**3GPP TSG-CT WG3 Meeting #121-eC3-222057**

**E-Meeting, 6th – 12th April 2022**

**Source: Nokia, Nokia Shanghai Bell, Huawei**

**Title: Pseudo-CR on the Npcf\_MBSPolicyControl UpdateNotify Service description**

**Spec: 3GPP TS 29.537 V0.1.0**

**Agenda item: 17.31 (5MBS)**

**Document for: Approval**

**1. Introduction**

TS 29.537 has been allocated under the 5MBS work item to define the MBS Policy Control services.

**2. Reason for Change**

For the Npcf\_MBSPolicyControl service, the “UpdateNotify” service operation should be updated to add a new procedure to cover the MBS session termination notification request from the PCF to the MB-SMF as per step 7 of clause 7.1.1.5 of TS 23.247.

**3. Conclusions**

N/A.

**4. Proposal**

It is proposed to agree the following changes to 3GPP TS 29.537 V0.1.0.

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

##### 5.2.2.3.1 General

The Npcf\_MBSPolicyControl\_UpdateNotify service operation enables the PCF to update/provision MBS Session policies to the NF service consumer (e.g. MB-SMF).

The following procedures using the Npcf\_MBSPolicyControl\_UpdateNotify service operation are supported:

- PCF-initiated MBS Session Policy Association Update; and

- PCF-initiated MBS Session Policy Association Termination.

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

#### 5.2.2.3.x PCF initiated MBS Session Policy Association Termination



Figure 5.2.2.3.x-1: MBS Session Policy Association termination request

1. The PCF may request MBS session termination and the corresponding deletion of the related Individual MBS policy resource due to e.g. an internal trigger or a trigger from an AF. The PCF shall send for this purpose a notification to the NF service consumer (e.g. MB-SMF) via an HTTP POST request using the URI "{notificationUri}/terminate" with the "notificationUri" set to the notification URI received during MBS Session Policy Association establishment procedure as defined in clause 5.2.2.2. The request body shall include the MbsTermNotif data structure that shall contain:

- the identifier of the Individual MBS Policy association to which the notification is related, within the "mbsSessionId" attribute; and

- the cause of why the PCF requests the termination of the MBS policy association within the "cause" attribute.

2. If the NF service consumer accepts the received HTTP POST request, the NF service consumer shall reply with an HTTP "204 No Content" status code.

After the successful processing of the HTTP POST request, the NF service consumer shall invoke the Npcf\_MBSPolicyControl\_Delete Service Operation defined in clause 5.2.2.x to terminate the corresponding "Individual MBS Policy" resource and initiate the procedure to terminate the related MBS session as defined in 3GPP TS 29.532 [16] (see also clause 7.1.1.5 of 3GPP TS 23.247 [14].

If errors occur when processing the HTTP POST request, the NF service consumer shall send an HTTP error response as specified in clause 6.1.7.

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

#### 6.1.5.1 General

Notifications shall comply to clause 6.2 of 3GPP TS 29.500 [4] and clause 4.6.2.3 of 3GPP TS 29.501 [5].

Table 6.1.5.1-1: Notifications overview

|  |  |  |  |
| --- | --- | --- | --- |
| Notification | Callback URI | HTTP method or custom operation | Description  (service operation) |
| MBS Policy Update Notification | {notificationUri}/update | update (POST) | MBS Policy Update Notification initiated by the PCF. |
| MBS Policy Termination Notification | {notificationUri}/terminate | terminate (POST) | MBS Policy Termination Notification initiated by the PCF. |

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

#### 6.1.5.3 MBS Policy Termination Notification

##### 6.1.5.3.1 Description

This notification is used by the PCF to request the termination of an existing MBS policy to the NF service consumer (e.g. MB-SMF).

##### 6.1.5.3.2 Target URI

The Callback URI **"{notificationUri}/terminate"** shall be used with the callback URI variables defined in table 6.1.5.3.2-1.

Table 6.1.5.3.2-1: Callback URI variables

|  |  |
| --- | --- |
| Name | Definition |
| notificationUri | String formatted as URI with the Callback Uri |

##### 6.1.5.3.3 Standard Methods

6.1.5.3.3.1 POST

This method shall support the request data structures specified in table 6.1.5.3.3.1-1 and the response data structures and response codes specified in table 6.1.5.3.3.1-2.

Table 6.1.5.3.3.1-1: Data structures supported by the POST Request Body

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| MbsTermNotif | M | 1 | Request to terminate the MBS policy association. |

Table 6.1.5.3.3.1-2: Data structures supported by the POST Response Body

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response codes | Description |
| n/a |  |  | 204 No Content | The MBS policy termination request is successfully acknowledged. |
| RedirectResponse | O | 0..1 | 307 Temporary Redirect | Temporary redirection. The response shall include a Location header field containing an alternative URI representing the end point of an alternative NF service consumer (service) instance where the notification should be sent. |
| RedirectResponse | O | 0..1 | 308 Permanent Redirect | Permanent redirection. The response shall include a Location header field containing an alternative URI representing the end point of an alternative NF service consumer (service) instance where the notification should be sent. |
| NOTE: The mandatory HTTP error status codes for the POST method listed in Table 5.2.7.1-1 of 3GPP TS 29.500 [4] also apply. | | | | |

Table 6.1.5.3.3.1-3: Headers supported by the 307 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | An alternative URI representing the end point of an alternative NF consumer (service) instance towards which the notification should be redirected. |
| 3gpp-Sbi-Target-Nf-Id | string | O | 0..1 | Identifier of the target NF (service) instance towards which the notification request is redirected. |

Table 6.1.5.3.3.1-4: Headers supported by the 308 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | An alternative URI representing the end point of an alternative NF consumer (service) instance towards which the notification should be redirected. |
| 3gpp-Sbi-Target-Nf-Id | string | O | 0..1 | Identifier of the target NF (service) instance towards which the notification request is redirected. |

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

#### 6.1.6.1 General

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

Table 6.1.6.1-1 specifies the data types defined for the Npcf\_MBSPolicyControl service based interface protocol.

Table 6.1.6.1-1: Npcf\_MBSPolicyControl specific Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Clause defined | Description | Applicability |
| MbsPolicyCtxtData | 6.1.6.2.2 | Contains the parameters used to request the creation of an Individual MBS Policy resource. |  |
| MbsPolicyData | 6.1.6.2.4 | Contains the MBS policy data of an Individual MBS Policy resource. |  |
| MbsPolicyDecision | 6.1.6.2.3 | Contains the MBS policies authorized by the PCF. |  |
| MbsPolicyNotif | 6.1.6.2.5 | Represents an MBS policy update notification. |  |
| MbsTermNotif | 6.1.6.2.x | Represents an MBS policy termination notification. |  |

Table 6.1.6.1-2 specifies data types re-used by the Npcf\_MBSPolicyControl service based interface protocol from other specifications, including a reference to their respective specifications and when needed, a short description of their use within the Npcf\_MBSPolicyControl service based interface.

Table 6.1.6.1-2: Npcf\_MBSPolicyControl re-used Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Reference | Comments | Applicability |
| Dnn | 3GPP TS 29.571 [15] | Identifies a DNN. |  |
| MbsSessionId | 3GPP TS 29.571 [15] | Represents an MBS Session Identifier. |  |
| RedirectResponse | 3GPP TS 29.571 [15] | Contains redirection related information. |  |
| Snssai | 3GPP TS 29.571 [15] | Identifies an S-NSSAI. |  |
| SupportedFeatures | 3GPP TS 29.571 [15] | Represents the list of supported features. It is used to negotiate the applicability of the optional features. |  |
| Uri | 3GPP TS 29.571 [15] | Represents a URI. |  |

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

##### 6.1.6.2.x Type: MbsTermNotif

Table 6.1.6.2.x-1: Definition of type MbsTermNotif

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| mbsSessionId | string | M | 1 | The identifier of an Individual MBS Policy association to which the notification is related. |  |
| cause | MbsPolicyAssociationReleaseCause | M | 1 | The cause why the PCF requests the termination of the policy association. |  |

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

##### 6.1.6.3.3 Enumeration: MbsPolicyAssociationReleaseCause

The enumeration MbsPolicyAssociationReleaseCause represents the cause why the PCF requests the termination of the policy association.. It shall comply with the provisions defined in table 6.1.6.3.3-1.

Table 6.1.6.3.3-1: Enumeration MbsPolicyAssociationReleaseCause

|  |  |  |
| --- | --- | --- |
| Enumeration value | Description | Applicability |
| UNSPECIFIED | This value is used for unspecified reasons. |  |

Editor's note: Other cause values are FFS.

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

## A.2 Npcf\_MBSPolicyControl API

openapi: 3.0.0

info:

title: Npcf\_MBSPolicyControl API

version: 1.0.0-alpha.1

description: |

MBS Session Policy Control Service

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externalDocs:

description: 3GPP TS 29.537 V0.1.0; 5G System; Multicast/Broadcast Policy Control Services.

url: 'http://www.3gpp.org/ftp/Specs/archive/29\_series/29.537/'

security:

- {}

- oAuth2ClientCredentials:

- npcf-mbspolicycontrol

servers:

- url: '{apiRoot}/npcf-mbspolicycontrol/v1'

variables:

apiRoot:

default: https://example.com

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

paths:

/mbs-policies:

post:

summary: Request the creation of a new Individual MBS Policy resource.

operationId: CreateMBSPolicy

tags:

- MBS Policies (Collection)

requestBody:

required: true

content:

application/json:

schema:

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

responses:

'201':

description: Created. An Individual MBS Policy resource is successfully created and a representation of the created resource is returned.

content:

application/json:

schema:

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

headers:

Location:

description: Contains the URI of the newly created Individual MBS Policy resource.

required: true

schema:

type: string

'400':

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

'401':

$ref: 'TS29571\_CommonData.yaml#/components/responses/401'

'403':

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

'404':

description: Not Found

'411':

$ref: 'TS29571\_CommonData.yaml#/components/responses/411'

'413':

$ref: 'TS29571\_CommonData.yaml#/components/responses/413'

'415':

$ref: 'TS29571\_CommonData.yaml#/components/responses/415'

'429':

$ref: 'TS29571\_CommonData.yaml#/components/responses/429'

'500':

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

'503':

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

default:

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

callbacks:

MbsPolicyUpdateNotification:

'{$request.body#/notificationUri}/update':

post:

requestBody:

required: true

content:

application/json:

schema:

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

responses:

'204':

description: No Content. The MBS Policy Update Notification was successfully received.

'307':

$ref: 'TS29571\_CommonData.yaml#/components/responses/307'

'308':

$ref: 'TS29571\_CommonData.yaml#/components/responses/308'

'401':

$ref: 'TS29571\_CommonData.yaml#/components/responses/401'

'403':

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

'404':

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

'411':

$ref: 'TS29571\_CommonData.yaml#/components/responses/411'

'413':

$ref: 'TS29571\_CommonData.yaml#/components/responses/413'

'415':

$ref: 'TS29571\_CommonData.yaml#/components/responses/415'

'429':

$ref: 'TS29571\_CommonData.yaml#/components/responses/429'

'500':

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

'503':

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

default:

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

MbsPolicyTerminationNotification:

'{$request.body#/notificationUri}/terminate':

post:

requestBody:

required: true

content:

application/json:

schema:

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

responses:

'204':

description: >

No Content. The notification was successfully received.

'307':

$ref: 'TS29571\_CommonData.yaml#/components/responses/307'

'308':

$ref: 'TS29571\_CommonData.yaml#/components/responses/308'

'400':

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

'401':

$ref: 'TS29571\_CommonData.yaml#/components/responses/401'

'403':

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

'404':

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

'411':

$ref: 'TS29571\_CommonData.yaml#/components/responses/411'

'413':

$ref: 'TS29571\_CommonData.yaml#/components/responses/413'

'415':

$ref: 'TS29571\_CommonData.yaml#/components/responses/415'

'429':

$ref: 'TS29571\_CommonData.yaml#/components/responses/429'

'500':

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

'503':

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

default:

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

/mbs-policies/{mbsPolicyId}:

get:

summary: Read an Individual MBS Policy.

operationId: GetMBSPolicy

tags:

- Individual MBS Policy (Document)

parameters:

- name: mbsPolicyId

in: path

description: Contains the identifier of the concerned Individual MBS Session Policy Association.

required: true

schema:

type: string

responses:

'200':

description: OK. The requested Individual MBS Policy resource is successfully returned.

content:

application/json:

schema:

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

'307':

$ref: 'TS29571\_CommonData.yaml#/components/responses/307'

'308':

$ref: 'TS29571\_CommonData.yaml#/components/responses/308'

'400':

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

'401':

$ref: 'TS29571\_CommonData.yaml#/components/responses/401'

'403':

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

'404':

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

'406':

$ref: 'TS29571\_CommonData.yaml#/components/responses/406'

'429':

$ref: 'TS29571\_CommonData.yaml#/components/responses/429'

'500':

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

'503':

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

default:

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

components:

securitySchemes:

oAuth2ClientCredentials:

type: oauth2

flows:

clientCredentials:

tokenUrl: '{nrfApiRoot}/oauth2/token'

scopes:

npcf-mbspolicycontrol: Access to the Npcf\_MBSPolicyControl API

schemas:

MbsPolicyCtxtData:

description: Contains the parameters used to request the creation of an Individual MBS Policy resource.

type: object

properties:

mbsSessionId:

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

dnn:

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

snssai:

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

notificationUri:

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

suppFeat:

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

required:

- mbsSessionId

- dnn

- snssai

- notificationUri

MbsPolicyData:

description: Contains the MBS policy data of an Individual MBS Policy resource.

type: object

properties:

mbsPolicyCtxtData:

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

suppFeat:

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

required:

- mbsPolicyCtxtData

MbsPolicyNotif:

description: Represents an MBS Policy Update Notification.

type: object

properties:

mbsSessionId:

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

required:

- mbsSessionId

MbsTermNotif:

description: Represents an MBS Policy Termination Notification.

type: object

properties:

mbsSessionId:

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

cause:

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

required:

- mbsSessionId

- cause

MbsPolicyAssociationReleaseCause:

description: >

Represents the cause due to which the PCF requests the termination of the MBS policy

association.

anyOf:

- type: string

enum:

- UNSPECIFIED

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