AAA authorization profile index

subsDefQos:

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

vplmnQos:

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

vplmnQosNotApp:

type: boolean

description: >

If it is included and set to true, indicates that the QoS constraints in the VPLMN are

not applicable.

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

description: QoS Monitoring reporting information.

qosMonDatRateReps:

type: array

items:

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

minItems: 1

qosMonCongReps:

type: array

items:

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

minItems: 1

userLocationInfoTime:

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

repPraInfos:

type: object

additionalProperties:

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

minProperties: 1

description: >

Reports the changes of presence reporting area. The praId attribute within the

PresenceInfo data type is the key of the map.

ueInitResReq:

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

refQosIndication:

type: boolean

description: >

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

included and set to false, the reflective QoS is revoked by the UE.

qosFlowUsage:

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

creditManageStatus:

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

servNfId:

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

traceReq:

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

maPduInd:

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

atsssCapab:

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

tsnBridgeInfo:

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

tsnBridgeManCont:

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

tsnPortManContDstt:

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

tsnPortManContNwtts:

type: array

items:

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

minItems: 1

tscNotifUri:

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

tscNotifCorreId:

type: string

description: >

Correlation identifier for TSC management information notifications.

mulAddrInfos:

type: array

items:

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

minItems: 1

policyDecFailureReports:

type: array

items:

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

minItems: 1

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

invalidPolicyDecs:

type: array

items:

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

minItems: 1

description: >

Indicates the invalid parameters for the reported type(s) of the failed policy decision

and/or condition data.

trafficDescriptors:

type: array

items:

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

minItems: 1

pccRuleId:

type: string

description: >

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

typesOfNotif:

type: array

items:

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

minItems: 1

interGrpIds:

type: array

items:

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

minItems: 1

satBackhaulCategory:

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

pcfUeInfo:

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

nwdafDatas:

type: array

items:

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

minItems: 1

nullable: true

anGwStatus:

type: boolean

description: >

When it is included and set to true, it indicates that the AN-Gateway has failed and

that the PCF should refrain from sending policy decisions to the SMF until it is

informed that the AN-Gateway has been recovered.

uePolCont:

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

uePolFailReport:

$ref: 'TS29525\_Npcf\_UEPolicyControl.yaml#/components/schemas/UePolicyTransferFailureCause'

urspEnfInfo:

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

sscMode:

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

ueReqDnn:

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

ueReqPduSessionType:

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

l4sReports:

type: array

items:

$ref: '#/components/schemas/L4sSupportInfo'

minItems: 1

description: ECN marking for L4S support availability in 5GS.

altSliceInfo:

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

batOffsetInfo:

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

hrsboInd:

type: boolean

description: >

HR-SBO support indication. If present and set to "true", it indicates that the HR-SBO is

supported. If present and set to "false", it indicates that the HR-SBO is not supported.

ueReachStatus:

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

retryAfter:

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

qosMonCapRepos:

type: array

items:

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

minItems: 1

description: QoS monitoring is supported or not for the indicated PCC rule(s).

allOf:

- not:

required: [multiIpv6Prefixes, ipv6AddressPrefix]

- not:

required: [multiIpv6Prefixes, addIpv6AddrPrefixes]

- not:

required: [multiRelIpv6Prefixes, relIpv6AddressPrefix]

- not:

required: [multiRelIpv6Prefixes, relAddIpv6AddrPrefixes]

UpPathChgEvent:

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

type: object

properties:

notificationUri:

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

notifCorreId:

type: string

description: >

It is used to set the value of Notification Correlation ID in the notification sent by

the SMF.

dnaiChgType:

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

afAckInd:

type: boolean

required:

- notificationUri

- notifCorreId

- dnaiChgType

nullable: true

TerminationNotification:

description: Represents a Termination Notification.

type: object

properties:

resourceUri:

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

cause:

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

required:

- resourceUri

- cause

AppDetectionInfo:

description: Contains the detected application's traffic information.

type: object

properties:

appId:

type: string

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

instanceId:

type: string

description: >

Identifier sent by the SMF in order to allow correlation of application Start and Stop

events to the specific service data flow description, if service data flow descriptions

are deducible.

sdfDescriptions:

type: array

items:

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

minItems: 1

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

required:

- appId

AccNetChId:

description: >

Contains the access network charging identifier for the PCC rule(s) or for the whole

PDU session.

type: object

properties:

accNetChaIdValue:

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

accNetChargId:

type: string

description: A character string containing the access network charging id.

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

oneOf:

- required: [accNetChaIdValue]

- required: [accNetChargId]

AccNetChargingAddress:

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

type: object

anyOf:

- required: [anChargIpv4Addr]

- required: [anChargIpv6Addr]

properties:

anChargIpv4Addr:

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

anChargIpv6Addr:

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

RequestedRuleData:

description: >

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

type: object

properties:

refPccRuleIds:

type: array

items:

type: string

minItems: 1

description: >

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

reqData:

type: array

items:

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

minItems: 1

description: >

Array of requested rule data type elements indicating what type of rule data is

requested for the corresponding referenced PCC rules.

required:

- refPccRuleIds

- reqData

RequestedUsageData:

description: >

Contains usage data requested by the PCF requesting usage reports for the corresponding

usage monitoring data instances.

type: object

properties:

refUmIds:

type: array

items:

type: string

minItems: 1

description: >

An array of usage monitoring data id references to the usage monitoring data instances

for which the PCF is requesting a usage report. This attribute shall only be provided

when allUmIds is not set to true.

allUmIds:

type: boolean

description: >

This boolean indicates whether requested usage data applies to all usage monitoring data

instances. When it's not included, it means requested usage data shall only apply to the

usage monitoring data instances referenced by the refUmIds attribute.

UeCampingRep:

description: >

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

type: object

properties:

accessType:

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

ratType:

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

servNfId:

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

servingNetwork:

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

userLocationInfo:

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

ueTimeZone:

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

netLocAccSupp:

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

satBackhaulCategory:

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

urspEnfInfo:

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

sscMode:

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

ueReqDnn:

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

ueReqPduSessionType:

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

RuleReport:

description: Reports the status of PCC.

type: object

properties:

pccRuleIds:

type: array

items:

type: string

minItems: 1

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

ruleStatus:

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

contVers:

type: array

items:

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

minItems: 1

description: Indicates the version of a PCC rule.

failureCode:

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

retryAfter:

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

finUnitAct:

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

ranNasRelCauses:

type: array

items:

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

minItems: 1

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

altQosParamId:

type: string

description: >

Indicates the alternative QoS parameter set that the NG-RAN can guarantee. It is

included during the report of successfull resource allocation and indicates that NG-RAN

used an alternative QoS profile because the requested QoS could not be allocated..

required:

- pccRuleIds

- ruleStatus

RanNasRelCause:

description: Contains the RAN/NAS release cause.

type: object

properties:

ngApCause:

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

5gMmCause:

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

5gSmCause:

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

epsCause:

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

UeInitiatedResourceRequest:

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

type: object

properties:

pccRuleId:

type: string

ruleOp:

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

precedence:

type: integer

packFiltInfo:

type: array

items:

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

minItems: 1

reqQos:

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

required:

- ruleOp

- packFiltInfo

PacketFilterInfo:

description: >

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

type: object

properties:

packFiltId:

type: string

description: An identifier of packet filter.

packFiltCont:

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

tosTrafficClass:

type: string

description: >

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

mask field.

spi:

type: string

description: The security parameter index of the IPSec packet.

flowLabel:

type: string

description: The Ipv6 flow label header field.

flowDirection:

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

RequestedQos:

description: Contains the QoS information requested by the UE.

type: object

properties:

5qi:

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

gbrUl:

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

gbrDl:

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

required:

- 5qi

QosNotificationControlInfo:

description: Contains the QoS Notification Control Information.

type: object

properties:

refPccRuleIds:

type: array

items:

type: string

minItems: 1

description: >

An array of PCC rule id references to the PCC rules associated with the QoS notification

control info.

notifType:

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

contVer:

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

altQosParamId:

type: string

description: >

Indicates the alternative QoS parameter set the NG-RAN can guarantee. When it is omitted

and the notifType attribute is set to NOT\_GUAARANTEED it indicates that the lowest

priority alternative QoS profile could not be fulfilled.

altQosNotSuppInd:

type: boolean

description: >

When present and set to true it indicates that the Alternative QoS profiles are not

supported by NG-RAN.

required:

- refPccRuleIds

- notifType

PartialSuccessReport:

description: >

Includes the information reported by the SMF when some of the PCC rules and/or session rules

and/or policy decision and/or condition data are not successfully installed/activated or

stored.

type: object

properties:

failureCause:

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

ruleReports:

type: array

items:

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

minItems: 1

description: >

Information about the PCC rules provisioned by the PCF not successfully

installed/activated.

sessRuleReports:

type: array

items:

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

minItems: 1

description: >

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

ueCampingRep:

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

policyDecFailureReports:

type: array

items:

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

minItems: 1

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

invalidPolicyDecs:

type: array

items:

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

minItems: 1

description: >

Indicates the invalid parameters for the reported type(s) of the failed policy decision

and/or condition data.

required:

- failureCause

AuthorizedDefaultQos:

description: Represents the Authorized Default QoS.

type: object

properties:

5qi:

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

arp:

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

priorityLevel:

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

averWindow:

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

maxDataBurstVol:

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

maxbrUl:

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

maxbrDl:

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

gbrUl:

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

gbrDl:

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

extMaxDataBurstVol:

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

ErrorReport:

description: Contains the rule,policy decision and/or condition data error reports.

type: object

properties:

error:

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

ruleReports:

type: array

items:

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

minItems: 1

description: Used to report the PCC rule failure.

sessRuleReports:

type: array

items:

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

minItems: 1

description: Used to report the session rule failure.

polDecFailureReports:

type: array

items:

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

minItems: 1

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

invalidPolicyDecs:

type: array

items:

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

minItems: 1

description: >

Indicates the invalid parameters for the reported type(s) of the failed policy decision

and/or condition data.

SessionRuleReport:

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

type: object

properties:

ruleIds:

type: array

items:

type: string

minItems: 1

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

ruleStatus:

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

sessRuleFailureCode:

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

policyDecFailureReports:

type: array

items:

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

minItems: 1

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

required:

- ruleIds

- ruleStatus

ServingNfIdentity:

description: Contains the serving Network Function identity.

type: object

properties:

servNfInstId:

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

guami:

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

anGwAddr:

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

sgsnAddr:

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

SteeringMode:

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

type: object

properties:

steerModeValue:

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

active:

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

standby:

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

3gLoad:

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

prioAcc:

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

thresValue:

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

steerModeInd:

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

primary:

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

required:

- steerModeValue

AdditionalAccessInfo:

description: >

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

type: object

properties:

accessType:

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

ratType:

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

required:

- accessType

QosMonitoringData:

description: Contains QoS monitoring related control information.

type: object

properties:

qmId:

type: string

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

qosMonParamType:

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

reqQosMonParams:

type: array

items:

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

minItems: 1

description: >

Indicates the QoS information to be monitored when the QoS Monitoring is enabled for

the service data flow.

repFreqs:

type: array

items:

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

minItems: 1

description: >

Indicates the frequency for the reporting, such as event triggered and/or periodic.

repThreshDl:

type: integer

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

nullable: true

repThreshUl:

type: integer

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

nullable: true

repThreshRp:

type: integer

description: >

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

nullable: true

conThreshDl:

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

conThreshUl:

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

waitTime:

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

repPeriod:

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

notifyUri:

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

notifyCorreId:

type: string

nullable: true

directNotifInd:

type: boolean

description: >

Indicates that the direct event notification sent by UPF to the Local NEF or AF is

requested if it is included and set to true.

avrgWndw:

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

repThreshDatRateUl:

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

repThreshDatRateDl:

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

dataCollAppId:

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

required:

- qmId

- reqQosMonParams

- repFreqs

nullable: true

QosMonitoringReport:

description: Contains reporting information on QoS monitoring.

type: object

properties:

refPccRuleIds:

type: array

items:

type: string

minItems: 1

description: >

An array of PCC rule id references to the PCC rules associated with the QoS monitoring

report.

ulDelays:

type: array

items:

type: integer

minItems: 1

dlDelays:

type: array

items:

type: integer

minItems: 1

rtDelays:

type: array

items:

type: integer

minItems: 1

pdmf:

type: boolean

description: Represents the packet delay measurement failure indicator.

ulDataRate:

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

dlDataRate:

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

ulCongInfo:

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

dlCongInfo:

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

required:

- refPccRuleIds

#

TsnBridgeInfo:

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

type: object

properties:

bridgeId:

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

dsttAddr:

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

dsttPortNum:

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

dsttResidTime:

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

mtuIpv4:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uint16'

mtuIpv6:

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

#

PortManagementContainer:

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

type: object

properties:

portManCont:

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

portNum:

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

required:

- portManCont

- portNum

BridgeManagementContainer:

description: Contains the UMIC.

type: object

properties:

bridgeManCont:

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

required:

- bridgeManCont

IpMulticastAddressInfo:

description: Contains the IP multicast addressing information.

type: object

properties:

srcIpv4Addr:

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

ipv4MulAddr:

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

srcIpv6Addr:

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

ipv6MulAddr:

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

DownlinkDataNotificationControl:

description: Contains the downlink data notification control information.

type: object

properties:

notifCtrlInds:

type: array

items:

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

minItems: 1

typesOfNotif:

type: array

items:

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

minItems: 1

DownlinkDataNotificationControlRm:

description: >

This data type is defined in the same way as the DownlinkDataNotificationControl data type,

but with the nullable:true property.

type: object

properties:

notifCtrlInds:

type: array

items:

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

minItems: 1

nullable: true

typesOfNotif:

type: array

items:

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

minItems: 1

nullable: true

nullable: true

ThresholdValue:

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

type: object

properties:

rttThres:

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

plrThres:

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

nullable: true

NwdafData:

description: >

Indicates the list of Analytic ID(s) per NWDAF instance ID used for the PDU Session consumed

by the SMF.

type: object

properties:

nwdafInstanceId:

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

nwdafEvents:

type: array

items:

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

minItems: 1

required:

- nwdafInstanceId

CallInfo:

description: Identifies the caller and callee information.

type: object

properties:

callingPartyAddrs:

type: array

items:

type: string

minItems: 1

calleeInfo:

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

nullable: true

CalleeInfo:

description: Identifies the callee information.

type: object

properties:

calledPartyAddr:

type: string

requestPartyAddrs:

type: array

items:

type: string

minItems: 1

calledAssertIds:

type: array

items:

type: string

minItems: 1

nullable: true

#

TrafficParaData:

description: Contains Traffic Parameter(s) related control information.

type: object

properties:

periodUl:

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

periodDl:

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

reqTrafficParas:

type: array

items:

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

minItems: 1

description: Indicates the traffic parameters to be measured.

repFreqs:

type: array

items:

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

minItems: 1

description: Represents the notification method (periodic or on event detection).

dlN6JitterThr:

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

repPeriod:

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

L4sSupportInfo:

description: Contains the ECN marking for L4S support in 5GS information.

type: object

properties:

refPccRuleIds:

type: array

items:

type: string

minItems: 1

description: >

An array of PCC rule id references to the PCC rules associated with the ECN marking

for L4S support info.

notifType:

$ref: 'TS29514\_Npcf\_PolicyAuthorization.yaml#/components/schemas/L4sNotifType'

required:

- refPccRuleIds

- notifType

SliceUsgCtrlInfo:

description: Represents network slice usage control information.

type: object

properties:

pduSessInactivTimer:

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

anyOf:

- required: [pduSessInactivTimer]

BatOffsetInfoPcc:

description: >

Indicates the offset of the BAT and the optionally adjusted periodicity.

type: object

required:

- ranBatOffsetNotif

- refPccRuleIds

properties:

ranBatOffsetNotif:

type: integer

description: >

Indicates the BAT offset of the arrival time of the data burst in units

of milliseconds.

adjPeriod:

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

refPccRuleIds:

type: array

items:

type: string

minItems: 1

description: >

Identification of the PCC rules associated with the BAT offset and the optionally

adjusted periodicity.

CapabilityReportRule:

description: >

Contains information about whether a capability is supported or

not for one or more PCC rules.

type: object

properties:

refPccRuleIds:

type: array

items:

type: string

minItems: 1

description: >

Contains the identifier of the PCC rule(s) which are affected of QoS Monitoring

Capability Report.

capReport:

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

required:

- refPccRuleIds

- capReport

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'

UePolicyContainer:

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

UrspEnforcementInfo:

$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 and is not used to encode

content defined in the present version of this API.

description: |

Indicates the direction of the service data flow.

Possible values are:

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

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

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

- UNSPECIFIED: The corresponding filter applies for traffic to the UE (downlink), but has no

specific direction declared. The service data flow detection shall apply the filter for

uplink traffic as if the filter was bidirectional. The PCF shall not use the value

UNSPECIFIED in filters created by the network in NW-initiated procedures. The PCF shall only

include the value UNSPECIFIED in filters in UE-initiated procedures if the same value is

received from the SMF.

FlowDirectionRm:

description: >

This data type is defined in the same way as the "FlowDirection" data type, with the only

difference that it allows null value.

anyOf:

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

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

ReportingLevel:

anyOf:

- type: string

enum:

- SER\_ID\_LEVEL

- RAT\_GR\_LEVEL

- SPON\_CON\_LEVEL

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

- type: string

description: >

This string provides forward-compatibility with future

extensions to the enumeration and is not used to encode

content defined in the present version of this API.

description: |

Indicates the reporting level.

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 and is not used to encode

content defined in the present version of this API.

description: |

Indicates the metering method.

Possible values are:

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

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

- DURATION\_VOLUME: Indicates that the duration and the volume of the service data flow

traffic shall be metered.

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

PolicyControlRequestTrigger:

anyOf:

- type: string

enum:

- PLMN\_CH

- RES\_MO\_RE

- AC\_TY\_CH

- UE\_IP\_CH

- UE\_MAC\_CH

- AN\_CH\_COR

- US\_RE

- APP\_STA

- APP\_STO

- AN\_INFO

- CM\_SES\_FAIL

- PS\_DA\_OFF

- DEF\_QOS\_CH

- SE\_AMBR\_CH

- QOS\_NOTIF

- NO\_CREDIT

- REALLO\_OF\_CREDIT

- PRA\_CH

- SAREA\_CH

- SCNN\_CH

- RE\_TIMEOUT

- RES\_RELEASE

- SUCC\_RES\_ALLO

- RAI\_CH

- RAT\_TY\_CH

- REF\_QOS\_IND\_CH

- NUM\_OF\_PACKET\_FILTER

- UE\_STATUS\_RESUME

- UE\_TZ\_CH

- AUTH\_PROF\_CH

- QOS\_MONITORING

- QOS\_MON\_CAP\_REPO

- SCELL\_CH

- USER\_LOCATION\_CH

- EPS\_FALLBACK

- MA\_PDU

- TSN\_BRIDGE\_INFO

- 5G\_RG\_JOIN

- 5G\_RG\_LEAVE

- DDN\_FAILURE

- DDN\_DELIVERY\_STATUS

- GROUP\_ID\_LIST\_CHG

- DDN\_FAILURE\_CANCELLATION

- DDN\_DELIVERY\_STATUS\_CANCELLATION

- VPLMN\_QOS\_CH

- SUCC\_QOS\_UPDATE

- SAT\_CATEGORY\_CHG

- PCF\_UE\_NOTIF\_IND

- NWDAF\_DATA\_CHG

- UE\_POL\_CONT\_IND

- URSP\_ENFORCEMENT\_INFO

- HR\_SBO\_IND\_CHG

- L4S\_SUPP

- NET\_SLICE\_REPL

- BAT\_OFFSET\_INFO

- UE\_REACH\_STATUS\_CH

- type: string

description: >

This string provides forward-compatibility with future

extensions to the enumeration and is not used to encode

content defined in the present version of this API.

description: |

Indicates the policy control request trigger(s).

Possible values are:

- PLMN\_CH: PLMN Change

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

always reports to the PCF.

- AC\_TY\_CH: Access Type Change.

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

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

specific period.

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

- US\_RE: The PDU Session or the Monitoring key specific resources consumed by a UE either

reached the threshold or needs to be reported for other reasons.

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

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

- AN\_INFO: Access Network Information report.

- CM\_SES\_FAIL: Credit management session failure.

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

reports to the PCF.

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

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

- QOS\_NOTIF: The SMF notify the PCF when receiving notification from RAN that QoS targets of

the QoS Flow cannot be guranteed or gurateed again.

- NO\_CREDIT: Out of credit.

- REALLO\_OF\_CREDIT: Reallocation of credit.

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

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

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

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

revalidation timeout.

- RES\_RELEASE: Indicate that the SMF can inform the PCF of the outcome of the release of

resources for those rules that require so.

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

allocation.

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

- RAT\_TY\_CH: RAT Type Change.

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

- NUM\_OF\_PACKET\_FILTER: Indicates that the SMF shall report the number of supported packet

filter for signalled QoS rules.

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

- UE\_TZ\_CH: UE Time Zone Change.

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

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

- QOS\_MON\_CAP\_REPO: Indicates that the NF service consumer notifies the PCF about the

support of QoS Monitoring Capability Report.

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

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

change and serving cell change.

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

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

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

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

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

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

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

- GROUP\_ID\_LIST\_CHG: UE Internal Group Identifier(s) has changed: the SMF reports that UDM

provided list of group Ids has changed.

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

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

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

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

- SAT\_CATEGORY\_CHG: Indicates that the SMF has detected a change between different satellite

backhaul categories, or between a satellite backhaul and a non-satellite backhaul.

- PCF\_UE\_NOTIF\_IND: Indicates the SMF has detected the AMF forwarded the PCF for the UE

indication to receive/stop receiving notifications of SM Policy association

established/terminated events.

- NWDAF\_DATA\_CHG: Indicates that the NWDAF instance IDs used for the PDU session and/or

associated Analytics IDs used for the PDU session and available in the SMF have changed.

- UE\_POL\_CONT\_IND: Indicates that a UE policy container or failure delivery report is

received from the UE in EPC over a PDN connection.

- URSP\_ENFORCEMENT\_INFO: Indicates a report of URSP rule enforcement information.

- HR\_SBO\_IND\_CHG: Indicates the HR-SBO support indication has changed.

- L4S\_SUPP: Indicates whether ECN marking for L4S is not available or available again

in 5GS.

- NET\_SLICE\_REPL: Indicates network slice replacement, i.e., a change between the initial

S-NSSAI of the PDU Session and the Alternative S-NSSAI

- BAT\_OFFSET\_INFO: Indicates that the SMF has detected the BAT offset and optionally

adjusted periodicity.

- UE\_REACH\_STATUS\_CH: Indicates that there is a change in the UE reachability status.

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 and is not used to encode

content defined in the present version of this API.

description: |

Indicates the type of rule data requested by the PCF.

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 and is not used to encode

content defined in the present version of this API.

description: |

Indicates the status of PCC or session rule.

Possible values are

- ACTIVE: Indicates that the PCC rule(s) are successfully installed (for those provisioned

from PCF) or activated (for those pre-defined in SMF), or the session rule(s) are

successfully installed

- INACTIVE: Indicates that the PCC rule(s) are removed (for those provisioned from PCF) or

inactive (for those pre-defined in SMF) or the session rule(s) are removed.

FailureCode:

anyOf:

- type: string

enum:

- UNK\_RULE\_ID

- RA\_GR\_ERR

- SER\_ID\_ERR

- NF\_MAL

- RES\_LIM

- MAX\_NR\_QoS\_FLOW

- MISS\_FLOW\_INFO

- RES\_ALLO\_FAIL

- UNSUCC\_QOS\_VAL

- INCOR\_FLOW\_INFO

- PS\_TO\_CS\_HAN

- APP\_ID\_ERR

- NO\_QOS\_FLOW\_BOUND

- FILTER\_RES

- MISS\_REDI\_SER\_ADDR

- CM\_END\_USER\_SER\_DENIED

- CM\_CREDIT\_CON\_NOT\_APP

- CM\_AUTH\_REJ

- CM\_USER\_UNK

- CM\_RAT\_FAILED

- UE\_STA\_SUSP

- UNKNOWN\_REF\_ID

- INCORRECT\_COND\_DATA

- REF\_ID\_COLLISION

- TRAFFIC\_STEERING\_ERROR

- DNAI\_STEERING\_ERROR

- AN\_GW\_FAILE

- MAX\_NR\_PACKET\_FILTERS\_EXCEEDED

- PACKET\_FILTER\_TFT\_ALLOCATION\_EXCEEDED

- MUTE\_CHG\_NOT\_ALLOWED

- UE\_TEMPORARILY\_UNAVAILABLE

- type: string

description: >

This string provides forward-compatibility with future

extensions to the enumeration and is not used to encode

content defined in the present version of this API.

description: |

Indicates the reason of the PCC rule failure.

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 clause 5.4.2 of 3GPP TS 29.212

was not met.

- MISS\_REDI\_SER\_ADDR: Indicate that the PCC rule could not be successfully installed or

enforced at the SMF because there is no valid Redirect Server Address within the Traffic

Control Data policy decision which the PCC rule refers to provided by the PCF and no

preconfigured redirection address for this PCC rule at the SMF.

- CM\_END\_USER\_SER\_DENIED: Indicate that the charging system denied the service request due

to service restrictions (e.g. terminate rating group) or limitations related to the

end-user, for example the end-user's account could not cover the requested service.

- CM\_CREDIT\_CON\_NOT\_APP: Indicate that the charging system determined that the service can

be granted to the end user but no further credit control is needed for the service (e.g.

service is free of charge or is treated for offline charging).

- CM\_AUTH\_REJ: Indicate that the charging system denied the service request in order to

terminate the service for which credit is requested.

- CM\_USER\_UNK: Indicate that the specified end user could not be found in the charging

system.

- CM\_RAT\_FAILED: Indicate that the charging system cannot rate the service request due to

insufficient rating input, incorrect AVP combination or due to an attribute or an attribute

value that is not recognized or supported in the rating.

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

- UNKNOWN\_REF\_ID: Indicates that the PCC rule could not be successfully installed/modified

because the referenced identifier to a Policy Decision Data or to a Condition Data is

unknown to the SMF.

- INCORRECT\_COND\_DATA: Indicates that the PCC rule could not be successfully

installed/modified because the referenced Condition data are incorrect.

- REF\_ID\_COLLISION: Indicates that PCC rule could not be successfully installed/modified

because the same Policy Decision is referenced by a session rule (e.g. the session rule

and the PCC rule refer to the same Usage Monitoring decision data).

- TRAFFIC\_STEERING\_ERROR: Indicates that enforcement of the steering of traffic to the

N6-LAN or 5G-LAN failed; or the dynamic PCC rule could not be successfully installed or

modified at the NF service consumer because there are invalid traffic steering policy

identifier(s) within the provided Traffic Control Data policy decision to which the PCC

rule refers.

- DNAI\_STEERING\_ERROR: Indicates that the enforcement of the steering of traffic to the

indicated DNAI failed; or the dynamic PCC rule could not be successfully installed or

modified at the NF service consumer because there is invalid route information for a DNAI(s)

(e.g. routing profile id is not configured) within the provided Traffic Control Data policy

decision to which the PCC rule refers.

- AN\_GW\_FAILED: This value is used to indicate that the AN-Gateway has failed and that the

PCF should refrain from sending policy decisions to the SMF until it is informed that the

S-GW has been recovered. This value shall not be used if the SM Policy association

modification procedure is initiated for PCC rule removal only.

- MAX\_NR\_PACKET\_FILTERS\_EXCEEDED: This value is used to indicate that the PCC rule could not

be successfully installed, modified or enforced at the NF service consumer because the

number of supported packet filters for signalled QoS rules for the PDU session has been

reached.

- PACKET\_FILTER\_TFT\_ALLOCATION\_EXCEEDED: This value is used to indicate that the PCC rule is

removed at 5GS to EPS mobility because TFT allocation was not possible since the number of

active packet filters in the EPC bearer is exceeded.

- MUTE\_CHG\_NOT\_ALLOWED: Indicates that the PCC rule could not be successfully modified

because the mute condition for application detection report cannot be changed. Applicable

when the functionality introduced with the ADC feature applies.

- UE\_TEMPORARILY\_UNAVAILABLE: Indicates that the PCC rule could not be successfully

installed or modified because the SMF was informed that the UE was not reachable.

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 and is not used to encode

content defined in the present version of this API.

description: |

Indicates the protocol used for signalling between the UE and the AF.

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: |

Indicates a UE initiated resource operation that causes a request for PCC rules.

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 and is not used to encode

content defined in the present version of this API.

description: |

Indicates the redirect address type.

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 and is not used to encode

content defined in the present version of this API.

description: |

Indicates a QoS flow usage information.

Possible values are

- GENERAL: Indicate no specific QoS flow usage information is available.

- IMS\_SIG: Indicate that the QoS flow is used for IMS signalling only.

FailureCause:

description: Indicates the cause of the failure in a Partial Success Report.

anyOf:

- type: string

enum:

- PCC\_RULE\_EVENT

- PCC\_QOS\_FLOW\_EVENT

- RULE\_PERMANENT\_ERROR

- RULE\_TEMPORARY\_ERROR

- POL\_DEC\_ERROR

- type: string

description: >

This string provides forward-compatibility with future extensions to the enumeration

and is not used to encode content defined in the present version of this API.

CreditManagementStatus:

description: Indicates the reason of the credit management session failure.

anyOf:

- type: string

enum:

- END\_USER\_SER\_DENIED

- CREDIT\_CTRL\_NOT\_APP

- AUTH\_REJECTED

- USER\_UNKNOWN

- RATING\_FAILED

- type: string

description: >

This string provides forward-compatibility with future extensions to the enumeration

and is not used to encode content defined in the present version of this API.

SessionRuleFailureCode:

anyOf:

- type: string

enum:

- NF\_MAL

- RES\_LIM

- SESSION\_RESOURCE\_ALLOCATION\_FAILURE

- UNSUCC\_QOS\_VAL

- INCORRECT\_UM

- UE\_STA\_SUSP

- UNKNOWN\_REF\_ID

- INCORRECT\_COND\_DATA

- REF\_ID\_COLLISION

- AN\_GW\_FAILED

- DEFAULT\_QOS\_MODIFICATION\_FAILURE

- SESSION\_AMBR\_MODIFICATION\_FAILURE

- type: string

description: >

This string provides forward-compatibility with future

extensions to the enumeration and is not used to encode

content defined in the present version of this API.

description: |

Indicates the reason of the session rule failure.

Possible values are

- NF\_MAL: Indicates that the PCC rule could not be successfully installed (for those

provisioned from the PCF) or activated (for those pre-defined in SMF) or enforced (for those

already successfully installed) due to SMF/UPF malfunction.

- RES\_LIM: Indicates that the PCC rule could not be successfully installed (for those

provisioned from PCF) or activated (for those pre-defined in SMF) or enforced (for those

already successfully installed) due to a limitation of resources at the SMF/UPF.

- SESSION\_RESOURCE\_ALLOCATION\_FAILURE: Indicates the session rule could not be successfully

enforced due to failure during the allocation of resources for the PDU session in the UE,

RAN or AMF.

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

- INCORRECT\_UM: The usage monitoring data of the enforced session rule is not the same for

all the provisioned session rule(s).

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

- UNKNOWN\_REF\_ID: Indicates that the session rule could not be successfully

installed/modified because the referenced identifier to a Policy Decision Data or to a

Condition Data is unknown to the SMF.

- INCORRECT\_COND\_DATA: Indicates that the session rule could not be successfully

installed/modified because the referenced Condition data are incorrect.

- REF\_ID\_COLLISION: Indicates that the session rule could not be successfully

installed/modified because the same Policy Decision is referenced by a PCC rule (e.g. the

session rule and the PCC rule refer to the same Usage Monitoring decision data).

- AN\_GW\_FAILED: Indicates that the AN-Gateway has failed and that the PCF should refrain

from sending policy decisions to the SMF until it is informed that the S-GW has been

recovered. This value shall not be used if the SM Policy association modification procedure

is initiated for session rule removal only.

- DEFAULT\_QOS\_MODIFICATION\_FAILURE: Indicates that the enforcement of the default QoS

modification failed. The SMF shall use this value to indicate to the PCF that the default

QoS modification has failed.

- SESSION\_AMBR\_MODIFICATION\_FAILURE: Indicates that the enforcement of the session-AMBR

modification failed. The SMF shall use this value to indicate to the PCF that the

session-AMBR modification has failed.

SteeringFunctionality:

anyOf:

- type: string

enum:

- MPTCP

- MPQUIC

- ATSSS\_LL

- type: string

description: >

This string provides forward-compatibility with future

extensions to the enumeration and is not used to encode

content defined in the present version of this API.

description: |

Indicates functionality to support traffic steering, switching and splitting determined

by the PCF.

Possible values are

- MPTCP: Indicates that PCF authorizes the MPTCP functionality to support traffic

steering, switching and splitting.

- MPQUIC: Indicates that PCF authorizes the MPQUIC functionality to support traffic

steering, switching and splitting.

- ATSSS\_LL: Indicates that PCF authorizes the ATSSS-LL functionality to support traffic

steering, switching and splitting.

SteerModeValue:

description: Indicates the steering mode value determined by the PCF.

anyOf:

- type: string

enum:

- ACTIVE\_STANDBY

- LOAD\_BALANCING

- SMALLEST\_DELAY

- PRIORITY\_BASED

- REDUNDANT

- type: string

description: >

This string provides forward-compatibility with future extensions to the enumeration

and is not used to encode content defined in the present version of this API.

MulticastAccessControl:

description: >

Indicates whether the service data flow, corresponding to the service data flow template, is

allowed or not allowed.

anyOf:

- type: string

enum:

- ALLOWED

- NOT\_ALLOWED

- type: string

description: >

This string provides forward-compatibility with future extensions to the enumeration

and is not used to encode content defined in the present version of this API.

RequestedQosMonitoringParameter:

description: Indicates the requested QoS monitoring parameters to be measured.

anyOf:

- type: string

enum:

- DOWNLINK

- UPLINK

- ROUND\_TRIP

- DOWNLINK\_DATA\_RATE

- UPLINK\_DATA\_RATE

- DOWNLINK\_CONGESTION

- UPLINK\_CONGESTION

- type: string

description: >

This string provides forward-compatibility with future extensions to the enumeration

and is not used to encode content defined in the present version of this API.

ReportingFrequency:

description: Indicates the frequency for the reporting.

anyOf:

- type: string

enum:

- EVENT\_TRIGGERED

- PERIODIC

- type: string

description: >

This string provides forward-compatibility with future extensions to the enumeration

and is not used to encode content defined in the present version of this API.

SgsnAddress:

description: describes the address of the SGSN

type: object

anyOf:

- required: [sgsnIpv4Addr]

- required: [sgsnIpv6Addr]

properties:

sgsnIpv4Addr:

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

sgsnIpv6Addr:

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

SmPolicyAssociationReleaseCause:

description: >

Represents the cause due to which the PCF requests the termination of the SM policy

association.

anyOf:

- type: string

enum:

- UNSPECIFIED

- UE\_SUBSCRIPTION

- INSUFFICIENT\_RES

- VALIDATION\_CONDITION\_NOT\_MET

- REACTIVATION\_REQUESTED

- type: string

description: >

This string provides forward-compatibility with future extensions to the enumeration

and is not used to encode content defined in the present version of this API.

PduSessionRelCause:

description: Contains the SMF PDU Session release cause.

anyOf:

- type: string

enum:

- PS\_TO\_CS\_HO

- RULE\_ERROR

- type: string

description: >

This string provides forward-compatibility with future extensions to the enumeration

and is not used to encode content defined in the present version of this API.

MaPduIndication:

description: >

Contains the MA PDU session indication, i.e., MA PDU Request or MA PDU Network-Upgrade

Allowed.

anyOf:

- type: string

enum:

- MA\_PDU\_REQUEST

- MA\_PDU\_NETWORK\_UPGRADE\_ALLOWED

- type: string

description: >

This string provides forward-compatibility with future extensions to the enumeration

and is not used to encode content defined in the present version of this API.

AtsssCapability:

description: Contains the ATSSS capability supported for the MA PDU Session.

anyOf:

- type: string

enum:

- MPTCP\_ATSSS\_LL\_WITH\_ASMODE\_UL

- MPTCP\_ATSSS\_LL\_WITH\_EXSDMODE\_DL\_ASMODE\_UL

- MPTCP\_ATSSS\_LL\_WITH\_ASMODE\_DLUL

- ATSSS\_LL

- MPTCP\_ATSSS\_LL

- MPQUIC\_ATSSS\_LL\_WITH\_ASMODE\_UL

- MPQUIC\_ATSSS\_LL\_WITH\_EXSDMODE\_DL\_ASMODE\_UL

- MPQUIC\_ATSSS\_LL\_WITH\_ASMODE\_DLUL

- MPQUIC\_ATSSS\_LL

- MPTCP\_MPQUIC\_ATSSS\_LL\_WITH\_ASMODE\_UL

- MPTCP\_MPQUIC\_ATSSS\_LL\_WITH\_EXSDMODE\_DL\_ASMODE\_UL

- MPTCP\_MPQUIC\_ATSSS\_LL\_WITH\_ASMODE\_DLUL

- MPTCP\_MPQUIC\_ATSSS\_LL

- type: string

description: >

This string provides forward-compatibility with future extensions to the enumeration

and is not used to encode content defined in the present version of this API.

#

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 and is not used to encode

content defined in the present version of this API.

description: |

Indicates the access network support of the report of the requested access network

information.

Possible values are

- ANR\_NOT\_SUPPORTED: Indicates that the access network does not support the report of access

network information.

- TZR\_NOT\_SUPPORTED: Indicates that the access network does not support the report of UE

time zone.

- LOC\_NOT\_SUPPORTED: Indicates that the access network does not support the report of UE

Location (or PLMN Id).

PolicyDecisionFailureCode:

description: Indicates the type of the failed policy decision and/or condition data.

anyOf:

- type: string

enum:

- TRA\_CTRL\_DECS\_ERR

- QOS\_DECS\_ERR

- CHG\_DECS\_ERR

- USA\_MON\_DECS\_ERR

- QOS\_MON\_DECS\_ERR

- CON\_DATA\_ERR

- POLICY\_PARAM\_ERR

- type: string

description: >

This string provides forward-compatibility with future extensions to the enumeration

and is not used to encode content defined in the present version of this API.

#

NotificationControlIndication:

description: >

Indicates that the notification of DDD Status is requested and/or that the notification of

DDN Failure is requested.

anyOf:

- type: string

enum:

- DDN\_FAILURE

- DDD\_STATUS

- type: string

description: >

This string provides forward-compatibility with future extensions to the enumeration

and is not used to encode content defined in the present version of this API.

#

SteerModeIndicator:

description: Contains Autonomous load-balance indicator or UE-assistance indicator.

anyOf:

- type: string

enum:

- AUTO\_LOAD\_BALANCE

- UE\_ASSISTANCE

- type: string

description: >

This string provides forward-compatibility with future extensions to the enumeration

and is not used to encode content defined in the present version of this API.

#

TrafficParameterMeas:

description: Indicates the traffic parameters to be measured.

anyOf:

- type: string

enum:

- DL\_N6\_JITTER

- DL\_PERIOD

- UL\_PERIOD

- type: string

description: >

This string provides forward-compatibility with future extensions to the enumeration

and is not used to encode content defined in the present version of this API.

QosMonitoringParamType:

anyOf:

- type: string

enum:

- PACKET\_DELAY

- CONGESTION

- DATA\_RATE

- type: string

description: >

This string provides forward-compatibility with future extensions to the enumeration

and is not used to encode content defined in the present version of this API.

description: |

Indicates the QoS monitoring parameter type.

Possible values are:

- PACKET\_DELAY: Indicates that the QoS monitoring parameter to be measured is packet delay.

- CONGESTION: Indicates that the QoS monitoring parameter to be measured is congestion.

- DATA\_RATE: Indicates that the QoS monitoring parameter to be measured is data rate.

TransportMode:

description: >

Indicates the Transport Mode when the steering functionality is MPQUIC functionality.

anyOf:

- type: string

enum:

- DATAGRAM\_MODE\_1

- DATAGRAM\_MODE\_2

- STREAM\_MODE

- type: string

description: >

This string provides forward-compatibility with future extensions to the enumeration

and is not used to encode content defined in the present version of this API.

UeReachabilityStatus:

anyOf:

- type: string

enum:

- REACHABLE

- UNREACHABLE

- type: string

description: >

This string provides forward-compatibility with future extensions to the enumeration

and is not used to encode content defined in the present version of this API.

description: |

Indicates the UE rechability status.

Possible values are:

- REACHABLE: Indicates that the UE is reachable.

- UNREACHABLE: Indicates that the UE is unreachable.

#

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