**TSG-CT WG3 Meeting #117-e *C3-214073***

**E-Meeting, 18th – 27th August 2021 (Revision of C3-214xyz)**

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| --- |
| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
|  |
|  | **29.522** | **CR** | 0367 | **rev** | **-** | **Current version:** | **17.2.0** |  |
|  |
| *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 |  | Radio Access Network |  | Core Network | **X** |

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|  |
| ***Title:***  | TSCTSF support for Time Sensitive Communication |
|  |  |
| ***Source to WG:*** | Huawei, Nokia, Nokia Shanghai Bell |
| ***Source to TSG:*** | CT3 |
|  |  |
| ***Work item code:*** | IIoT |  | ***Date:*** | 2021-08-18 |
|  |  |  |  |  |
| ***Category:*** | **B** |  | ***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)* |
|  |  |
| ***Reason for change:*** | TSCTSF is defined in stage 2 for Time Sensitive Communication.The tscaiTimeDomain is encoded separately of the TscaiInputContainer agreed in last CT3 meeting.The maximum burst size, the priority, the requested 5GS delayand the TSCAI time domain are optional parameters. |
|  |  |
| ***Summary of change:*** | NEF interacts with the TSCTSF to provide the received information.The time domain is included within TscQosRequirement, but out of the TSCAI container.Indicates that the maximum burst size, the priority, the requested 5GS delayand the TSCAI time domain are optional parameters. |
|  |  |
| ***Consequences if not approved:*** | Not aligned with stage 2. |
|  |  |
| ***Clauses affected:*** | 2. 3.2, 4.4.9 |
|  |  |
|  | **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 does not impact the OpenAPI file. |
|  |  |
| ***This CR's revision history:*** |  |

**Additional discussion(if needed):**

**Proposed changes:**

\*\*\* 1st 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 23.502: "Procedures for the 5G system".

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

[4] 3GPP TS 29.122: "T8 reference point for northbound Application Programming Interfaces (APIs)".

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

[6] 3GPP TS 33.501: "Security architecture and procedures for 5G System".

[7] 3GPP TS 29.514: "5G System; Policy Authorization Service; Stage 3".

[8] 3GPP TS 29.571: "5G System; Common Data Types for Service Based Interfaces; Stage 3".

[9] 3GPP TS 29.521: "5G System; Binding Support Management Service; Stage 3".

[10] Void.

[11] 3GPP TS 23.222: "Common API Framework for 3GPP Northbound APIs; Stage 2".

[12] 3GPP TS 29.222: "Common API Framework for 3GPP Northbound APIs; Stage 3".

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

[14] 3GPP TS 33.122: "Security Aspects of Common API Framework for 3GPP Northbound APIs".

[15] Void.

[16] IETF RFC 5246: "The Transport Layer Security (TLS) Protocol Version 1.2".

[17] 3GPP TS 29.503: "5G System; Unified Data Management Services; Stage 3".

[18] 3GPP TS 29.518: "5G System; Access and Mobility Management Services; Stage 3".

[19] 3GPP TS 29.554: "5G System; Background Data Transfer Policy Control Service; Stage 3".

[20] 3GPP TS 29.504: "5G System; Unified Data Repository Services; Stage 3".

[21] 3GPP TR 21.900: "Technical Specification Group working methods".

[22] 3GPP TS 29.523: "5G System; Policy Control Event Exposure Service; Stage 3".

[23] 3GPP TS 29.519: "5G System; Usage of the Unified Data Repository service for Policy Control Data, Application Data and Structured Data for Exposure; Stage 3".

[24] 3GPP TS 29.541: "5G System; Network Exposure (NE) function services for Non-IP Data Delivery (NIDD); Stage 3".

[25] 3GPP TS 29.542: "5G System, Session management services for Non-IP Data Delivery (NIDD); Stage 3".

[26] 3GPP TS 29.508: "5G System; Session Management Event Exposure Service; Stage 3".

[27] 3GPP TS 29.520: "5G System; Network Data Analytics Services; Stage 3".

[28] 3GPP TS 23.316: "Wireless and wireline convergence access support for the 5G system (5GS)".

[29] 3GPP TS 23.288: "Architecture enhancements for 5G System (5GS) to support network data analytics services".

[30] 3GPP TS 23.032: "Universal Geographical Area Description (GAD)".

[31] Void

[32] 3GPP TS 29.501: "5G System; Principles and Guidelines for Services Definition; Stage 3".

[33] 3GPP TS 24.588: "Vehicle-to-Everything (V2X) services in 5G System (5GS); User Equipment (UE) policies; Stage 3".

[34] 3GPP TS 29.572: "5G System; Location Management Services; Stage 3".

[35] 3GPP TS 29.515: "5G System; Gateway Mobile Location Services; Stage 3".

[36] 3GPP TS 23.273: "5G System Location Services (LCS)".

[37] 3GPP TS 33.535: "Authentication and Key Management for Applications (AKMA) based on 3GPP credentials in the 5G System (5GS)".

[38] 3GPP TS 29.535: "5G System; AKMA Anchor Services; Stage 3".

[39] 3GPP TS 33.220: "Generic Authentication Architecture (GAA); Generic Bootstrapping Architecture (GBA)".

[40] IETF RFC 7542: "The Network Access Identifier".

[41] 3GPP TS 29.512: "5G System; Session Management Policy Control Service; Stage 3".

[42] 3GPP TS 23.548: "5G System Enhancements for Edge Computing; Stage 2".

[43] 3GPP TS 29.534: "5G System; Access and Mobility Policy Authorization Service; Stage 3".

[44] IETF RFC 3986: "Uniform Resource Identifier (URI): Generic Syntax".

[45] IEEE Std 1588-2019: "IEEE Standard for a Precision Clock Synchronization Protocol for Networked Measurement and Control".

[46] IEEE Std 802.1AS-2020: "IEEE Standard for Local and metropolitan area networks--Timing and Synchronization for Time-Sensitive Applications".

[47] 3GPP TS 29.536: "5G System; Network Slice Admission Control Services; Stage 3".

[48] 3GPP TS 24.526: "User Equipment (UE) policies for 5G System (5GS); Stage 3".

[49] 3GPP TS 24.555: "Proximity based services (ProSe) in 5G system (5GS); User Equipment (UE) policies; Stage 3".

[x] 3GPP TS 29.abc: "5G System; Time Sensitive Communication and Time Synchronization Function Services; Stage 3".

\*\*\* 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].

A-KID AKMA Key IDentifier

A-TID AKMA Temporary UE IDentifier

AAnF AKMA Anchor Function

ACS Auto-Configuration Server

AF Application Function

AKMA Authentication and Key Management for Applications

AM Access and Mobility management

BDT Background Data Transfer

CAPIF Common API Framework

CP Communication Pattern

DN Data Network

DNAI DN Access Identifier

DNN Data Network Name

ECS Edge Configuration Server

GMLC Global Mobile Location Centre

GPSI Generic Public Subscription Identifier

IPTV Internet Protocol Television

KAF AKMA Application Key

MO-LR Mobile Originated Location Request

NEF Network Exposure Function

NSAC Network Slice Admission Control

NSACF Network Slice Admission Control Function

PCF Policy Control Function

PCRF Policy and Charging Rule Function

PFD Packet Flow Description

PFDF Packet Flow Description Function

REST Representational State Transfer

SCEF Service Capability Exposure Function

S-NSSAI Single Network Slice Selection Assistance Information

TSC Time Sensitive Communication

TSCAI Time Sensitive Communication Assistance Information

TSCTSF Time Sensitive Communication and Time Synchronization Function

UDR Unified Data Repository

UP User Plane

URSP UE Route Selection Policy

WB Wide Band

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

### 4.4.9 Procedures for setting up an AF session with required QoS

The procedures for setting up an AF session with required QoS in 5GS are described in subclause 4.4.13 of 3GPP TS 29.122 [4] with the following differences:

- description of the SCS/AS applies to the AF;

- description of the SCEF applies to the NEF;

- description of the PCRF applies to the PCF;

- the NEF may interact with BSF by using Nbsf\_Management\_Discovery service as defined in 3GPP TS 29.521 [9] to retrieve the PCF address;

- the NEF shall interact with the PCF by using Npcf\_PolicyAuthorization service as defined in 3GPP TS 29.514 [7];

- in the HTTP POST request, the AF may include a "dnn" attribute and/or a "snssai" attribute; and in the HTTP PUT request, the AF shall keep the same value(s) of the "dnn" attribute and/or the "snssai" attribute as set in the HTTP POST request if provided;

- description about the INDICATION\_OF\_SUCCESSFUL\_RESOURCES\_ALLOCATION event and INDICATION\_OF\_FAILED\_RESOURCES\_ALLOCATION event apply to the SUCCESSFUL\_RESOURCES\_ALLOCATION event and FAILED\_RESOURCES\_ALLOCATION event respectively; In addition, description about the INDICATION\_OF\_RELEASE\_OF\_BEARER, INDICATION\_OF\_LOSS\_OF\_BEARER and INDICATION\_OF\_RECOVERY\_OF\_BEARER events are not applicable in this specification.

- if the EthAsSessionQoS\_5G feature as defined in subclause 5.14.4 of 3GPP TS 29.122 [4] is supported and the request is for Ethernet UE:

- in the HTTP POST/PUT request, the AF shall include the UE MAC address within the "macAddr" attribute instead of the UE IP address and the Ethernet Flow description within the "ethFlowInfo" attribute instead of the IP Flow description;

- in the HTTP PATCH request, the AF may update the Ethernet Flow description within the "ethFlowInfo" attribute;

- if the "QoSMonitoring\_5G" feature as defined in subclause 5.14.4 of 3GPP TS 29.122 [4] is supported, in order to support the QoS Monitoring, the AF shall include "qosMonInfo" attribute. The AF shall also include the "localNotifInd" attribute set to true if the "EnEDGE\_5G" feature is supported and the local notification is required. Within the QosMonitoringInformation data structure, the AF shall include:

- one or more requested QoS Monitoring Parameter(s) within the "reqQosMonParams"; and

- one or more report frequency within the "repFreqs" attribute; and

- when the "repFreqs" attribute includes the value "PERIODIC", the reporting period within the "repPeriod" attribute; and

- when the "repFreqs" attribute includes the value "EVENT\_TRIGGERED", the AF shall include:

- the delay threshold for downlink with the "repThreshDl" attribute;

- the delay threshold for uplink with the "repThreshUl" attribute; and/or

- the delay threshold for round trip with the "repThreshRp" attribute; and

- the minimum waiting time between subsequent reports within the "waitTime" attribute.

- when the NEF receives the event notification as defined in subclause 4.2.2 of 3GPP TS 29.508 [26] or subclauses 4.2.4.12 and 4.2.5.14 of 3GPP TS 29.514 [7], the NEF shall include one or more QoS monitoring reports within the "qosMonReports" attribute. Within the QosMonitoringReport data structure, the NEF shall include:

- one or two uplink packet delays within the "ulDelays" attribute;

- one or two downlink packet delays within the "dlDelays" attribute; and/or

- one or two round trip packet delays within the "rtDelays" attribute; and

- if the "AlternativeQoS\_5G" feature is supported, the AF may include an ordered list of QoS references within the "altQosReferences" attribute and, if the "DisableUENotification\_5G" feature is also supported, an indication that the UE does not need to be informed about changes related to Alternative QoS Profiles within the "disUeNotif" attribute. The NEF shall transfer them to the PCF in the Npcf\_PolicyAuthorization service and subscribe to PCF event "QOS\_NOTIF" in the Npcf\_PolicyAuthorization service. When the NEF receives the notification of PCF event "QOS\_NOTIF", it shall notify the AF with "QOS\_GUARANTEED" event; or "QOS\_NOT\_GUARANTEED" event with the currently applied QoS reference if received. When the NEF receives the notification of PCF event "SUCCESSFUL\_RESOURCES\_ALLOCATION", it shall notify the AF the event together with the currently applied QoS reference if received.

NOTE 1: Based on the operator configuration, the QoS reference identifiers received from the AF can be the same or different as the QoS reference identifiers known at the PCF. The NEF can perform a mapping for the QoS reference identifier.

- if the "TSC\_5G" feature is supported, the AF may include the TSC QoS requirement within the "tscQosReq" attribute. Within the TscQosRequirement data structure, the AF shall include:

- requested GBR within the "reqGbrDl" attribute and/or "reqGbrUl" attribute;

- requested MBR within the "reqMbrDl" attribute and/or "reqMbrUl" attribute; and

- the TSCAI input information within the "tscaiInputUl" attribute and/or "tscaiInputDl"attribute;

and may include:

- the maximum burst size within the "maxTscBurstSize" attribute;

- the priority within the "priority" attribute;

- the requested 5GS delay within the "req5Gsdelay" attribute; and

- the TSCAI time domain within the "tscaiTimeDom" attribute.

If the NEF authorizes the AF request, the NEF shall provision the received QoS requirement to the TSCTSF by invoking the Ntsctsf\_QoSandTSCAssistance\_Create request as defined in of 3GPP TS 29.abc [x].

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