**3GPP TSG-CT WG3 Meeting #127e C3-231544**

**E-meeting, 17th – 21st April, 2023 (Revision of C3-231326, 1327r1,1328r1,1329r1)**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **29.522** | **CR** | **0888** | **rev** | **1** | **Current version:** | **18.1.0** |  |
|  | | | | | | | | |
| *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)*.* | | | | | | | | |
|  | | | | | | | | |

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

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | | | | | |
| ***Title:*** | DNAI Mapping service and procedures | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Ericsson | | | | | | | | | |
| ***Source to TSG:*** | CT3 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | EDGE\_Ph2 | | | | |  | ***Date:*** | | | 2023-03-30 |
|  |  | | | |  | |  | | |  |
| ***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:*** | | TS 23.548 and TS 23.502 clause 5.2.6.34 adding Nnef\_DNAIMapping service, needs to be introduced in this specification. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Adding service and procedures for Nnef\_DNAIMapping Service API. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Not aligned with stage 2 normative requirement, missing service and procedures for Nnef\_DNAIMapping Service API. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 4.1, 4.3.1, 4.4.33(new) | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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 files. | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

**Additional discussion(if needed):**

**Proposed changes:**

\*\*\* 1st Change \*\*\*

## 4.1 Overview

The NEF Northbound interface is between the NEF and the AF. It specifies RESTful/RPC APIs that allow the AF to access the services and capabilities provided by 3GPP network entities and securely exposed by the NEF.

This document also specifies the procedures triggered at the NEF by API requests from the AF and by event notifications received from 3GPP network entities.

The stage 2 level requirements and signalling flows for the NEF Northbound interface are defined in 3GPP TS 23.502 [2], 3GPP TS 23.247 [53] for MBS specific aspects and 3GPP TS 26.531 [59] for data reporting provisioning and Media Streaming Event Exposure specific aspects.

The NEF Northbound interface supports the following procedures:

1) Procedures for Monitoring

2) Procedures for Device Triggering

3) Procedures for resource management of Background Data Transfer

4) Procedures for CP Parameters, Network Configuration Parameters Provisioning, 5G LAN Parameters Provisioning, ACS Configuration Parameter Provisioning, Location Privacy Indication Parameters Provisioning and ECS address provisioning

5) Procedures for PFD Management

6) Procedures for Traffic Influence

7) Procedures for changing the chargeable party at session set up or during the session

8) Procedures for setting up an AF session with required QoS

9) Procedures for MSISDN-less Mobile Originated SMS

10) Procedures for non-IP data delivery

11) Procedures for analytics information exposure

12) Procedure for applying BDT policy

13) Procedures for Enhanced Coverage Restriction Control

14) Procedures for IPTV Configuration

15) Procedures for Service Parameter Provisioning

16) Procedures for RACS Parameter Provisioning

17) Procedures for Mobile Originated Location Request

18) Procedures for AKMA

19) Procedures for AF triggered Access and Mobility Influence

20) Procedures for AF triggered Access and Mobility Policy Authorization

21) Procedures for Time Synchronization Exposure

22) Procedures for EAS Deployment information provisioning

23) Procedures for TMGI allocation, deallocation, expiry timer refresh and timer expiry notification

24) Procedures for MBS session management and parameters provisioning.

25) Procedures for Data Reporting.

26) Procedures for Data Reporting Provisioning.

27) Procedures for AF specific UE ID retrieval.

28) Procedures for Media Streaming Event Exposure.

29) Procedures for MBS User Service management.

30) Procedures for MBS User Data Ingest Session management.

32) Procedures for DNAI mapping.

Which correspond to the following services respectively, supported by the NEF as defined in 3GPP TS 23.502 [2] or 3GPP TS 26.531 [59]:

1) Nnef\_EventExposure service and Nnef\_APISupportCapability service

2) Nnef\_Trigger service

3) Nnef\_BDTPNegotiation service

4) Nnef\_ParameterProvision service

5) Nnef\_PFDManagement service

6) Nnef\_TrafficInfluence service

7) Nnef\_ChargeableParty service

8) Nnef\_AFsessionWithQoS service

9) Nnef\_MSISDN-less\_MO\_SMS service

10) Nnef\_NIDDConfiguration and Nnef\_NIDD services

11) Nnef\_AnalyticsExposure service

12) Nnef\_ApplyPolicy service

13) Nnef\_ECRestriction service

14) Nnef\_IPTVConfiguration service

15) Nnef\_ServiceParameter service

16) Nnef\_UCMFProvisioning service

17) Nnef\_Location service

18) Nnef\_AKMA service

19) Nnef\_AMInfluence

20) Nnef\_AMPolicyAuthorization service

21) Nnef\_TimeSynchronization and Nnef\_ASTI services

22) Nnef\_EASDeployment service

23) Nnef\_MBSTMGI service

24) Nnef\_MBSSession service

25) Nnef\_DataReporting

26) Nnef\_DataReportingProvisioning

27) Nnef\_UEId service

28) Nnef\_MSEventExposure service

29) Nnef\_MBSUserService

30) Nnef\_MBSUserDataIngestSession

32) Nnef\_DNAIMapping

NOTE 1: For Nnef\_PFDManagement service, only the Nnef\_PFDManagement\_Create/Update/Delete service operations are applicable for the NEF Northbound interface.

NOTE 2: For Nnef\_NIDD service, NF consumer other than the AF does not use the NEF Northbound interface.

NOTE 3: For Nnef\_NIDDConfiguration service, the Nnef\_NIDDConfiguration\_Trigger service operation is only applicable for the NEF Northbound interface.

NOTE 4: The Nnef\_APISupportCapability service is only applicable in the MonitoringEvent API when the monitoring type sets to "API\_SUPPORT\_CAPABILITY".

NOTE 5: The Nnef\_MSEventExposure service maps to the Nnef\_EventExposure service and is applicable for the case where the event consumer AF in the Application Service Provider is deployed outside the trusted domain, as described in 3GPP TS 26.531 [59], and the subscribed event is set to "MS\_QOE\_METRICS", "MS\_CONSUMPTION", "MS\_NET\_ASSIST\_INVOCATION", "MS\_DYN\_POLICY\_INVOCATION", or "MS\_ACCESS\_ACTIVITY".

\*\*\* 2nd Change \*\*\*

### 4.3.1 NEF

The Network Exposure Function (NEF) is a functional element that supports the following functionalities:

- The NEF shall securely expose network capabilities and events provided by 3GPP NFs to AF.

- The NEF shall provide means for the AF to securely provide information to 3GPP network and may authenticate, authorize and assist in throttling the AF.

- The NEF shall be able to translate the information received from the AF to the one sent to internal 3GPP NFs, and vice versa.

- The NEF shall support to expose information (collected from other 3GPP NFs) to the AF.

- The NEF may support a PFD Function which allows the AF to provision PFD(s) and may store and retrieve PFD(s) in the UDR. The NEF further provisions PFD(s) to the SMF.

- The NEF may support the time synchronization exposure function to the AF.

- The NEF may provide means for the AF to influence access and mobility management related policies.

- The NEF may provide means for the AF to provide inputs that can be used by the PCF for deciding access and mobility management related policies.

- The NEF may provide means for the AF to provide the EAS Deployment information.

- The NEF may provide means for the AF to retrieve AF specific UE ID.

- The NEF may provide means for an untrusted event consumer AF to perform Media Streaming Event Exposure monitoring.

- The NEF may provide means for the service consumer (e.g.: AF or NWDAF) to retrieve DNAI information.

A specific NEF instance may support one or more of the functionalities described above and consequently an individual NEF may support a subset of the APIs specified for capability exposure.

NOTE: The NEF can access the UDR located in the same PLMN as the NEF.

\*\*\* 3rd Change \*\*\*

### 4.4.33 Procedures for DNAI Mapping

#### 4.4.33.1 General

The procedures are used by AF to create or delete subscription(s) of DNAI Mapping information to NEF and also by NEF to notify NF consumer about the update of the DNAI Mapping information as defined in clause 5.2.6.34 of 3GPP TS 23.502 [2]

#### 4.4.33.2 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 either:

- FQDN of the EAS in the Local part of the DN as the "fqdn" attribute;

or

- EAS IP Address(es) in the Local part of the DN, "easIpAddrs" attribute;

and may include:

- an DNN as "dnn" attribute;

- an S-NSSAI as "snssai" attribute;

- geographical areas within which the AF request applies as "geoAreas" attribute;

- a maximum number of reports as "maxNumOfReps" attribute;

- an immediate reporting flag as "immRep" 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, an Expriy time (if the subscription can be expired based on the operator’s policy) shall be included within 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.

\*\*\* 4th Change \*\*\*

#### 4.4.33.3 Deletion of an existing individual DNAI Mapping subscription

In order to delete an existing DNAI Mapping subscription, the AF shall send an HTTP DELETE request message and targeting the correponding "Individual DNAI Mapping Subscription" resource.

On successful deletion of the subscription, the NEF shall return a Nnef\_ DNAIMapping \_Unsubcribe response with an HTTP "204 No Content" status code.

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.

\*\*\* 5th Change \*\*\*

#### 4.4.33.4 Notification for updated DNAI Mapping information

This procedure is used by the NEF to send DNAI Mapping information update notifications to a previously subscribed AF.

When the NEF receives the notification of the updated DNAI Mapping information from the UDR as described in 3GPP TS 29.504 [20], the NEF shall provide a notification by sending an HTTP POST request message to the AF with the request body including the DnaiMapUpdateNotif data structure and targeting the notification URI provided by the AF during the corresponding DNAI mapping subscription.

Upon reception of this notification request, the AF shall acknowledge its successful reception by sending a Nnef\_DNAIMapping\_UpdateNotify response message with an HTTP "204 No Content" status code.

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

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