**3GPP TSG-CT3 Meeting #130 *C3-234232***

**Xiamen, China, 9th Oct 2023 - 13th Oct 2023**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **29.522** | **CR** | **1069** | **rev** | **-** | **Current version:** | **18.3.0** |  |
|  | | | | | | | | |
| *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)*.* | | | | | | | | |
|  | | | | | | | | |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Proposed change affects:*** | UICC apps |  | ME |  | Radio Access Network |  | Core Network | **X** |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | | | | | |
| ***Title:*** | Updates in the DNAIMapping procedure and data models | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | , ZTE | | | | | | | | | |
| ***Source to TSG:*** | CT3 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | EDGE\_Ph2, UPEAS | | | | |  | ***Date:*** | | | 2023-09-29 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **B** |  | | | | | ***Release:*** | | | Rel-18 |
|  | *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-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | As described in 23.548 clause 6.8, the DNAI Mapping functionality is based on the lookup of OAM-configured DNAI-EAS mapping records in the UDR.  Most notably, the current data model cannot return DNAI-to-FQDN mappings, altthough this shall be possible according to stage 2.  Further, the current implementation of the DNAIMapping data model does not allow proper immediate reporting. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Adjusted the data model of the DNAIMapping service to re-use the data model of the respective UDR dataset for the notifications.  Implemented immediate reporting for DNAIMapping.  Corrected small mistakes in the data model and procedure descriptions. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Not fulfilled stage 2 requirements. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 4.4.34.2, 5.30.5.1, 5.30.5.2.2, 5.30.5.2.3, 5.30.5.2.4, A.28 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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 introduces a backwards compatible feature into the OpenAPI file of the DNAIMapping API. | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

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

4.4.34.2 Creation of a new subscription for DNAI Mapping

In order to create a new subscription for DNAI Mapping for a given AF, the AF shall initiate an HTTP POST request to the NEF for the "DNAI Mapping Subscriptions" resource. The HTTP POST request message body shall include the DnaiMapSub data structure that shall include:

- a notification URI within the "notifUri" attribute and a notification correlation identifier within the "notifCorrId" attribute;

- either the FQDN of the EAS in the Local part of the DN as the "fqdn" attribute or its EAS IP Address(es) in the Local part of the DN within the "easIpAddrs" attribute;

and may include:

- a DNN as "dnn" attribute;

- an S-NSSAI as "snssai" attribute;

- Event reporting requirements as "eventReq" attribute.

Upon receipt of the corresponding HTTP POST message, if the AF is authorized by the NEF to obtain the DNAI mapping information, the NEF shall interact with the UDR by invoking the Nudr\_DataRepository service as described in 3GPP TS 29.504 [20]. If the NEF receives an error response from the UDR, the NEF shall not create, update or delete the resource and shall respond to the AF with a proper error status code. If the NEF received within an error response a "ProblemDetails" data structure with a "cause" attribute indicating an application error, the NEF shall relay this error response to the AF with a corresponding application error, when applicable.

On successful DNAI Mapping subscription creation, the NEF shall return an HTTP POST response with an HTTP "201 Created" status code to the AF, including a "Location" header containing the URI of the created "Individual DNAI Mapping Subscription" resource and the response body containing a representation of the created resource within the DnaiMapSub data structure. If one-time reporting is not requested and the subscription can be expired based on the operator's policy, an Expriy time shall be included within the "monDur" attribute of the ReportingInformation in the DnaiMapSub data structure. If immediate reporting is requested, the currently available DNAI Mapping information shall be included within the "immReports" attribute of the DnaiMapSub data structure.

On failure, the NEF shall take proper error handling actions, as specified in clause 5.30.7, and respond to the AF with an appropriate error status code.

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

5.30.5.1 General

This clause specifies the application data model supported by the DNAIMapping API. Table 5.30.5.1-1 specifies the data types defined for the DNAIMapping API.

**Table 5.30.5.1-1: DNAIMapping specific Data Types**

|  |  |  |  |
| --- | --- | --- | --- |
| **Data type** | **Clause defined** | **Description** | **Applicability** |
| DnaiMapSub | 5.30.5.2.2 | Represents DNAI Mapping subscription data. |  |
| DnaiMapUpdateNotif | 5.30.5.2.3 | Represents the notification data of they update of DNAI Mapping information. |  |

Table 5.30.5.1-2 specifies data types re-used by the DNAIMapping API from other specifications, including a reference to their respective specifications, and when needed, a short description of their use within the DNAIMapping API.

**Table 5.30.5.1-2: Re-used Data Types**

|  |  |  |  |
| --- | --- | --- | --- |
| **Data type** | **Reference** | **Comments** | **Applicability** |
| DateTime | 3GPP TS 29.122 [4] | Represents a date and a time. |  |
| Dnai | 3GPP TS 29.571 [8] | Identifies a DNAI. |  |
| DnaiEasInfo | 3GPP TS 29.519 [23] | Contains EAS information for a DNAI. |  |
| Dnn | 3GPP TS 29.571 [8] | Identifies the DNN. |  |
| Fqdn | 3GPP TS 29.571 [8] | Identifies an FQDN. |  |
| IpAddr | 3GPP TS 29.571 [8] | Identifes an IP address. |  |
| ReportingInformation | 3GPP TS 29.523 [22] | Represents the event reporting requirements. |  |
| Snssai | 3GPP TS 29.571 [8] | Identifies an S-NSSAI. |  |
| SupportedFeatures | 3GPP TS 29.571 [8] | Represents the list of supported feature(s) and used to negotiate the applicability of the optional features. |  |
| Uri | 3GPP TS 29.122 [4] | Contains a URI. |  |
| WebsockNotifConfig | 3GPP TS 29.122 [4] | Contains the configuration parameters to set up notification delivery over Websocket protocol. |  |

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

5.30.5.2.2 Type: DnaiMapSub

**Table 5.30.5.2.2-1: Definition of type DnaiMapSub**

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Attribute name** | | **Data type** | | **P** | | **Cardinality** | | **Description** | | **Applicability** | |
| easIpAddrs | | array(IpAddr) | | C | | 1..N | | IP address(es) of the EASs in the Local part of the DN or the IP address ranges (IPv4 subnetwork(s) and/or IPv6 prefix(es) of the Local part of the DN where the EAS is deployed.  (NOTE) | |  | |
| fqdn | | Fqdn | | C | | 1..N | | FQDN of the EAS in the Local part of the DN where the EAS is deployed.  (NOTE) | |  | |
| dnn | | Dnn | | O | | 0..1 | | Identifies a DNN, a full DNN with both the Network Identifier and Operator Identifier, or a DNN with the Network Identifier only. | |  | |
| snssai | | Snssai | | O | | 0..1 | | Identifies an S-NSSAI. | |  | |
| immReports | | DnaiMapUpdateNotif | | C | | 0..1 | | DNAI EAS mapping information.  It shall be included in the subscription response if immediate reporting has been requested and the information is available. | |  | |
| eventReq | | ReportingInformation | | O | | 0..1 | | Indicates the event reporting requirements. | |  | |
| notifUri | | Uri | | M | | 1 | | Represents the notification URI to be used for DNAI Mapping information reporting. | |  | |
| notifCorrId | | string | | M | | 1 | | Notification correlation identifier | |  | |
| requestTestNotification | | boolean | | O | | 0..1 | | Set to true by the AF to request the NEF to send a test notification as defined in clause 5.2.5.3 of 3GPP TS 29.122 [4]. Set to false or omitted otherwise. | | Notification\_test\_event | |
| websockNotifConfig | | WebsockNotifConfig | | O | | 0..1 | | Configuration parameters to set up notification delivery over Websocket protocol. | | Notification\_websocket | |
| suppFeat | | SupportedFeatures | | C | | 0..1 | | Indicates the list of Supported features used as described in clause 5.30.4.  This attribute shall be provided in the POST request and in the response of successful resource creation. | |  | |
| NOTE: One of "easIpAddrs" or "fqdn" attribute shall be provided. | | | | | | | | | | | |

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

5.30.5.2.3 Type: DnaiMapUpdateNotif

**Table 5.30.5.2.3-1: Definition of type DnaiMapUpdateNotif**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Attribute name** | **Data type** | **P** | **Cardinality** | **Description** | **Applicability** |
| dnaiEasAddrMap | array(DnaiEasInfo) | M | 1..N | Represents the mapping information between DNAI(s) and EAS address(es). |  |
| notifCorrId | string | M | 1 | Notification correlation identifier. |  |

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



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

A.28 DNAIMapping API

openapi: 3.0.0

info:

title: 3gpp-dnaimapping

version: 1.0.0-alpha.2

description: |

API for DNAI Mapping.

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externalDocs:

description: >

3GPP TS 29.522 V18.3.0; 5G System; Network Exposure Function Northbound APIs.

url: 'https://www.3gpp.org/ftp/Specs/archive/29\_series/29.522/'

security:

- {}

- oAuth2ClientCredentials: []

servers:

- url: '{apiRoot}/3gpp-dnai-mapping/v1'

variables:

apiRoot:

default: https://example.com

description: apiRoot as defined in clause 5.2.4 of 3GPP TS 29.122.

paths:

/{afId}/subscriptions:

get:

summary: read all of the active subscriptions for the AF

operationId: ReadAllSubscriptions

tags:

- DNAI Mapping Subscriptions

parameters:

- name: afId

in: path

description: Identifier of the AF

required: true

schema:

type: string

responses:

'200':

description: OK (Successful get all of the active subscriptions for the AF)

content:

application/json:

schema:

type: array

items:

$ref: '#/components/schemas/DnaiMapSub'

minItems: 0

'307':

$ref: 'TS29122\_CommonData.yaml#/components/responses/307'

'308':

$ref: 'TS29122\_CommonData.yaml#/components/responses/308'

'400':

$ref: 'TS29122\_CommonData.yaml#/components/responses/400'

'401':

$ref: 'TS29122\_CommonData.yaml#/components/responses/401'

'403':

$ref: 'TS29122\_CommonData.yaml#/components/responses/403'

'404':

$ref: 'TS29122\_CommonData.yaml#/components/responses/404'

'406':

$ref: 'TS29122\_CommonData.yaml#/components/responses/406'

'429':

$ref: 'TS29122\_CommonData.yaml#/components/responses/429'

'500':

$ref: 'TS29122\_CommonData.yaml#/components/responses/500'

'503':

$ref: 'TS29122\_CommonData.yaml#/components/responses/503'

default:

$ref: 'TS29122\_CommonData.yaml#/components/responses/default'

post:

summary: Creates a new subscription resource

operationId: CreateNewSubscription

tags:

- DNAI Mapping Subscriptions

parameters:

- name: afId

in: path

description: Identifier of the AF

required: true

schema:

type: string

requestBody:

description: new subscription creation

required: true

content:

application/json:

schema:

$ref: '#/components/schemas/DnaiMapSub'

callbacks:

notification:

'{request.body#/notifUri}':

post:

requestBody: # contents of the callback message

required: true

content:

application/json:

schema:

$ref: '#/components/schemas/DnaiMapUpdateNotif'

responses:

'204':

description: No Content (successful notification)

'307':

$ref: 'TS29122\_CommonData.yaml#/components/responses/307'

'308':

$ref: 'TS29122\_CommonData.yaml#/components/responses/308'

'400':

$ref: 'TS29122\_CommonData.yaml#/components/responses/400'

'401':

$ref: 'TS29122\_CommonData.yaml#/components/responses/401'

'403':

$ref: 'TS29122\_CommonData.yaml#/components/responses/403'

'404':

$ref: 'TS29122\_CommonData.yaml#/components/responses/404'

'411':

$ref: 'TS29122\_CommonData.yaml#/components/responses/411'

'413':

$ref: 'TS29122\_CommonData.yaml#/components/responses/413'

'415':

$ref: 'TS29122\_CommonData.yaml#/components/responses/415'

'429':

$ref: 'TS29122\_CommonData.yaml#/components/responses/429'

'500':

$ref: 'TS29122\_CommonData.yaml#/components/responses/500'

'503':

$ref: 'TS29122\_CommonData.yaml#/components/responses/503'

default:

$ref: 'TS29122\_CommonData.yaml#/components/responses/default'

responses:

'201':

description: Created (Successful creation)

content:

application/json:

schema:

$ref: '#/components/schemas/DnaiMapSub'

headers:

Location:

description: Contains the URI of the newly created resource.

required: true

schema:

type: string

'400':

$ref: 'TS29122\_CommonData.yaml#/components/responses/400'

'401':

$ref: 'TS29122\_CommonData.yaml#/components/responses/401'

'403':

$ref: 'TS29122\_CommonData.yaml#/components/responses/403'

'404':

$ref: 'TS29122\_CommonData.yaml#/components/responses/404'

'411':

$ref: 'TS29122\_CommonData.yaml#/components/responses/411'

'413':

$ref: 'TS29122\_CommonData.yaml#/components/responses/413'

'415':

$ref: 'TS29122\_CommonData.yaml#/components/responses/415'

'429':

$ref: 'TS29122\_CommonData.yaml#/components/responses/429'

'500':

$ref: 'TS29122\_CommonData.yaml#/components/responses/500'

'503':

$ref: 'TS29122\_CommonData.yaml#/components/responses/503'

default:

$ref: 'TS29122\_CommonData.yaml#/components/responses/default'

/{afId}/subscriptions/{subscriptionId}:

get:

summary: read an active subscription for the AF and the subscription Id

operationId: ReadAnSubscription

tags:

- Individual DNAI Mapping Subscription

parameters:

- name: afId

in: path

description: Identifier of the AF

required: true

schema:

type: string

- name: subscriptionId

in: path

description: Identifier of the subscription resource

required: true

schema:

type: string

responses:

'200':

description: OK (Successful get the active subscription)

content:

application/json:

schema:

$ref: '#/components/schemas/DnaiMapSub'

'307':

$ref: 'TS29122\_CommonData.yaml#/components/responses/307'

'308':

$ref: 'TS29122\_CommonData.yaml#/components/responses/308'

'400':

$ref: 'TS29122\_CommonData.yaml#/components/responses/400'

'401':

$ref: 'TS29122\_CommonData.yaml#/components/responses/401'

'403':

$ref: 'TS29122\_CommonData.yaml#/components/responses/403'

'404':

$ref: 'TS29122\_CommonData.yaml#/components/responses/404'

'406':

$ref: 'TS29122\_CommonData.yaml#/components/responses/406'

'429':

$ref: 'TS29122\_CommonData.yaml#/components/responses/429'

'500':

$ref: 'TS29122\_CommonData.yaml#/components/responses/500'

'503':

$ref: 'TS29122\_CommonData.yaml#/components/responses/503'

default:

$ref: 'TS29122\_CommonData.yaml#/components/responses/default'

delete:

summary: Deletes an already existing subscription

operationId: DeleteAnSubscription

tags:

- Individual Dnai Mapping Subscription

parameters:

- name: afId

in: path

description: Identifier of the AF

required: true

schema:

type: string

- name: subscriptionId

in: path

description: Identifier of the subscription resource

required: true

schema:

type: string

responses:

'204':

description: No Content (Successful deletion of the existing subscription)

'307':

$ref: 'TS29122\_CommonData.yaml#/components/responses/307'

'308':

$ref: 'TS29122\_CommonData.yaml#/components/responses/308'

'400':

$ref: 'TS29122\_CommonData.yaml#/components/responses/400'

'401':

$ref: 'TS29122\_CommonData.yaml#/components/responses/401'

'403':

$ref: 'TS29122\_CommonData.yaml#/components/responses/403'

'404':

$ref: 'TS29122\_CommonData.yaml#/components/responses/404'

'429':

$ref: 'TS29122\_CommonData.yaml#/components/responses/429'

'500':

$ref: 'TS29122\_CommonData.yaml#/components/responses/500'

'503':

$ref: 'TS29122\_CommonData.yaml#/components/responses/503'

default:

$ref: 'TS29122\_CommonData.yaml#/components/responses/default'

components:

securitySchemes:

oAuth2ClientCredentials:

type: oauth2

flows:

clientCredentials:

tokenUrl: '{tokenUrl}'

scopes: {}

schemas:

DnaiMapSub:

description: Represents a DNAI Mapping subscription.

type: object

properties:

easIpAddrs:

type: array

items:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/IpAddr'

minItems: 1

description: >

IP address(es) of the EASs in the Local part of the DN or the IP address ranges(IPv4

subnetwork(s) and/or IPv6 prefix(es) of the Local part of the DN where the EAS is

deployed.

fqdn:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Fqdn'

dnn:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Dnn'

snssai:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Snssai'

eventReq:

$ref: 'TS29523\_Npcf\_EventExposure.yaml#/components/schemas/ReportingInformation'

immReport:

$ref: '#/components/schemas/DnaiMapUpdateNotif'

notifUri:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uri'

notifCorrId:

type: string

description: Notification correlation identifier.

requestTestNotification:

type: boolean

description: >

Set to true by the AF to request the NEF to send a test notification

as defined in clause 5.2.5.3 of 3GPP TS 29.122. Set to false or omitted otherwise.

websockNotifConfig:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/WebsockNotifConfig'

suppFeat:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/SupportedFeatures'

oneOf:

- required: [easIpAddrs]

- required: [fqdn]

required:

- notifUri

- notifCorrId

DnaiMapUpdateNotif:

description: Represents an updated DNAI Mapping notification.

type: object

properties:

dnaiEasAddrMap:

type: array

items:

$ref: 'TS29519\_Application\_Data.yaml#/components/schemas/DnaiEasInfo'

minItems: 1

description: >

Contains the mapping information between DNAI(s) and EAS address(es).

notifCorrId:

type: string

description: Notification correlation identifier.

required:

- dnaiEasAddrMap

- notifCorrId

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