**3GPP TSG-CT WG4 Meeting #96C4-200594**

**Sophia Antipolis, France; 24th – 28th February 2020**

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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.0* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **29.503** | **CR** | **0331** | **rev** | **-** | **Current version:** | **16.2.0** |  |
|  | | | | | | | | |
| *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:*** | Retrieve the status of Enhanced Coverage Restriction | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Huawei | | | | | | | | | |
| ***Source to TSG:*** | CT4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | 5G\_CIoT | | | | |  | ***Date:*** | | | 2019-12-16 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **B** |  | | | | | ***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:*** | | For Enhanced Coverage Restriction Control via NEF, NEF can query the status of Enhanced Coverage Restriction from the UDM except enabling/disabling the Enhanced Coverage Restriction, see 4.27 Procedures for Enhanced Coverage Restriction Control via NEF in TS 23.502 and agreed CR S2-2000730 in S2#136AH. In S2-2000730, S2 has agreed changing the SDM operation to PP operation for NEF to provision Enhanced Coverage Restriction data, therefore retrieving the Enhanced Coverage Restriction data is best to be provided by PP service.  Querying the status of Enhanced Coverage Restriction by NEF from the UDM is not supported yet. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Add the retrieve service operation for PP service.  Add the get method for resource PpData of PP service.  Add Enumeration data mode PpType that is used in URI query parameters of newly defined get method. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Stage 2 solution won't be implemented. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 5.6.2.1, 5.6.2.x(new), 5.6.2.x.1(new), 5.6.2.x.2(new), 6.5.3.1, 6.5.3.2.3.x(new), 6.5.6.3.x(new), 6.5.7.3, A.6 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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 will introduce backward compatible new features in the OpenAPI specification file of TS29503\_Nudm\_PP.yaml, TS29505\_Subscription\_Data.yaml. | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | | Rev1:   1. Add information about agreed stage 2 CR for changing the SDM operation to PP operation in ***Reason for change*** of cover page. 2. Change P column of “pp-types” query parameters from O to M because stage 2 only specified allowing to get the enhanced coverage but not full PP Data, to align the stage 2 3. Revise Nudm\_pp API accordingly. | | | | | | | | |

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*The start of changes\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

#### 5.6.2.1 Introduction

For the Nudm\_ParameterProvision service the following service operations are defined:

- Update

- Create

- Delete

- Get

The Nudm\_ParameterProvision service is used by consumer NFs (e.g. NEF) to update a UE's subscription data by means of the Update service operation.

The Nudm\_ParameterProvision service is also used by consumer NFs (e.g. NEF) to retrieve a UE's subscription data by means of the Get service operation.

For details see 3GPP TS 23.502 [3] clause 4.15.6.2.

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

#### 5.6.2.x Get

##### 5.6.2.x.1 General

The following procedures using the Get service operation are supported:

- Subscription data retrieval

##### 5.6.2.x.2 Subscription data retrieval

Figure 5.6.2.x.2-1 shows a scenario where the NF service consumer (e.g. NEF) sends a request to the UDM to retrieve a UE's subscription data (see also 3GPP TS 23.502 [3] figure 4.27.1-1 step 1 and 8). The request contains the identifier of the UE's parameter provision data ( .../{gpsi}/pp-data) and query parameters (supported-features, and pp-type).



Figure 5.6.2.x.2-1: NF service consumer retrieves subscription data

1. The NF service consumer (e.g. NEF) sends a GET request to the resource that represents a UE's retrievable subscription data, with query parameters indicating the supported-features and/or pp-type.

2a. On success, the UDM responds with "200 OK", the message body containing the UE's subscription data as relevant for the requesting NF service consumer. The type of UE's subscription data as below can be retrieved:

The status of Enhanced Coverage Restriction can be retrieved.

2b. If there is no valid subscription data for the UE, or if the UE subscription data exists, but the requested subscription data is not available (e.g. query parameter contains pp-type to which the UE's subscription belongs does not exist), HTTP status code "404 Not Found" 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.

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

#### 6.5.3.1 Overview



Figure 6.5.3.1-1: Resource URI structure of the Nudm\_PP API

Table 6.5.3.1-1 provides an overview of the resources and applicable HTTP methods.

Table 6.5.3.1-1: Resources and methods overview

|  |  |  |  |
| --- | --- | --- | --- |
| Resource name | Resource URI | HTTP method or custom operation | Description |
| PpData | /{gpsi}/pp-data | PATCH | Modify the UE's modifiable subscription data |
| GET | Retrieve the UE's retrievable subscription data |
| 5GVnGroupConfiguration | /5g-vn-groups/{external-group-id} | PUT | Create a 5G VN Group |
| DELETE | Delete a 5G VN Group |
| PATCH | Modify a 5G VN Group |

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

###### 6.5.3.2.3.x GET

This method shall support the URI query parameters specified in table 6.5.3.2.3.x-1.

Table 6.5.3.2.3.x-1: URI query parameters supported by the GET method on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Supported-features | SupportedFeatures | O | 0..1 | see 3GPP TS 29.500 [4] clause 6.6 |
| pp-types | array(PpType) | M | 1..N | List of the Types of the Provision Parameters |

This method shall support the request data structures specified in table 6.5.3.2.3.x-2 and the response data structures and response codes specified in table 6.5.3.2.3.x-3.

Table 6.5.3.2.3.x-2: Data structures supported by the GET Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| n/a |  |  |  |

Table 6.5.3.2.3.x-3: Data structures supported by the GET Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response  codes | Description |
| PpData | M | 1 | 200 OK | Upon success, a response body containing the PpData shall be returned. |
| ProblemDetails | M | 1 | 404 Not Found | The "cause" attribute shall be set to the following application error:  - USER\_NOT\_FOUND  - DATA\_NOT\_FOUND |
| NOTE: In addition common data structures as listed in table 6.5.7-1 are supported. | | | | |

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

##### 6.5.6.3.x Enumeration: PpType

Table 6.5.6.3.x-1: Enumeration PpType

|  |  |
| --- | --- |
| Enumeration value | Description |
| "EC\_RESTRICTION\_DATA" | Enhanced Coverage Restriction Parameters |

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

#### 6.5.7.3 Application Errors

The common application errors defined in the Table 5.2.7.2-1 in 3GPP TS 29.500 [4] may also be used for the Nudm\_ParameterProvision service. The following application errors listed in Table 6.5.7.3-1 are specific for the Nudm\_ParameterProvision service.

The application errors defined for the Nudm\_ParamterProvision service are listed in Table 6.5.7.3-1.

Table 6.5.7.3-1: Application errors

|  |  |  |
| --- | --- | --- |
| Application Error | HTTP status code | Description |
| MODIFICATION\_NOT\_ALLOWED | 403 Forbidden | The subscriber does not have the necessary subscription for external parameter provisioning. |
| USER\_NOT\_FOUND | 404 Not Found | The User does not exist. |
| DATA\_NOT\_FOUND | 404 Not Found | The requested UE subscription data is not found/does not exist. |
| CREATION\_NOT\_ALLOWED | 403 Forbidden | Creation of a 5G VN Group is not allowed. |
| GROUP\_IDENTIFIER\_NOT\_FOUND | 404 Not Found | The group does not exist |

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

## A.6 Nudm\_PP API

openapi: 3.0.0

***(… text not shown for clarity …)***

paths:

/{gpsi}/pp-data:

patch:

summary: provision parameters

operationId: Update

tags:

- Subscription Data Update

parameters:

- name: gpsi

in: path

description: Identifier of the UE

required: true

schema:

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

requestBody:

content:

application/merge-patch+json:

schema:

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

required: true

responses:

'200':

description: Expected response to a valid request

content:

application/json:

schema:

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

'204':

description: Expected response to a valid request

'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'

'503':

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

default:

description: Unexpected error

get:

summary: retrieve provision parameters

operationId: Retrieve

tags:

- Subscription Data Retrieve

parameters:

- name: gpsi

in: path

description: Identifier of the UE

required: true

schema:

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

- name: supported-features

in: query

description: Supported Features

schema:

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

- name: pp-types

in: query

description: list of types of provision paramters

required: true

schema:

type: array

items:

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

minItems: 1

style: form

explode: false

requestBody:

content:

application/merge-patch+json:

schema:

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

required: true

responses:

'200':

description: Expected response to a valid request

content:

application/json:

schema:

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

'400':

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

'404':

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

'500':

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

'503':

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

default:

description: Unexpected error

***(… text not shown for clarity …)***

# ENUMS:

PpType:

anyOf:

- type: string

enum:

- EC\_RESTRICTION\_DATA

- type: string

***(… text not shown for clarity …)***

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*The end of changes\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*