**3GPP TSG CT WG3 Meeting #135 *C3-243226***

**Hyderabad, IN, 27 - 31 May, 2024 *(Revision of C3-243xxx)***

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  |  | **CR** |  | **rev** | **-** | **Current version:** | **18.3.0** |  |
|  | | | | | | | | |
| *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:*** | Npcf\_MBSPolicyAuthorization API | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** |  | | | | | | | | | |
| ***Source to TSG:*** |  | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** |  | | | | |  | ***Date:*** | | |  |
|  |  | | | |  | |  | | |  |
| ***Category:*** |  |  | | | | | ***Release:*** | | |  |
|  | *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:*** | | The following issues have been identified in the current specification:   1. In clause 5.3.2.3.2, the descriptions of NF service consumer for MB-SMF is not aligned with other clauses. 2. The Annex number for Npcf\_MBSPolicyAuthorization API is incorrect. 3. The RFC number of IETF RFC 9457 is incorrect in clause 6.1.2.2.2. 4. For the OpenAPI file, the description field of some attributes by using "string" or "array" data type are missing , they should be updated to align with the guidelines of clause 5.3.9 of TS 29.501. 5. Additional editorial and format issues. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Correct the above-detailed issues. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Incorrect specfication. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 5.3.2.3.2, 6.2.2.1, 6.2.2.2.2, 6.2.3.1, 6.2.6.2.2, 6.2.6.2.4, A.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 introduces backwards compatible corrections to the OpenAPI description of the Npcf\_MBSPolicyAuthorization API. | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

**Additional discussion(if needed):**

**Proposed changes:**

\*\*\* 1st Change \*\*\*

##### 5.3.2.3.2 MBS Application Session Context Update



Figure 5.3.2.3.2-1: MBS Application Session Context update procedure

1. In order to request the modification of an existing MBS Application Session Context, the NF service consumer (e.g., AF, NEF, MBSF) shall send an HTTP PATCH request to the PCF, targeting the URI of the corresponding "Individual MBS Application Session Context" resource, with the request body containing the MbsAppSessionCtxtPatch data structure that may contain:

- the requested modifications to the MBS Service Information, within the "mbsServInfo" attribute.

2. Upon reception of the HTTP PATCH request from the NF service consumer:

- the PCF may interact with the UDR to retrieve MBS Session policy control data for the MBS session, as specified in 3GPP TS 29.519 [20];

- the PCF shall perform MBS policy authorization based on the requested modifications to the MBS Service Information received from the NF service consumer and the operator policies that are pre-configured at the PCF and/or the MBS session policy control data retrieved from the UDR. Then:

- if MBS policy authorization of the requested modifications to the MBS Service Information is successful, the PCF shall derive the required updated MBS policies (e.g., QoS parameters), if any, and determine whether they are allowed or not;

- if the required updated MBS policies are allowed:

- the PCF shall store the generated updated MBS policies for the MBS session, if any, together with the corresponding MBS session ID;

- the PCF shall update the associated "Individual MBS Application Session Context" resource accordingly 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 MbsAppSessionCtxt data structure, or an HTTP "204 No Content" status code; and

- if the authorized MBS policies have been changed, the PCF shall include the "contactPcfInd" attribute set to "true" within the returned MbsAppSessionCtxt data structure to indicate that the PCF shall be contacted, i.e. to indicate to the NF service consumer (e.g., MB-SMF) that it needs to trigger the MBS Policy Association Update procedure, as defined in clause 5.2.2.3, to receive updated MBS policies from the PCF;

- otherwise, when MBS policy authorization is not successful or the required updated MBS policies are not allowed, the PCF shall reject the request with an appropriate error response as specified below in this clause;

- 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 targeted "Individual MBS Application Session Context" resource does not exist, the PCF shall reject the request with an HTTP "404 Not Found" status code including the ProblemDetails data structure with the "cause" attribute set to "MBS\_SESSION\_POL\_AUTH\_CTXT\_NOT\_FOUND";

- if the provided MBS Service Information is invalid, incorrect or insufficient for the PCF to perform MBS 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\_INFO";

- if the MBS IP flow(s) description provided within the MBS Service Information 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"; and

- if the provided MBS Service Information is 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\_INFO\_NOT\_AUTHORIZED";

and may contain:

- the AcceptableMbsServInfo data structure including the MBS Service Information that is acceptable for the PCF.

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

#### 6.2.2.1 General

HTTP/2, IETF RFC 9113 [11], shall be used as specified in clause 5 of 3GPP TS 29.500 [4].

HTTP/2 shall be transported as specified in clause 5.3 of 3GPP TS 29.500 [4].

The OpenAPI [6] specification of HTTP messages and content bodies for the Npcf\_MBSPolicyAuthorization API is contained in Annex A.3.

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

##### 6.2.2.2.2 Content type

JSON, IETF RFC 8259 [12], shall be used as content type of the HTTP bodies specified in the present specification as specified in clause 5.4 of 3GPP TS 29.500 [4]. The use of the JSON format shall be signalled by the content type "application/json".

JSON object used in the HTTP PATCH request shall be encoded according to "JSON Merge Patch" and shall be signalled by the content type "application/merge-patch+json", as defined in IETF RFC 7396 [22].

The "Problem Details" JSON object shall be used to indicate additional details of the error in a HTTP response body and shall be signalled by the content type "application/problem+json", as defined in IETF RFC 9457 [13].

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

#### 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 defined for the Npcf\_MBSPolicyAuthorization API.

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 Application Session Contexts | /contexts | POST | Create a new MBS Application Session Context. |
| Individual MBS Application Session Context | /contexts/{contextId} | GET | Retrieve an existing Individual MBS Application Session Context resource. |
| PATCH | Modify an existing Individual MBS Application Session Context resource. |
| DELETE | Delete an existing Individual MBS Application Session Context resource. |

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

##### 6.2.6.2.2 Type: MbsAppSessionCtxt

Table 6.2.6.2.2-1: Definition of type MbsAppSessionCtxt

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| mbsSessionId | MbsSessionId | M | 1 | Represents the identifier of the corresponding MBS Session. |  |
| mbsServInfo | MbsServiceInfo | C | 0..1 | Represents the MBS Service Information.  This attribute shall be provided, if available. |  |
| dnn | Dnn | O | 0..1 | Represents the DNN of the MBS session. |  |
| snssai | Snssai | O | 0..1 | Represents the S-NSSAI of the MBS session. |  |
| areaSessPolId | AreaSessionPolicyId | C | 0..1 | Contains the Area Session Policy ID.  This attribute may be present only in the response to an MBS Application Session Context creation request.  This attribute shall be present if the "reqForLocDepMbs" attribute was present and set to "true" in the corresponding request. | AreaSessPolicy |
| reqForLocDepMbs | boolean | O | 0..1 | Indicates whether the request corresponds to a location-dependent MBS service, i.e.:  - "true" means that the request corresponds to a location-dependent MBS service.  - "false" means that the request does not correspond to a location-dependent MBS service.  - When this attribute is not present, the default value is "false".  This attribute may be present only in a request to create an MBS Application Session Context. It shall not be present otherwise. | AreaSessPolicy |
| contactPcfInd | boolean | O | 0..1 | Indicates whether the PCF shall be contacted or not, i.e.:  - "true" means that the PCF shall be contacted.  - "false" means that the PCF shall not be contacted.  - When this attribute is not present, the default value is "false".  This attribute may be present only in the response to an MBS Application Session Context update request. |  |
| suppFeat | SupportedFeatures | C | 0..1 | Contains the list of the supported features defined in clause 6.2.8.  This parameter shall be provided if feature negotiation needs to take place. |  |

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

##### 6.2.6.2.4 Type: AcceptableMbsServInfo

Table 6.2.6.2.4-1: Definition of type AcceptableMbsServInfo

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| accMbsServInfo | map(MbsMediaComp) | C | 1..N | Contains the maximum acceptable bandwidth per media component that can be accepted and authorized by the PCF.  Each map entry encoded using the MbsMediaComp data structure shall only include the "mbsMedCompNum" attribute and the "maxReqMbsBwDl" attribute indicating the maximum acceptable bandwidth.  The key of the map is the "medCompN" attribute of the corresponding MbsMediaComp data structure provided as a map entry.  (NOTE) |  |
| accMaxMbsBw | BitRate | C | 0..1 | Contains the maximum acceptable bandwidth.  (NOTE) |  |
| NOTE: When the acceptable MBS bandwidth is per MBS media component, only the "accMbsServInfo" attribute shall be present. When the acceptable MBS bandwidth applies to all the MBS media components, only the "accMaxMbsBw" attribute shall be present. | | | | | |

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

# A.3 Npcf\_MBSPolicyAuthorization API

openapi: 3.0.0

info:

title: Npcf\_MBSPolicyAuthorization API

version: 1.1.0-alpha.2

description: |

MBS Policy Authorization Service.

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externalDocs:

description: >

3GPP TS 29.537 V18.3.0; 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 Individual MBS Application Session Context resource.

operationId: CreateMBSAppSessionCtxt

tags:

- MBS Application Session Contexts (Collection)

requestBody:

required: true

content:

application/json:

schema:

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

responses:

'201':

description: >

Created. An Individual MBS Application Session Context resource is successfully created

and a representation of the created resource is returned.

content:

application/json:

schema:

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

headers:

Location:

description: >

Contains the URI of the newly created Individual MBS Application Session 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'

'502':

$ref: 'TS29571\_CommonData.yaml#/components/responses/502'

'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 Application Session Context resource.

required: true

schema:

type: string

get:

summary: Read an existing Individual MBS Application Session Context resource.

operationId: GetMBSAppSessionCtxt

tags:

- Individual MBS Application Session Context (Document)

responses:

'200':

description: >

OK. The requested Individual MBS Application Session Context resource is successfully

returned.

content:

application/json:

schema:

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

'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'

'502':

$ref: 'TS29571\_CommonData.yaml#/components/responses/502'

'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 Application Session Context resource.

operationId: ModifyMBSAppSessionCtxt

tags:

- Individual MBS Application Session Context (Document)

requestBody:

required: true

content:

application/merge-patch+json:

schema:

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

responses:

'200':

description: >

OK. The requested Individual MBS Application Session 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/MbsAppSessionCtxt'

'204':

description: >

No Content. The corresponding Individual MBS Application Session 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'

'502':

$ref: 'TS29571\_CommonData.yaml#/components/responses/502'

'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 Application Session Context resource.

operationId: DeleteMBSAppSessionCtxt

tags:

- Individual MBS Application Session Context (Document)

responses:

'204':

description: >

No Content. The corresponding Individual MBS Application Session 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'

'502':

$ref: 'TS29571\_CommonData.yaml#/components/responses/502'

'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:

MbsAppSessionCtxt:

description: >

Represents the parameter of an MBS Application Session Context.

type: object

properties:

mbsSessionId:

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

mbsServInfo:

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

dnn:

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

snssai:

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

areaSessPolId:

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

reqForLocDepMbs:

type: boolean

default: false

description: >

Indicates whether the request corresponds to a location-dependent MBS service. When

the request corresponds and set to "true". When the request does not correspond and

set to "false". The default value is false if omitted.

contactPcfInd:

type: boolean

default: false

description: >

Indicates whether the PCF shall be contacted or not. The PCF shall be contacted and

set to "true". The PCF shall not be contacted and set to "false". The default value

is false if omitted.

suppFeat:

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

required:

- mbsSessionId

MbsAppSessionCtxtPatch:

description: >

Represents the modifications to an existing MBS Application Session Context resource.

type: object

properties:

mbsServInfo:

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

AcceptableMbsServInfo:

description: >

Contains the MBS Service Information that can be accepted by the PCF.

type: object

properties:

accMbsServInfo:

type: object

additionalProperties:

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

minProperties: 1

accMaxMbsBw:

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

oneOf:

- required: [accMbsServInfo]

- required: [accMaxMbsBw]

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

MbsExtProblemDetails:

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

allOf:

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

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

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