**3GPP TSG-CT3 Meeting #121e C3-222173**

**E-Meeting, 6th – 12th April 2022**

**Source: Huawei**

**Title: Modification of subscription to notification of synchronization service capability**

**Spec: 29.565 1.2.0**

**Agenda item: 17.16**

**Document for: Decision**

**1. Introduction**

<Introduction part (optional)>

**2. Reason for Change**

The AF may modify the subscription to notification of synchronization service capability, e.g. update the list of UE(s), event filter, notification URI. The Nnef\_TimeSynchronization service supports the PUT method to modify the subscription.

**3. Conclusions**

Ntsctsf\_TimeSynchronization supports the PUT method.

**4. Proposal**

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

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

#### 5.2.2.1 Introduction

Service operations defined for the Ntsctsf\_TimeSynchronization service are shown in table 5.2.2.1-1.

Table 5.2.2.1-1: Ntsctsf\_TimeSynchronization Service Operations

|  |  |  |
| --- | --- | --- |
| Service Operation Name | Description | Initiated by |
| Ntsctsf\_TimeSynchronization\_CapsSubscribe | Allows the NF service consumer to create or modify a subscription to the notification about the capability of time synchronization service for a list of UEs or a DNN/S-NSSAI combination. | NF service consumer (e.g. AF, NEF) |
| Ntsctsf\_TimeSynchronization\_CapsUnsubscribe | Allows the NF service consumer to delete the subscription to the notification about capability of time synchronization service for a list of UEs or a DNN/S-NSSAI combination. | NF service consumer (e.g. AF, NEF) |
| Ntsctsf\_TimeSynchronization\_CapsNotify | Allows the TSCTSF to notify the NF service consumer of the capability of time synchronization service. | TSCTSF |
| Ntsctsf\_TimeSynchronization\_ConfigCreate | Allows the NF service consumer to create a time synchronization configuration. | NF service consumer (e.g. AF, NEF) |
| Ntsctsf\_TimeSynchronization\_ConfigUpdate | Allows the NF service consumers to update the time synchronization configuration. | NF service consumer (e.g. AF, NEF) |
| Ntsctsf\_TimeSynchronization\_ConfigDelete | Allows the NF service consumer to delete the time synchronization configuration. | NF service consumer (e.g. AF, NEF) |
| Ntsctsf\_TimeSynchronization\_ConfigUpdateNotify | Allows the TSCTSF to notify the NF service consumer of the state of time synchronization configuration. | TSCTSF |
| Ntsctsf\_TimeSynchronization\_ASTICreate | Allows the NF service consumer to create a 5G access stratum time distribution configuration. | NF service consumer (e.g. AF, NEF) |
| Ntsctsf\_TimeSynchronization\_ASTIUpdate | Allows the NF service consumer to update a 5G access stratum time distribution configuration. | NF service consumer (e.g. AF, NEF) |
| Ntsctsf\_TimeSynchronization\_ASTIDelete | Allows the NF service consumer to delete a 5G access stratum time distribution configuration. | NF service consumer (e.g. AF, NEF) |
| Ntsctsf\_TimeSynchronization\_ASTIGet | Allows the NF service consumer to query the status of the 5G access stratum time distribution configuration. | NF service consumer (e.g. AF, NEF) |

NOTE: The NEF and the AF use the Ntsctsf\_TimeSynchronization service in the same way.

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

##### 5.2.2.2.1 General

This service operation is used by an NF service consumer to subscribe to notification of capability of time synchronization service for a list of UEs.

The following procedures using the Ntsctsf\_TimeSynchronization\_CapsSubscribe service operation are supported:

- creating a new subscription;

- modifying an existing subscription

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

##### 5.2.2.2.3 Modifying an existing subscription

Figure 5.2.2.2.3-1 illustrates the modification of a subscription.



Figure 5.2.2.2.3-1: Modification of a subscription

To modify the subscription to the notification of the capability of time synchronization service, the NF service consumer shall send an HTTP PUT message to the TSCTSF to the URI "{apiRoot}/ntsctsf-time-sync/<apiVersion>/subscriptions/{subscriptionId}" representing an existing "Individual Time Synchronization Exposure Subscription" resource, as shown in figure 5.2.2.2.3-1, step 1. The HTTP PUT message shall include the TimeSyncExposureSubsc data structure as request body. The TimeSyncExposureSubsc data structure shall the parameters as defined in clause 5.2.2.2.2.

Upon receipt of the HTTP request from the NF service consumer, if the request is authorized, the TSCTSF shall:

- update the existing "Individual Time Synchronization Exposure Subscription" resource;

- identify the affected AF session(s) based on the parameters received from the NF service consumer and interact with the PCF by triggering Npcf\_PolicyAuthorization\_Create/Update request message as defined in 3GPP TS 29.514 [20] for the new added UE(s), by triggering Npcf\_PolicyAuthorization\_Delete request message as defined in 3GPP TS 29.514 [20] for the removed UE(s) or by triggering Npcf\_PolicyAuthorization\_Update request message as defined in 3GPP TS 29.514 [20] for the existing UE(s) if necessary.

NOTE: If the PCF determines an existing PDU Session is potentially impacted by time synchronization service (based on local configuration or SM Policy Association), the PCF invokes Npcf\_PolicyAuthorization\_Notify service operation to the TSCTSF as defined in clause 4.2.5.16 of 3GPP TS 29.514 [20].

- send a HTTP response including "200 OK" status code with TimeSyncExposureSubsc data structure or "204 No Content" status code, as shown in figure 5.2.2.2.3-1, step 2.

If the HTTP PUT request from the NF service consumer is not accepted, the TSCTSF shall indicate in the response to HTTP PUT request the cause for the rejection as specified in clause 6.1.7.

If the TSCTSF determines the received HTTP PUT 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 \* \* \* \*

###### 6.1.3.3.3.2 DELETE

This method shall support the URI query parameters specified in table 6.1.3.3.3.2-1.

Table 6.1.3.3.3.2-1: URI query parameters supported by the DELETE method on this resource

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

This method shall support the request data structures specified in table 6.1.3.3.3.2-2 and the response data structures and response codes specified in table 6.1.3.3.3.2-3.

Table 6.1.3.3.3.2-2: Data structures supported by the DELETE Request Body on this resource

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

Table 6.1.3.3.3.2-3: Data structures supported by the DELETE Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Responsecodes | Description |
| n/a |  |  | 204 No Content | The subscription was deleted successfully. |
| RedirectResponse | O | 0..1 | 307 Temporary Redirect | Temporary redirection, during Individual Time Synchronization Exposure Subscription resource deletion. The response shall include a Location header field containing an alternative URI of the resource located in an alternative TSCTSF (service) instance. |
| RedirectResponse | O | 0..1 | 308 Permanent Redirect | Permanent redirection, during Individual Time Synchronization Exposure Subscription resource deletion. The response shall include a Location header field containing an alternative URI of the resource located in an alternative TSCTSF (service) instance. |
| NOTE: The manadatory HTTP error status code for the DELETE method listed in Table 5.2.7.1-1 of 3GPP TS 29.500 [4] also apply. |

Table 6.1.3.3.3.2-4: Headers supported by the 307 Response Code on this resource

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

Table 6.1.3.3.3.2-5: Headers supported by the 308 Response Code on this resource

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

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

###### 6.1.3.3.3.3 PUT

This method shall support the URI query parameters specified in table 6.1.3.3.3.3-1.

Table 6.1.3.3.3.3-1: URI query parameters supported by the PUT method on this resource

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

This method shall support the request data structures specified in table 6.1.3.3.3.3-2 and the response data structures and response codes specified in table 6.1.3.3.3.3-3.

Table 6.1.3.3.3.3-2: Data structures supported by the PUT Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| TimeSyncExposureSubsc | M | 1 | Modify an existing Time Synchronization Exposure Subscription. |

Table 6.1.3.3.3.3-3: Data structures supported by the PUT Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Responsecodes | Description |
| TimeSyncExposureSubsc | M | 1 | 200 OK | The subscription was updated successfully.  |
| n/a |  |  | 204 No Content | The subscription was deleted successfully. |
| RedirectResponse | O | 0..1 | 307 Temporary Redirect | Temporary redirection, during Individual Time Synchronization Exposure Subscription resource modification. The response shall include a Location header field containing an alternative URI of the resource located in an alternative TSCTSF (service) instance. |
| RedirectResponse | O | 0..1 | 308 Permanent Redirect | Permanent redirection, during Individual Time Synchronization Exposure Subscription resource modification. The response shall include a Location header field containing an alternative URI of the resource located in an alternative TSCTSF (service) instance. |
| NOTE: The manadatory HTTP error status code for the PUT method listed in Table 5.2.7.1-1 of 3GPP TS 29.500 [4] also apply. |

Table 6.1.3.3.3.3-4: Headers supported by the 307 Response Code on this resource

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

Table 6.1.3.3.3.3-5: Headers supported by the 308 Response Code on this resource

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

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

## A.2 Ntsctsf\_TimeSynchronization API

openapi: 3.0.0

info:

 title: Ntsctsf\_TimeSynchronization Service API

 version: 1.0.0-alpha.3

 description: |

 TSCTSF Time Synchronization Service.

 © 2022, 3GPP Organizational Partners (ARIB, ATIS, CCSA, ETSI, TSDSI, TTA, TTC).

 All rights reserved.

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-time-sync/v1'

 variables:

 apiRoot:

 default: https://example.com

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

security:

 - {}

 - oAuth2ClientCredentials:

 - ntsctsf-timesynchronization

paths:

 /subscriptions:

 post:

 summary: Creates a new subscription to notification of capability of time synchronization service resource

 operationId: TimeSynchronizationExposureSubscriptions

 tags:

 - Time Synchronization Exposure Subscriptions (Collection)

 requestBody:

 description: Contains the information for the creation the resource

 required: true

 content:

 application/json:

 schema:

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

 responses:

 '201':

 description: Successful creation of the resource

 content:

 application/json:

 schema:

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

 headers:

 Location:

 description: >

 Contains the URI of the created individual time synchronization exposure

 subscription resource, according to the structure

 {apiRoot}/ntsctsf-time-sync/{apiVersion}/subscriptions/{subscriptionId}

 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/404'

 '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:

 subsEventNotification:

 '{$request.body#/subsNotifUri':

 post:

 requestBody:

 description: Notification of an event occurrence in the TSCTSF.

 required: true

 content:

 application/json:

 schema:

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

 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'

 /subscriptions/{subscriptionId}:

 get:

 summary: "Reads an existing Individual Time Synchronization Exposure Subscription"

 operationId: GetIndividualTimeSynchronizationExposureSubscription

 tags:

 - Individual Time Synchronization Exposure Subscription (Document)

 parameters:

 - name: subscriptionId

 description: string identifying an Individual Time Synchronization Exposure Subscription

 in: path

 required: true

 schema:

 type: string

 responses:

 '200':

 description: A representation of the resource is returned.

 content:

 application/json:

 schema:

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

 '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'

 put:

 operationId: ReplaceIndividualTimeSynchronizationExposureSubscription

 summary: Replace an individual Time Synchronization Exposure Subscription

 tags:

 - IndividualTimeSynchronizationExposureSubscription (Document)

 requestBody:

 required: true

 content:

 application/json:

 schema:

 $ref: 'TS29522\_TimeSyncExposure.yaml#/components/schemas/TimeSyncExposureSubsc'

 parameters:

 - name: subscriptionId

 description: string identifying an Individual Time Synchronization Exposure Subscription

 in: path

 required: true

 schema:

 type: string

 responses:

 '200':

 description: OK. Resource was successfully modified and representation is returned

 content:

 application/json:

 schema:

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

 '204':

 description: No Content. Resource was successfully modified

 '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:

 operationId: DeleteIndividualTimeSynchronizationExposureSubscription

 summary: Delete an Individual TimeSynchronization Exposure Subscription

 tags:

 - Individual Time Synchronization Exposure Subscription (Document)

 parameters:

 - name: subscriptionId

 in: path

 description: string identifying an Individual Time Synchronization Exposure Subscription

 required: true

 schema:

 type: string

 responses:

 '204':

 description: No Content. Resource was successfully deleted

 '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'

 /subscriptions/{subscriptionId}/configurations:

 post:

 summary: "Craete a new Individual Time Synchronization Exposure Configuration"

 operationId: CreateIndividualTimeSynchronizationExposureConfiguration

 tags:

 - Individual Time Synchronization Exposure Configuration (Document)

 parameters:

 - name: subscriptionId

 description: string identifying an Individual Time Synchronization Exposure Subscription

 in: path

 required: true

 schema:

 type: string

 requestBody:

 description: Contains the information for the creation the resource

 required: true

 content:

 application/json:

 schema:

 $ref: 'TS29522\_TimeSyncExposure.yaml#/components/schemas/TimeSyncExposureConfig'

 responses:

 '201':

 description: Successful creation of the resource

 content:

 application/json:

 schema:

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

 headers:

 Location:

 description: >

 Contains the URI of the created individual time synchronization exposure

 configuration resource, according to the structure

 {apiRoot}/ntsctsf-time-sync/{apiVersion}/subscriptions/{subscriptionId}

 /configurations/{configurationId}

 required: true

 schema:

 type: string

 '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/404'

 '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:

 configEventNotification:

 '{$request.body#/configNotifUri':

 post:

 requestBody:

 description: Notification of an event occurrence in the TSCTSF.

 required: true

 content:

 application/json:

 schema:

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

 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'

 /subscriptions/{subscriptionId}/configurations/{configurationId}:

 get:

 summary: "Reads an existing Individual Time Synchronization Exposure Configuration"

 operationId: GetIndividualTimeSynchronizationExposureConfiguration

 tags:

 - Individual Time Synchronization Exposure Configuration (Document)

 parameters:

 - name: subscriptionId

 description: string identifying an Individual Time Synchronization Exposure Subscription

 in: path

 required: true

 schema:

 type: string

 - name: configurationId

 description: string identifying an Individual Time Synchronization Exposure Configuration

 in: path

 required: true

 schema:

 type: string

 responses:

 '200':

 description: A representation of the resource is returned.

 content:

 application/json:

 schema:

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

 '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'

 put:

 operationId: ReplaceIndividualTimeSynchronizationExposureConfiguration

 summary: Replace an individual Time Synchronization Exposure Configuration

 tags:

 - IndividualTimeSynchronizationExposureConfiguration (Document)

 requestBody:

 required: true

 content:

 application/json:

 schema:

 $ref: 'TS29522\_TimeSyncExposure.yaml#/components/schemas/TimeSyncExposureConfig'

 parameters:

 - name: subscriptionId

 description: string identifying an Individual Time Synchronization Exposure Subscription

 in: path

 required: true

 schema:

 type: string

 - name: configurationId

 description: string identifying an Individual Time Synchronization Exposure Configuration

 in: path

 required: true

 schema:

 type: string

 responses:

 '200':

 description: OK. Resource was successfully modified and representation is returned

 content:

 application/json:

 schema:

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

 '204':

 description: No Content. Resource was successfully modified

 '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:

 operationId: DeleteIndividualTimeSynchronizationExposureConfiguration

 summary: Delete an Individual TimeSynchronization Exposure Configuration

 tags:

 - Individual Time Synchronization Exposure Configuration (Document)

 parameters:

 - name: subscriptionId

 in: path

 description: string identifying an Individual Time Synchronization Exposure Subscription

 required: true

 schema:

 type: string

 - name: configurationId

 description: string identifying an Individual Time Synchronization Exposure Configuration

 in: path

 required: true

 schema:

 type: string

 responses:

 '204':

 description: No Content. Resource was successfully deleted

 '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'

 /asti-configurations:

 post:

 summary: Creates a new Individual ASTI Configuration resource.

 operationId: ASTIConfiguration

 tags:

 - ASTI Configurations (Collection)

 requestBody:

 description: Contains the information for the creation the resource

 required: true

 content:

 application/json:

 schema:

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

 responses:

 '201':

 description: Successful creation of the resource

 content:

 application/json:

 schema:

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

 headers:

 Location:

 description: >

 Contains the URI of the created individual ASTI Configuration resource,

 according to the structure

 {apiRoot}/ntsctsf-time-sync/{apiVersion}/asti-configurations/{astiConfigId}

 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/404'

 '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'

 /asti-configurations/retrieve:

 post:

 summary: "Request the status of the 5G access stratum time distribution for a list of UEs."

 operationId: RequestStatusof5GAccessStratumTimeDistribution

 tags:

 - ASTI Configurations Retrieve (Document)

 requestBody:

 description: Contains the information for the status of the 5G access stratum time distribution

 required: true

 content:

 application/json:

 schema:

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

 responses:

 '200':

 description: Successful retrieval of the status of the 5G access stratum time distribution

 content:

 application/json:

 schema:

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

 '400':

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

 '401':

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

 '403':

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

 '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'

 /asti-configurations/{astiConfigId}:

 put:

 summary: "Modifies an existing Individual ASTI Configuration resource"

 operationId: ModifyIndividualASTIConfiguration

 tags:

 - Individual ASTI Configuration (Document)

 parameters:

 - name: astiConfigId

 description: string identifying an Individual ASTI Configuration

 in: path

 required: true

 schema:

 type: string

 requestBody:

 required: true

 content:

 application/json:

 schema:

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

 responses:

 '200':

 description: OK. Resource was succesfully modified and representation is returned

 content:

 application/json:

 schema:

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

 '204':

 description: No Content. Resource was succesfully modified

 '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:

 operationId: DeleteIndividualASTIConfiguration

 summary: Delete an Individual ASTI Configuration

 tags:

 - Individual ASTI Configuration (Document)

 parameters:

 - name: astiConfigId

 in: path

 description: string identifying an Individual ASTI Configuration

 required: true

 schema:

 type: string

 responses:

 '204':

 description: No Content. Resource was successfully deleted

 '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-timesynchronization: Access to the Ntsctsf\_TimeSynchronization API

 schemas:

 TimeSyncExposureSubsc:

 description: Contains the parameters for the subscription to notification of capability of time synchronization service.

 type: object

 properties:

 supis:

 type: array

 items:

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

 minItems: 1

 interGrpId:

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

 anyUeInd:

 type: boolean

 description: Identifies whether the request applies to any UE. This attribute shall set to "true" if applicable for any UE, otherwise, set to "false".

 notifMethod:

 $ref: 'TS29508\_Nsmf\_EventExposure.yaml#/components/schemas/NotificationMethod'

 dnn:

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

 snssai:

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

 subscribedEvents:

 type: array

 items:

 $ref: 'TS29522\_TimeSyncExposure.yaml#/components/schemas/SubscribedEvent'

 minItems: 1

 eventFilters:

 type: array

 items:

 $ref: 'TS29522\_TimeSyncExposure.yaml#/components/schemas/EventFilter'

 minItems: 1

 subsNotifUri:

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

 subsNotifId:

 type: string

 description: Notification Correlation ID assigned by the NF service consumer.

 maxReportNbr:

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

 expiry:

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

 repPeriod:

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

 suppFeat:

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

 required:

 - subsNotifUri

 - subsNotifId

 TimeSyncExposureSubsNotif:

 description: Contains the notification of time synchronization service.

 type: object

 properties:

 subsNotifId:

 type: string

 description: Notification Correlation ID assigned by the NF service consumer.

 eventNotifs:

 type: array

 items:

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

 minItems: 1

 SubsEventNotification:

 description: Contains the notification of capability of time synchronization for a list of UEs.

 type: object

 properties:

 event:

 $ref: 'TS29522\_TimeSyncExposure.yaml#/components/schemas/SubscribedEvent'

 timeSyncCapas:

 type: array

 items:

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

 minItems: 1

 TimeSyncCapability:

 description: Contains the capability of time synchronization service

 type: object

 properties:

 upNodeId:

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

 gmCapables:

 type: array

 items:

 $ref: 'TS29522\_TimeSyncExposure.yaml#/components/schemas/GmCapable'

 minItems: 1

 asTimeRes:

 $ref: 'TS29522\_TimeSyncExposure.yaml#/components/schemas/AsTimeResource'

 ptpCapForUes:

 type: object

 additionalProperties:

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

 minProperties: 1

 description: Contains the PTP capabilities supported by each of the UE(s). The key of the map is the supi.

 required:

 - upNodeId

 anyOf:

 - required: [gmCapables]

 - required: [asTimeRes]

 PtpCapabilitiesPerUe:

 description: Contains the supported PTP capabilities per UE.

 type: object

 properties:

 supi:

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

 ptpCaps:

 type: array

 items:

 $ref: 'TS29522\_TimeSyncExposure.yaml#/components/schemas/EventFilter'

 minItems: 1

 required:

 - supi

 - ptpCaps

 TimeSyncExposureConfigNotif:

 description: Contains the notification of time synchronization service state.

 type: object

 properties:

 configNotifId:

 type: string

 description: Notification Correlation ID assigned by the NF service consumer.

 stateOfConfig:

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

 required:

 - configNotifId

 - stateOfConfig

 StateOfConfiguration:

 description: Contains the state of the time synchronization configuration.

 type: object

 properties:

 state:

 type: boolean

 description: >

 When it is set to true, it indicates the states of configurations for NW-TT port and all

 DS-TT port(s) are active. When it is set to false, it indicates the state of

 configurations for NW-TT port or at least one of the DS-TT port(s) are inactive.

 inactiveNwtt:

 type: boolean

 description: >

 When it is included and set to true, it indicates the state of configuration for NW-TT

 port is inactive. It may be included when the "state" attribute is set to false.

 Default value is false.

 inactiveDstts:

 description: >

 Contains the UE identities. The states of configurations for DS-TT port(s) corresponding

 to these UEs are inactive. It may be included when the "state" attribute is set to false.

 type: array

 items:

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

 minItems: 1

 required:

 - state

 AccessTimeDistributionData:

 description: Contains the parameters for the creation of 5G access stratum time distribution configuration..

 type: object

 properties:

 supis:

 type: array

 items:

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

 minItems: 1

 interGrpId:

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

 anyUeInd:

 type: boolean

 description: Identifies whether the request applies to any UE. This attribute shall set to "true" if applicable for any UE, otherwise, set to "false".

 dnn:

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

 snssai:

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

 asTimeDisParam:

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

 suppFeat:

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

 required:

 - asTimeDisParam

 oneOf:

 - required: [supis]

 - required: [interGrpId]

 - required: [anyUeInd]

 AsTimeDistributionParam:

 description: Contains the 5G access stratum time distribution parameters.

 type: object

 properties:

 asTimeDisEnabled:

 type: boolean

 description: When this attribute is included and set to true, it indicates that the access stratum time distribution via Uu reference point is activated.

 timeSyncErrBudget:

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

 tempValidity:

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

 StatusRequestData:

 description: Contains the parameters for retrieval of the status of the access stratum time distribution for a list of UEs.

 type: object

 properties:

 supis:

 type: array

 items:

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

 minItems: 1

 dnn:

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

 snssai:

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

 required:

 - supis

 StatusResponseData:

 description: Contains the parameters for the status of the access stratum time distribution for a list of UEs.

 type: object

 properties:

 inactiveUes:

 type: array

 items:

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

 minItems: 1

 activeUes:

 type: array

 items:

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

 minItems: 1

 ActiveUe:

 description: Contains the UE identifier whose status of the access stratum time distribution is active and the optional requested time synchronization error budget.

 type: object

 properties:

 supi:

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

 timeSyncErrBudget:

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

 TimeSyncExposureConfig:

 description: Contains the Time Synchronization Configuration parameters.

 type: object

 properties:

 upNodeId:

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

 reqPtpIns:

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

 gmEnable:

 type: boolean

 description: Indicates that the AF requests 5GS to act as a grandmaster for PTP or gPTP if it is included and set to true.

 gmPrio:

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

 timeDom:

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

 uuErrorBudget:

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

 configNotifId:

 type: string

 description: Notification Correlation ID assigned by the NF service consumer.

 configNotifUri:

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

 tempValidity:

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

 required:

 - upNodeId

 - reqPtpIns

 - timeDom

 - configNotifId

 - configNotifUri

 PtpInstance:

 description: Contains PTP instance configuration and activation requested by the AF.

 type: object

 properties:

 instanceType:

 $ref: 'TS29522\_TimeSyncExposure.yaml#/components/schemas/InstanceType'

 protocol:

 $ref: 'TS29522\_TimeSyncExposure.yaml#/components/schemas/Protocol'

 ptpProfile:

 type: string

 portConfigs:

 type: array

 items:

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

 minItems: 1

 required:

 - instanceType

 - protocol

 - ptpProfile

 ConfigForPort:

 description: Contains configuration for each port.

 type: object

 properties:

 supi:

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

 n6Ind:

 type: boolean

 ptpEnable:

 type: boolean

 logSyncInter:

 type: integer

 logSyncInterInd:

 type: boolean

 logAnnouInter:

 type: integer

 logAnnouInterInd:

 type: boolean

 oneOf:

 - required: [supi]

 - required: [n6Ind]

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