**3GPP TSG-CT WG4 Meeting #111-e C4-224**

**E-Meeting, 18th – 26th August 2022 was C4-224340**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.0* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **29.503** | **CR** | **0925** | **rev** | **1** | **Current version:** | **16.12.0** |  |
|  | | | | | | | | |
| *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:*** | Clarification of NIDD Authorization | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Huawei | | | | | | | | | |
| ***Source to TSG:*** | C4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | 5G\_CIoT | | | | |  | ***Date:*** | | | 2022-08-10 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **F** |  | | | | | ***Release:*** | | | Rel-16 |
|  | *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-12 (Release 12)* *Rel-13 (Release 13) Rel-14 (Release 14) Rel-15 (Release 15) Rel-16 (Release 16)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | As agreed SA2 CR (S2-2204947, S2-2204948), The NIDD Duration is added into the authorization request/response between NEF and UDM as below: *5.2.3.7.2 Nudm\_NIDDAuthorisation\_Get service operation* ***Service operation name:*** *Nudm\_NIDDAuthorisation\_Get*  ***Description:*** *The consumer requests authorisation for NIDD Configuration.*  ***Inputs, Required:*** *GPSI or External Group Identifier, DNN, S-NSSAI, MTC Provider Information, Update Notification Address.*  ***Inputs, Optional:*** *NIDD Duration.*  ***Outputs, Required:*** *Single value or list of (SUPI, GPSI), Result.*  ***Outputs, Optional:*** *NIDD Duration.* *5.2.3.7.3 Nudm\_NIDDAuthorisation\_UpdateNotify service operation* ***Service operation name:*** *Nudm\_NIDDAuthorisation\_UpdateNotify*  ***Description:*** *This service operation is used by the UDM to notify the NIDD Authorization Update to NF consumer.*  ***Inputs, Required:*** *SUPI, GPSI, DNN, S-NSSAI, Result.*  ***Inputs, Optional:*** *Cause (e.g. subscription withdrawal, DNN used for NIDD service is removed from the UE subscription), NIDD Duration.*  ***Outputs, Required:*** *None.*  It proposes to add NIDD Duration and cause to align with Stage2. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | It proposes to add NIDD Duration and cause to align with Stage2.  Editorial corrections. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | It is not align with Stage2. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 5.7.2.2.2, 5.7.2.3, 6.6.3.1, 6.6.6.1, 6.6.6.2.4, 6.6.6.2.6, 6.6.6.3.x(new), A.7 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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 backwards compatible corrections on the TS29503\_Nudm\_NIDDAU API | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

\* \* \* Begin of Changes \* \* \* \*

##### 5.7.2.2.2 NIDD Authorization Data Retrieval

Figure 5.7.2.2.2-1 shows a scenario where the NF service consumer (e.g. NEF) sends a request to the UDM to authorize the NIDD configuration request (see also 3GPP TS 23.502 [3] figure 4.25.3-1 step 4). The request contains the UE's identity (/{ueIdentity}), and information used for NIDD authorization (AuthorizationInfo).



Figure 5.7.2.2.2-1: Requesting a UE's NIDD Authorization Data

1. The NF service consumer (e.g. NEF) sends a POST request to invoke "authorize" custom method on the resource representing the UE's subscribed NIDD authorization information. The payload of the request shall be an object of "AuthorizationInfo" which shall contain NSSAI, DNN, MTC Provider Information, callback URI.  
  
If MTC Provider information and/or AF ID are received in the request, the UDM shall check whether the MTC Provider and/or the AF is allowed to perform this operation for the UE; otherwise, the UDM shall skip the MTC provider and/or AF authorization check.

2a. On success, the UDM responds with "200 OK" with the message body containing the single value or list of AuthorizationData (SUPI and GPSI) as relevant for the requesting NF service consumer.

2b. If there is no valid AuthorizationData for the UE Identity, HTTP status code "404 Not Found" shall be returned including additional error information in the response body (in the "ProblemDetails" element).

2c. If SNSSAI and/or DNN are not authorized for this UE, or MTC Provider or AF are not allowed to perform this operation for the UE, HTTP status code "403 Forbidden" shall be returned including additional error information in the response body (in the "ProblemDetails" element).

On failure, the appropriate HTTP status code indicating the error shall be returned and appropriate additional error information should be returned in the GET response body.

Editor's Note: On success if the response exceeds the maximum length of a message segmentation need to be introduced, how this is done is FFS.

#### 5.7.2.3 Notification

##### 5.7.2.3.1 General

The following procedures using the Notification service operation are supported:

- NIDD Authorization Data Update Notification

##### 5.7.2.3.2 NIDD Authorization Data Update Notification

Figure 5.7.2.3.2-1 shows a scenario where the UDM notifies the NF service consumer (that has subscribed to receive such notification) about subscription data change (see also 3GPP TS 23.502 [3] figure 4.25.6-1 step 1 and 2). The request contains the callbackReference URI as previously received by the UDM during NIDD Authorization Data Retrieval.



Figure 5.7.2.3.2-1: Requesting a UE's NIDD Authorization Data

1. The UDM sends a POST request to the callbackReference as provided by the NF service consumer during NIDD Authorization Data Retrieval.

2. The NF service consumer responds with "204 No Content".

On failure, the appropriate HTTP status code indicating the error shall be returned and appropriate additional error information should be returned in the POST response body.

\* \* \* Next Change \* \* \* \*

#### 6.6.3.1 Overview

Figure 6.6.3.1-1 describes the resources supported by the Nudm\_NIDDAU API.



Figure 6.6.3.1-1: Resource URI structure of the nudm-niddau API

Table 6.6.3.1-1 provides an overview of the resources and applicable HTTP methods.

Table 6.6.3.1-1: Resources and methods overview

|  |  |  |  |
| --- | --- | --- | --- |
| Resource name (Archetype) | Resource URI | HTTP method or custom operation | Description |
| ueIdentity (Document) | /{ueIdentity}/authorize | authorize (POST) | Authorize the NIDD configuration request. |

\* \* \* Next Change \* \* \* \*

### 6.6.6 Data Model

#### 6.6.6.1 General

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

Table 6.6.6.1-1 specifies the structured data types defined for the Nudm\_NIDDAU service API. For simple data types defined for the Nudm\_NIDDAU service API see table 6.6.6.3.2-1.

Table 6.6.6.1-1: Nudm\_NIDDAU specific Data Types

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Data type | | Clause defined | | Description | |
| AuthorizationData | | 6.6.6.2.2 | |  | |
| UserIdentifier | | 6.6.6.2.3 | |  | |
| NiddAuthUpdateInfo | | 6.6.6.2.4 | |  | |
| NiddAuthUpdateNotification | | 6.6.6.2.5 | |  | |
| AuthorizationInfo | | 6.6.6.2.6 | |  | |
| NiddCause | | 6.6.6.3.x | |  | |

Table 6.6.6.1-2 specifies data types re-used by the Nudm\_NIDDAU service API from other specifications, including a reference to their respective specifications and when needed, a short description of their use within the Nudm\_NIDDAU service API.

Table 6.6.6.1-2: Nudm\_NIDDAU re-used Data Types

|  |  |  |
| --- | --- | --- |
| Data type | Reference | Comments |
| Nssai | 6.1.6.2.2 | Network Slice Selection Assistance Information |
| Gpsi | 3GPP TS 29.571 [7] | Generic Public Subscription Identifier |
| Supi | 3GPP TS 29.571 [7] |  |
| Dnn | 3GPP TS 29.571 [7] | Data Network Name with Network Identifier only. |
| MtcProviderInformation | 3GPP TS 29.571 [7] |  |
| DateTime | 3GPP TS 29.571 [7] |  |
| Snssai | 3GPP TS 29.571 [7] |  |
| Uri | 3GPP TS 29.571 [7] |  |
| NefId | 3GPP TS 29.510 [19] | NEF ID |

\* \* \* Next Change \* \* \* \*

##### 6.6.6.2.4 Type: NiddAuthUpdateInfo

Table 6.6.6.2.4-1: Definition of type NiddAuthUpdateInfo

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description |
| authorizationData | AuthorizationData | M | 1 | This IE shall include the Authorization data. |
| invalidityInd | boolean | O | 0..1 | Indicates whether the authorized NIDD authoration data is still valid or not.  true: the authorized NIDD authoration data is not valid.  false or absent: the authorized NIDD authoration data is valid. |
| snssai | Snssai | O | 0..1 | Indicates Single Network Slice Selection Assistance Information for NIDD authorization.  When absent it indicates authorization for all subscribed S-NSSAIs. |
| dnn | Dnn | O | 0..1 | Indicates DNN for NIDD authorization, shall contain the Network Identifier only.  When absent it indicates authorization for all subscribed DNNs. |
| niddCause | NiddCause | O | 0..1 | NIDD Cause |

\* \* \* Next Change \* \* \* \*

##### 6.6.6.2.6 Type: AuthorizationInfo

Table 6.6.6.2.6-1: Definition of type AuthorizationInfo

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description |
| snssai | Snssai | M | 1 | Indicates Single Network Slice Selection Assistance Information for NIDD authorization. |
| dnn | Dnn | M | 1 | Indicates DNN for NIDD authorization, shall contain the Network Identifier only. |
| mtcProviderInformation | MtcProviderInformation | M | 1 | Indicates MTC provider information for NIDD authorization. |
| authUpdateCallbackUri | Uri | M | 1 | A URI provided by NEF to receive (implicitly subscribed) notifications on authorization data update.  The authUpdateCallbackUri URI shall have unique information within NEF to identify the authorized result. |
| afId | string | O | 0..1 | When present, indicates the string identifying the originating AF, which is carried in {scsAsId} URI variable in resource URIs on T8/N33 interface (see clause 5 of 3GPP TS 29.122 [45]) or in {afId} URI variable in resource URIs on N33 interface (see clause 5 of 3GPP TS 29.522 [54]).. |
| nefId | NefId | O | 0..1 | When present, this IE shall contain the ID of the requesting NEF.  The UDM shall update the NIDD NEF ID for the DNN and Slice in corresponding subscription data after successful NIDD authorization, as specified in clause 4.25.3 of 3GPP TS 23.502 [3]. |
| validityTime | DateTime | O | 0..1 | Indicates the granted validity time of the authorisation result.  If absent, it indicates the authorisation result is valid permanently |

\* \* \* Next Change \* \* \* \*

##### 6.6.6.3.x Enumeration: NiddCause

Table 6.4.6.3.11-1: Enumeration RevokedCause

|  |  |
| --- | --- |
| Enumeration value | Description |
| "SUBSCRIPTION\_WITHDRAWAL" | Subscription Withdrawal |
| "DNN\_REMOVED" | DNN used for NIDD service is removed from the UE subscription |

\* \* \* Next Change \* \* \* \*

# A.7 Nudm\_NIDDAU API

openapi: 3.0.0

info:

version: '1.0.2'

title: 'Nudm\_NIDDAU'

description: |

Nudm NIDD Authorization Service.

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externalDocs:

description: 3GPP TS 29.503 Unified Data Management Services, version 16.8.0

url: 'http://www.3gpp.org/ftp/Specs/archive/29\_series/29.503/'

servers:

- url: '{apiRoot}/nudm-niddau/v1'

variables:

apiRoot:

default: https://example.com

description: apiRoot as defined in clause clause 4.4 of 3GPP TS 29.501.

security:

- oAuth2ClientCredentials:

- nudm-niddau

- {}

paths:

/{ueIdentity}/authorize:

post:

summary: Authorize the NIDD configuration request.

operationId: AuthorizeNiddData

tags:

- Authorize the NIDD configuration request

parameters:

- name: ueIdentity

in: path

description: Represents the scope of the UE for which the NIDD configuration are authorized. Contains the GPSI of the user or the external group ID.

required: true

schema:

type: string

pattern: '^(msisdn-[0-9]{5,15}|.+|extid-[^@]+@[^@]+|extgroupid-[^@]+@[^@]+)$'

requestBody:

content:

application/json:

schema:

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

required: true

responses:

'200':

description: Expected response to a valid request

content:

application/json:

schema:

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

'400':

$ref: 'TS29571\_CommonData.yaml#/components/responses/400'

'403':

$ref: 'TS29571\_CommonData.yaml#/components/responses/403'

'404':

$ref: 'TS29571\_CommonData.yaml#/components/responses/404'

'500':

$ref: 'TS29571\_CommonData.yaml#/components/responses/500'

'501':

$ref: 'TS29571\_CommonData.yaml#/components/responses/501'

'503':

$ref: 'TS29571\_CommonData.yaml#/components/responses/503'

default:

description: Unexpected error

callbacks:

niddAuthUpdateNotification:

'{request.body#/authUpdateCallbackUri}':

post:

requestBody:

required: true

content:

application/json:

schema:

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

responses:

'204':

description: Expected response to a valid request

components:

securitySchemes:

oAuth2ClientCredentials:

type: oauth2

flows:

clientCredentials:

tokenUrl: '{nrfApiRoot}/oauth2/token'

scopes:

nudm-niddau: Access to the nudm-niddau API

schemas:

# COMPLEX TYPES:

#

AuthorizationData:

type: object

required:

- authorizationData

properties:

authorizationData:

type: array

items:

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

minItems: 1

uniqueItems: true

validityTime:

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

UserIdentifier:

type: object

required:

- supi

properties:

supi:

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

gpsi:

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

validityTime:

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

NiddAuthUpdateInfo:

type: object

required:

- authorizationData

properties:

authorizationData:

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

invalidityInd:

type: boolean

snssai:

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

dnn:

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

niddCause:

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

NiddAuthUpdateNotification:

type: object

required:

- niddAuthUpdateInfoList

properties:

niddAuthUpdateInfoList:

type: array

items:

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

minItems: 1

AuthorizationInfo:

type: object

required:

- snssai

- dnn

- mtcProviderInformation

- authUpdateCallbackUri

properties:

snssai:

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

dnn:

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

mtcProviderInformation:

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

authUpdateCallbackUri:

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

afId:

type: string

nefId:

$ref: 'TS29510\_Nnrf\_NFManagement.yaml#/components/schemas/NefId'

validityTime:

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

# SIMPLE TYPES:

# ENUMS:

NiddCause:

anyOf:

- type: string

enum:

- SUBSCRIPTION\_WITHDRAWAL

- DNN\_REMOVED

- type: string

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