**3GPP TSG-CT WG3 Meeting #117eC3-214146**

**E-Meeting, 18th – 27th August 2021**

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

**Title: Ntsctsf\_TimeSynchronization\_CapsNotify service operation**

**Spec: 3GPP TS 29.abc**

**Agenda item: 17.16**

**Document for: Decision**

**1. Introduction**

<Introduction part (optional)>

**2. Reason for Change**

Ntsctsf\_TimeSynchronization\_CapsNotify service operation needs to be specified.

**3. Conclusions**

**4. Proposal**

It is proposed to agree the following changes to 3GPP TS 29.abc.

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

# 2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non‑specific.

- For a specific reference, subsequent revisions do not apply.

- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[2] 3GPP TS 23.501: "System Architecture for the 5G System; Stage 2".

[3] 3GPP TS 23.502: "Procedures for the 5G System; Stage 2".

[4] 3GPP TS 29.500: "5G System; Technical Realization of Service Based Architecture; Stage 3".

[5] 3GPP TS 29.501: "5G System; Principles and Guidelines for Services Definition; Stage 3".

[6] OpenAPI: "OpenAPI Specification Version 3.0.0", <https://spec.openapis.org/oas/v3.0.0>.

[7] 3GPP TR 21.900: "Technical Specification Group working methods".

[8] 3GPP TS 33.501: "Security architecture and procedures for 5G system".

[9] IETF RFC 6749: "The OAuth 2.0 Authorization Framework".

[10] 3GPP TS 29.510: "5G System; Network Function Repository Services; Stage 3".

[11] IETF RFC 7540: "Hypertext Transfer Protocol Version 2 (HTTP/2)".

[12] IETF RFC 8259: "The JavaScript Object Notation (JSON) Data Interchange Format".

[13] IETF RFC 7807: "Problem Details for HTTP APIs".

[x] IEEE 802.1Q: "Virtual Bridged Local Area Networks".

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

#### 5.2.2.4 Ntsctsf\_TimeSynchronization\_CapsNotify service operation

#### 5.2.2.4.1 General

This service operation is used by the TSCTSF to send notifications to NF service consumers upon the detection of the capability of the time synchronization service for a list of UEs.

The following procedure using the Ntsctsf\_TimeSynchronization\_CapsNotify service operation is supported:

- notification about the capability of time synchronization service.

#### 5.2.2.4.2 Notification about the capability of time synchronization service

Figure 5.2.2.4.2-1 illustrates the notification about the capability of time synchronization service.



Figure 5.2.2.4.2-1: Notification about the capability of time synchronization service

If the TSCTSF detects the capability of time time synchronization service for a list of UEs for which an NF service consumer has subscribed, the TSCTSF shall send an HTTP POST request with "{subsNotifUri}", as previously provided by the NF service consumer within the corresponding subscription, as URI and TimeSyncExposureSubsNotif data structure as request body that shall include:

- Notification correlation ID provided by the NF service consumer during the subscription within "subsNotifId" attribute; and

- information about the observed event(s) within the "eventNotifs" attribute that shall contain for each observed event an "SubsEventNotification" data structure that shall include:

1. the detected event within the "event" attribute;

2. the capabilities of time synchronization service for one or more UE with the "timeSyncCapas" attribute.

NOTE 1: Each TimeSyncCapability data type instance includes the identifiers of UEs which have the same capability of time synchronization service.

Upon the reception of an HTTP POST, the NF service consumer shall send an HTTP "204 No Content" response for a successful processing.

Editor's Note: Error/Redirect responses are FFS.

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

#### 6.1.6.1 General

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

Table 6.1.6.1-1 specifies the data types defined for the Ntsctsf\_TimeSynchronization service based interface protocol.

Table 6.1.6.1-1: N<NF> specific Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Clause defined | Description | Applicability |
| TimeSyncCapability | 6.1.6.2.5 | Contains the capability of time synchronization service |  |
| TimeSyncExposureSubsNotif | 6.1.6.2.3 | Contains the notification of time synchronization service. |  |
| SubsEventNotification | 6.1.6.2.4 | Contains the notification of capability of time synchronization for a list of UEs. |  |
|  |  |  |  |

Table 6.1.6.1-2 specifies data types re-used by the Ntsctsf\_TimeSynchronization service based interface protocol from other specifications, including a reference to their respective specifications and when needed, a short description of their use within the N<NF> service based interface.

Table 6.1.6.1-2: Ntsctsf\_TimeSynchronization re-used Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Reference | Comments | Applicability |
| GmCapable | 3GPP TS 29.522 [a] | Indicates separately whether 5GS supports acting as a gPTP or PTP grandmaster. |  |
| DistributionMethod | 3GPP TS 29.522 [a] | Identifies the time synchronization distribution methods supported by 5GS. |  |
| SubscribedEvent | 3GPP TS 29.522 [a] | Subscribed events. |  |
| Uint64 | 3GPP TS 29.571 [y] |  |  |

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

##### 6.1.6.2.3 Type: TimeSyncExposureSubsNotif

Table 6.1.6.2.3-1: Definition of type TimeSyncExposureSubsNotify

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| subsNotifId | string | M | 1 | Notification Correlation ID assigned by the NF service consumer. |  |
| eventNotifs | array(SubsEventNotification) | M | 1..N | Notifications about Individual Events |  |

##### 6.1.6.2.4 Type SubsEventNotification

Table 6.1.6.2.4-1: Definition of type EventNotification

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| event | SubscribedEvent | M | 1 | Subscribed events |  |
| timeSyncCapas | array(TimeSyncCapability) | O | 1..N | Contains a list of time syncroniziation capabilities for the UEs |  |

##### 6.1.6.2.5 Type: TimeSyncCapability

Table 6.1.6.2.5-1: Definition of type TimeSyncCapability

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| supis | array(Supi) | C | 1..N | Contains a list of UE for which the time synchronization request is applied. |  |
| upNodeId | Uint64 | O | 0..1 | Identifies the applicable NW-TT. Contains a TSC user plane node Id. If integrated with TSN, the user plane node Id is a bridge Id defined in IEEE 802.1Q [x] clause 14.2.5. |  |
| disMethods | DistributionMethod | O | 0..1 | Identifies the time synchronization distribution methods supported by 5GS. |  |
| gmCapable | GmCapable | O | 0..1 | Indicates whether NW-TT supports acting as a gPTP or PTP grandmaster. |  |
| ptpProfiles | string | O | 0..1 | Identifies the PTP profiles supported by 5GS for the reported UE. |  |

Editor's Note: Data types for notification need further check based on stage 2 progress.

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