**3GPP TSG CT WG3 Meeting #141 *C3-252206***

**Bratislava, SK, 19 – 23 May, 2025**

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| *CR-Form-v12.3* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **29.522** | **CR** | **1608** | **rev** | **-** | **Current version:** | **19.2.0** |  |
|  | | | | | | | | |
| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* | | | | | | | | |
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| ***Proposed change affects:*** | UICC apps |  | ME |  | Radio Access Network |  | Core Network | **X** |

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|  | | | | | | | | | | |
| ***Title:*** | UE policy delivery outcome handling | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Ericsson, Nokia | | | | | | | | | |
| ***Source to TSG:*** | CT3 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | UEP19 | | | | |  | ***Date:*** | | | 2025-05-05 |
|  |  | | | |  | |  | | |  |
| ***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:*** | | In CT3#138 the UEP19 work item was agreed with number of C3-245481. Within the work item scope, we identified the issue that when the UE policy is not completely successfully delivered, the current delivery outcome handling is not complete. In CT3#139, we further submitted a discussion paper to present the available information at PCF and one of the possibilities to handle the outcome delivery when the unsuccessfully delivered UE policy information section is received by the PCF. During the discussions over the meeting and offline discussions, companies agreed on that there is a need to implement reporting failure of UE policy authorization/delivery towards the AF, but not agreed on returning the details of the unauthorized UE policies.  In this CR, we submit a proposal to complete the UE policy delivery outcome with the support of reporting the failed UE policy type together with unsuccessfully UE policy outcome delivery.  3GPP TS 24.501 clause D.2.1.4 specifies:  If the UE could not execute all instructions included in the UE policy section management list IE successfully, the UE shall:  a) set the PTI IE to the PTI value received within the MANAGE UE POLICY COMMAND message and encode the results by including:  1) the UPSI associated with the instructions which could not be executed successfully;  2) the failed instruction order set to order of the instruction in the UE policy section management sublist of the received UE policy section management list IE which could not be executed successfully; and  3) the cause of the failure,  in the UE policy section management result IE as specified in subclause D.5.3 and include it in a MANAGE UE POLICY COMMAND REJECT message, and  b) transport the MANAGE UE POLICY COMMAND REJECT message using the NAS transport procedure as specified in subclause 5.4.5.  Upon receipt of the MANAGE UE POLICY COMMAND REJECT message, the PCF shall stop timer T3501. Any instruction that was included in the UE policy section management list IE but not indicatedin the UE policy section management result IE of the received MANAGE UE POLICY COMMAND REJECT message, shall be considered as successfully executed.  According to the 3GPP TS 24.501 clause D.5.3.1, the MANAGE UE POLICY COMMAND REJECT message is defined as:  Table D.5.3.1.1: MANAGE UE POLICY COMMAND REJECT message content   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | IEI | Information Element | Type/Reference | Presence | Format | Length | |  | PTI | Procedure transaction identity  9.6 | M | V | 1 | |  | MANAGE UE POLICY COMMAND REJECT message identity | UE policy delivery service message type  D.6.1. | M | V | 1 | |  | UE policy section management result | UE policy section management result  D.6.3 | M | LV-E | 11-65533 | | NOTE: The total length of the MANAGE UE POLICY COMMAND REJECT message content cannot exceed 65535 octets (see Payload container contents maximum length as specified in subclause 9.11.3.39.1). | | | | | |   In 29.525, during the UE policy association response or the PCF updatenofity procedure, the PCF provides the UE policy as a Bytes that follows the "MANAGE UE POLICY COMMAND", as:  *The (V-)(H-)PCF may combine several policy sections into one "MANAGE UE POLICY COMMAND" message, if the predefined size limit is observed.*  *The following rules apply to policy sections:*  *- The size shall be below the predefined size limit.*  *- The policy section shall only contain complete URSP rule(s), WLANSP rule(s), N3AN node configuration information, V2XP, A2XP, ProSeP and/or RSLPP info content, but no fractions of such rules, configuration information, or info contents.*  *- To ease a subsequent partial update of UE policies, policy sections should only contain a small number of policies, e.g. URSP rule(s), and/or WLANSP rule(s).*  *- The entire content of a policy section shall be provided by a single PLMN.*  *After sending a "MANAGE UE POLICY COMMAND" messages, the (V-)(H-)PCF shall wait for a related confirmation in a "MANAGE UE POLICY COMPLETE" messages or failure indication in a "MANAGE UE POLICY COMMAND REJECT" message.*  The PCF for UE reports the UE policy delivery results as a Byte that follows the "MANAGE UE POLICY COMPLETE" or "MANAGE UE POLICY COMMAND REJECT".  In each Result, it contains the failed instruction order as:   |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  | | UPSC | | | | | | | | octet f  octet f+1 | | Failed instruction order | | | | | | | | octet f+2  octet f+3 | | Cause | | | | | | | | octet f+4 |   Figure D.6.3.5: Result  PCF is the consumer that send the instruction to the UE as:   |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  | | Instruction contents length | | | | | | | | octet d+5  octet d+6 | | UPSC | | | | | | | | octet d+7  octet d+8 | | UE policy section contents | | | | | | | | octet (d+9)\*  octet k\* |   Figure D.6.2.5: Instruction   |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  | | UE policy part 1 | | | | | | | | octet l  octet m | | UE policy part 2 | | | | | | | | octet (m+1)\*  octet n\* | | … | | | | | | | | octet (n+1)\*  …  octet o\* | | UE policy part N | | | | | | | | octet (o+1)\*  octet p\* |   Figure D.6.2.6: UE policy section contents   |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  | | UE policy part contents length | | | | | | | | octet q  octet q+1 | | 0 | 0 | 0 | 0 | UE policy part type | | | | octet q+2 | | Spare | | | | | UE policy part contents | | | | | | | | octet q+3  octet r |   Figure D.6.2.7: UE policy part  Therefore, when PCF receives the failed UPSC and instruction encoded as the "MANAGE UE POLICY COMMAND REJECT" from UE, the PCF can determine the unsuccessfully executed UE policy part type.  The UE policy part type may contain UE policy for complete URSP rule(s), WLANSP rule(s), N3AN node configuration information, V2XP, A2XP, ProSeP and/or RSLPP info content as specified in TS 24.501:    Therefore, the unsuccessfully executed UE policy part type provided by the UE are available at the PCF. The PCF can report such information from PCF to NEF/AF to indicate the unsuccessfully executed UE policy part types that lead to the unsuccessful UE policy delivery related to the invocation of AF provisioned service parameters. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Add the support to report the unsuccessfully executed UE policy part types of the UE policy delivery outcome, together with the unsuccessful UE policy delivery event. | | | | | | | | |
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| ***Consequences if not approved:*** | | UE policy delivery outcome is not complete and not aligned with UE response structure. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 5.11.2.1, 5.11.2.3.4, 5.11.2.3.6, 5.11.2.3.6 (new), 5.11.2.4.7 (new), 5.11.2.4.8 (new), 5.11.3, A.9 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **X** | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | |  | **X** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | | This CR introduces backward compatible feature to the following APIs:  TS29519\_Application\_Data.yaml  TS29522\_ServiceParameter.yaml  TS29525\_Npcf\_UEPolicyControl.yaml | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

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

#### 5.11.2.1 General

This clause specifies the application data model supported by the ServiceParameter API.

Table 5.11.2.1-1 specifies the data types defined for the ServiceParameter API.

Table 5.11.2.1-1: ServiceParameter API specific Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Clause defined | Description | Applicability |
| A2xParamsPc5 | 5.11.2.4.2 | Represents the service parameters for A2X communication over PC5 reference point. | A2X |
| A2xParamsPc5Rm | 5.11.2.4.2 | This data type is defined in the same way as the A2xParamsPc5 data type, but with the OpenAPI nullable property set to true. | A2X |
| A2xParamsUu | 5.11.2.4.2 | Represents the service parameters for A2X communication over Uu reference point. | A2X |
| A2xParamsUuRm | 5.11.2.4.2 | This data type is defined in the same way as the A2xParamsUu data type, but with the OpenAPI nullable property set to true. | A2X |
| AfNotification | 5.11.2.3.6 | Contains the reported event notification or the service parameters authorization update result. | AfNotifications |
| AuthorizationResult | 5.11.2.4.4 | Represents the result of the service parameters authorization. | AfNotifications |
| ConnectionCapabilities | 5.11.2.4.6 | UE application requests a network connection with certain capabilities. | AfGuideURSP |
| DetailedEventInfo | 5.11.2.3.13 | Detailed information about the outcome of Service Parameter provisioning requests. | ExtDeliveryOutcome |
| Event | 5.11.2.4.3 | Identifies the AF subscribed events. | AfNotifications |
| EventInfo | 5.11.2.3.7 | Indicates the event information. | AfNotifications |
| Failure | 5.11.2.4.5 | Represents the failure reason for the unsuccessful result. | AfNotifications |
| NetworkDescription | 5.11.2.3.9 | Represents the description of a PLMN, by the definition of the PLMN ID, the MCC (and optionally applicable MNC(s)) or the indication of any PLMN. | VPLMNSpecificURSP |
| Non3gppDeviceInformation | 5.11.2.3.12 | Represents the Non-3GPP device information. | Non3gppDevice |
| Outcome | 5.11.2.4.8 | Represents the detailed outcome of the request for AF provisioned service parameters. | ExtDeliveryOutcome |
| ParameterOverPc5 | 5.11.2.4.2 | Represents configuration parameters for V2X communications over PC5 reference point. |  |
| ParameterOverPc5Rm | 5.11.2.4.2 | Represents the same as the ParameterOverPc5 data type but with the "nullable: true" property. |  |
| ParameterOverUu | 5.11.2.4.2 | Represents configuration parameters for V2X communications over Uu reference point. |  |
| ParameterOverUuRm | 5.11.2.4.2 | Represents the same as the ParameterOverUu data type but with the "nullable: true" property. |  |
| ParamForProSeDc | 5.11.2.4.2 | Represents the service parameters for 5G ProSe direct communications. | ProSe |
| ParamForProSeDcRm | 5.11.2.4.2 | This data type is defined in the same way as the ParamForProSeDc data type, but with the OpenAPI nullable property set to "true". | ProSe |
| ParamForProSeDd | 5.11.2.4.2 | Represents the service parameters for 5G ProSe direct discovery. | ProSe |
| ParamForProSeDdRm | 5.11.2.4.2 | This data type is defined in the same way as the ParamForProSeDd data type, but with the OpenAPI nullable property set to true. | ProSe |
| ParamForProSeEndUe | 5.11.2.4.2 | Represents the service parameters for 5G ProSe end UE supporting 5G ProSe Layer-2 and/or Layer-3 UE-to-UE Relay. | ProSe\_Ph2 |
| ParamForProSeEndUeRm | 5.11.2.4.2 | This data type is defined in the same way as the ParamForProSeEndUe data type, but with the OpenAPI nullable property set to true. | ProSe\_Ph2 |
| ParamForProSeRemUe | 5.11.2.4.2 | Represents the service parameters for 5G ProSe remote UE supporting 5G ProSe Layer-2 and/or Layer-3 UE-to-Network Relay. | ProSe |
| ParamForProSeRemUeRm | 5.11.2.4.2 | This data type is defined in the same way as the ParamForProSeRemUe data type, but with the OpenAPI nullable property set to "true". | ProSe |
| ParamForProSeU2NRelUe | 5.11.2.4.2 | Represents the service parameters for 5G ProSe UE-to-network relay UE supporting 5G ProSe Layer-2 and/or Layer-3 UE-to-Network Relay. | ProSe |
| ParamForProSeU2NRelUeRm | 5.11.2.4.2 | This data type is defined in the same way as the ParamForProSeU2NRelUe data type, but with the OpenAPI nullable property set to "true". | ProSe |
| ParamForProSeU2URelUe | 5.11.2.4.2 | Represents the service parameters for 5G ProSe UE-to-UE relay UE supporting 5G ProSe Layer-2 and/or Layer-3 UE-to-UE Relay. | ProSe\_Ph2 |
| ParamForProSeU2URelUeRm | 5.11.2.4.2 | This data type is defined in the same way as the ParamForProSeU2URelUe data type, but with the OpenAPI nullable property set to "true". | ProSe\_Ph2 |
| ParamProSeMultiHopU2NRelUe | 5.11.2.4.2 | Represents the service parameters for 5G ProSe UE-to-Network Relay UE supporting 5G ProSe Layer-2 and/or Layer-3 multi-hop UE-to-Network Relay. | ProSe\_Ph3 |
| ParamProSeMultiHopU2NRelUeRm | 5.11.2.4.2 | This data type is defined in the same way as the ParamProSeMultiHopU2NRelUe data type, but with the OpenAPI nullable property set to "true". | ProSe\_Ph3 |
| ParamProSeMultiHopRemUe | 5.11.2.4.2 | Represents the service parameters for 5G ProSe Remote UE supporting 5G ProSe Layer-2 and/or Layer-3 multi-hop UE-to-Network Relay. | ProSe\_Ph3 |
| ParamProSeMultiHopRemUeRm | 5.11.2.4.2 | This data type is defined in the same way as the ParamProSeMultiHopRemUe data type, but with the OpenAPI nullable property set to "true". | ProSe\_Ph3 |
| ParamProSeMultiHopIntermUe | 5.11.2.4.2 | Represents the service parameters for 5G ProSe Intermediate UE-to-Network Relay supporting 5G ProSe Layer-2 and/or Layer-3 multi-hop UE-to-Network Relay. | ProSe\_Ph3 |
| ParamProSeMultiHopU2URelUe | 5.11.2.4.2 | Represents the service parameters for 5G ProSe Layer-3 UE-to-UE Relay UE supporting 5G ProSe Layer-3 multi-hop UE-to-UE Relay. | ProSe\_Ph3 |
| ParamProSeMultiHopU2URelUeRm | 5.11.2.4.2 | This data type is defined in the same way as the ParamProSeMultiHopU2ERelUe data type, but with the OpenAPI nullable property set to "true". | ProSe\_Ph3 |
| ParamProSeMultiHopEndUe | 5.11.2.4.2 | Represents the service parameters for 5G ProSe Layer-3 End UE supporting 5G ProSe Layer-3 multi-hop UE-to-UE Relay. | ProSe\_Ph3 |
| ParamProSeMultiHopEndUeRm | 5.11.2.4.2 | This data type is defined in the same way as the ParamProSeMultiHopEndUe data type, but with the OpenAPI nullable property set to "true". | ProSe\_Ph3 |
| ParamForRangingSlPos | 5.11.2.4.2 | Represents the service parameters for ranging and sidelink positioning. | Ranging\_SL |
| ParamForRangingSlPosRm | 5.11.2.4.2 | This data type is defined in the same way as the ParamForRangingSlPos data type, but with the OpenAPI nullable property set to true. | Ranging\_SL |
| RouteSelectionParameterSet | 5.11.2.3.5 | Contains parameters that can be used to guide the Route Selection Descriptors of the URSP. | AfGuideURSP |
| ServiceParameterData | 5.11.2.3.2 | Represents an individual Service Parameter subscription resource. |  |
| ServiceParameterDataPatch | 5.11.2.3.3 | Represents the parameters to request the modification of a service parameter subscription resource. |  |
| TrafficDescriptorComponents | 5.11.2.3.8 | Traffic descriptor components for the requested URSP. | AfGuideURSP |
| UePolPartType | 5.11.2.4.7 | Represents a UE policy part type. | ExtDeliveryOutcome |
| UrspRuleRequest | 5.11.2.3.4 | Contains parameters that can be used to guide the URSP. | AfGuideURSP |

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

5.11.2.3.4 Type: UrspRuleRequest

**Table 5.11.2.3.4-1: Definition of type UrspRuleRequest**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Attribute name** | **Data type** | **P** | **Cardinality** | **Description** | **Applicability** |
| afReqId | string | O | 0..1 | Identifier of the requested rule. | ExtDeliveryOutcome |
| trafficDesc | TrafficDescriptorComponents | O | 0..1 | Traffic descriptor components for the requested URSP. (NOTE 1) |  |
| relatPrecedence | Uinteger | O | 0..1 | Represents the relative precedence of the URSP rule within the same AF request, Lower values take precedence over higher values. Its absence means that the AF has no relative precedence requirement for the provided URSP rules. |  |
| visitedNetDescs | array(NetworkDescription) | O | 1..N | It indicates the VPLMN(s) to which the provided AF guidance on VPLMN-specific URSP rules apply.  (NOTE 3) | VPLMNSpecificURSP |
| routeSelParamSets | array(RouteSelectionParameterSet) | O | 1..N | Route Selection Parameter Sets, i.e. sets of parameters that may be used to guide the Route Selection Descriptors of the URSP. (NOTE 2) |  |
| NOTE 1: If the "trafficDesc" attribute is not present, the NEF may derive the traffic descriptor components from the AF Service Identifier.  NOTE 2: If the "routeSelParamSets" attribute is not present, the NEF may derive S-NSSAI/DNN and/or other related parameters from the AF Service Identifer according to SLA.  NOTE 3: Each element of the "visitedNetDescs" attribute may describe one PLMN (the "plmnId" attribute is included) or more than one PLMNs (the "mcc" attribute and, optionally, the "mncs" attribute are included). To indicate any VPLMN, the "visitedNetDescs" attribute shall contain only one entry with the "anyPlmnInd" attribute set to true. | | | | | |

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

5.11.2.3.6 Type: AfNotification

**Table 5.11.2.3.6-1: Definition of type AfNotification**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Attribute name** | **Data type** | **P** | **Cardinality** | **Description** | **Applicability** |
| subscription | Link | M | 1 | Link to the subscription resource to which this notification is related. |  |
| reportEvent | Event | C | 0..1 | Identifies the reported event notification. May be present if the "subNotifEvents" attribute is included in the AF subscription transaction. (NOTE) |  |
| authResult | AuthorizationResult | C | 0..1 | Indicates the service parameters authorization update result. (e.g. to revoke an authorization). (NOTE) |  |
| gpsis | array(Gpsi) | C | 1..N | Identifies the list of GPSI(s) of the reported UE(s). May be present if the "exterGroupId" attribute or "anyUeInd" attribute is included in the AF subscription transaction and only if the "authResult" attribute is provided. |  |
| dnn | Dnn | O | 0..1 | Identifies a DNN. |  |
| snssai | Snssai | O | 0..1 | Identifies an S-NSSAI. |  |
| eventInfo | EventInfo | O | 0..1 | Indicates the event information.  It is not applicable if the "reportEvent" attribute has the value "PARTLY\_SUCC\_UE\_POL\_DEL\_SP". |  |
| detEventInfo | array(DetailedEventInfo) | O | 1..N | Detailed outcome of the AF service parameter request.  It is only applicable if the "reportEvent" attribute has the value "PARTLY\_SUCC\_UE\_POL\_DEL\_SP". | ExtDeliveryOutcome |
| NOTE: At least one of "reportEvent" attribute and "authResult" attribute shall be included. | | | | | |

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

5.11.2.3.13 Type: DetailedEventInfo

**Table 5.11.2.3.13-1: Definition of type DetailedEventInfo**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Attribute name** | **Data type** | **P** | **Cardinality** | **Description** | **Applicability** |
| policyType | UePolPartType | M | 1 | Contains the UE policy part type for which the detailed outcome is being reported. |  |
| afReqId | string | O | 0..1 | Contains a value that was provided by the AF in the "afReqId" attribute of the request, indicating that the detailed event information is related to the AF request entry identified by the "afReqId" attribute. |  |
| outcome | Outcome | M | 1 | Contains the reported outcome. |  |

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

##### 5.11.2.4.7 Enumeration: UePolPartType

The enumeration UePolPartType represents a UE policy part type.

Table 5.11.2.4.7-1: Enumeration UePolPartType

|  |  |  |
| --- | --- | --- |
| Enumeration value | Description | Applicability |
| URSP | Represents a URSP UE policy part type. |  |
| V2XP | Represents a V2X UE policy part type. |  |
| A2XP | Represents an A2XP UE policy part type. |  |
| PROSEP | Represents a ProSe UE policy part type. |  |
| RSLPP | Represents an RSLPP UE policy part type. |  |

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

5.11.2.4.8 Enumeration: Outcome

**Table 5.11.2.4.8-1: Enumeration Outcome**

The enumeration Outcome represents detailed outcome of the requests for AF provisioned service parameters.

|  |  |  |
| --- | --- | --- |
| **Enumeration value** | **Description** | **Applicability** |
| INSTALLED\_ON\_UE | The requested parameters were installed on the UE. |  |
| MODIFIED\_BY\_PCF\_AND\_INSTALLED\_ON\_UE | The requested parameters were modified by the PCF and installed on the UE. |  |
| REJECTED\_BY\_UE | The requested parameters were not successfully installed on the UE. |  |
| NOT\_AUTHORIZED\_BY\_PCF | The requested parameters were not authorized by the PCF. |  |

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

### 5.11.3 Used Features

The table below defines the features applicable to the ServiceParameter API. Those features are negotiated as described in clause 5.2.7 of 3GPP TS 29.122 [4].

Table 5.11.3-1: Features used by ServiceParameter API

|  |  |  |
| --- | --- | --- |
| Feature number | Feature Name | Description |
| 1 | ProSe | This feature indicates the support of UE policy and N2 information provisioning for 5G ProSe. |
| 2 | enNB | Indicates the support of enhancements to the northbound interfaces. |
| 3 | AfNotifications | This feature indicates the support of AF subscribed event(s) notifications. |
| 4 | Notification\_websocket | The delivery of notifications over Websocket is supported as described in 3GPP TS 29.122 [4]. This feature requires that the Notification\_test\_event feature is also supported. |
| 5 | Notification\_test\_event | The testing of notification connection is supported as described in 3GPP TS 29.122 [4]. |
| 6 | AfGuideURSP | This feature indicates the support of AF guidance for URSP determination. |
| 7 | A2X | This feature indicates the support of A2X communication. |
| 8 | ProSe\_Ph2 | This feature indicates the support of the first set of enhancements to the 5G ProSe functionality.  The following sub-functionalities are supported:  - Support UE policy and N2 information provisioning for UE-to-UE Relay.  This feature requires that the "ProSe" feature is also supported. |
| 9 | PIN | This feature indicates the support of Personal IoT Network requirements.  This feature requires the support of the "AfGuideURSP" feature. |
| 10 | VPLMNSpecificURSP | This feature indicates the support of AF guidance on VPLMN-specific URSP rules.  This feature requires that "AfGuideURSP" and "AfNotifications" features are also supported. |
| 11 | AfGuideTNAPs | This feature indicates the support of AF providing guidance to the HPLMN of the UE of the list of TNAP(s) collocated with the 5G-RG(s) of a specific user. |
| 12 | Ranging\_SL | This feature indicates the support of the ranging and sidelink positioning functionality.  The following functionalities are supported:  - Support the provisioning/update/deletion of ranging and sidelink positioning service parameters. |
| 13 | PduSessTypeChange | This feature indicates the support of the provisioning/update of the requested PDU Session type functionality as part of the Generic Group Management, Exposure and Communication Enhancements.  The following functionalities are supported:  - Support the provisioning/update of the requested PDU Session type as part of the information provided by the AF for guiding URSP determination.  This feature requires the support of the "AfGuideURSP" feature. |
| 14 | ExtConnCapability | This feature indicates the support of:  - The connection capabilities defined as traffic categories in GSMA PRD NG.135 [75].  - Operator Specific traffic categories.  This feature requires the support of the "AfGuideURSP" feature. |
| 15 | ProSe\_Ph3 | This feature indicates the support of the second set of enhancements to the 5G ProSe functionality.  The following sub-functionalities are supported:  - Support UE policy and N2 information provisioning for Multi-hop UE-to-Network Relay.  - Support UE policy and N2 information provisioning for Layer-3 Multi-hop UE-to-UE Relay.  This feature requires that the "ProSe\_Ph2" feature is also supported. |
| 16 | Non3gppDevice | This feature indicates the support of provisioning information for non-3GPP device. |
| 17 | ConnGroup | This feature indicates the support of providing the Connectivity Group ID in the traffic descriptor for matching.  This feature requires the support of the "AfGuideURSP" feature. |
| 18 | PCFSerParAuth | Indicates the support of notifications about the unsuccessful authorization related to the invocation of AF provisioned service parameters.  This feature requires that "AfNotifications" feature is also supported. |
| 19 | ExtDeliveryOutcome | Indicates the support of notifications about partially successful UE policy delivery related to the invocation of AF provisioned service parameters.  This feature requires the support of AfNotifications feature. |

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

# A.9 ServiceParameter API

openapi: 3.0.0

info:

title: 3gpp-service-parameter

version: 1.3.0-alpha.2

description: |

API for AF service paramter

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externalDocs:

description: >

3GPP TS 29.522 V19.2.0; 5G System; Network Exposure Function Northbound APIs.

url: 'https://www.3gpp.org/ftp/Specs/archive/29\_series/29.522/'

security:

- {}

- oAuth2ClientCredentials: []

servers:

- url: '{apiRoot}/3gpp-service-parameter/v1'

variables:

apiRoot:

default: https://example.com

description: apiRoot as defined in clause 5.2.4 of 3GPP TS 29.122.

paths:

/{afId}/subscriptions:

parameters:

- name: afId

in: path

description: Identifier of the AF

required: true

schema:

type: string

get:

summary: read all of the active subscriptions for the AF

operationId: ReadAllSubscriptions

tags:

- Service Parameter Subscriptions

parameters:

- name: gpsis

in: query

description: The GPSI of the requested UE(s).

required: false

schema:

type: array

items:

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

minItems: 1

- name: ip-addrs

in: query

description: The IP address(es) of the requested UE(s).

required: false

content:

application/json:

schema:

type: array

items:

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

minItems: 1

- name: ip-domain

in: query

description: >

The IPv4 address domain identifier. The attribute may only be provided

if IPv4 address is included in the ip-addrs query parameter.

required: false

schema:

type: string

- name: mac-addrs

in: query

description: The MAC address(es) of the requested UE(s).

required: false

schema:

type: array

items:

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

minItems: 1

responses:

'200':

description: OK.

content:

application/json:

schema:

type: array

items:

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

minItems: 0

'307':

$ref: 'TS29122\_CommonData.yaml#/components/responses/307'

'308':

$ref: 'TS29122\_CommonData.yaml#/components/responses/308'

'400':

$ref: 'TS29122\_CommonData.yaml#/components/responses/400'

'401':

$ref: 'TS29122\_CommonData.yaml#/components/responses/401'

'403':

$ref: 'TS29122\_CommonData.yaml#/components/responses/403'

'404':

$ref: 'TS29122\_CommonData.yaml#/components/responses/404'

'406':

$ref: 'TS29122\_CommonData.yaml#/components/responses/406'

'429':

$ref: 'TS29122\_CommonData.yaml#/components/responses/429'

'500':

$ref: 'TS29122\_CommonData.yaml#/components/responses/500'

'503':

$ref: 'TS29122\_CommonData.yaml#/components/responses/503'

default:

$ref: 'TS29122\_CommonData.yaml#/components/responses/default'

post:

summary: Creates a new subscription resource

operationId: CreateAnSubscription

tags:

- Service Parameter Subscriptions

requestBody:

description: Request to create a new subscription resource

required: true

content:

application/json:

schema:

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

responses:

'201':

description: Created (Successful creation of subscription)

content:

application/json:

schema:

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

headers:

Location:

description: Contains the URI of the newly created resource.

required: true

schema:

type: string

'400':

$ref: 'TS29122\_CommonData.yaml#/components/responses/400'

'401':

$ref: 'TS29122\_CommonData.yaml#/components/responses/401'

'403':

$ref: 'TS29122\_CommonData.yaml#/components/responses/403'

'404':

$ref: 'TS29122\_CommonData.yaml#/components/responses/404'

'411':

$ref: 'TS29122\_CommonData.yaml#/components/responses/411'

'413':

$ref: 'TS29122\_CommonData.yaml#/components/responses/413'

'415':

$ref: 'TS29122\_CommonData.yaml#/components/responses/415'

'429':

$ref: 'TS29122\_CommonData.yaml#/components/responses/429'

'500':

$ref: 'TS29122\_CommonData.yaml#/components/responses/500'

'503':

$ref: 'TS29122\_CommonData.yaml#/components/responses/503'

default:

$ref: 'TS29122\_CommonData.yaml#/components/responses/default'

callbacks:

notificationDestination:

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

post:

requestBody:

description: >

Notifications upon AF Service Parameter Authorization Update,

and/or AF subscribed event notification of the outcome related

to the invocation of service parameters provisioning.

required: true

content:

application/json:

schema:

type: array

items:

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

minItems: 1

responses:

'204':

description: Expected response to a successful callback processing without a body

'307':

$ref: 'TS29122\_CommonData.yaml#/components/responses/307'

'308':

$ref: 'TS29122\_CommonData.yaml#/components/responses/308'

'400':

$ref: 'TS29122\_CommonData.yaml#/components/responses/400'

'401':

$ref: 'TS29122\_CommonData.yaml#/components/responses/401'

'403':

$ref: 'TS29122\_CommonData.yaml#/components/responses/403'

'404':

$ref: 'TS29122\_CommonData.yaml#/components/responses/404'

'411':

$ref: 'TS29122\_CommonData.yaml#/components/responses/411'

'413':

$ref: 'TS29122\_CommonData.yaml#/components/responses/413'

'415':

$ref: 'TS29122\_CommonData.yaml#/components/responses/415'

'429':

$ref: 'TS29122\_CommonData.yaml#/components/responses/429'

'500':

$ref: 'TS29122\_CommonData.yaml#/components/responses/500'

'503':

$ref: 'TS29122\_CommonData.yaml#/components/responses/503'

default:

$ref: 'TS29122\_CommonData.yaml#/components/responses/default'

/{afId}/subscriptions/{subscriptionId}:

parameters:

- name: afId

in: path

description: Identifier of the AF

required: true

schema:

type: string

- name: subscriptionId

in: path

description: Identifier of the subscription resource

required: true

schema:

type: string

get:

summary: read an active subscriptions for the SCS/AS and the subscription Id

operationId: ReadAnSubscription

tags:

- Individual Service Parameter Subscription

responses:

'200':

description: OK (Successful get the active subscription)

content:

application/json:

schema:

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

'307':

$ref: 'TS29122\_CommonData.yaml#/components/responses/307'

'308':

$ref: 'TS29122\_CommonData.yaml#/components/responses/308'

'400':

$ref: 'TS29122\_CommonData.yaml#/components/responses/400'

'401':

$ref: 'TS29122\_CommonData.yaml#/components/responses/401'

'403':

$ref: 'TS29122\_CommonData.yaml#/components/responses/403'

'404':

$ref: 'TS29122\_CommonData.yaml#/components/responses/404'

'406':

$ref: 'TS29122\_CommonData.yaml#/components/responses/406'

'429':

$ref: 'TS29122\_CommonData.yaml#/components/responses/429'

'500':

$ref: 'TS29122\_CommonData.yaml#/components/responses/500'

'503':

$ref: 'TS29122\_CommonData.yaml#/components/responses/503'

default:

$ref: 'TS29122\_CommonData.yaml#/components/responses/default'

put:

summary: Fully updates/replaces an existing subscription resource

operationId: FullyUpdateAnSubscription

tags:

- Individual Service Parameter Subscription

requestBody:

description: Parameters to update/replace the existing subscription

required: true

content:

application/json:

schema:

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

responses:

'200':

description: OK (Successful update of the subscription)

content:

application/json:

schema:

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

'204':

description: OK (Successful update of the subscription)

'307':

$ref: 'TS29122\_CommonData.yaml#/components/responses/307'

'308':

$ref: 'TS29122\_CommonData.yaml#/components/responses/308'

'400':

$ref: 'TS29122\_CommonData.yaml#/components/responses/400'

'401':

$ref: 'TS29122\_CommonData.yaml#/components/responses/401'

'403':

$ref: 'TS29122\_CommonData.yaml#/components/responses/403'

'404':

$ref: 'TS29122\_CommonData.yaml#/components/responses/404'

'411':

$ref: 'TS29122\_CommonData.yaml#/components/responses/411'

'413':

$ref: 'TS29122\_CommonData.yaml#/components/responses/413'

'415':

$ref: 'TS29122\_CommonData.yaml#/components/responses/415'

'429':

$ref: 'TS29122\_CommonData.yaml#/components/responses/429'

'500':

$ref: 'TS29122\_CommonData.yaml#/components/responses/500'

'503':

$ref: 'TS29122\_CommonData.yaml#/components/responses/503'

default:

$ref: 'TS29122\_CommonData.yaml#/components/responses/default'

patch:

summary: Partial updates/replaces an existing subscription resource

operationId: PartialUpdateAnSubscription

tags:

- Individual Service Parameter Subscription

requestBody:

required: true

content:

application/merge-patch+json:

schema:

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

responses:

'200':

description: OK. The subscription was modified successfully.

content:

application/json:

schema:

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

'204':

description: OK. The subscription was modified successfully.

'307':

$ref: 'TS29122\_CommonData.yaml#/components/responses/307'

'308':

$ref: 'TS29122\_CommonData.yaml#/components/responses/308'

'400':

$ref: 'TS29122\_CommonData.yaml#/components/responses/400'

'401':

$ref: 'TS29122\_CommonData.yaml#/components/responses/401'

'403':

$ref: 'TS29122\_CommonData.yaml#/components/responses/403'

'404':

$ref: 'TS29122\_CommonData.yaml#/components/responses/404'

'411':

$ref: 'TS29122\_CommonData.yaml#/components/responses/411'

'413':

$ref: 'TS29122\_CommonData.yaml#/components/responses/413'

'415':

$ref: 'TS29122\_CommonData.yaml#/components/responses/415'

'429':

$ref: 'TS29122\_CommonData.yaml#/components/responses/429'

'500':

$ref: 'TS29122\_CommonData.yaml#/components/responses/500'

'503':

$ref: 'TS29122\_CommonData.yaml#/components/responses/503'

default:

$ref: 'TS29122\_CommonData.yaml#/components/responses/default'

delete:

summary: Deletes an already existing subscription

operationId: DeleteAnSubscription

tags:

- Individual Service Parameter Subscription

responses:

'204':

description: No Content (Successful deletion of the existing subscription)

'307':

$ref: 'TS29122\_CommonData.yaml#/components/responses/307'

'308':

$ref: 'TS29122\_CommonData.yaml#/components/responses/308'

'400':

$ref: 'TS29122\_CommonData.yaml#/components/responses/400'

'401':

$ref: 'TS29122\_CommonData.yaml#/components/responses/401'

'403':

$ref: 'TS29122\_CommonData.yaml#/components/responses/403'

'404':

$ref: 'TS29122\_CommonData.yaml#/components/responses/404'

'429':

$ref: 'TS29122\_CommonData.yaml#/components/responses/429'

'500':

$ref: 'TS29122\_CommonData.yaml#/components/responses/500'

'503':

$ref: 'TS29122\_CommonData.yaml#/components/responses/503'

default:

$ref: 'TS29122\_CommonData.yaml#/components/responses/default'

components:

securitySchemes:

oAuth2ClientCredentials:

type: oauth2

flows:

clientCredentials:

tokenUrl: '{tokenUrl}'

scopes: {}

schemas:

ServiceParameterData:

description: Represents an individual Service Parameter subscription resource.

type: object

properties:

afServiceId:

type: string

description: Identifies a service on behalf of which the AF is issuing the request.

appId:

type: string

description: Identifies an application.

dnn:

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

snssai:

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

externalGroupId:

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

anyUeInd:

type: boolean

description: >

Identifies whether the AF request applies to any non-roaming UE. This attribute,

when provided, shall set to "true" if applicable for any UE, otherwise, set to "false".

roamUeNetDescs:

type: array

items:

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

minItems: 1

description: Each element identifies one or more PLMN IDs of inbound roamers.

gpsi:

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

ueIpv4:

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

ueIpv6:

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

ueMac:

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

self:

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

subNotifEvents:

type: array

items:

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

minItems: 1

description: >

Identifies the AF subscribed event(s) notifications related to AF provisioned

service parameters.

notificationDestination:

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

requestTestNotification:

type: boolean

description: >

Set to true by the AF to request the NEF to send a test notification

as defined in clause 5.2.5.3 of 3GPP TS 29.122. Set to false or omitted otherwise.

websockNotifConfig:

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

paramOverPc5:

$ref: '#/components/schemas/ParameterOverPc5'

paramOverUu:

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

paramForProSeDd:

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

paramForProSeDc:

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

paramForProSeU2NRelUe:

$ref: '#/components/schemas/ParamForProSeU2NRelUe'

paramForProSeRemUe:

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

paramForProSeU2URelUe:

$ref: '#/components/schemas/ParamForProSeU2URelUe'

paramForProSeEndUe:

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

multiHopU2NRelUe:

$ref: '#/components/schemas/ParamProSeMultiHopU2NRelUe'

multiHopU2NRemUe:

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

multiHopU2NIntermUe:

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

multiHopU2URelUe:

$ref: '#/components/schemas/ParamProSeMultiHopU2URelUe'

multiHopU2UEndUe:

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

paramForRangingSlPos:

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

urspGuidance:

type: array

items:

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

minItems: 1

description: Contains the service parameter used to guide the URSP.

vpsUrspGuidance:

type: array

items:

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

minItems: 1

description: >

Contains the service parameters used to guide the VPLMN-specific URSP

rule(s).

a2xParamsPc5:

$ref: '#/components/schemas/A2xParamsPc5'

a2xParamsUu:

$ref: '#/components/schemas/A2xParamsUu'

tnaps:

type: array

items:

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

minItems: 1

description: Contains the TNAP IDs collocated with the 5G-RG(s) of a specific user.

mtcProviderId:

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

non3gppDevInfos:

type: array

items:

$ref: '#/components/schemas/Non3gppDeviceInformation'

minItems: 1

suppFeat:

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

ServiceParameterDataPatch:

description: >

Represents the parameters to request the modification of a service parameter

subscription resource.

type: object

properties:

paramOverPc5:

$ref: '#/components/schemas/ParameterOverPc5Rm'

paramOverUu:

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

paramForProSeDd:

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

paramForProSeDc:

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

paramForProSeU2NRelUe:

$ref: '#/components/schemas/ParamForProSeU2NRelUeRm'

paramForProSeRemUe:

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

paramForProSeU2URelUe:

$ref: '#/components/schemas/ParamForProSeU2URelUeRm'

paramForProSeEndUe:

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

multiHopU2NRelUe:

$ref: '#/components/schemas/ParamProSeMultiHopU2NRelUeRm'

multiHopU2NRemUe:

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

multiHopU2NIntermUe:

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

multiHopU2URelUe:

$ref: '#/components/schemas/ParamProSeMultiHopU2URelUeRm'

multiHopU2UEndUe:

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

paramForRangingSlPos:

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

urspGuidance:

type: array

items:

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

minItems: 1

description: Contains the service parameter used to guide the URSP.

vpsUrspGuidance:

type: array

items:

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

minItems: 1

description: >

Contains the service parameters used to guide the VPLMN-specific

URSP rule(s).

nullable: true

a2xParamsPc5:

$ref: '#/components/schemas/A2xParamsPc5Rm'

a2xParamsUu:

$ref: '#/components/schemas/A2xParamsUuRm'

tnaps:

type: array

items:

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

minItems: 1

description: Contains the TNAP IDs collocated with the 5G-RG(s) of a specific user.

nullable: true

subNotifEvents:

type: array

items:

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

minItems: 1

nullable: true

description: >

Identifies the AF subscribed event(s) notifications related to AF provisioned

service parameters.

notificationDestination:

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

non3gppDevInfos:

type: array

items:

$ref: '#/components/schemas/Non3gppDeviceInformation'

minItems: 1

nullable: true

ParameterOverPc5:

description: >

Represents configuration parameters for V2X communications over PC5 reference point.

type: string

ParameterOverPc5Rm:

description: >

Represents the same as the ParameterOverPc5 data type but with the nullable:true property.

type: string

nullable: true

ParameterOverUu:

description: >

Represents configuration parameters for V2X communications over Uu reference point.

type: string

ParameterOverUuRm:

description: >

Represents the same as the ParameterOverUu data type but with the nullable:true property.

type: string

nullable: true

ParamForProSeDd:

description: Represents the service parameters for 5G ProSe direct discovery.

type: string

ParamForProSeDdRm:

description: >

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

but with the OpenAPI nullable property set to true.

type: string

nullable: true

ParamForProSeDc:

description: Represents the service parameters for 5G ProSe direct communications.

type: string

ParamForProSeDcRm:

description: >

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

but with the OpenAPI nullable property set to true.

type: string

nullable: true

ParamForProSeU2NRelUe:

description: Represents the service parameters for 5G ProSe UE-to-network relay UE.

type: string

ParamForProSeU2NRelUeRm:

description: >

This data type is defined in the same way as the ParamForProSeU2NRelay data type,

but with the OpenAPI nullable property set to true.

type: string

nullable: true

ParamForProSeRemUe:

description: Represents the service parameters for 5G ProSe Remote UE.

type: string

ParamForProSeRemUeRm:

description: >

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

but with the OpenAPI nullable property set to true.

type: string

nullable: true

ParamForProSeU2URelUe:

description: Represents the service parameters for 5G ProSe UE-to-UE relay UE.

type: string

ParamForProSeU2URelUeRm:

description: >

This data type is defined in the same way as the ParamForProSeU2URelay data type,

but with the OpenAPI nullable property set to true.

type: string

nullable: true

ParamForProSeEndUe:

description: Represents the service parameters for 5G ProSe End UE.

type: string

ParamForProSeEndUeRm:

description: >

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

but with the OpenAPI nullable property set to true.

type: string

nullable: true

ParamProSeMultiHopU2NRelUe:

description: >

Represents the service parameters for 5G ProSe UE-to-Network Relay UE supporting

5G ProSe Layer-2 and/or Layer-3 multi-hop UE-to-Network Relay.

type: string

ParamProSeMultiHopU2NRelUeRm:

description: >

This data type is defined in the same way as the ParamProSeMultiHopU2NRelUe data type,

but with the OpenAPI nullable property set to true.

type: string

nullable: true

ParamProSeMultiHopRemUe:

description: >

Represents the service parameters for 5G ProSe Remote UE supporting 5G ProSe

Layer-2 and/or Layer-3 multi-hop UE-to-Network Relay.

type: string

ParamProSeMultiHopRemUeRm:

description: >

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

but with the OpenAPI nullable property set to true.

type: string

nullable: true

ParamProSeMultiHopIntermUe:

description: >

Represents the service parameters for 5G ProSe Intermediate UE-to-Network Relay

supporting 5G ProSe Layer-2 and/or Layer-3 multi-hop UE-to-Network Relay.

type: string

ParamProSeMultiHopIntermUeRm:

description: >

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

but with the OpenAPI nullable property set to true.

type: string

nullable: true

ParamProSeMultiHopU2URelUe:

description: >

Represents the service parameters for 5G ProSe Layer-3 UE-to-UE Relay UE supporting

5G ProSe Layer-3 multi-hop UE-to-UE Relay.

type: string

ParamProSeMultiHopU2URelUeRm:

description: >

This data type is defined in the same way as the ParamProSeMultiHopU2URelUe data type,

but with the OpenAPI nullable property set to true.

type: string

nullable: true

ParamProSeMultiHopEndUe:

description: >

Represents the service parameters for 5G ProSe Layer-3 End UE supporting 5G ProSe

Layer-3 multi-hop UE-to-UE Relay.

type: string

ParamProSeMultiHopEndUeRm:

description: >

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

but with the OpenAPI nullable property set to true.

type: string

nullable: true

ParamForRangingSlPos:

description: Represents the service parameters for ranging and sidelink positioning.

type: string

ParamForRangingSlPosRm:

description: >

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

but with the OpenAPI nullable property set to true.

type: string

nullable: true

A2xParamsPc5:

description: >

Represents configuration parameters for A2X communications over PC5 reference point.

type: string

A2xParamsPc5Rm:

description: >

Represents the same as the A2xParamsPc5 data type but with the nullable:true property.

type: string

nullable: true

A2xParamsUu:

description: >

Represents configuration parameters for A2X communications over Uu reference point.

type: string

A2xParamsUuRm:

description: >

Represents the same as the A2xParamsUu data type but with the nullable:true property.

type: string

nullable: true

UrspRuleRequest:

description: Contains parameters that can be used to guide the URSP.

type: object

properties:

afReqId:

type: string

description: identifier of the AF-requested rule.

trafficDesc:

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

relatPrecedence:

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

visitedNetDescs:

type: array

items:

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

minItems: 1

description: >

Each element identifies one or more PLMN IDs where AF guidance for VPLMN-specific

URSP rule applies.

routeSelParamSets:

type: array

items:

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

minItems: 1

description: >

Sets of parameters that may be used to guide the Route Selection Descriptors of the

URSP.

RouteSelectionParameterSet:

description: >

Contains parameters that can be used to guide the Route Selection

Descriptors of the URSP.

type: object

properties:

dnn:

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

snssai:

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

precedence:

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

spatialValidityAreas:

type: array

items:

$ref: 'TS29522\_AMPolicyAuthorization.yaml#/components/schemas/GeographicalArea'

minItems: 1

description: >

Indicates where the route selection parameters apply. It may correspond

to a geographical area, for example using a geographic shape that

is known to the AF and is configured by the operator to correspond to a list

of or TAIs.

spatialValidityTais:

type: array

items:

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

minItems: 1

description: >

Indicates the TAIs in which the route selection parameters apply. This attribute is

applicable only within the 5GC and it shall not be included in the request messages of

untrusted AFs for URSP guidance.

pduSessType:

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

Non3gppDeviceInformation:

description: Represents the Non-3GPP device identifier(s) information.

type: object

properties:

non3gppDevId:

type: string

dnnSnssaiInfo:

$ref: 'TS29522\_AMInfluence.yaml#/components/schemas/DnnSnssaiInformation'

flowInfos:

type: array

items:

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

minItems: 1

ethFlowInfos:

type: array

items:

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

minItems: 1

qosReference:

type: string

indQosParamSet:

$ref: 'TS29543\_Npcf\_PDTQPolicyControl.yaml#/components/schemas/QosParameterSet'

required:

- non3gppDevId

oneOf:

- required: [qosReference]

- required: [indQosParamSet]

Event:

anyOf:

- type: string

enum:

- SUCCESS\_UE\_POL\_DEL\_SP

- UNSUCCESS\_UE\_POL\_DEL\_SP

- UNSUCCESS\_PCF\_SERVICE\_AUTHORIZATION

- 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: |

Represents the AF subscribe to event notification of the outcome related to the

invocation of AF provisioned service parameters.

Possible values are:

- SUCCESS\_UE\_POL\_DEL\_SP: Successful UE Policy Delivery related to

the invocation of AF provisioned Service Parameters.

- UNSUCCESS\_UE\_POL\_DEL\_SP: Unsuccessful UE Policy Delivery related to the invocation of AF

provisioned Service Parameters.

- UNSUCCESS\_PCF SERVICE AUTHORIZATION: Unsuccessful authorization in the PCF related to the

invocation of AF provisioned Service Parameters.

AfNotification:

description: >

Notifications upon AF Service Parameter Authorization Update e.g. to

revoke the authorization, and/or AF subscribed event notification of the

outcome related to the invocation of service parameter provisioning.

type: object

properties:

subscription:

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

reportEvent:

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

authResult:

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

gpsis:

type: array

items:

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

minItems: 1

dnn:

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

snssai:

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

eventInfo:

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

detEventInfo:

type: array

items:

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

minItems: 1

required:

- subscription

anyOf:

- required: [reportEvent]

- required: [authResult]

TrafficDescriptorComponents:

description: Traffic descriptor components for the requested URSP.

type: object

properties:

appDescs:

type: object

additionalProperties:

$ref: 'TS29522\_5GLANParameterProvision.yaml#/components/schemas/AppDescriptor'

minProperties: 1

description: >

Describes the operation systems and the corresponding applications for each

operation systems. The key of map is osId.

flowDescs:

type: array

items:

type: string

minItems: 1

description: >

Represents a 3-tuple with protocol, server ip and server port for UL/DL

application traffic. The content of the string has the same encoding as the IPFilterRule

AVP value as defined in IETF RFC 6733.

domainDescs:

type: array

items:

type: string

minItems: 1

description: >

FQDN(s) or a regular expression which are used as a domain name matching

criteria.

ethFlowDescs:

type: array

items:

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

minItems: 1

description: >

Descriptor(s) for destination information of non-IP traffic in which only

ethernet flow description is defined.

dnns:

type: array

items:

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

minItems: 1

description: This is matched against the DNN information provided by the application.

connCaps:

type: array

items:

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

minItems: 1

description: >

This is matched against the information provided by a UE application when it

requests a network connection with certain capabilities.

opSpecConnCaps:

type: array

items:

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

minItems: 1

maxItems: 128

description: >

Operator specific connection capabilities.

pinId:

type: string

description: This is matched against a PIN ID for a specific PIN configured in the PEGC.

connGroupId:

type: string

description: >

This is matched against a Connectivity Group ID for a specific Connectivity Group

configured in 5G-RG.

oneOf:

- required: [pinId]

- anyOf:

- required: [appDescs]

- required: [flowDescs]

- required: [domainDescs]

- required: [ethFlowDescs]

- required: [dnns]

- required: [connCaps]

- required: [opSpecConnCaps]

NetworkDescription:

description: >

Represents the description of a PLMN, by the definition of the PLMN ID, the MCC (and

applicable MNC(s)) or the indication of any PLMN.

type: object

properties:

plmnId:

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

mcc:

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

mncs:

type: array

items:

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

minItems: 1

description: Represents the applicable MNC(s) for the indicated MCC.

anyPlmnInd:

type: boolean

description: Indicates any PLMN.

oneOf:

- required: [plmnId]

- required: [mcc]

- required: [anyPlmnInd]

AuthorizationResult:

anyOf:

- type: string

enum:

- AUTH\_REVOKED

- 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: |

Represents the NEF notify the AF about the service parameters authorization updates result,

e.g. to revoke an authorization.

Possible values are:

- AUTH\_REVOKED: Indicated the service parameters authorization is revoked.

EventInfo:

description: Indicates the event information.

type: object

properties:

failureCause:

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

plmnId:

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

DetailedEventInfo:

description: Indicates detailed event information.

type: object

properties:

policyType:

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

afReqId:

type: string

description: identifier of a part of the AF service parameter provisioning request.

outcome:

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

required:

- policyType

- outcome

Failure:

anyOf:

- type: string

enum:

- UNSPECIFIED

- UE\_NOT\_REACHABLE

- UNKNOWN

- UE\_TEMP\_UNREACHABLE

- DNN\_NOT\_ALLOWED

- SNSSAI\_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.

description: |

Represents the failure reason for the unsuccessful result.

Possible values are:

- UNSPECIFIED: Indicates the PCF received the UE sent UE policy delivery service cause #111

(Protocol error, unspecified) or that the PCF does not authorize the service information

for unspecified reasons.

- UE\_NOT\_REACHABLE: Indicates the PCF received the notification from the AMF that the UE is

not reachable.

- UNKNOWN: Indicates unknown reasons upon no response from the UE, e.g. UPDS message type is

not defined or not implemented by the UE, or not compatible with the UPDS state, in which

the UE shall ignore the UPDS message.

- UE\_TEMP\_UNREACHABLE: Indicates the PCF received the notification from the AMF that the UE

is not reachable but the PCF will retry again.

- DNN\_NOT ALLOWED: Indicates that the DNN is not authorized for the user.

- SNSSAI\_NOT\_ALLOWED: Indicates that the SNSSAI is not authorized for the user.

ConnectionCapabilities:

anyOf:

- type: string

enum:

- IMS

- MMS

- SUPL

- INTERNET

- IOT\_DELAY\_TOLERANT

- IOT\_NON\_DELAY\_TOLERANT

- DL\_STREAMING

- UL\_STREAMING

- VEHIC\_COMM

- REAL\_TIME\_INTERACTIVE

- UNIFIED\_COMM

- BACKGROUND

- MISS\_CRITICAL

- TIME\_CRITICAL

- LOW\_LAT\_LOSS\_TOL\_UNACK

- 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: |

Represents the information provided by a UE application when it requests a network

connection with certain capabilities.

Possible values are:

- IMS: Indicates the connection capability to support IMS service.

- MMS: Indicates the connection capability to support MMS service.

- SUPL: Indicates the connection capability to support SUPL service.

- INTERNET: Indicates the connection capability to support Internet service.

- IOT\_DELAY\_TOLERANT: Indicates the connection capability to support IoT

delay-tolerant services.

- IOT\_NON\_DELAY\_TOLERANT: Indicates the connection capability to support IoT

non-delay-tolerant services.

- DL\_STREAMING: Indicates the connection capability to support downlink streaming

services.

- UL\_STREAMING: Indicates the connection capability to support uplink streaming services

- VEHIC\_COMM: Indicates the connection capability to support vehicular communication

services.

- REAL\_TIME\_INTERACTIVE: Indicates the connection capability to support real time

interactive services.

- UNIFIED\_COMM: Indicates the connection capability to support unified communication

services.

- BACKGROUND: Indicates the connection capability to support background services.

- MISS\_CRITICAL: Indicates the connection capability to support mission critical services.

- TIME\_CRITICAL: Indicates the connection capability to support time critical services.

- LOW\_LAT\_LOSS\_TOL\_UNACK: Indicates the connection capability to support low latency

loss tolerant communications in un-acknowledged mode.

UePolPartType:

anyOf:

- type: string

enum:

- URSP

- V2XP

- A2XP

- PROSEP

- RSLPP

- 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: |

Represents a UE policy part type.

Possible values are:

- URSP: Represents a URSP UE policy part type.

- V2XP: Represents a V2X UE policy part type.

- A2XP: Represents an A2X UE policy part type.

- PROSEP: Represents a ProSe UE policy part type.

- RSLPP: Represents an RSLPP UE policy part type.

Outcome:

anyOf:

- type: string

enum:

- INSTALLED\_ON\_UE

- MODIFIED\_BY\_PCF\_AND\_INSTALLED\_ON\_UE

- REJECTED\_BY\_UE

- NOT\_AUTHORIZED\_BY\_PCF

- 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: |

Represents a UE policy part type.

Possible values are:

- INSTALLED\_ON\_UE: The requested parameters were installed on the UE.

- MODIFIED\_BY\_PCF\_AND\_INSTALLED\_ON\_UE: The requested parameters were modified by the PCF

and installed on the UE.

- REJECTED\_BY\_UE: The requested parameters were not successfully installed on the UE.

- NOT\_AUTHORIZED\_BY\_PCF: The requested parameters were not authorized by the PCF.

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