**3GPP TSG-CT WG3 Meeting #123-eC3-224433r2**

**E-Meeting, 18th – 26th August 2022**

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

**Title: Pseudo-CR on completing the definition of the Npcf\_MBSPolicyAuthorization API**

**Spec: 3GPP TS 29.537 V1.0.1**

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

**Document for: Agreement**

**1. Introduction**

The MBS Session Policy authorization framework based on the Npcf\_MBSPolicyAuthorization API and defined in TS 23.247 is not yet fully described/specified in TS 29.537.

**2. Reason for Change**

Update the service description clauses, the API definition clauses and the OpenAPI description of the Npcf\_MBSPolicyControl API in TS 29.537 to cover the missing stage 2 requirements in TS 23.247.

It is to be noted that this pCR may be updated during the meeting based on the progress of the related stage 2 discussions/CRs.

**3. Conclusions**

N/A.

**4. Proposal**

It is proposed to agree the following changes to 3GPP TS 29.537 V1.0.1.

\* \* \* \* Start of Changes \* \* \* \*

# 2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non‑specific.

- For a specific reference, subsequent revisions do not apply.

- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[2] 3GPP TS 23.501: "System Architecture for the 5G System; Stage 2".

[3] 3GPP TS 23.502: "Procedures for the 5G System; Stage 2".

[4] 3GPP TS 29.500: "5G System; Technical Realization of Service Based Architecture; Stage 3".

[5] 3GPP TS 29.501: "5G System; Principles and Guidelines for Services Definition; Stage 3".

[6] OpenAPI: "OpenAPI Specification Version 3.0.0", <https://spec.openapis.org/oas/v3.0.0>.

[7] 3GPP TR 21.900: "Technical Specification Group working methods".

[8] 3GPP TS 33.501: "Security architecture and procedures for 5G system".

[9] IETF RFC 6749: "The OAuth 2.0 Authorization Framework".

[10] 3GPP TS 29.510: "5G System; Network Function Repository Services; Stage 3".

[11] IETF RFC 7540: "Hypertext Transfer Protocol Version 2 (HTTP/2)".

[12] IETF RFC 8259: "The JavaScript Object Notation (JSON) Data Interchange Format".

[13] IETF RFC 7807: "Problem Details for HTTP APIs".

[14] 3GPP TS 23.247: "Architectural enhancements for 5G multicast-broadcast services; Stage 2".

[15] 3GPP TS 29.571: "5G System; Common Data Types for Service Based Interfaces; Stage 3".

[16] 3GPP TS 29.532: "5G System; 5G Multicast-Broadcast Session Management Services; Stage 3".

[17] 3GPP TS 29.514: "5G System; Policy Authorization Service; Stage 3".

[18] 3GPP TS 29.512: "5G System; Session Management Policy Control Service; Stage 3".

[19] 3GPP TS 29.214: "Policy and Charging Control over Rx reference point".

\* \* \* \* Next Changes \* \* \* \*

### 5.3.1 Service Description

The MBS Policy Authorization Service enables the Policy Control Function (PCF) to authorize the MBS application service requirements provided by an NF service consumer (e.g. AF, NEF, MBSF) and derive the related MBS policies, i.e.:

- enable an NF service consumer (e.g. AF, NEF, MBSF) to request the creation, update or removal of an MBS Session Policy Authorization Context, based on the provisioning of MBS application service requirements; and

- enable the PCF to authorize the provided MBS application service requirements and derive the policies related to the targeted MBS session.

\* \* \* \* Next Changes \* \* \* \*

#### 5.3.2.1 Introduction

The service operations defined for Npcf\_MBSPolicyAuthorization are shown in table 5.3.2.1-1.

Table 5.3.2.1-1: Npcf\_MBSPolicyAuthorization Service Operations

|  |  |  |
| --- | --- | --- |
| Service Operation Name | Description | Initiated by |
| Npcf\_MBSPolicyAuthorization\_Create | Request the creation of an MBS Session Policy Authorization Context at the PCF, to enable MBS application service requirements authorization. | NF service consumer (e.g. NEF, MBSF, AF) |
| Npcf\_MBSPolicyAuthorization\_Update | Update an existing MBS Session Policy Authorization Context at the PCF, to enable the authorization of the updated MBS application service requirements. | NF service consumer (e.g. NEF, MBSF, AF) |
| Npcf\_MBSPolicyAuthorization\_Delete | Delete an existing MBS Session Policy Authorization Context at the PCF. | NF service consumer (e.g. NEF, MBSF, AF) |

\* \* \* \* Next Changes \* \* \* \*

##### 5.3.2.2.1 General

The Npcf\_MBSPolicyAuthorization\_Create service operation enables an NF service consumer (e.g. AF, NEF, MBSF) to request the creation of an MBS Session Policy Authorization Context at the PCF, for the purpose of requesting MBS application service requirements authorization for a multicast or a broadcast MBS session.

The following procedures using the Npcf\_MBSPolicyAuthorization\_Create service operation are supported:

- MBS Session Policy Authorization Context Establishment.

\* \* \* \* Next Changes \* \* \* \*

##### 5.3.2.2.2 MBS Session Policy Authorization Context Establishment



Figure 5.3.2.2.2-1: MBS Session Policy Authorization Context establishment procedure

1. In order to request the creation of an MBS Session Policy Authorization Context, the NF service consumer (e.g. AF, NEF, MBSF) shall send an HTTP POST request to the PCF, as described in step 1 of figure 5.3.2.2.2-1, targeting the "MBS Session Policy Authorization Contexts" collection resource, with the request body containing the MbsSessionPolAuthCtxt data structure that shall contain the requested MBS application service requirements.

2. Upon reception of the HTTP POST request from the NF service consumer, the PCF shall perform MBS application service requirements authorization based on the information received from the NF service consumer and operator policies that are pre-configured at the PCF. Then:

- if the MBS application service requirements authorization is successful, the PCF shall create a new "Individual MBS Session Policy Authorization Context" resource and respond to the NF service consumer with an HTTP "201 Created" status code, including an HTTP Location header field containing the URI of the created "Individual MBS Session Policy Authorization Context" resource and the response body containing a representation of the created resource within the MbsSessionPolAuthCtxt data structure;

- the NF service consumer shall use the URI received in the HTTP Location header in subsequent requests targeting the created "Individual MBS Session Policy Authorization Context" resource at the PCF;

- if errors occur when processing the HTTP POST request, the PCF shall apply the error handling procedures specified in clause 6.2.7;

- if the provided MBS application service requirements are invalid, incorrect or insufficient for the PCF to perform MBS session policy authorization, the PCF shall reject the request with an HTTP "400 Bad Request" status code including the ProblemDetails data structure with the "cause" attribute set to "INVALID\_MBS\_SERVICE\_REQS";

- if the MBS IP flow(s) description provided within the MBS application service requirements cannot be handled by the PCF because the restrictions defined in clause 5.3.8 of 3GPP TS 29.214 [19] are not respected, the PCF shall reject the request with an HTTP "400 Bad Request" status code including the ProblemDetails data structure with the "cause" attribute set to "FILTER\_RESTRICTIONS\_NOT\_RESPECTED";

- if the provided MBS application service requirements are not authorized, the PCF shall reject the request with an HTTP "403 Forbidden" status code including the MbsExtProblemDetails data structure that shall contain the ProblemDetails data structure with the "cause" attribute set to "MBS\_SERVICE\_REQS\_NOT\_AUTHORIZED". The PCF may additionally return within the AcceptableMbsServReq data structure the MBS application service requirements that are acceptable for the PCF also within the the MbsExtProblemDetails data structure.

\* \* \* \* Next Changes \* \* \* \*

##### 5.3.2.3.1 General

The Npcf\_MBSPolicyAuthorization\_Update service operation enables an NF service consumer (e.g. AF, NEF, MBSF) to request the update of an existing MBS Session Policy Authorization Context, for the purpose of requesting the authorization of updated MBS application service requirements.

The following procedures using the Npcf\_MBSPolicyAuthorization\_Update service operation are supported:

- MBS Session Context Policy Authorization Update.

\* \* \* \* Next Changes \* \* \* \*

##### 5.3.2.3.2 MBS Session Policy Authorization Context Update



Figure 5.3.2.3.2-1: MBS Session Policy Authorization Context update procedure

1. In order to request the modification of an existing MBS Session Policy Authorization Context, the NF service consumer (e.g. AF, NEF, MBSF) shall send an HTTP PATCH request to the PCF targeting the URI of the concerned "Individual MBS Session Policy Authorization Context" resource, with the request body containing the MbsSessionPolAuthCtxtPatch data structure that shall contain the requested modifications to the MBS application service requirements.

2. Upon reception of the HTTP PATCH request from the NF service consumer, the PCF shall authorize the requested modifications to the MBS application service requirements based on the information received from the NF service consumer and operator policies that are pre-configured at the PCF.

- if the authorization of the requested modifications to the MBS application service requirements is successful, the PCF shall update accordingly the associated "Individual MBS Session Policy Authorization Context" resource and respond to the NF service consumer with either an HTTP "200 OK" status code with the response body containing a representation of the updated resource within the MbsSessionPolAuthCtxt data structure, or an HTTP "204 No Content" status code;

- if errors occur when processing the HTTP PATCH request, the PCF shall apply the error handling procedures specified in clause 6.2.7;

- if the provided updated MBS application service requirements are invalid, incorrect or insufficient for the PCF to perform MBS session policy authorization, the PCF shall reject the request with an HTTP "400 Bad Request" status code including the ProblemDetails data structure with the "cause" attribute set to "INVALID\_MBS\_SERVICE\_REQS";

- if the MBS IP flow(s) description provided within the updated MBS application service requirements cannot be handled by the PCF because the restrictions defined in clause 5.3.8 of 3GPP TS 29.214 [19] are not respected, the PCF shall reject the request with an HTTP "400 Bad Request" status code including the ProblemDetails data structure with the "cause" attribute set to "FILTER\_RESTRICTIONS\_NOT\_RESPECTED";

- if the provided updated MBS application service requirements are not authorized, the PCF shall reject the request with an HTTP "403 Forbidden" status code including the MbsExtProblemDetails data structure that shall include the ProblemDetails data structure with the "cause" attribute set to "MBS\_SERVICE\_REQS\_NOT\_AUTHORIZED". The PCF may additionally return within the AcceptableMbsServReq data structure the MBS application service requirements that are acceptable for the PCF also within the MbsExtProblemDetails data structure.

\* \* \* \* Next Changes \* \* \* \*

##### 5.3.2.4.1 General

The Npcf\_MBSPolicyAuthorization\_Delete service operation enables an NF service consumer (e.g. AF, NEF, MBSF) to request the deletion of an existing MBS Session Policy Authorization Context at the PCF.

The following procedures using the Npcf\_MBSPolicyAuthorization\_Delete service operation are supported:

- MBS Session Policy Authorization Context Deletion.

\* \* \* \* Next Changes \* \* \* \*

##### 5.3.2.4.2 MBS Session Policy Authorization Context Deletion



Figure 5.3.2.4.2-1: MBS Session Policy Authorization Context deletion procedure

1. In order to request the deletion of an existing MBS Session Policy Authorization Context, the NF service consumer (e.g. AF, NEF, MBSF) shall send an HTTP DELETE request to the PCF targeting the URI of the corresponding "Individual MBS Session Policy Authorization Context" resource.

2. Upon success, the PCF shall respond with an HTTP "204 No Content" status code.

If errors occur when processing the HTTP DELETE request, the PCF shall apply the error handling procedures specified in clause 6.2.7.

\* \* \* \* Next Changes \* \* \* \*

#### 6.2.3.1 Overview

This clause describes the structure of the resource URIs and the resources and methods used for the Npcf\_MBSPolicyAuthorization service.

Figure 6.2.3.1-1 depicts the resource URIs structure for the Npcf\_MBSPolicyAuthorization API.



Figure 6.2.3.1-1: Resource URI structure of the Npcf\_MBSPolicyAuthorization API

Table 6.2.3.1-1 provides an overview of the resources and applicable HTTP methods.

Table 6.2.3.1-1: Resources and methods overview

|  |  |  |  |
| --- | --- | --- | --- |
| Resource purpose/name | Resource URI (relative path after API URI) | HTTP method or custom operation | Description (service operation) |
| MBS Session Policy Authorization Contexts | /contexts | POST | Create a new MBS Session Policy Authorization Context. |
| Individual MBS Session Policy Authorization Context | /contexts/{contextId} | GET | Retrieve an existing Individual MBS Session Policy Authorization Context resource. |
| PATCH | Modify an existing Individual MBS Session Policy Authorization Context resource. |
| DELETE | Delete an existing Individual MBS Session Policy Authorization Context resource. |

\* \* \* \* Next Changes \* \* \* \*

#### 6.2.3.2 Resource: MBS Session Policy Authorization Contexts

\* \* \* \* Next Changes \* \* \* \*

##### 6.2.3.2.1 Description

This resource represents the collection of Individual MBS Session Policy Authorization Context resources managed by the PCF.

\* \* \* \* Next Changes \* \* \* \*

##### 6.2.3.2.2 Resource Definition

Resource URI: **{apiRoot}/npcf-mbspolicyauth/<apiVersion>/contexts**

This resource shall support the resource URI variables defined in table 6.2.3.2.2-1.

Table 6.2.3.2.2-1: Resource URI variables for this resource

|  |  |  |
| --- | --- | --- |
| Name | Data type | Definition |
| apiRoot | string | See clause 6.2.1. |

\* \* \* \* Next Changes \* \* \* \*

###### 6.2.3.2.3.1 POST

This method shall support the URI query parameters specified in table 6.2.3.2.3.1-1.

Table 6.2.3.2.3.1-1: 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 6.2.3.2.3.1-2 and the response data structures and response codes specified in table 6.2.3.2.3.1-3.

Table 6.2.3.2.3.1-2: Data structures supported by the POST Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| MbsSessionPolAuthCtxt | M | 1 | Contains the parameters to create an MBS Session Policy Authorization Context for MBS application service requirements authorization. |

Table 6.2.3.2.3.1-3: Data structures supported by the POST Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Responsecodes | Description |
| MbsSessionPolAuthCtxt | M | 1 | 201 Created | Successful case. An Individual MBS Session Policy Authorization Context resource is successfully created and a representation of the created resource is returned in the response body.A Location header field containing the URI of the created resource is also included. |
| ProblemDetails | O | 0..1 | 400 Bad Request | (NOTE 2) |
| MbsExtProblemDetails | O | 0..1 | 403 Forbidden | (NOTE 2) |
| NOTE 1: The mandatory HTTP error status code for the HTTP POST method listed in Table 5.2.7.1-1 of 3GPP TS 29.500 [4] also apply.NOTE 2: Failure cases are described in clause 6.2.7. |

Table 6.2.3.2.3.1-4: Headers supported by the POST method 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}/npcf-mbspolicyauth/<apiVersion>/contexts/{contextId} |

\* \* \* \* Next Changes \* \* \* \*

#### 6.2.3.3 Resource: Individual MBS Session Policy Authorization Context

\* \* \* \* Next Changes \* \* \* \*

##### 6.2.3.3.1 Description

This resource represents an Individual MBS Session Policy Authorization Context resource managed by the PCF.

\* \* \* \* Next Changes \* \* \* \*

##### 6.2.3.3.2 Resource Definition

Resource URI: **{apiRoot}/npcf-mbspolicyauth/<apiVersion>/contexts/{contextId}**

This resource shall support the resource URI variables defined in table 6.2.3.3.2-1.

Table 6.2.3.3.2-1: Resource URI variables for this resource

|  |  |  |
| --- | --- | --- |
| Name | Data type | Definition |
| apiRoot | string | See clause 6.2.1. |
| contextId | string | Represents the unique identifier of the Individual MBS Session Policy Authorization Context resource. |

\* \* \* \* Next Changes \* \* \* \*

###### 6.2.3.3.3.1 GET

This method shall support the URI query parameters specified in table 6.2.3.3.3.1-1.

Table 6.2.3.3.3.1-1: URI query parameters supported by the GET method on this resource

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

This method shall support the request data structures specified in table 6.2.3.3.3.1-2 and the response data structures and response codes specified in table 6.2.3.3.3.1-3.

Table 6.2.3.3.3.1-2: Data structures supported by the GET Request Body on this resource

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

Table 6.2.3.3.3.1-3: Data structures supported by the GET Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Responsecodes | Description |
| MbsSessionPolAuthCtxt | M | 1 | 200 OK | Successful case. The requested Individual MBS Session Policy Authorization Context resource is successfully returned. |
| RedirectResponse | O | 0..1 | 307 Temporary Redirect | Temporary redirection. The response shall include a Location header field containing an alternative URI of the resource located in an alternative PCF (service) instance. |
| RedirectResponse | O | 0..1 | 308 Permanent Redirect | Permanent redirection. The response shall include a Location header field containing an alternative URI of the resource located in an alternative PCF (service) instance. |
| NOTE: The mandatory HTTP error status code for the HTTP GET method listed in Table 5.2.7.1-1 of 3GPP TS 29.500 [4] also apply. |

Table 6.2.3.3.3.1-4: 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 PCF (service) instance. |
| 3gpp-Sbi-Target-Nf-Id | string | O | 0..1 | Identifier of the target NF (service) instance towards which the request is redirected. |

Table 6.2.3.3.3.1-5: 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 PCF (service) instance. |
| 3gpp-Sbi-Target-Nf-Id | string | O | 0..1 | Identifier of the target NF (service) instance towards which the request is redirected. |

\* \* \* \* Next Changes \* \* \* \*

###### 6.2.3.3.3.2 PATCH

This method shall support the URI query parameters specified in table 6.2.3.3.3.2-1.

Table 6.2.3.3.3.2-1: URI query parameters supported by the PATCH method on this resource

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

This method shall support the request data structures specified in table 6.2.3.3.3.2-2 and the response data structures and response codes specified in table 6.2.3.3.3.2-3.

Table 6.2.3.3.3.2-2: Data structures supported by the PATCH Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| MbsSessionPolAuthCtxtPatch | M | 1 | Contains the parameters to request the modification of an existing Individual MBS Session Policy Authorization Context resource. |

Table 6.2.3.3.3.2-3: Data structures supported by the PATCH Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Responsecodes | Description |
| MbsSessionPolAuthCtxt | M | 1 | 200 OK | Successful case. The concerned Individual MBS Session Policy Authorization Context resource is successfully modified and a representation of the updated resource is returned in the response body. |
| n/a |  |  | 204 No Content | Successful case. The concerned Individual MBS Session Policy Authorization Context resource is successfully modified and no content is returned in the response body. |
| RedirectResponse | O | 0..1 | 307 Temporary Redirect | Temporary redirection. The response shall include a Location header field containing an alternative URI of the resource located in an alternative PCF (service) instance. |
| RedirectResponse | O | 0..1 | 308 Permanent Redirect | Permanent redirection. The response shall include a Location header field containing an alternative URI of the resource located in an alternative PCF (service) instance. |
| ProblemDetails | O | 0..1 | 400 Bad Request | (NOTE 2) |
| MbsExtProblemDetails | O | 0..1 | 403 Forbidden | (NOTE 2) |
| NOTE 1: The mandatory HTTP error status code for the HTTP PATCH method listed in Table 5.2.7.1-1 of 3GPP TS 29.500 [4] also apply.NOTE 2: Failure cases are described in clause 6.2.7. |

Table 6.2.3.3.3.2-4: 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 PCF (service) instance. |
| 3gpp-Sbi-Target-Nf-Id | string | O | 0..1 | Identifier of the target NF (service) instance towards which the request is redirected. |

Table 6.2.3.3.3.2-5: 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 PCF (service) instance. |
| 3gpp-Sbi-Target-Nf-Id | string | O | 0..1 | Identifier of the target NF (service) instance towards which the request is redirected. |

\* \* \* \* Next Changes \* \* \* \*

###### 6.2.3.3.3.3 DELETE

This method shall support the URI query parameters specified in table 6.2.3.3.3.3-1.

Table 6.2.3.3.3.3-1: URI query parameters supported by the DELETE method on this resource

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

This method shall support the request data structures specified in table 6.2.3.3.3.3-2 and the response data structures and response codes specified in table 6.2.3.3.3.3-3.

Table 6.2.3.3.3.3-2: Data structures supported by the DELETE Request Body on this resource

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

Table 6.2.3.3.3.3-3: Data structures supported by the DELETE Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Responsecodes | Description |
| n/a |  |  | 204 No Content | Successful case. The concerned Individual MBS Session Policy Authorization Context resource is successfully deleted. |
| RedirectResponse | O | 0..1 | 307 Temporary Redirect | Temporary redirection. The response shall include a Location header field containing an alternative URI of the resource located in an alternative PCF (service) instance. |
| RedirectResponse | O | 0..1 | 308 Permanent Redirect | Permanent redirection. The response shall include a Location header field containing an alternative URI of the resource located in an alternative PCF (service) instance. |
| NOTE: The mandatory HTTP error status code for the HTTP DELETE method listed in Table 5.2.7.1-1 of 3GPP TS 29.500 [4] also apply. |

Table 6.2.3.3.3.3-4: 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 PCF (service) instance. |
| 3gpp-Sbi-Target-Nf-Id | string | O | 0..1 | Identifier of the target NF (service) instance towards which the request is redirected. |

Table 6.2.3.3.3.3-5: 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 PCF (service) instance. |
| 3gpp-Sbi-Target-Nf-Id | string | O | 0..1 | Identifier of the target NF (service) instance towards which the request is redirected. |

\* \* \* \* Next Changes \* \* \* \*

#### 6.2.6.1 General

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

Table 6.2.6.1-1 specifies the data types defined for the Npcf\_MBSPolicyAuthorization service based interface protocol.

Table 6.2.6.1-1: Npcf\_MBSPolicyControl specific Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Clause defined | Description | Applicability |
| AcceptableMbsServReq | 6.2.6.2.4 | Contains the MBS application service requirements that can be accepted by the PCF. |  |
| MbsExtProblemDetails | 6.2.6.4.1 | Identifies the MBS related extensions to the ProblemDetails data structure. |  |
| MbsSessionPolAuthCtxt | 6.2.6.2.2 | Represents the parameters of an MBS Session Policy Authorization Context. |  |
| MbsSessionPolAuthCtxtPatch | 6.2.6.2.3 | Represents the modifications to an existing MBS Session Policy Authorization Context. |  |

Table 6.2.6.1-2 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 6.2.6.1-2: Npcf\_MBSPolicyControl re-used Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Reference | Comments | Applicability |
| Dnn | 3GPP TS 29.571 [15] | Identifies a DNN. |  |
| MbsServiceArea | 3GPP TS 29.571 [15] | Represents the MBS service area. |  |
| MbsServiceReq | 3GPP TS 29.571 [15] | Represents MBS Service Requirements. |  |
| MbsSessionId | 3GPP TS 29.571 [15] | Represents an MBS Session Identifier. |  |
| ProblemDetails | 3GPP TS 29.571 [15] | Contains error related additional information. |  |
| 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. |  |

\* \* \* \* Next Changes \* \* \* \*

##### 6.2.6.2.2 Type: MbsSessionPolAuthCtxt

Table 6.2.6.2.2-1: Definition of type MbsSessionPolAuthCtxt

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| mbsSessionId | MbsSessionId | M | 1 | Represents the identifier of the concerned MBS Session. |  |
| mbsServReq | MbsServiceReq | M | 1 | Represents MBS service requirements.This attribute shall be provided, if available. |  |
| mbsServiceArea | MbsServiceArea | C | 0..1 | Contains the MBS Service Area.This attribute shall be provided, if available. |  |
| locationDependent | boolean | C | 0..1 | Indicates whether the MBS session is an instance of a location dependent MBS service.This attribute shall be provided if the targeted MBS session is an instance of a location dependent MBS service.Default value (if not present): "false". |  |
| dnn | Dnn | C | 0..1 | Represents the DNN of the MBS session.This attribute shall be provided, if available. |  |
| snssai | Snssai | C | 0..1 | Represents the S-NSSAI of the MBS session.This attribute shall be provided, if available. |  |
| suppFeat | SupportedFeatures | C | 0..1 | Contains the list of the supported features (among the ones defined in clause 6.2.8).This parameter shall be provided if feature negotiation needs to take place. |  |

\* \* \* \* Next Changes \* \* \* \*

##### 6.2.6.2.3 Type: MbsSessionPolAuthCtxtPatch

Table 6.2.6.2.3-1: Definition of type MbsSessionCtxtPolAuthPatch

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| mbsServiceArea | MbsServiceArea | O | 0..1 | Contains the updated MBS Service Area. |  |
| mbsServReq | MbsServiceReq | O | 0..1 | Represents updated MBS service requirements. |  |

\* \* \* \* Next Changes \* \* \* \*

##### 6.2.6.2.4 Type: AcceptableMbsServReq

Table 6.2.6.2.4-1: Definition of type AcceptableMbsServReq

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| acceptableMbsServReq | MbsServiceReq | M | 1 | Contains the MBS service requirements that can be accepted by the PCF. |  |

\* \* \* \* Next Changes \* \* \* \*

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  |  |  |

\* \* \* \* Next Changes \* \* \* \*

\* \* \* \* Next Changes \* \* \* \*

#### 6.2.6.4 Data types describing alternative data types or combinations of data types

##### 6.2.6.4.1 Type: MbsExtProblemDetails

Table 6.2.6.4.1-1: Definition of type MbsExtProblemDetails as a list of to be combined data types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Cardinality | Description | Applicability |
| ProblemDetails | 1 | Contains the details of the encountered problem, as defined in 3GPP TS 29.571 [15]. |  |
| AcceptableMbsServReq | 0..1 | Contains the MBS service requirements that can be accepted by the PCF. |  |

\* \* \* \* Next Changes \* \* \* \*

\* \* \* \* Next Changes \* \* \* \*

#### 6.2.7.3 Application Errors

The application errors defined for the Npcf\_MBSPolicyAuthorization service are listed in table 6.2.7.3-1.

Table 6.2.7.3-1: Application errors

|  |  |  |
| --- | --- | --- |
| Application Error | HTTP status code | Description |
| INVALID\_MBS\_SERVICE\_REQS | 400 Bad Request | The HTTP request is rejected because the provided MBS service requirements are invalid (e.g. invalid QoS reference), incorrect or insufficient for the PCF to perform MBS policy authorization. |
| FILTER\_RESTRICTIONS\_NOT\_RESPECTED | 400 Bad Request | The HTTP request is rejected because the MBS IP flow(s) description provided within the MBS application service requirements cannot be handled due to the restrictions defined in clause 5.3.8 of 3GPP TS 29.214 [19] not being respected. |
| MBS\_SERVICE\_REQS\_NOT\_AUTHORIZED | 403 Forbidden | The provided MBS service requirements are rejected. |
| MBS\_SESSION\_POL\_AUTH\_CTXT\_NOT\_FOUND | 404 Not Found | The HTTP request is rejected because the targeted Individual MBS Session Policy Authorization Context does not exist. |

\* \* \* \* Next Changes \* \* \* \*

### 6.2.9 Security

As indicated in 3GPP TS 33.501 [8] and 3GPP TS 29.500 [4], the access to the Npcf\_MBSPolicyAuthorization API may be authorized by means of the OAuth2 protocol (see IETF RFC 6749 [9]), based on local configuration, using the "Client Credentials" authorization grant, where the NRF (see 3GPP TS 29.510 [10]) plays the role of the authorization server.

If OAuth2 is used, an NF Service Consumer, prior to consuming services offered by the Npcf\_MBSPolicyAuthorization API, shall obtain a "token" from the authorization server, by invoking the Access Token Request service, as described in 3GPP TS 29.510 [10], clause 5.4.2.2.

NOTE: When multiple NRFs are deployed in a network, the NRF used as authorization server is the same NRF that the NF Service Consumer used for discovering the Npcf\_MBSPolicyAuthorization service.

The Npcf\_MBSPolicyAuthorization API defines a single scope "npcf-mbspolicyauth" for the entire service, and it does not define any additional scopes at resource or operation level.

\* \* \* \* Next Changes \* \* \* \*

# A.3 Npcf\_MBSPolicyAuthorization API

openapi: 3.0.0

info:

 title: Npcf\_MBSPolicyAuthorization API

 version: 1.0.0-alpha.2

 description: |

 MBS Policy Authorization Service.

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externalDocs:

 description: >

 3GPP TS 29.537 V1.0.1; 5G System; Multicast/Broadcast Policy Control Services.

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

security:

 - {}

 - oAuth2ClientCredentials:

 - npcf-mbspolicyauth

servers:

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

 variables:

 apiRoot:

 default: https://example.com

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

paths:

 /contexts:

 post:

 summary: Request the creation of a new MBS Session Policy Authorization Context.

 operationId: CreateMBSSessionPolAuthCtxt

 tags:

 - MBS Session Policy Authorization Contexts (Collection)

 requestBody:

 required: true

 content:

 application/json:

 schema:

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

 responses:

 '201':

 description: >

 Created. An Individual MBS Session Policy Authorization Context resource is successfully

 created and a representation of the created resource is returned.

 content:

 application/json:

 schema:

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

 headers:

 Location:

 description: >

 Contains the URI of the newly created Individual MBS Session Policy Authorization

 Context.

 Context resource.

 required: true

 schema:

 type: string

 '400':

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

 '401':

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

 '403':

 description: Forbidden.

 content:

 application/problem+json:

 schema:

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

 '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'

 /contexts/{contextId}:

 parameters:

 - name: contextId

 in: path

 description: >

 Contains the identifier of the Individual MBS Session Policy Authorization Context

 resource.

 required: true

 schema:

 type: string

 get:

 summary: Read an existing Individual MBS Session Policy Authorization Context resource.

 operationId: GetMBSSessionPolAuthCtxt

 tags:

 - Individual MBS Session Policy Authorization Context (Document)

 responses:

 '200':

 description: >

 OK. The requested Individual MBS Session Policy Authorization Context resource

 is successfully returned.

 content:

 application/json:

 schema:

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

 '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'

 patch:

 summary: Request the modification of an existing Individual MBS Session Policy Authorization Context resource.

 operationId: ModifyMBSSessionPolAuthCtxt

 tags:

 - Individual MBS Session Policy Authorization Context (Document)

 requestBody:

 required: true

 content:

 application/merge-patch+json:

 schema:

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

 responses:

 '200':

 description: >

 OK. The requested Individual MBS Session Policy Authorization Context resource is

 successfully modified and a representation of the updated resource is returned in the

 response body.

 content:

 application/json:

 schema:

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

 '204':

 description: >

 No Content. The concerned Individual MBS Session Policy Authorization Context resource is

 successfully modified and no content is returned in the response body.

 '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':

 description: Forbidden.

 content:

 application/problem+json:

 schema:

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

 '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'

 delete:

 summary: Request the deletion of an existing Individual MBS Session Policy Authorization Context resource.

 operationId: DeleteMBSSessionPolAuthCtxt

 tags:

 - Individual MBS Session Policy Authorization Context (Document)

 responses:

 '204':

 description: >

 No Content. The concerned Individual MBS Session Policy Authorization Context resource is

 successfully deleted.

 '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-mbspolicyauth: Access to the Npcf\_MBSPolicyAuthorization API

 schemas:

 MbsSessionPolAuthCtxt:

 description: >

 Represents the parameter of an MBS Session Policy Authorization Context.

 type: object

 properties:

 mbsSessionId:

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

 mbsServReq:

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

 mbsServiceArea:

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

 locationDependent:

 type: boolean

 default: false

 dnn:

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

 snssai:

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

 suppFeat:

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

 required:

 - mbsSessionId

 - mbsServReq

 MbsSessionPolAuthCtxtPatch:

 description: >

 Represents the modifications to an existing MBS Session Policy Authorization Context

 resource.

 type: object

 properties:

 mbsServReq:

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

 mbsServiceArea:

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

 MbsExtProblemDetails:

 description: Identifies the MBS related extensions to the ProblemDetails data structure.

 allOf:

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

 - $ref: '#/components/schemas/AcceptableMbsServReq'

 AcceptableMbsServReq:

 description: >

 Contains the MBS application service requirements that can be accepted by the PCF.

 type: object

 properties:

 acceptableMbsServReq:

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

 required:

 - acceptableMbsServReq

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