**3GPP TSG-CT3 Meeting #138 *C3-246203***

**Orlando, United States, 18th Nov 2024 - 22nd Nov 2024**

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| *CR-Form-v12.3* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **29.576** | **CR** | **0074** | **rev** | **-** | **Current version:** | **19.0.0** |  |
|  | | | | | | | | |
| *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:*** | MFAF ContextManagement API data model | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Nokia, Huawei | | | | | | | | | |
| ***Source to TSG:*** | CT3 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | eNetAE19 | | | | |  | ***Date:*** | | | 2024-11-11 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **B** |  | | | | | ***Release:*** | | | Rel-19 |
|  | *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:*** | | In the context of DCCF (and MFAF) relocation, 23.288 clause 6.2.6.3.8 specifies that a Target MFAF may retrieve MFAF configuration context from a Source MFAF using the Nmfaf\_ContextManagement service.  The agreed S2-2410866 provided now also the rest of the detailed requirements for this service.  The Nmfaf\_ContextManagement service is not implemented in 29.576. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Added the data model for the (new) Nmfaf\_ContextManagement service. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Not implemented stage 2 requirements and incomplete DCCF/MFAF relocation functionality. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 5.3 (new, including subclauses) | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | | **X** |  | Other core specifications | | | | TS/TR 23.288 CR 1216 | | |
| ***affected:*** | |  | **X** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | | This CR does not impact any OpenAPI file. | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

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

5.3 Nmfaf\_ContextManagement Service API

5.3.1 Introduction

The Nmfaf\_ContextManagement Service shall use the Nmfaf\_ContextManagement API.

The API URI of the Nmfaf\_ContextManagement API shall be:

**{apiRoot}/<apiName>/<apiVersion>**

The request URIs used in HTTP requests from the NF service consumer towards the NF service producer shall have the Resource URI structure defined in clause 4.4.1 of 3GPP TS 29.501 [5], i.e.:

**{apiRoot}/<apiName>/<apiVersion>/<apiSpecificResourceUriPart>**

with the following components:

- The {apiRoot} shall be set as described in 3GPP TS 29.501 [5].

- The <apiName>shall be "nmfaf-contextmanagement".

- The <apiVersion> shall be "v1".

- The <apiSpecificResourceUriPart> shall be set as described in clause 5.3.3.

5.3.2 Usage of HTTP

5.3.2.1 General

HTTP/2, IETF RFC 9113 [11], shall be used as specified in clause 5 of 3GPP TS 29.500 [4].

HTTP/2 shall be transported as specified in clause 5.3 of 3GPP TS 29.500 [4].

The OpenAPI [6] specification of HTTP messages and content bodies for the Nmfaf\_ContextManagement API is contained in Annex A.4.

5.3.2.2 HTTP standard headers

5.3.2.2.1 General

See clause 5.1.2 of 3GPP TS 29.500 [4] for the usage of HTTP standard headers.

5.3.2.2.2 Content type

JSON, IETF RFC 8259 [12], shall be used as content type of the HTTP bodies specified in the present specification as specified in clause 5.4 of 3GPP TS 29.500 [4]. The use of the JSON format shall be signalled by the content type "application/json".

"Problem Details" JSON object shall be used to indicate additional details of the error in a HTTP response body and shall be signalled by the content type "application/problem+json", as defined in IETF RFC 9457 [13].

5.3.2.3 HTTP custom headers

The mandatory HTTP custom header fields specified in clause 5.1.3.2 of 3GPP TS 29.500 [4] shall be applicable.

5.3.3 Resources

5.3.3.1 Overview

None in this release of the specification.

5.3.4 Custom Operations without associated resources

The structure of the custom operation URIs of the Nmfaf\_ContextManagement service is shown in Figure 5.3.4.1-1.

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**Figure 5.3.4.1-1: Custom operation URI structure of the Nmfaf\_ContextManagement API**

Table 5.3.4.1-1 provides an overview of the custom operations and applicable HTTP methods.

**Table 5.3.4.1-1: Custom operations without associated resources**

|  |  |  |
| --- | --- | --- |
| **Custom operation URI** | **Mapped HTTP method** | **Description** |
| {apiRoot}/nmfaf-contextmanagement/<apiVersion>/transfer | POST | Transfers configuration(s) from another MFAF. |

5.3.4.2 Operation: transfer

5.3.4.2.1 Description

The operation is used by the NF service consumer to transfer MFAF configuration(s) from another MFAF.

5.3.4.2.2 Operation Definition

This operation shall support the request data structures shown in Table 5.3.4.2.2-1 and the response data structures and error codes specified in Tables 5.3.4.2.2-2.

**Table 5.3.4.2.2-1: Data structures supported by the POST Request Body on this resource**

|  |  |  |  |
| --- | --- | --- | --- |
| **Data type** | **P** | **Cardinality** | **Description** |
| ContextTransferReq | M | 1 | Information about the MFAF configuration(s) to be transferred to this MFAF. |

**Table 5.3.4.2.2-2: Data structures supported by the POST Response Body on this resource**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data type** | **P** | **Cardinality** | **Response**  **codes** | **Description** |
| ContextTransferResp | M | 1 | 200 OK | Successful transfer of MFAF configuration(s) to this MFAF. |
| RedirectResponse | O | 0..1 | 307 Temporary Redirect | Temporary redirection during the transfer request.  (NOTE 2) |
| RedirectResponse | O | 0..1 | 308 Permanent Redirect | Permanent redirection, during the transfer request.  (NOTE 2) |
| NOTE 1: The manadatory HTTP error status code for the POST method listed in Table 5.2.7.1-1 of 3GPP TS 29.500 [4] also apply.  NOTE 2: The RedirectResponse data structure may be provided by an SCP (cf. clause 6.10.9.1 of 3GPP TS 29.500 [4]). | | | | |

**Table 5.3.4.2.2-3: Headers supported by the 307 Response Code on this resource**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Data type** | **P** | **Cardinality** | **Description** |
| Location | string | M | 1 | Contains an alternative URI representing the end point of an alternative MFAF (service) instance towards which the notification is redirected.  For the case where the notification is redirected to the same target via a different SCP, refer to clause 6.10.9.1 of 3GPP TS 29.500 [4]. |
| 3gpp-Sbi-Target-Nf-Id | string | O | 0..1 | Identifier of the target MFAF (service) instance towards which the notification request is redirected. |

**Table 5.3.4.2.2-4: Headers supported by the 308 Response Code on this resource**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Data type** | **P** | **Cardinality** | **Description** |
| Location | string | M | 1 | Contains an alternative URI representing the end point of an alternative MFAF (service) instance towards which the notification is redirected.  For the case where the notification is redirected to the same target via a different SCP, refer to clause 6.10.9.1 of 3GPP TS 29.500 [4]. |
| 3gpp-Sbi-Target-Nf-Id | string | O | 0..1 | Identifier of the target MFAF (service) instance towards which the notification request is redirected. |

5.3.5 Notifications

None in this release of the specification.

5.3.6 Data Model

5.3.6.1 General

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

Table 5.3.6.1-1 specifies the data types defined for the Nmfaf\_ContextManagement service based interface protocol.

**Table 5.3.6.1-1: Nmfaf\_ContextManagement specific Data Types**

|  |  |  |  |
| --- | --- | --- | --- |
| **Data type** | **Clause defined** | **Description** | **Applicability** |
| ContextTransferReq | 5.3.6.2.2 | Represents the contents of an MFAF context transfer request. |  |
| ContextTransferResp | 5.3.6.2.3 | Represents the contents of an MFAF context transfer response. |  |

Table 5.3.6.1-2 specifies data types re-used by the Nmfaf\_ContextManagement 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 Nmfaf\_ContextManagement service based interface.

**Table 5.3.6.1-2: Nmfaf\_ContextManagement re-used Data Types**

|  |  |  |  |
| --- | --- | --- | --- |
| **Data type** | **Reference** | **Comments** | **Applicability** |
| DataNotification | 3GPP TS 29.575 [23] | Represents a data subscription notification of one of various possible data sources. |  |
| MfafConfiguration | 5.1.6.2.2 | Contains the description of an MFAF configuration. |  |
| NmfafDataAnaNotification | 5.2.6.2.4 | Contains a data or analytics notification. |  |
| NnwdafEventsSubscriptionNotification | 3GPP TS 29.520 [20] | Represents an NWDAF analytics subscription notification. |  |
| SupportedFeatures | 3GPP TS 29.571 [22] | Used to negotiate the applicability of the optional features defined in table 5.3.8-1. |  |
| Uri | 3GPP TS 29.571 [22] | Represents a URI. |  |

5.3.6.2 Structured data types

5.3.6.2.1 Introduction

This clause defines the structures to be used in resource representations.

5.3.6.2.2 Type: ContextTransferReq

**Table 5.3.6.2.2-1: Definition of type ContextTransferReq**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Attribute name** | **Data type** | **P** | **Cardinality** | **Description** | **Applicability** |
| refIds | array(Uri) | M | 1..N | List of resource URIs of the configurations to be transferred (i.e. the URIs including the transaction reference identifiers, which had been returned during the creation of the configuration as described in clause 4.2.2.2.2). |  |
| suppFeat | SupportedFeatures | C | 0..1 | This attribute represents a list of supported features as described in clause 5.3.8. It shall be present if feature negotiation needs to take place. |  |

5.3.6.2.3 Type: ContextTransferResp

**Table 5.3.6.2.3-1: Definition of type ContextTransferResp**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Attribute name** | **Data type** | **P** | **Cardinality** | **Description** | **Applicability** |
| configs | map(MfafConfiguration) | M | 1..N | A map of the configurations that are transferred. The key used in this map for each entry is one of the values of the "refIds" attribute provided in the request and the value is the respective configuration. |  |
| bufferedNotifs | map(NmfafDataAnaNotification) | O | 1..N | A map of the buffered notifications that had not yet been delivered by the MFAF to the consumer. The key used in this map for each entry is one of the values of the "refIds" attribute provided in the request and the value is the respective buffered notifications. |  |
| suppFeat | SupportedFeatures | C | 0..1 | This attribute represents a list of supported features as described in clause 5.3.8. It shall be present if feature negotiation needs to take place. |  |

Editor’s Note: It is FFS if configs and bufferedNotifs will be defined as maps or arrays.

5.3.6.3 Simple data types and enumerations

5.3.6.3.1 Introduction

This clause defines simple data types and enumerations that can be referenced from data structures defined in the previous clauses.

5.3.6.3.2 Simple data types

The simple data types defined in table 5.3.6.3.2-1 shall be supported.

**Table 5.3.6.3.2-1: Simple data types**

|  |  |  |  |
| --- | --- | --- | --- |
| **Type Name** | **Type Definition** | **Description** | **Applicability** |
|  |  |  |  |

5.3.6.4 Data types describing alternative data types or combinations of data types

None in this release of the specification.

5.3.6.5 Binary data

None in this release of the specification.

5.3.7 Error Handling

5.3.7.1 General

For the Nmfaf\_ContextManagement API, HTTP error responses shall be supported as specified in clause 4.8 of 3GPP TS 29.501 [5]. Protocol errors and application errors specified in table 5.1.7.2-1 of 3GPP TS 29.500 [4] shall be supported for an HTTP method if the corresponding HTTP status codes are specified as mandatory for that HTTP method in table 5.2.7.1-1 of 3GPP TS 29.500 [4].

In addition, the requirements in the following clauses are applicable for the Nmfaf\_ContextManagement API.

5.3.7.2 Protocol Errors

No specific procedures for the Nmfaf\_ContextManagement service are specified.

5.3.7.3 Application Errors

The application errors defined for the Nmfaf\_ContextManagement service are listed in Table 5.3.7.3-1.

**Table 5.3.7.3-1: Application errors**

|  |  |  |
| --- | --- | --- |
| **Application Error** | **HTTP status code** | **Description** |
|  |  |  |

5.3.8 Feature negotiation

The optional features in table 5.3.8-1 are defined for the Nmfaf\_ContextManagement API. They shall be negotiated using the extensibility mechanism defined in clause 6.6 of 3GPP TS 29.500 [4].

**Table 5.3.8-1: Supported Features**

|  |  |  |
| --- | --- | --- |
| **Feature number** | **Feature Name** | **Description** |
|  |  |  |

5.3.9 Security

As indicated in 3GPP TS 33.501 [8] and 3GPP TS 29.500 [4], the access to the Nmfaf\_ContextManagement API may be authorized by means of the OAuth2 protocol (see IETF RFC 6749 [9]), based on local configuration, using the "Client Credentials" authorization grant, where the NRF (see 3GPP TS 29.510 [10]) plays the role of the authorization server.

If OAuth2 is used, an NF Service Consumer, prior to consuming services offered by the Nmfaf\_ContextManagement API, shall obtain a "token" from the authorization server, by invoking the Access Token Request service, as described in 3GPP TS 29.510 [10], clause 5.4.2.2.

NOTE: When multiple NRFs are deployed in a network, the NRF used as authorization server is the same NRF that the NF Service Consumer used for discovering the Nmfaf\_ContextManagement service.

The Nmfaf\_ContextManagement API defines a single scope "nmfaf-contextmanagement" for the entire service, and it does not define any additional scopes at resource or operation level.

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