**3GPP TSG CT WG3 Meeting #138 *C3-246312***

**Orlando, US, 18 - 22 November, 2024 *(Revision of C3-246xyz)***

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

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| ***Title:***  |  |
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| ***Source to WG:*** | i, Nokia, AT&T |
| ***Source to TSG:*** |  |
|  |  |
| ***Work item code:*** |  |  | ***Date:*** |  |
|  |  |  |  |  |
| ***Category:*** | **B** |  | ***Release:*** |  |
|  | *Use one of the following categories:****F*** *(correction)****A*** *(mirror corresponding to a change in an earlier release)****B*** *(addition of feature),* ***C*** *(functional modification of feature)****D*** *(editorial modification)*Detailed explanations of the above categories canbe found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | *Use one of the following releases:Rel-8 (Release 8)Rel-9 (Release 9)Rel-10 (Release 10)Rel-11 (Release 11)…Rel-17 (Release 17)Rel-18 (Release 18)Rel-19 (Release 19) Rel-20 (Release 20)* |
|  |  |
| ***Reason for change:*** | As agreed in S2-2411026, the Non-3GPP Device Identifier Information is introduced to support AF provisioning the device Identifiers and their corresponding QoS/Policies parameters associated with a UE via Nnef\_ServiceParameter service.Hence, it is proposed to add Non-3GPP device information for ServiceParameter API. |
|  |  |
| ***Summary of change:*** | 1. Update the service description clauses to support Non-3GPP device information.
2. Defined the new attribute for Non-3GPP device information.
3. Define a new feature applicable to the ServiceParameter API in clauses 5.11.3 for Non-3GPP device enhancement.
4. Define the associated necessary updates to the OpenAPI description of the Nnef\_ServiceParameter API.
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|  |  |
| ***Consequences if not approved:*** | Missing definition of the stage 2 requirements on Non-3GPP device information. |
|  |  |
| ***Clauses affected:*** | 4.4.20, 5.11.2.1, 5.11.2.2, 5.11.2.3.2, 5.11.2.3.12(new), 5.11.3, A.9 |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** | **X** |  |  Other core specifications  | TS 23.502 CR 5065 |
| ***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 new feature to the OpenAPI description of the Nnef\_ServiceParameter API. |
|  |  |
| ***This CR's revision history:*** |  |

**Additional discussion(if needed):**

**Proposed changes:**

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

### 4.4.20 Procedures for service specific parameter provisioning

These procedures are used by an AF to provide service specific parameters to the 5G system via the NEF.

In order to provision service specific parameters to the 5G system, the AF shall send an HTTP POST message to the NEF targetting the resource "Service Parameter Subscriptions", the HTTP POST request message body shall include the ServiceParameterData data structure that shall include:

- service description via one of the following:

a) a combination of DNN and S-NSSAI within the "dnn" attribute and the "snssai" attribute respectively;

b) an AF Service Identifier within the "afServiceId" attribute. In this case, the NEF may translate the received AF service identifier into a DNN and S-NSSAI combination; or

c) an application identifier within the "appId" attribute;

NOTE 1: When the feature "AfGuideURSP" is supported, the DNN, S-NSSAI and/or Application Identifier information can be provided in the "urspGuidance" attribute, hence only the "afServiceId" attribute needs to be included for providing guidance for URSP determination. When the "AfGuideTNAPs" feature is supported, and the attribute "tnaps" is included, the "appId" attribute cannot be included.

- indication of the UEs to which the subscription applies via one of the following:

a) identification of an individual UE within the "gpsi" attribute;

b) an IPv4 address of the UE within the "ueIpv4" attribute;

c) an IPv6 address of the UE within the "ueIpv6" attribute;

d) a MAC address of the UE within the "ueMac" attribute;

e) an identification of a group of UE(s) within the "externalGroupId" attribute;

NOTE 2: When the feature "PIN" is supported, AF can use "externalGroupId" attribute to indicate the external group identifier if more than one PEGC is present within the PIN. If external group identifier is not used for the PIN, then AF will indicate "gpsi" attribute in the individual request for each of the PEGC within the PIN.

f) an identification of any UE within the "anyUeInd" attribute; or

g) when the feature "VPLMNSpecificURSP" is supported, the AF is interacting with the VPLMN, and the request is to influence the determination of VPLMN-specific URSP rules for any inbound roamer from one or more PLMN(s), an identification of the PLMN IDs of the roaming UEs within the "roamUeNetDescs" attribute; and

- service parameters for at least one of the following:

1) V2X service parameters via:

a) configuration parameters for V2X communications over PC5 within the "paramOverPc5" attribute; and

b) configuration parameters for V2X communications over Uu within the "paramOverUu" attribute;

2) if the "ProSe" and/or "ProSe\_Ph2" feature(s) is/are supported, 5G ProSe service parameters via:

a) configuration parameters for 5G ProSe direct discovery within the "paramForProSeDd" attribute;

b) configuration parameters for 5G ProSe direct communication within the "paramForProSeDc" attribute; and

c) configuration parameters for 5G ProSe UE-to-network relay, including configuration parameters for 5G ProSe UE-to-network relay UE within the "paramForProSeU2NRelUe" attribute and configuration parameters for 5G ProSe remote UE within the "ParamForProSeRemUe" attribute;

d) configuration parameters for 5G ProSe UE-to-UE relay, including configuration parameters for 5G ProSe UE-to-UE relay UE within the "paramForProSeU2URelUe" attribute and configuration parameters for 5G ProSe end UE within the "ParamForProSeEndUe" attribute, only if the "ProSe\_Ph2" feature is supported;

3) if the "AfGuideURSP" feature is supported, URSP service parameters via:

a) contents for the AF guidance on URSP within the "urspGuidance" attribute, which shall include one or more URSP rule requests. Each URSP rule request may include:

1. a traffic descriptor within the "trafficDesc" attribute;

- if the "PIN" feature is supported and the provided URSP request applies to a PIN scenario, the traffic descriptor shall correspond to a PIN Identifier within the "pinId" attribute applicable for the PEGC;

2. a relative precedence within the "relatPrecedence" attribute; and/or

3. one or more route selection parameter sets within the "routeSelParamSets" attribute. Each route selection parameter set may include a precedence value within the "precedence" attribute, a DNN within the "dnn" attribute, an S-NSSAI within the "snssai" attribute, a spatial validity condition within the "spatialValidity" attribute, and if the "PduSessTypeChange" feature is also supported and the PDU Session type needs to be changed, the requested PDU Session type within the "pduSessType" attribute. If the request contains only one route selection parameter set, each of the optional attributes "dnn", "snssai", "precedence", and "spatialValidity" that is missing from the request may be complemented by the NEF based on local configuration for the provided AF service identifier. It is up to the NEF to transform the information of the "spatialValidity" attribute into a list of TAIs;

NOTE 3: If the "PIN" feature is supported and the provided URSP request applies to a PIN scenario, the DNN and S-NSSAI need to be included.

b) when the feature "VPLMNSpecificURSP" is supported, the "vpsUrspGuidance" attribute, where each URSP rule may contain the parameters of bullet a) above, and in addition, the description of the VPLMN(s) where the URSP rule applies within the "visitedNetDescs" attribute;

4) if the "A2X" feature is supported, A2X service parameters via:

a) configuration parameters for A2X communications over PC5 within the "a2xParamsPc5" attribute;

b) configuration parameters for A2X communications over Uu within the "a2xParamsUu" attribute;

5) if the "AfGuideTNAPs" feature is supported, TNAP ID(s) service parameters via:

a) a list of the TNAP ID(s) collocated with the 5G-RG(s) of a specific user within the "tnaps" attribute;

NOTE 4: When the "AfGuideTNAPs" feature is supported and the AF provides the "tnaps" attribute, the service specific parameter provisioning procedure is used for the provisioning of UE location related information to be applied for SM Policy Control.

and

6) if the "Ranging\_SL" feature is supported, the Ranging and sidelink positioning service parameters including:

a) configuration parameters for ranging and sidelink positioning within the "paramForRangingSlPos" attribute;

7) if the "Non3gppDevice" feature is supported, service parameters for non-3gpp devices via:

a) the Non-3GPP device information within the "non3gppDeInfos" attribute;

and may include:

- if the "AfNotifications" feature is supported:

a) subscription to event notification of the outcome related to invocation of service parameter provisioning within the "subNotifEvents" attribute; and

b) notification URI within the "notificationDestination" attribute.

In order to update an existing service parameter subscription, the AF shall send an HTTP PUT or HTTP PATCH message to the NEF targetting the resource "Individual Service Parameter Subscription" and requesting to change the subscription. When the HTTP PUT method is used, the NF service consumer should not update attributes that do not exist in the ServiceParameterDataPatch data type, i.e. such attributes should remain unchanged compared to the initial values provided in the HTTP POST request message.

In order to delete an existing service parameter subscription, the AF shall send an HTTP DELETE message to the NEF targetting the resource "Individual Service Parameter Subscription".

In non-roaming scenarios or roaming scenarios when the AF interacts with the HPLMN, upon receipt of the HTTP request from the AF, and if the AF is authorized, the NEF shall interact with the UDM by invoking the Nudm\_SubscriberDataManagement service as described in 3GPP TS 29.503 [17] to retrieve the SUPI or Internal Group Identifier.

The NEF may, based on local configuration, complement missing service parameters. Additionally, based on operator's local policy, NEF may support service specific authorization as described in clause 4.15.6.10 in 3GPP TS 23.502 [2]. Then the NEF shall interact with the UDR to create, update or delete the associated service parameters by using the Nudr\_DataRepository service as defined in 3GPP TS 29.519 [23]. If information related to AfNotifications feature are received from the AF, the NEF shall also include the required information (e.g. "policDelivNotifUri" and "policDelivNotifCorreId" attributes in 3GPP TS 29.519 [23]) in UDR data creation if the NEF supports the DeliveryOutcome feature (as described in 3GPP TS 29.504 [4]).

If the NEF receives an error response from the UDR or UDM, the NEF shall not create, update or delete the resource and shall respond to the AF with a proper error status code. If the NEF received within an error response a "ProblemDetails" data structure with a "cause" attribute indicating an application error, the NEF shall relay this error response to the AF with a corresponding application error, when applicable.

After receiving a successful response from the UDR, the NEF shall:

- for an HTTP POST request, create an "Individual Service Parameter Subscription" resource which represents the Service Parameter provisioning request, addressed by a URI that contains the AF Identifier and a NEF-created configuration identifier, and shall respond to the AF with a 201 Created status code, including a Location header field containing the URI for the created resource. The AF shall use the URI received in the Location header in subsequent requests to the NEF to refer to this Service Parameter Subscription;

- for an HTTP PUT or HTTP PATCH request, update the "Individual Service Parameter Subscription" resource which represents the service parameter provisioning request, and respond to the AF with a 200 OK or 204 No Content status code; and

- for an HTTP DELETE request, remove all properties of the resource and delete the corresponding active "Individual Service Parameter Subscription" resource, then respond to the AF with a 204 No Content status code.

When the NEF receives the Service Specific Authorization Update information from the UDM by Nudm\_ServiceSpecificAuthorization\_UpdateNotify service operation defined in 3GPP TS 29.503 [17], if the authorization is revoked, the NEF shall provide a notification to AF by sending HTTP POST message that include the one or more AfNotification data structure(s). Upon receipt of the notification, the AF shall respond with a "204 No Content" status code to confirm the received notification.

When the NEF receives the notification of the outcome of invocation related to AF provisioned service parameters from the PCF by Npcf\_EventExposure\_Notify service operation defined in 3GPP TS 29.523 [22], the NEF shall determine the corresponding service parameter subscription and provide a notification to AF by sending HTTP POST message that include the AfNotification data structure. Upon receipt of the notification, the AF shall respond with a "204 No Content" status code to confirm the received notification.

In the roaming scenarios when the AF interacts with the VPLMN, the interaction of the V-NEF with the UDM does not apply. The V-NEF stores in the V-UDR the service parameter information provided by the AF and receives from the V-PCF the notification of the outcome of the provisioning of the AF requested service parameters.

\*\*\* Next 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 |
| 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 |
| 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. | 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. | 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. | 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. | 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 |
| 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 |
| UrspRuleRequest | 5.11.2.3.4 | Contains parameters that can be used to guide the URSP. | AfGuideURSP |

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

#### 5.11.2.2 Reused data types

The data types reused by the ServiceParameter API from other specifications are listed in table 5.9.2.2-1.

Table 5.11.2.2-1: Re-used Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Reference | Comments | Applicability |
| AppDescriptor | 5.7.2.3.4 | Application descriptor describes the operation systems and the corresponding applications for each operation systems. |  |
| Bytes | 3GPP TS 29.571 [8] | Represents a string with format "byte". | ExtConnCapability |
| Dnn | 3GPP TS 29.571 [8] | Identifies a DNN. |  |
| DnnSnssaiInformation | 5.18.3.3.5 | Contains DNN and S-NSSAI information. | Non3gppDevice |
| EthFlowDescription | 3GPP TS 29.514 [7] | Defines a packet filter for an Ethernet flow. |  |
| EthFlowInfo | 3GPP TS 29.122 [4] | Represents Ethernet flow information. | Non3gppDevice |
| ExternalGroupId | 3GPP TS 29.122 [4] | External Group Identifier for a user group. |  |
| FlowInfo | 3GPP TS 29.122 [4] | Represents IP flow information | Non3gppDevice |
| GeographicalArea | 5.17.3.3.4 | Identifies the geographical area information. | AfGuideURSP |
| Gpsi | 3GPP TS 29.571 [8] | Identifies a GPSI. |  |
| IpAddr | 3GPP TS 29.571 [8] | UE IP Address. |  |
| IPv4Addr | 3GPP TS 29.571 [8] | Identifies an IPv4 address. |  |
| IPv6Addr | 3GPP TS 29.571 [8] | Identifies an IPv6 address. |  |
| Link | 3GPP TS 29.122 [4] | Represents a referenced resource. |  |
| MacAddr48 | 3GPP TS 29.571 [8] | Identifies an MAC address. |  |
| Mcc | 3GPP TS 29.571 [8] | Mobile Country Code. |  |
| Mnc | 3GPP TS 29.571 [8] | Mobile Network Code. |  |
| PduSessionType | 3GPP TS 29.571 [8] | Represents the PDU session type. | PduSessTypeChange |
| PlmnId | 3GPP TS 29.571 [8] | Identifies a PLMN Identifier. |  |
| PlmnIdNid | 3GPP TS 29.571 [8] | Identifies a PLMN Identifier and optionally the Network Identity. | PlmnIdNid |
| QosParameterSet | 3GPP TS 29.543 [68] | Represents the QoS requirements expressed as one or more individual QoS parameters. | Non3gppDevice |
| MtcProviderInformation | 3GPP TS 29.571 [8] | Indicates MTC provider information. |  |
| Snssai | 3GPP TS 29.571 [8] | Identifies the S-NSSAI. |  |
| SupportedFeatures | 3GPP TS 29.571 [8] | Used to negotiate the applicability of the optional features defined in table 5.11.3-1. |  |
| Tai | 3GPP TS 29.571 [8] | Tracking Area Identity information. |  |
| TnapId | 3GPP TS 29.571 [8] | Trusted Network Access Point identifier. |  |
| Uinteger | 3GPP TS 29.571 [8] | Unsigned integer. |  |

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

##### 5.11.2.3.2 Type: ServiceParameterData

Table 5.11.2.3.2-1: Definition of type ServiceParameterData

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| self | Link | C | 0..1 | Identifies the individual service parameter subscription resource URI.Shall be present by the NEF in HTTP responses that include an object of ServiceParameterData type. |  |
| dnn | Dnn | O | 0..1 | Identifies a DNN. (NOTE 2) (NOTE 3) |  |
| snssai | Snssai | O | 0..1 | Identifies an S-NSSAI. (NOTE 2) (NOTE 3) |  |
| afServiceId | string | O | 0..1 | Identifies a service on behalf of which the AF is issuing the request. (NOTE 2) (NOTE 3) |  |
| appId | string | O | 0..1 | Identifies an application identifier. (NOTE 2) |  |
| gpsi | Gpsi | O | 0..1 | Identifies GPSI. (NOTE 1) |  |
| ueIpv4 | Ipv4Addr | O | 0..1 | The IPv4 address of the served UE. (NOTE 1) |  |
| ueIpv6 | Ipv6Addr | O | 0..1 | The IPv6 address of the served UE. (NOTE 1) |  |
| ueMac | MacAddr48 | O | 0..1 | The MAC address of the served UE. (NOTE 1) |  |
| externalGroupId | ExternalGroupId | O | 0..1 | Represents a group of users. (NOTE 1) |  |
| anyUeInd | boolean | O | 0..1 | Identifies whether the service parameters apply to any non-roaming UE.- "true": the service parameters are applicable to any non-roaming UE.- "false": the service parameters are not applicable to any non-roaming UE.- Default value is "false" if omitted.(NOTE 1) (NOTE 3) |  |
| roamUeNetDescs | array(NetworkDescription) | O | 1..N | Each element identifies one (e.g., combination of MCC and MNC) or more (e.g. a MCC only) PLMN ID(s). It indicates the PLMN(s) of inbound roamers to which the provided AF guidance on VPLMN-specific URSP rules apply. (NOTE 1) | VPLMNSpecificURSP |
| subNotifEvents | array(Event) | C | 1..N | Identifies the AF subscribed event(s) notifications related to AF provisioned service parameters. | AfNotifications |
| notificationDestination | Uri | C | 0..1 | Contains the callback URI to receive the notifications from the NEF. Shall be present If "subNotifEvents" attribute is included. | AfNotifications |
| requestTestNotification | boolean | O | 0..1 | 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 [4]. The default value is "false" if omitted. | Notification\_test\_event |
| websockNotifConfig | WebsockNotifConfig | O | 0..1 | Configuration parameters to set up notification delivery over Websocket protocol. | Notification\_websocket |
| paramOverPc5 | ParameterOverPc5 | O | 0..1 | Contains the V2X service parameters used over PC5 |  |
| paramOverUu | ParameterOverUu | O | 0..1 | Contains the V2X service parameters used over Uu |  |
| paramForProSeDd | ParamForProSeDd | O | 0..1 | Contains the service parameters for 5G ProSe direct discovery. | ProSe |
| paramForProSeDc | ParamForProSeDc | O | 0..1 | Contains the service parameters for 5G ProSe direct communications. | ProSe |
| paramForProSeU2NRelUe | ParamForProSeU2NRelUe | O | 0..1 | Contains the service parameters for 5G ProSe UE-to-network relay UE. | ProSe |
| paramForProSeRemUe | ParamForProSeRemUe | O | 0..1 | Contains the service parameters for 5G ProSe remote UE. | ProSe |
| paramForProSeU2URelUe | ParamForProSeU2URelUe | O | 0..1 | Contains the service parameters for 5G ProSe UE-to-UE relay UE. | ProSe\_Ph2 |
| paramForProSeEndUe | ParamForProSeEndUe | O | 0..1 | Contains the service parameters for 5G ProSe end UE. | ProSe\_Ph2 |
| paramForRangingSlPos | ParamForRangingSlPos | O | 0..1 | Contains the service parameters for ranging and sidelink positioning. | Ranging\_SL |
| urspGuidance | array(UrspRuleRequest) | O | 1..N | Contains the service parameters used to guide the URSP rule(s). | AfGuideURSP |
| vpsUrspGuidance | array(UrspRuleRequest) | O | 1..N | Contains the service parameters provided by an AF to guide the VPLMN-specific URSP rule(s). | VPLMNSpecificURSP |
| a2xParamsPc5 | A2xParamsPc5 | O | 0..1 | Contains the A2X service parameters used over PC5 reference point. | A2X |
| a2xParamsUu | A2xParamsUu | O | 0..1 | Contains the A2X service parameters used over Uu reference point. | A2X |
| tnaps | array(TnapId) | O | 1..N | Contains the TNAP ID(s) collocated with the 5G-RG(s) of a specific user. | AfGuideTNAPs |
| mtcProviderId | MtcProviderInformation | O | 0..1 | Indicates MTC provider information. |  |
| non3gppDeInfos | array(Non3gppDeviceInformation) | O | 1..N | Contains the Non-3GPP device information.(NOTE 1) | Non3gppDevice |
| suppFeat | SupportedFeatures | C | 0..1 | Indicates the list of Supported features used as described in clause 5.11.3.This attribute shall be provided in the POST request and in the response of successful resource creation. |  |
| NOTE 1: One of individual UE identifier (i.e. "gpsi", "ueIpv4", "ueIpv6" or "ueMac" attribute), External Group Identifier (i.e. "externalGroupId" attribute) or any UE indication (i.e. "anyUeInd" attribute), and when the feature "VPLMNSpecificURSP" is supported, or any inbound roaming UE from the indicated PLMN(s) (i.e., "roamUeNetDescs" attribute) shall be included. For V2X, Prose (when the "ProSe" and/or "ProSe\_Ph2" feature is supported), A2X (when the "A2X" feature is supported) and URSP service parameter provisioning (see clause 4.4.20), only "anyUeInd", "gpsi" and "externalGroupId" attributes are applicable. When the "VPLMNSpecificURSP" feature is supported, the "roamUeNetDescs" attribute only applies to URSP service parameter provisioning and may be included when the "vpsUrspGuidance" attribute is provided. When the "AfGuideTNAPs" feature is supported, when TNAP ID(s) is provisioned within the "tnaps" attribute, only "gpsi" shall be provided. When the "Non3gppDevice" feature is supported and the Non-3GPP device identifier(s) information is provisioned within the "non3gppDeInfo" attribute, only "gpsi" and "externalGroupId" attributes are applicable.NOTE 2: Either the "afServiceId" attribute, "appId" attribute or the combination of "snssai" and "dnn" attributes shall be provided. When the feature "AfGuideURSP" is supported, only the "afServiceId" attribute shall be provided for providing guidance for URSP determination. When the feature "AfGuideTNAPs" is supported, when TNAP ID(s) is provisioned within the "tnaps" attribute, only the "afServiceId" attribute shall be provided.NOTE 3: When "anyUeInd" attribute is present, "appId" attribute, "afServiceId" attribute or the combination of "snssai" attribute and "dnn" attribute shall be provided. When the feature "AfGuideURSP" is supported, only the "afServiceId" attribute shall be provided for providing guidance for URSP determination. |

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

##### 5.11.2.3.12 Type: Non3gppDeviceInformation

Table 5.11.2.3.12-1: Definition of type Non3gppDeviceInformation

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| non3gppDevId | string | M | 1 | Represents the Non-3GPP Device Identifier. |  |
| dnnSnssaiInfo | DnnSnssaiInformation | O | 0..1 | Identifies the DNN and S-NSSAI information to be used |  |
| flowInfos | array(FlowInfo) | O | 1..N | Describes the IP data flow(s) of the non-3gpp device which require specific QoS. |  |
| ethFlowInfos | array(EthFlowInfo) | O | 1..N | Contains the ethernet flow description. |  |
| qosReference | string | C | 0..1 | Contains the requested QoS requirements expressed as a QoS Reference.(NOTE) |  |
| indQosParamSet | QosParameterSet | C | 0..1 | Contains the requested QoS requirements expressed as one or more individual QoS parameters.(NOTE) |  |
| NOTE: These attributes are mutually exclusive. One of them shall be present. |

\*\*\* 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 UE policy and N2 information provisioning for 5G ProSe UE-to-UE Relay function.This feature requires that the ProSe feature is also supported. |
| 9 | PIN | This feature indicates the support of Personal IoT Network requirements. |
| 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. |
| 15 | Non3gppDevice | This feature indicates the support of provisioning information for non-3GPP device. |

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

# A.9 ServiceParameter API

openapi: 3.0.0

info:

 title: 3gpp-service-parameter

 version: 1.2.1

 description: |

 API for AF service paramter

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externalDocs:

 description: >

 3GPP TS 29.522 V18.7.0; 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

 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'

 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'

 non3gppDeInfos:

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

 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'

 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'

 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

 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:

 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: Contains 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'

 oneOf:

 - required: [qosReference]

 - required: [indQosParamSet]

 Event:

 anyOf:

 - type: string

 enum:

 - SUCCESS\_UE\_POL\_DEL\_SP

 - UNSUCCESS\_UE\_POL\_DEL\_SP

 - 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.

 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'

 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.

 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'

 Failure:

 anyOf:

 - type: string

 enum:

 - UNSPECIFIED

 - UE\_NOT\_REACHABLE

 - UNKNOWN

 - UE\_TEMP\_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: |

 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).

 - 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.

 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.

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