**3GPP TSG-CT WG1 Meeting #131-eC1-21xxxx**

**E-meeting, 19-27 August 2021 (was C1-214390)**

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| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
|  |
|  | **24.539** | **CR** | **0002** | **rev** | **1** | **Current version:** | **17.1.0** |  |
|  |
| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* |
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| ***Proposed change affects:*** | UICC apps |  | ME | **X** | Radio Access Network |  | Core Network | **X** |

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|  |
| ***Title:***  | Clarification of applicability of port and user plane node management parameters |
|  |  |
| ***Source to WG:*** | Qualcomm Incorporated, Nokia, Nokia Shanghai Bell |
| ***Source to TSG:*** | C1 |
|  |  |
| ***Work item code:*** | IIoT |  | ***Date:*** | 2021-08-19 |
|  |  |  |  |  |
| ***Category:*** | **C** |  | ***Release:*** | Rel-17 |
|  | *Use one of the following categories:****F*** *(correction)****A*** *(mirror corresponding to a change in an earlier release)****B*** *(addition of feature),* ***C*** *(functional modification of feature)****D*** *(editorial modification)*Detailed explanations of the above categories canbe found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | *Use one of the following releases:Rel-8 (Release 8)Rel-9 (Release 9)Rel-10 (Release 10)Rel-11 (Release 11)...Rel-15 (Release 15)Rel-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)* |
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| ***Reason for change:*** | 1. At SA#92-e, SA approved CR 2962 to TS 23.501 (SP-210371) which clarifies which port and user plane node management parameters are applicable to the TSN AF and the TSCTSF. Rather than duplicating this information in TS 24.539, it is proposed to references to the relevant tables in TS 23.501.
2. At SA2#145-e, SA2 agreed CR 2833 to TS 23.501 (S2-2105082) which introduced the Time Sensitive Communication and Time Synchronization function (TSCTSF). The TSCTSF controls the DS-TT/NW-TT functionality for (g)PTP based time synchronization when requested via NEF or directly by a trusted AF. The CR was approved at SA#92-e. TS 24.539 needs to be updated accordingly.
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| ***Summary of change:*** | 1. References to the relevant tables in TS 23.501 for the applicability of the port and user plane node management parameters to the TSN AF and the TSCTSF were added.
2. “NEF” was replaced by “TSCTSF” wherever applicable.
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| ***Consequences if not approved:*** | 1. It will remain unclear in stage 3 which port and user plane node management parameters are applicable to the TSN AF and the TSCTSF.
2. The stage 3 will remain misaligned with stage 2.
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| ***Clauses affected:*** | 1, 3.2, 4 |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **X** |  Other core specifications  | TS/TR ... CR ...  |
| ***affected:*** |  | **X** |  Test specifications | TS/TR ... CR ...  |
| ***(show related CRs)*** |  | **X** |  O&M Specifications | TS/TR ... CR ...  |
|  |  |
| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

\*\*\* First change \*\*\*

# 1 Scope

The present document specifies the protocols of communication between:

a) a DS-TT and a TSN AF;

b) a NW-TT and a TSN AF;

c) a DS-TT and a TSCTSF; and

d) a NW-TT and a TSCTSF;

as specified in 3GPP TS 23.501 [2] for:

a) port management regarding Ethernet ports or PTP ports; and

b) user plane node management.

\*\*\* Next change \*\*\*

## 3.2 Abbreviations

For the purposes of the present document, the abbreviations given in 3GPP TR 21.905 [1] and the following apply. An abbreviation defined in the present document takes precedence over the definition of the same abbreviation, if any, in 3GPP TR 21.905 [1].

5GS 5G System

AF Application function

UMS User plane node Management Service

CNC Centralized Network Configuration

DS-TT Device-Side TSN Translator

PMS Port management service

NW-TT Network-Side TSN Translator

TSC Time Sensitive Communication

TSCTSF Time Sensitive Communication and Time Synchronization Function

TSN Time-Sensitive Networking

\*\*\* Next change \*\*\*

# 4 General

For time sensitive communication (TSC), a 5G system (5GS) can act as a user plane node of an external network or a 5GS can be independently used to enable TSC.

The device-side TSN translator (DS-TT) is deployed at the UE-side edge and the network-side TSN translator (NW-TT) is deployed at the network-side edge (see 3GPP TS 23.501 [2]).

When integrated with IEEE TSN network, the TSN application function (TSN AF) is deployed to exchange user plane node information (i.e. TSN bridge information) with the centralized network configuration (CNC) as defined in IEEE Std 802.1Qcc-2018 [9]. The user plane node information includes port management information and user plane node management information. Port management information is related to ports located in the DS-TT and NW-TT. User plane node management information is related to the NW-TT.

In order to support user plane node information exchange between TSN AF and CNC, the DS-TT, NW-TT, and TSN AF support procedures for port management and user plane node management. Clause 5 describes details of the elementary procedures between TSN AF and DS-TT for port management. Clause 6 describes details of the elementary procedures between TSN AF and NW-TT for port management (clause 6.2) and user plane node management (clause 6.3). The operations supported by the TSN AF for port management and user plane node management are listed in 3GPP TS 23.501 [2] table 5.28.3.1-1 and table 5.28.3.1-2.

A 5GS supports AF-requested time synchronization services. For this purpose, an NEF in the 5GS exposes 5GS capabilities to support the services as described in 3GPP TS 23.501 [2] and the Time Sensitive Communication and Time Synchronization Function (TSCTSF) manages the user plane node and ports (either Ethernet ports or PTP ports) in the DS-TT and NW-TT for time synchronization. Therefore, the DS-TT, NW-TT, and TSCTSF support procedures for port management and user plane node management. Clause 5 describes details of the elementary procedures between the TSCTSF and DS-TT for port management for time synchronization. Clause 6 describes details of the elementary procedures between the TSCTSF and NW-TT for port management (clause 6.2) and user plane node management (clause 6.3) for time synchronization. The operations supported by the TSCTSF for port management and user plane node management are listed in 3GPP TS 23.501 [2] table 5.28.3.1-1 and table 5.28.3.1-2.

NOTE: What is applicable for a TSN AF in this technical specification can be applied for a TSCTSF unless specified otherwise.

\*\*\* End of changes \*\*\*