**3GPP TSG-CT3 Meeting #121e C3-222172**

**E-Meeting, 6th – 12th April 2022**

**Source: Huawei**

**Title: Correction to 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 TSCTSF needs to keep the association between the AF sessions and the Time Synchronization Exposure Configuration. It shall be further clarified based on the agreement in stage 2.

**3. Conclusions**

The TSCTSF uses the parameters received from the NF service consumer (i.e. DNN, S-NSSAI and the indication of the UEs) to determine the matching AF-session(s) and for any such AF-session interact with the PCF by triggering Npcf\_PolicyAuthorization\_Create request message.

The TSCTSF shall handle the AF session(s) associated with the "Individual Time Synchronization Exposure Subcription" resource.

* Upon the Npcf\_PolicyAuthorization\_Notify service operation for establishment of a new PDU session, the TSCTSF shall use the parameters received from the NF service consumer above to determine whether the AF session is matched. If it is, the TSCTSF triggers the Npcf\_PolicyAuthorization\_Create request message to the PCF and associate the new AF session to the "Individual Time Synchronization Exposure Subcription" resource. The TSCTSF shall update the time synchrozation service capability for this new DS-TT as defined in cluase 5.2.2.4.2.
* Upon the Npcf\_PolicyAuthorization\_Notify service operation for termination of an existing PDU session, and if the TSCTSF determines that the corresponding AF session is associated with the "Individual Time Synchronization Exposure Subcription" resource. The TSCTSF shall remove the AF session from the list of AF session(s) associated with the "Individual Time Synchronization Exposure Subcription" resource. The TSCTSF shall update the time synchrozation service capability for this removed DS-TT as defined in cluase 5.2.2.4.2.

**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 a subscription to the notification about the capability of time synchronization service for a list of UEs, a group of UEs or any UE using 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, a group of UEs or any UE using a DNN/S-NSSAI combination.

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

- creating a new subscription.

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

##### 5.2.2.2.2 Creating a new subscription

Figure 5.2.2.2.2-1 illustrates the creation of a subscription.



Figure 5.2.2.2.2-1: Creation of a subscription

To subscribe the notification of the capability of time synchronization service, the NF service consumer shall send an HTTP POST message to the TSCTSF to the URI "{apiRoot}/ntsctsf-time-sync/<apiVersion>/subscriptions". The HTTP POST message shall include the TimeSyncExposureSubsc data structure as request body. The TimeSyncExposureSubsc data structure shall include:

- the indication of the UEs to which the time synchronization capabilities is requested via:

- identification of a list of individual UEs within a "supis" attribute;

- indication of any UE within the "anyUeInd" attribute; or

- identification of a group of UE(s) within the "interGroupId" attribute.

- subscription to event(s) notification as "evSubsc" attribute;

- notification URI within the "subsNotifUri" attribute;

- notification correlation Id within the "subsNotifId" attribute;

and may include:

* DNN with the "dnn" attribute;
* S-NSSAI with the "snssai";
* the conditions to match for notifying the event within the "eventFilters" attribute;
* notification methods within the "notifMethods" attribute
* maximum number of reports within the "maxReportNbr" attribute;
* expiry time withinthe "expiry" attribute; and
* report period within the "repPeriod" attribute.

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

- create a new subscription;

- assign a subscription correlation ID;

- select an expiry time that is equal to or less than the expiry time potentially received in the request;

- store the subscription;

- use the parameters received from the NF service consumer (i.e. DNN, S-NSSAI and, if available, the list of UEs or the group of UEs) to determine the matching AF-session(s) and for any such AF-session interact with the PCF by triggering Npcf\_PolicyAuthorization\_Create/Update request message as defined in 3GPP TS 29.514 [20].

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 an HTTP "201 Created" response with TimeSyncExposureSubsc data structure as response body and a Location header field containing the URI of the created individual subscription resource, i.e. "{apiRoot}/ntsctsf-time-sync/<apiVersion>/subscriptions/{subcriptionId}".

The TSCTSF shall handle the AF session(s) associated with the "Individual Time Synchronization Exposure Subcription" resource.

* To associate a new AF session to the "Individual Time Synchronization Exposure Subcription" resource, when the TSCTSF receives the Npcf\_PolicyAuthorization\_Notify service operation for establishment of a new PDU session, the TSCTSF shall use the parameters received from the NF service consumer above to determine whether the AF session is matched. If it is, the TSCTSF triggers the Npcf\_PolicyAuthorization\_Create request message to the PCF and associate the new AF session to the "Individual Time Synchronization Exposure Subcription" resource. The TSCTSF shall update the time synchrozation service capability for this new DS-TT as defined in cluase 5.2.2.4.2.
* To remove an AF session from the associated ones to the "Individual Time Synchronization Exposure Subcription" resource, when the TSCTSF receives the Npcf\_PolicyAuthorization\_Notify service operation indicating the termination of an existing PDU session, the TSCTSF determines if the corresponding AF session is associated with the "Individual Time Synchronization Exposure Subcription" resource. If it is so, the TSCTSF shall remove the AF session from the list of AF session(s) associated with the "Individual Time Synchronization Exposure Subcription" resource. The TSCTSF shall update the time synchrozation service capability for this removed DS-TT as defined in cluase 5.2.2.4.2.

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 6.1.7.

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