**3GPP TSG CT WG3 Meeting #135 *C3-243xxx***

**Hyderabad, IN, 27 - 31 May, 2024 was C3-243247**

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| *CR-Form-v12.3* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  |  | **CR** | **0352** | **rev** | **1** | **Current version:** |  |  |
|  | | | | | | | | |
| *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:*** | Various essential corrections to the common design aspects for all CAPIF APIs | | | | | | | | |
|  |  | | | | | | | | |
| ***Source to WG:*** | Huawei | | | | | | | | |
| ***Source to TSG:*** | CT3 | | | | | | | | |
|  |  | | | | | | | | |
| ***Work item code:*** | NBI18 | | | | |  | ***Date:*** | | 2024-04-08 |
|  |  | | | |  | |  | |  |
| ***Category:*** | **F** |  | | | | | ***Release:*** | |  |
|  | *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 can be 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-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)  Rel-20 (Release 20)* | |
|  |  | | | | | | | | |
| ***Reason for change:*** | | | There are various unclear and incorrect provisions in the clauses defining common design aspects for all CAPIF APIs under clause 7. For example:   * The common functionalities for all NBI APIs defined in clauses 5.2.10, 5.2.11, 5.2.12 TS 29.122 are not mentioned anywhere. * The name of the case convention for attributes and data types in the NOTE in clause 7.2.1 is not indicated. Instead, a clear and incomplete definition indicates that they should start with lower/upper case while missing the other rules (e.g., each new word starts with uppercase and the other letters in lowercase, etc.). It is hence better to clearly mention the name of the case convention to be used. * The tables in clauses 7.2.2 and 7.2.3 are incomplete. * Some clauses are repeating exactly the text in the corresponding clauses in TS 29.122. It is better to simply reference the corresponding clauses in TS 29.122 to avoid misalignments. * Clause 7.11 misses the support/applicability of the query parameters extensibility mechanism defined in TS 29.122. * Clause 8 title mistakenly misses to indicate that this clause defined CCF APIs, not all the CAPIF APIs as clause 9 defines the AEF API that are also CAPIF APIs. * etc. | | | | | | |
|  | | |  | | | | | | |
| ***Summary of change:*** | | | This CR proposes to:   * Address the above-detailed issues. * Apply additional editorial corrections. | | | | | | |
|  | | |  | | | | | | |
| ***Consequences if not approved:*** | | | * The above-detailed issues remain in the specification. | | | | | | |
|  | |  | | | | | | | |
| ***Clauses affected:*** | | 7.1, 7.2.1, 7.2.2, 7.2.3, 7.3, 7.4, 7.5.1, 7.5.2, 7.6, 7.7, 7.8, 7.9, 7.10, 7.11, 8 | | | | | | | |
|  | |  | | | | | | | |
|  | | **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 descriptions of the APIs defined in this specification. | | | | | | | |
|  | |  | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | |

\* \* \* \* Start of changes \* \* \* \*

## 7.1 General

CAPIF APIs are RESTful APIs that allow secure access to the capabilities provided by CAPIF.

This document specifies the procedures triggered at different functional entities as a result of API invocation requests and event notifications. The stage-2 level requirements and signalling flows are defined in 3GPP TS 23.222 [2].

Several design aspects, as mentioned in the following clauses, are specified in 3GPP TS 29.122 [14] and referenced by this specification.

The common API design aspects defined in the clauses under clause 5.2 of 3GPP TS 29.122 [14] that are not defined in the following clauses (e.g., clauses 5.2.10, 5.2.11, 5.2.12 of 3GPP TS 29.122 [14]) shall also apply to the CAPIF APIs defined in this specification, with the following differences:

- the CCF/AEF plays the role of the SCEF;

- the service consumer (e.g., API Invoker, AEF, APF, AMF, CCF) plays the role of the SCS/AS; and

- the provisions related to the T8 APIs shall apply for the CAPIF APIs.

\* \* \* \* Next changes \* \* \* \*

### 7.2.1 General

This clause defines structured data types, simple data types and enumerations that are applicable to several APIs defined in the present specification and can be referenced from data structures defined in the subsequent clauses.

In addition, data types that are defined in OpenAPI Specification [3] can also be referenced from data structures defined in the subsequent clauses.

NOTE: As a convention, data types in the present specification follow the UpperCamel case convention. Attributes of structured data types follow the lowerCamel case convention. Enumerations follow the UPPER\_WITH\_UNDERSCORE case convention. As an exception, data types that are also defined in OpenAPI Specification [3] can use a lower-case case letter in the beginning for consistency.

Table 7.2.1-1 specifies data types re-used by the CAPIF APIs from other specifications, including a reference to their respective specifications and when needed, a short description of their use within the CAPIF.

Table 7.2.1-1: Re-used Data Types

|  |  |  |
| --- | --- | --- |
| Data type | Reference | Comments |
| Uri | 3GPP TS 29.122 [14] | Represents a URI. |
| TestNotification | 3GPP TS 29.122 [14] | Following clarifications apply:  - The SCEF is the CAPIF core function; and  - The SCS/AS is the Subscriber. |
| WebsockNotifConfig | 3GPP TS 29.122 [14] | Following clarifications apply:  - The SCEF is the CAPIF core function; and  - The SCS/AS is the Subscriber. |

\* \* \* \* Next changes \* \* \* \*

### 7.2.2 Referenced structured data types

Table 7.2.2-1 lists structured data types defined in this specification referenced by multiple services:

Table 7.2.2-1: Referenced Structured Data Types

|  |  |  |
| --- | --- | --- |
| Data type | Reference | Description |
| AefLocation | Clause 8.2.4.2.10 | Represents the AEF location. |
| AefProfile | Clause 8.2.4.2.4 | Represents the AEF profile. |
| CommunicationType | Clause 8.2.4.3.5 | Represents the communication type used by the API. |
| InterfaceDescription | Clause 8.2.4.2.3 | Represents the description of the API interface. |
| InvocationLog | Clause 8.7.4.2.2 | Represents logs of service API invocations stored on the CAPIF core function. |
| Log | Clause 8.7.4.2.3 | Represents individual log entries. |
| SecurityNotification | Clause 8.5.4.2.5 | Represents information about the revoked APIs. |
| ServiceAPIDescription | Clause 8.2.4.2.2 | Represents the description of the service API |

\* \* \* \* Next changes \* \* \* \*

### 7.2.3 Referenced Simple data types and enumerations

Following simple data types defined in Table 7.2.3.1-1 are applicable to several APIs in this document:

Table 7.2.3.1-1: Simple data types applicable to several APIs

|  |  |  |
| --- | --- | --- |
| Type name | Reference | Description |
| DataFormat | Clause 8.2.4.3.4 | Data format used by the API |
| Operation | Clause 8.2.4.3.7 | Used to indicate the HTTP operation |
| Protocol | Clause 8.2.4.3.3 | Protocol used by the API |

\* \* \* \* Next changes \* \* \* \*

## 7.3 Usage of HTTP

For CAPIF APIs, the support of HTTP/1.1 (IETF RFC 9112 [4], IETF RFC 9110 [5], and IETF RFC 9111 [8]) over TLS is mandatory and the support of HTTP/2 (IETF RFC 9113 [10]) over TLS is recommended. TLS shall be used as specified in 3GPP TS 33.122 [16].

A functional entity desiring to use HTTP/2 shall use the HTTP upgrade mechanism to negotiate applicable HTTP version as described in IETF RFC 9113 [10].

\* \* \* \* Next changes \* \* \* \*

## 7.4 Content type

The provisions of clause 5.2.3 of 3GPP TS 29.122 [14] shall apply to the CAPIF APIs defined in this specification.

\* \* \* \* Next changes \* \* \* \*

7.5.1 Resource URI structure

The provisions of clause 5.2.4.1 of 3GPP TS 29.122 [14] shall apply to the CAPIF APIs defined in this specification.

\* \* \* \* Next changes \* \* \* \*

7.5.2 Custom operations URI structure

The provisions of clause 5.2.4.2 of 3GPP TS 29.122 [14] shall apply to the CAPIF APIs defined in this specification.

\* \* \* \* Next changes \* \* \* \*

## 7.6 Notifications

The functional entities

- shall support the delivery of notifications using a separate HTTP connection towards an address;

- may support testing delivery of notifications; and

- may support the delivery of notification using WebSocket protocol (see IETF RFC 6455 [13]),

as described in clause 5.2.5 of 3GPP TS 29.122 [14], with the following clarifications:

- the CCF/AEF plays the role of the SCEF; and

- the service consumer (e.g., API Invoker, AEF, APF, AMF, CCF) plays the role of the SCS/AS.

\* \* \* \* Next changes \* \* \* \*

## 7.7 Error handling

HTTP error handling described in clause 5.2.6 of 3GPP TS 29.122 [14] is applicable to the CAPIF APIs defined in the present specification unless specified otherwise, with the following clarifications:

- the CCF/AEF plays the role of the SCEF; and

- the service consumer (e.g., API Invoker, AEF, APF, AMF, CCF) plays the role of the SCS/AS.

\* \* \* \* Next changes \* \* \* \*

## 7.8 Feature negotiation

The service consumer or functional entity invoking an API (e.g., API invoker, AEF, the APF, AMF, CCF) and the CCF shall support the feature negotiation procedures defined in clause 5.2.7 of 3GPP TS 29.122 [14] to negotiate the supported features, with the following clarifications:

- the CCF/AEF plays the role of the SCEF;

- the service consumer (e.g., API Invoker, AEF, APF, AMF, CCF) plays the role of the SCS/AS; and

- the CCF/AEF should not register any feature in the NRF.

\* \* \* \* Next changes \* \* \* \*

## 7.9 HTTP custom headers

The HTTP custom headers defined in clause 5.2.8 of 3GPP TS 29.122 [14] shall apply to the CAPIF APIs defined in this specification.

\* \* \* \* Next changes \* \* \* \*

## 7.10 Conventions for Open API specification files

The conventions for Open API specification files as specified in clause 5.2.9 of 3GPP TS 29.122 [14] shall be applicable for the CAPIF APIs defined in this specifications.

\* \* \* \* Next changes \* \* \* \*

## 7.11 CAPIF vendor-specifc extensions

The data model of any the CAPIF API shall be extensible with vendor-specific data as specified in clause 5.2.13.2 of 3GPP TS 29.122 [14].

The query parameters used in GET requests in the CAPIF APIs shall be extensible with vendor-specific query parameters as specified in clause 5.2.13.3 of 3GPP TS 29.122 [14].

\* \* \* \* Next changes \* \* \* \*

# 8 CAPIF Core Function API Definition

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