**3GPP TSG-CT WG3 Meeting #135 *C3-243289r1***

**Hyderabad, IN, 27 - 31 May, 2024 (Revision of C3-243289)**

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| *CR-Form-v12.3* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **29.522** | **CR** | **1305** | **rev** | **1** | **Current version:** | **18.5.0** |  |
|  | | | | | | | | |
| *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:*** | Error handling for network slice parameters provisioning | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Ericsson | | | | | | | | | |
| ***Source to TSG:*** | CT3 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | eNS\_Ph3 | | | | |  | ***Date:*** | | | 2023-05-13 |
|  |  | | | |  | |  | | |  |
| ***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-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19) Rel-20 (Release 20)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | Error handling procedure description for the SliceParamProvision API still not complete, missing description of "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". i.e., procedure only with error code without send the received application error to AF, is not sufficient for effective handling in the AF.  Also not clear on which application errors in the Nudm\_ParameterProvision service API are applicable to be transferred to the AF.  The Nnef\_ SliceParamProvision API naming in the procedures should also be corrected as SliceParamProvision API as defined in this TS. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Updates on error handling in network slice parameters provisioning API and align the application errors from the Nudm\_ParameterProvision API. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Not aligned with the TS 29.503 defined application errors in the Nudm\_ ParameterProvision API and missing the related error handling which the AF cannot be aware of the exact application errors and arouse not effective handling. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 4.4.38.1, 5.34.2.2.3.2, 5.34.2.3.3.2, 5.34.7.3 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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 file. | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

**Additional discussion(if needed):**

**Proposed changes:**

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

#### 4.4.38.1 General

The procedures described in the clauses below are used by an AF to interact with the 5GC for Network Slice Parameters Provisioning, in order to carry out one or more of the following procedures:

- Network Slice Usage Control parameters provisioning procedures (see clause 4.15.6.3g of 3GPP TS 23.502 [2]).

In order to request the creation of a Network Slice Parameters Provisioning:

- an AF shall trigger the SliceParamProvision API by sending an HTTP POST request to the NEF targeting the "Slice Parameters Provisionings" collection resource, with the request body including the SlicePpData data structure that shall include:

- within the "afId" attribute, the identifier of the AF that is sending the request; and

- within the "suppFeat" attribute, the features supported by the AF, if applicable (i.e., feature negociation needs to take place);

- the NEF shall then check whether the AF is authorized to perform this operation or not;

- if the AF is authorized, the NEF shall trigger the Nudm\_ParameterProvision service API of the UDM to request the provisioning of the received Network Slice Parameters Provisioning data as specified in 3GPP TS 29.503 [17]; and

- upon reception of a successful response from the UDM as defined in 3GPP TS 29.503 [17] and successful processing of the request, the NEF shall respond to the AF with an HTTP "200 OK" status code including a Location header field containing the URI of the created resource, and the response body including a representation of the created "Individual Slice Parameters Provisioning" resource within the SlicePpData data structure.

- If the NEF receives an error response from the UDM, the NEF shall not create 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 as defined in clause 5.34.7.3.

In order to request the update of an existing "Individual Slice Parameters Provisioning" resource:

- an AF shall trigger the SliceParamProvision API by sending to the NEF either:

- an HTTP PUT request targeting the concerned "Individual Slice Parameters Provisioning" resource with the request body including the updated representation of the resource within the SlicePpData data structure; or

- an HTTP PATCH request targeting the concerned "Individual Slice Parameters Provisioning" resource with the request body including the requested modifications to the resource within the SlicePpDataPatch data structure;

- after authorizing the request, the NEF shall interact with the UDM via the the Nudm\_ParameterProvision service API to request the provisioning of the received updated Network Slice parameters provisioning data; and

- upon reception of a successful response from the UDM as defined in 3GPP TS 29.503 [17] and successful processing of the request, the NEF shall respond to the AF with either:

- an HTTP "200 OK" status code with the response body containing a representation of the updated "Individual Slice Parameters Provisioning" resource within the SlicePpData data structure; or

- an HTTP "204 No Content" status code.

In order to request the deletion of an existing "Individual Slice Parameters Provisioning" resource:

- an AF shall trigger the SliceParamProvision API by sending an HTTP DELETE request targeting the concerned "Individual Slice Parameters Provisioning" resource to the NEF; and

- upon success, the NEF shall respond to the AF with an HTTP "204 No Content" status code.

On failure or if the NEF receives an error code from the UDM, the NEF shall take proper error handling actions, as specified in clause 5.34.7, and respond to the AF with an appropriate 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 as defined in clause 5.34.7.3.

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

###### 5.34.2.2.3.2 POST

This method enables an AF to request the creation of a new Slice Parameters Provisioning at the NEF.

This method shall support the URI query parameters specified in table 5.34.2.2.3.2-1.

Table 5.34.2.2.3.2-1: URI query parameters supported by the POST method on this resource

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

This method shall support the request data structures specified in table 5.34.2.2.3.2-2 and the response data structures and response codes specified in table 5.34.2.2.3.2-3.

Table 5.34.2.2.3.2-2: Data structures supported by the POST Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| SlicePpData | M | 1 | Representation of the Slice Parameters Provisioning to be created at the NEF. |

Table 5.34.2.2.3.2-3: Data structures supported by the POST Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response  codes | Description |
| SlicePpData | M | 1 | 201 Created | Successful case. A representation of the created "Individual Slice Parameters Provisioning" resource is returned in the response body.  The URI of the created resource shall be returned in an HTTP "Location" header. |
| ProblemDetails | O | 0..1 | 403 Forbidden | (NOTE 2) |
| NOTE 1: The mandatory HTTP error status code for the POST method listed in table 5.2.6-1 of 3GPP TS 29.122 [4] also apply.  NOTE 2: Failure causes are described in clause 5.34.7.3. | | | | |

Table 5.34.2.2.3.2-4: Headers supported by the 201 response code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | Contains the URI of the newly created resource, according to the structure:  {apiRoot}/3gpp-slice-pp/<apiVersion>/pp/{ppId} |

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

###### 5.34.2.3.3.2 PUT

This method enables an AF to request the update of an existing "Individual Slice Parameters Provisioning" resource at the NEF.

This method shall support the URI query parameters specified in table 5.34.2.3.3.2-1.

Table 5.34.2.3.3.2-1: URI query parameters supported by the PUT method on this resource

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

This method shall support the request data structures specified in table 5.34.2.3.3.2-2 and the response data structures and response codes specified in table 5.34.2.3.3.2-3.

Table 5.34.2.3.3.2-2: Data structures supported by the PUT Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| SlicePpData | M | 1 | Represents the updated "Individual Slice Parameters Provisioning" resource representation. |

Table 5.34.2.3.3.2-3: Data structures supported by the PUT Response Body on this resource

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response  codes | Description | |
| SlicePpData | M | 1 | 200 OK | Successful response. The "Individual Slice Parameters Provisioning" resource is successfully updated and a representation of the updated resource is returned in the response body. | |
| n/a |  |  | 204 No Content | Successful response. The "Individual Slice Parameters Provisioning" resource is successfully updated and no content is returned in the response body. | |
| n/a |  |  | 307 Temporary Redirect | Temporary redirection. The response shall include a Location header field containing an alternative target URI located in an alternative NEF.  Redirection handling is described in clause 5.2.10 of 3GPP TS 29.122 [4]. | |
| n/a |  |  | 308 Permanent Redirect | Permanent redirection. The response shall include a Location header field containing an alternative target URI located in an alternative NEF.  Redirection handling is described in clause 5.2.10 of 3GPP TS 29.122 [4]. | |
| ProblemDetails | O | 0..1 | 403 Forbidden | (NOTE 2) | |
| NOTE 1: The mandatory HTTP error status code for the PUT method listed in Table 5.2.6-1 of 3GPP TS 29.122 [4] also apply.  NOTE 2: Failure causes are described in clause 5.34.7.3. | | | | |

Table 5.34.2.3.3.2-4: Headers supported by the 307 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | An alternative URI of the resource located in an alternative NEF. |

Table 5.34.2.3.3.2-5: Headers supported by the 308 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | An alternative URI of the resource located in an alternative NEF. |

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

#### 5.34.7.3 Application Errors

The application errors defined for the SliceParamProvision API are listed in table 5.34.7.3-1.

Table 5.34.7.3-1: Application errors

|  |  |  |
| --- | --- | --- |
| **Application Error** | **HTTP status code** | **Description** |
| AF\_NOT\_ALLOWED | 403 Forbidden | This AF is not allowed to perform external provisioning creation. |
| MTC\_PROVIDER\_NOT\_ALLOWED | 403 Forbidden | MTC Provider not authorized to perform external provisioning. |

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