**3GPP TSG-CT3 Meeting #121e C3-222153**

**E-Meeting, 6th – 12th April 2022**

**Source: Huawei, Nokia, Nokia Shanghai Bell**

**Title: Support of Alternative QoS Parameter Set**

**Spec: 29.565 1.2.0**

**Agenda item: 17.16**

**Document for: Decision**

**1. Introduction**

<Introduction part (optional)>

**2. Reason for Change**

As defined 6.1.3.22 of TS 23.503, the AF may provide either QoS reference and alternative QoS reference additionally or the individual QoS parameters and Alternative QoS Parameter Set additionally. The QoS notification control is also applied to the Alternative QoS Parameter Set(s).

**3. Conclusions**

Add Support of Alternative QoS Parameter Set.

**4. Proposal**

It is proposed to agree the following changes to 3GPP TS 29.565 1.2.0.

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

##### 5.3.2.2.2 Initial provisioning of TSC related service information

This procedure is used to set up a TSC AF application session context for the service as defined in 3GPP TS 23.501 [2], 3GPP TS 23.502 [3] and 3GPP TS 23.503 [19].

Figure 5.3.2.2.2-1 illustrates the initial provisioning of TSC related service information.



Figure 5.3.2.2.2-1: Initial provisioning of TSC related service information

When a new TSC AF application session context is being established and media information for this application session context is available at the NF service consumer and the related media requires PCC control, the NF service consumer shall invoke the Ntsctsf\_QoSandTSCAssistance\_Create service operation by sending the HTTP POST request to the resource URI representing the "TSC Application Sessions" collection resource of the TSCTSF, as shown in figure 5.3.2.2.2-1, step 1.

The NF service consumer shall include the "TscAppSessionContextData" data type in the payload body of the HTTP POST request in order to request the creation of the "Individual TSC Application Session Context" resource. The "Individual TSC Application Session Context" resource and the "Events Subscription" sub-resource are created as described below.

The NF service consumer shall include in the "TscAppSessionContextData" data structure:

- the AF identifier within the "afId" attribute;

- either the IP address (IPv4 or IPv6) of the PDU session within the "ueIpAddr" attribute for IP type PDU session or the MAC address of the DS-TT port within the "ueMac" attribute for Ethernet type PDU sessions.;

Editor's Note: How to get the address of DS-TT by the NF service consumer is FFS.

- either the flow information within the "flowInfo" or "ethFlowInfo" attribute or the Application Id within the "appId" attribute;

- the QoS reference within the "qosReference" attribute or the individual QoS parameter set within the "tscQosReq" attribute;

- the URI where the TSCTSF can request to the NF service consumer to delete the "Individual TSC Application Session Context" resource within the "notifUri" attribute;

and may include:

- the DNN within the "dnn" attribute;

- the S-NSSAI within the "snssai" attribute;

- the domain identity in the "ipDomain" attribute;

- an ordered list of alternative QoS references within the "altQosReferences" attribute if the QoS reference is provided or an ordered list of requested alternative QoS parameters set(s) within the "altQosReqs" attribute if the individual QoS parameter set is provided;

- the request of the notification of certain user plane events within the "evSubsc" attribute. Within the EventsSubscReqData data structure, the NF service consumer shall include:

- the URI where the TSCTSF sends the event notification to the NF service consumer within the "notifUri" attribute;

- a Notification Correlation Identifier for the requested notifications within the "notifCorreId" attribute;

- subscribed the events within the "events" attribute;

- the usage threshold within the "usgThres" attribute if the "USAGE\_REPORT" event is subscribed; and

- QoS monitoring information within the "qosMon" attribute if the "QOS\_MONITORING" event is subscribed.

Upon the reception of this HTTP POST request, the TSCTSF shall:

* interact with the PCF by triggering a Npcf\_PolicyAuthorization\_Create request to provision the related parameters to the PCF as defined in 3GPP TS 29.514 [20];
* if the Requested 5GS delay is received from NF service consumer, calculate a Requested PDB by subtracting the UE-DS-TT residence time provided by the PCF from the Requested 5GS delay;

- if receiving a successful response from the PCF, the TSCSTF shall create an "Individual TSC Application Session Context" resource and send to the NF service consumer a "201 Created" response to the HTTP POST request, as shown in figure 5.3.2.2.2-1, step 2. If the "evSubsc" attribute is received, the "Events Subscription" sub-resource shall be created within the "Individual TSC Application Session Context" resource. The TSCTSF shall include in the "201 Created" response:

- a Location header field; and

- a "TscAppSessionContextData" data type in the payload body.

The Location header field shall contain the URI of the created "Individual TSC Application Session Context" i.e. "{apiRoot}/ntsctsf-qos-tscai/v1/tsc-app-sessions/{appSessionId}".

When "Events Subscription" sub-resource is created in this procedure, the NF service consumer shall build the sub-resource URI by adding the path segment "/events-subscription" at the end of the URI path received in the Location header field.

If the TSCTSF cannot successfully fulfil the received HTTP POST request due to the internal TSCTSF error or due to the error in the HTTP POST request, the TSCTSF shall send the HTTP error response as specified in clause 6.2.7.

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

##### 5.3.2.3.2 Modification of TSC related service information

This procedure is used to modify an existing TSC application session context as defined in 3GPP TS 23.501 [2], 3GPP TS 23.502 [3] and 3GPP TS 23.503 [19].

Figure 5.3.2.3.2-1 illustrates the modification of TSC related service information using HTTP PATCH method.



Figure 5.3.2.3.2-1: Modification of TSC related service information using HTTP PATCH

The NF service consumer may modify the TSC application session context information at any time and invoke the Ntsctsf\_QoSandTSCAssistance\_Update service operation by sending the HTTP PATCH request message to the resource URI representing the "Individual TSC Application Session Context" resource, as shown in figure 5.3.2.3.2-1, step 1, with the modifications to apply.

The JSON body within the PATCH request shall include the "TscAppSessionContextUpdateData" data type and shall be encoded according to "JSON Merge Patch", as defined in IETF RFC 7396 [22].

The NF service consumer may include in the "TscAppSessionContextUpdateData" data structure:

* the updated flow information within the "flowInfo" or "ethFlowInfo" attribute;
* the updated application Id within the "appId" attribute;
* the updated QoS reference within the "qosReference" attribute or the updated individual QoS parameter set within the "tscQosReq" attribute;
* the update URI where the TSCTSF can request to the NF service consumer to delete the "Individual TSC Application Session Context" resource within the "notifUri".
* the updated ordered list of alternative QoS references within the "altQosReferences" attribute or updated ordered list of requested alternative QoS parameters set(s) within the "altQosReqs" attribute; and
* the updated event subscription information within the "evSubsc" attribute. Within the EventsSubscReqDataRm data structure, the NF service consumer shall include:

- the new complete list of subscribed events within the "events" attribute;

- when the NF service consumer requests to update the additional information related to an event (e.g. the NF service consumer needs to provide new thresholds to the TSCTSF in the "usgThres" attribute related to the "USAGE\_REPORT" event), the additional information within the corresponding attribute(s).

NOTE 1: Note that when the NF service consumer requests to remove an event, this event is not included in the "events" attribute.

NOTE 2: When an event is included in the "events" attribute and its related additional information is set to null, the PCF considers the subscription to this event is active, but the related procedures stop applying.

NOTE 3: When an event is removed from the "events" attribute but its related information is not set to null, the PCF considers the subscription to this event is terminated, the related additional information is removed, and the related procedures stop applying.

The NF service consumer shall remove existing event subscription information by setting to null the "evSubsc" attribute included in "TscAppSessionContextUpdateData".

NOTE 4: The "notifUri" attribute within the EventsSubscReqData data structure can be modified to request that subsequent notifications are sent to a new NF service consumer.

Upon the reception of this HTTP PATCH request, the TSCTSF shall

- if the updated Requested 5GS delay is received from NF service consumer, re-calculate a Requested PDB by subtracting the UE-DS-TT residence time provided by the PCF from the Requested 5GS delay;

- interact with the PCF by triggering a Npcf\_PolicyAuthorization\_Update request to provision the related parameters to the PCF as defined in 3GPP TS 29.514 [20];

- if receiving a successful response from the PCF, the TSCSTF shall update the "Individual TSC Application Session Context" resource and send a "200 OK" or "204 No Content" response to the HTTP POST request to the NF service consumer, as shown in figure 5.3.2.3.2-1, step 2.

If the TSCTSF cannot successfully fulfil the received HTTP PATCH request due to the internal TSCTSF error or due to the error in the HTTP PATCH request, the TSCTSF shall send the HTTP error response as specified in clause 6.2.7.

If the TSCTSF determines the received HTTP PATCH request needs to be redirected, the TSCTSF shall send an HTTP redirect response as specified in clause 6.10.9 of 3GPP TS 29.500 [4].

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

##### 6.2.6.2.2 Type TscAppSessionContextData

Table 6.2.6.2.2-1: Definition of type TscAppSessionContextData

| Attribute name | Data type | P | Cardinality | Description | Applicability |
| --- | --- | --- | --- | --- | --- |
| ueIpAddr | IpAddr | C | 0..1 | The address of the UE.(NOTE x1) |  |
| ipDomain | string | C | 0..1 | The IPv4 address domain identifier.The attribute may only be provided if the ueIpv4 attribute is present. |  |
| ueMac | MacAddr48 | C | 0..1 | Identifies the MAC address.(NOTE x1) |  |
| dnn | Dnn | O | 0..1 | Data Network Name, a full DNN with both the Network Identifier and Operator Identifier, or a DNN with the Network Identifier only. |  |
| snssai | Snssai | O | 0..1 | Identifies the S-NSSAI. |  |
| notifUri | Uri | M | 1 | Notification URI for Individual TSC Application Session Context termination requests. |  |
| appId | string | C | 0..1 | Identifies the Application Identifier. (NOTE x1) |  |
| flowInfo | array(FlowInfo) | C | 0..1 | Describe the IP data flow which requires QoS.(NOTE x1) |  |
| ethFlowInfo | array(EthFlowDescription) | C | 0..1 | Identifies Ethernet packet flows.(NOTE x1) |  |
| afId | string | M | 1 | Identifies the AF identifier. |  |
| tscQosReq | TscQosRequirement | C | 0..1 | Contains the QoS requirements for time sensitive communication. (NOTE x2) |  |
| qosReference | string | C | 1 | Identifies a pre-defined QoS information. (NOTE x2) |  |
| altQosReferences | array(string) | C | 1..N | Identifies an ordered list of pre-defined QoS information. The lower the index of the array for a given entry, the higher the priority. (NOTE x3) |  |
| altQosReqs | array(AlternativeServiceRequirementsData) | C | 1..N | Identifies an ordered list of alternative service requirements that include individual QoS parameter set(s). The lower the index of the array for a given entry, the higher the priority. (NOTE x3) |  |
| evSubsc | EventsSubscReqData | O | 0..1 | Identifies the events the application subscribes to at creation of an Individual TSC Application Session Context resource. |  |
| suppFeat | SupportedFeatures | C | 1 | This IE represents a list of Supported features used as described in clause 6.2.8.It shall be supplied by the NF service consumer in the POST request and response of requests a creation of an Individual TSC Application Session Context resource. |  |
| NOTE x1: Eirther "ueIpAddr" attribute or "ueMac" attribute shall be included. If IP address is provided, IP flow information shall be provided. If ipv4, the domain identifier may be provided. If mac address is provided, Ethernet flow information shall be provided. One of IP flow information, Ethernet flow information or Application Identifier shall be provided.NOTE x2: Either "tscQosReq" attribute or "qosReference" attribute shall be included.NOTE x3: The attributes "altQoSReferences" and "altQosReqs" are mutually exclusive. |

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

##### 6.2.6.2.4 Type TscAppSessionContextUpdateData

Table 6.2.6.2.4-1: Definition of type TscAppSessionContextUpdateData

| Attribute name | Data type | P | Cardinality | Description | Applicability |
| --- | --- | --- | --- | --- | --- |
| notifUri | Uri | O | 1 | Notification URI for Individual TSC Application Session Context termination requests. |  |
| appId | string | O | 0..1 | Identifies the external Application Identifier. (NOTE x1) |  |
| flowInfo | array(FlowInfo) | O | 0..1 | Describe the IP data flow which requires QoS.(NOTE x1) |  |
| ethFlowInfo | array(EthFlowDescription) | O | 0..1 | Identifies Ethernet packet flows.(NOTE x1) |  |
| tscQosReq | TscQosRequirementRm | C | 0..1 | Contains the QoS requirements for time sensitive communication. (NOTE x2) |  |
| qosReference | string | C | 0..1 | Identifies a pre-defined QoS information. (NOTE x2) |  |
| altQosReferences | array(string) | C | 1..N | Identifies an ordered list of pre-defined QoS information. The lower the index of the array for a given entry, the higher the priority. (NOTE x3) |  |
| altQosReqs | array(AlternativeServiceRequirementsData) | C | 1..N | Identifies an ordered list of alternative service requirements that include individual QoS parameter set(s). The lower the index of the array for a given entry, the higher the priority. (NOTE x3) |  |
| evSubsc | EventsSubscReqDataRm | O | 0..1 | Identifies the events the application subscribes to at modification of an Individual TSC Application Session Context resource. |  |
| NOTE x1: One of IP flow information, Ethernet flow information or Application Identifier may be provided.NOTE x2: Either "tscQosReq" attribute or "qosReference" attribute may be provided.NOTE x3: The attributes "altQoSReferences" and "altQosReqs" are mutually exclusive. |

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

##### 6.2.6.2.7 Type EventNotification

Table 6.2.6.2.7-1: Definition of type EventNotification

| Attribute name | Data type | P | Cardinality | Description | Applicability |
| --- | --- | --- | --- | --- | --- |
| event | TscEvent | M | 1 | Indicates the event reported by the TSCTSF. |  |
| flowIds | array(integer) | O | 1..N | Identifies the flows that were sent during event subscription |  |
| qosMonReports | array(QosMonitoringReport) | C | 1..N | QoS Monitoring reporting information. It shall be present when the notified event is "QOS\_MONITORING". |  |
| appliedQosRef | string | C | 0..1 | The currently applied alternative QoS requirement referring to an alternative QoS reference or a requested alternative QoS parameter set. Applicable for event QOS\_NOT\_GUARANTEED or SUCCESSFUL\_RESOURCES\_ALLOCATION.When it is omitted and the "event" attribute is QOS\_NOT\_GUARANTEED, the event report indicates that the lowest priority alternative QoS profile could not be fulfilled either. |  |

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

## A.3 Ntsctsf\_QoSandTSCAssistance API

openapi: 3.0.0

info:

 title: Ntsctsf\_QoSandTSCAssistance Service API

 version: 1.0.0-alpha.2

 description: |

 TSCTSF QoS and TSC Assistance Service.

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externalDocs:

 description: 3GPP TS 29.565 V1.2.0; 5G System; Time Sensitive Communication and Time Synchronization function Services; Stage 3.

 url: 'https://www.3gpp.org/ftp/Specs/archive/29\_series/29.565/'

#

servers:

 - url: '{apiRoot}/ntsctsf-qos-tscai/v1'

 variables:

 apiRoot:

 default: https://example.com

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

security:

 - {}

 - oAuth2ClientCredentials:

 - ntsctsf-qos-tscai

paths:

 /tsc-app-sessions:

 post:

 summary: Creates a new Individual TSC Application Session Context resource

 operationId: PostTSCAppSessions

 tags:

 - TSC Application Sessions (Collection)

 requestBody:

 description: Contains the information for the creation the resource

 required: true

 content:

 application/json:

 schema:

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

 responses:

 '201':

 description: Successful creation of the resource

 content:

 application/json:

 schema:

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

 headers:

 Location:

 description: >

 Contains the URI of the created individual TSC application session context resource,

 according to the structure

 {apiRoot}/ntsctsf-qos-tscai/v1/tsc-app-sessions/{appSessionId} or the URI of the

 created events subscription sub-resource, according to the structure

 {apiRoot}/ntsctsf-qos-tscai/v1/tsc-app-sessions/{appSessionId}/events-subscription}'

 required: true

 schema:

 type: string

 '400':

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

 '401':

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

 '403':

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

 '404':

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

 '411':

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

 '413':

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

 '415':

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

 '429':

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

 '500':

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

 '503':

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

 default:

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

 callbacks:

 terminationRequest:

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

 post:

 requestBody:

 description: Request of the termination of the Individual TSC Application Session Context

 required: true

 content:

 application/json:

 schema:

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

 responses:

 '204':

 description: The receipt of the notification is acknowledged.

 '307':

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

 '308':

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

 '400':

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

 '401':

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

 '403':

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

 '404':

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

 '411':

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

 '413':

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

 '415':

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

 '429':

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

 '500':

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

 '503':

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

 default:

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

 eventNotification:

 '{$request.body#/evSubsc/notifUri}/notify':

 post:

 requestBody:

 description: Notification of an event occurrence in the TSCTSF.

 required: true

 content:

 application/json:

 schema:

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

 responses:

 '204':

 description: The receipt of the notification is acknowledged

 '307':

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

 '308':

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

 '400':

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

 '401':

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

 '403':

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

 '404':

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

 '411':

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

 '413':

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

 '415':

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

 '429':

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

 '500':

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

 '503':

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

 default:

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

#

 /tsc-app-sessions/{appSessionId}:

 get:

 summary: "Reads an existing Individual TSC Application Session Context"

 operationId: GetTSCAppSession

 tags:

 - Individual TSC Application Session Context (Document)

 parameters:

 - name: appSessionId

 description: string identifying the resource

 in: path

 required: true

 schema:

 type: string

 responses:

 '200':

 description: A representation of the resource is returned.

 content:

 application/json:

 schema:

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

 '307':

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

 '308':

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

 '400':

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

 '401':

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

 '403':

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

 '404':

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

 '406':

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

 '429':

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

 '500':

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

 '503':

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

 default:

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

 patch:

 summary: "Modifies an existing Individual TSC Application Session Context"

 operationId: ModAppSession

 tags:

 - Individual TSC Application Session Context (Document)

 parameters:

 - name: appSessionId

 description: string identifying the resource

 in: path

 required: true

 schema:

 type: string

 requestBody:

 description: modification of the resource.

 required: true

 content:

 application/merge-patch+json:

 schema:

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

 responses:

 '200':

 description: successful modification of the resource and a representation of that resource is returned

 content:

 application/json:

 schema:

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

 '204':

 description: The successful modification

 '307':

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

 '308':

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

 '400':

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

 '401':

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

 '403':

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

 '404':

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

 '411':

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

 '413':

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

 '415':

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

 '429':

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

 '500':

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

 '503':

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

 default:

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

 callbacks:

 eventNotification:

 '{$request.body#/evSubsc/notifUri}/notify':

 post:

 requestBody:

 description: Notification of an event occurrence in the TSCTSF.

 required: true

 content:

 application/json:

 schema:

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

 responses:

 '204':

 description: The receipt of the notification is acknowledged

 '307':

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

 '308':

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

 '400':

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

 '401':

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

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

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

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 '415':

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

 '429':

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

 '500':

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

 '503':

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

 default:

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

#

#

 /tsc-app-sessions/{appSessionId}/delete:

 post:

 summary: "Deletes an existing Individual TSC Application Session Context"

 operationId: DeleteTSCAppSession

 tags:

 - Individual TSC Application Session Context (Document)

 parameters:

 - name: appSessionId

 description: string identifying the Individual TSC Application Session Context resource

 in: path

 required: true

 schema:

 type: string

 requestBody:

 description: deletion of the Individual TSC Application Session Context resource, request notification

 required: false

 content:

 application/json:

 schema:

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

 responses:

 '200':

 description: The deletion of the resource is confirmed and a resource is returned

 content:

 application/json:

 schema:

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

 '204':

 description: The deletion is confirmed without returning additional data.

 '307':

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

 '308':

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

 '400':

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

 '401':

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

 '403':

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

 '404':

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

 '411':

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

 '413':

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

 '415':

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

 '429':

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

 '500':

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

 '503':

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

 default:

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

#

 /tsc-app-sessions/{appSessionId}/events-subscription:

 put:

 summary: "creates or modifies an Events Subscription subresource"

 operationId: putEventsSubsc

 tags:

 - Events Subscription (Document)

 parameters:

 - name: appSessionId

 description: string identifying the Events Subscription resource

 in: path

 required: true

 schema:

 type: string

 requestBody:

 description: Creation or modification of an Events Subscription resource.

 required: true

 content:

 application/json:

 schema:

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

 responses:

 '201':

 description: The creation of the Events Subscription resource is confirmed and its representation is returned.

 content:

 application/json:

 schema:

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

 headers:

 Location:

 description: >

 Contains the URI of the created Events Subscription resource,

 according to the structure

 {apiRoot}/ntsctsf-qos-tscai/v1/tsc-app-sessions/{appSessionId}/events-subscription}

 required: true

 schema:

 type: string

 '200':

 description: The modification of the Events Subscription resource is confirmed its representation is returned.

 content:

 application/json:

 schema:

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

 '204':

 description: The modification of the Events Subscription subresource is confirmed without returning additional data.

 '307':

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

 '308':

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

 '400':

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

 '401':

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

 '403':

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

 '404':

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

 '411':

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

 '413':

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

 '415':

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

 '429':

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

 '500':

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

 '503':

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

 default:

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

 callbacks:

 eventNotification:

 '{$request.body#/notifUri}/notify':

 post:

 requestBody:

 description: Contains the information for the notification of an event occurrence in the TSCTSF.

 required: true

 content:

 application/json:

 schema:

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

 responses:

 '204':

 description: The receipt of the notification is acknowledged.

 '307':

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

 '308':

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

 '400':

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

 '401':

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

 '403':

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

 '404':

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

 '411':

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

 '413':

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

 '415':

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

 '429':

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

 '500':

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

 '503':

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

 default:

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

 delete:

 summary: deletes the Events Subscription subresource

 operationId: DeleteEventsSubsc

 tags:

 - Events Subscription (Document)

 parameters:

 - name: appSessionId

 description: string identifying the Individual TSC Application Session Context resource

 in: path

 required: true

 schema:

 type: string

 responses:

 '204':

 description: The deletion of the of the Events Subscription sub-resource is confirmed without returning additional data.

 '307':

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

 '308':

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

 '400':

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

 '401':

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

 '403':

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

 '404':

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

 '429':

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

 '500':

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

 '503':

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

 default:

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

components:

 securitySchemes:

 oAuth2ClientCredentials:

 type: oauth2

 flows:

 clientCredentials:

 tokenUrl: '{nrfApiRoot}/oauth2/token'

 scopes:

 ntsctsf-qos-tscai: Access to the Ntsctsf\_QoSandTSCAssistance API

 schemas:

 TscAppSessionContextData:

 description: Represents an Individual TSC Application Session Context resource.

 type: object

 required:

 - notifUri

 - afId

 - qosReference

 oneOf:

 - required: [ueIpAddr]

 - required: [ueMac]

 properties:

 ueIpAddr:

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

 ipDomain:

 type: string

 description: The IPv4 address domain identifier.

 ueMac:

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

 dnn:

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

 snssai:

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

 notifUri:

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

 appId:

 type: string

 description: Identifies the Application Identifier.

 ethFlowInfo:

 type: array

 items:

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

 minItems: 1

 flowInfo:

 type: array

 items:

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

 minItems: 1

 afId:

 type: string

 description: Identifies the AF identifier.

 tscQosReq:

 $ref: 'TS29122\_AsSessionWithQoS.yaml#/components/schemas/TscQosRequirement'

 qosReference:

 type: string

 description: Identifies a pre-defined QoS information.

 altQosReferences:

 type: array

 items:

 type: string

 minItems: 1

 description: Identifies an ordered list of pre-defined QoS information.

 altQosReqs:

 type: array

 items:

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

 minItems: 1

 description: >

 Identifies an ordered list of alternative service requirements that include individual

 QoS parameter sets. The lower the index of the array for a given entry, the higher the

 priority.

 evSubsc:

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

 suppFeat:

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

 TscAppSessionContextUpdateData:

 description: Describes the authorization data of an Individual TSC Application Session Context created by the PCF.

 type: object

 properties:

 notifUri:

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

 appId:

 type: string

 description: Identifies the Application Identifier.

 ethFlowInfo:

 type: array

 items:

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

 minItems: 1

 flowInfo:

 type: array

 items:

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

 minItems: 1

 tscQosReq:

 $ref: 'TS29122\_AsSessionWithQoS.yaml#/components/schemas/TscQosRequirement'

 qosReference:

 type: string

 description: Identifies a pre-defined QoS information.

 altQosReferences:

 type: array

 items:

 type: string

 minItems: 1

 description: Identifies an ordered list of pre-defined QoS information.

 altQosReqs:

 type: array

 items:

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

 minItems: 1

 description: >

 Identifies an ordered list of alternative service requirements that include individual

 QoS parameter sets. The lower the index of the array for a given entry, the higher the

 priority.

 evSubsc:

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

 EventsSubscReqData:

 description: Identifies the events the application subscribes to.

 type: object

 required:

 - events

 - Uri

 - notifCorreId

 properties:

 events:

 type: array

 items:

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

 minItems: 1

 notifUri:

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

 qosMon:

 $ref: 'TS29122\_AsSessionWithQoS.yaml#/components/schemas/QosMonitoringInformation'

 minItems: 1

 usgThres:

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

 notifCorreId:

 type: string

 EventsSubscReqDataRm:

 description: this data type is defined in the same way as the EventsSubscReqData data type, but with the OpenAPI nullable property set to true.

 type: object

 required:

 - events

 properties:

 events:

 type: array

 items:

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

 notifUri:

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

 qosMon:

 $ref: 'TS29122\_AsSessionWithQoS.yaml#/components/schemas/QosMonitoringInformationRm'

 minItems: 1

 usgThres:

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

 notifCorreId:

 type: string

 nullable: true

 EventsNotification:

 description: describes the notification of a matched event

 type: object

 required:

 - notifCorreId

 - events

 properties:

 notifCorreId:

 type: string

 events:

 type: array

 items:

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

 minItems: 1

 EventNotification:

 description: describes a notification of an matched event

 type: object

 required:

 - event

 properties:

 event:

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

 flowIds:

 type: array

 items:

 type: integer

 minItems: 1

 description: Identifies the IP flows that were sent during event subscription

 qosMonReports:

 type: array

 items:

 $ref: 'TS29122\_AsSessionWithQoS.yaml#/components/schemas/QosMonitoringReport'

 minItems: 1

 usgRep:

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

 appliedQosRef:

 type: string

 description: >

 The currently applied alternative QoS requirement referring to an alternative QoS

 reference or a requested alternative QoS parameter set. Applicable for

 event QOS\_NOT\_GUARANTEED or SUCCESSFUL\_RESOURCES\_ALLOCATION.

#

# ENUMERATIONS DATA TYPES

#

 TscEvent:

 description: Represents an event to notify to the AF.

 anyOf:

 - type: string

 enum:

 - FAILED\_RESOURCES\_ALLOCATION

 - QOS\_MONITORING

 - QOS\_GUARANTEED

 - QOS\_NOT\_GUARANTEED

 - SUCCESSFUL\_RESOURCES\_ALLOCATION

 - type: string

#

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