**3GPP TSG-CT WG3 Meeting #122-eC3-223163**

**E-Meeting, 12th – 20th May 2022**

**Source: Nokia, Nokia Shanghai Bell**

**Title: Pseudo-CR on the PCC rule update to Npcf\_MBSPolicyControl Create Service**

**Spec: 3GPP TS 29.537 V0.2.0**

**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**

PCC rule update for Npcf\_MBSPolicyControl\_Create service operation needs to be specified as per stage 2 requirements.

Stage 2 requirements for policy data are defined in TS 23.247:

## *6.10    Policy control for Multicast and Broadcast services*

*The policy and charging control framework as defined in TS 23.503 [7] applies to Multicast and Broadcast services in the following aspects:*

*-     MBS Session binding: MBS Session binding is the association of an AF Session information to one and only one MBS Session. The PCF shall perform the session binding based on the MBS Session ID, i.e. TMGI or source specific IP multicast address.*

*-     QoS Flow binding: For an MBS Session, QoS Flow binding is the association of a PCC rule to a QoS Flow within an MBS Session. The MB-SMF performs QoS Flow binding for an MBS Session in the same way as the SMF for a PDU Session.*

*-* ***PCC rules for MBS Session are used to provide policy for QoS flows: The following PCC rule parameters defined in Table 6.3.1 of TS 23.503 [7] are applicable for MBS:***

***-     Rule identifier.***

***-     Service data flow detection: Precedence, Service data flow template (only for IP PDU traffic).***

***-     Policy Control: 5G QoS Identifier (5QI), DL-maximum bitrate, DL-guaranteed bitrate, ARP, Priority Level, Averaging Window, Maximum Data Burst Volume.***

***-     Policy information can also be applicable for an entire MBS session. The following parameters defined for a PDU session in Table 6.4.1 of TS 23.503 [7] are applicable for an entire MBS session:***

***-     Authorized Session-AMBR.***

***-     Explicitly signalled QoS Characteristics.***

**3. Conclusions**

N/A.

**4. Proposal**

It is proposed to agree the following changes to 3GPP TS 29.537 V0.2.0.

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

# 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".

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

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

### 5.2.X MBS Policy Decision Management

#### 5.2.X.1 MBS PCC rules definition

A MBS PCC rule is a set of information elements enabling the detection of a service data flow and providing parameters for policy control and/or charging control.

An MBS PCC rule consists of:

Table 5.2.X.1-1: MBS PCC rule information elements

|  |  |  |
| --- | --- | --- |
| Information name | Description | Category |
| Rule identifier | Uniquely identifies the MBS PCC rule, within a MBS Session.  It is used between PCF and MB-SMF for referencing MBS PCC rules. | Mandatory |
|  | Service data flow detection |  |
| Precedence | Determines the order, in which the service data flow templates are applied at service data flow detection, enforcement and charging. | Mandatory |
| Service Data Flow Template | The list of service data flow filters for the detection of the service data flow. | Mandatory |
|  | Policy control |  |
| 5QI | Identifier of the authorized QoS parameters for the service data flow. | Mandatory |
| ARP | The Allocation and Retention Priority for the service data flow consisting of the priority level, the pre-emption capability and the pre-emption vulnerability. | Mandatory |
| MBR (DL) | The downlink maximum bitrate authorized for the service data flow. | Optional |
| GBR (DL) | The downlink guaranteed bitrate authorized for the service data flow. | Optional |
| Priority Level | Indicates a priority in scheduling resources among MBS QoS Flows. | Optional |
| Averaging Window | Represents the duration over which the guaranteed and maximum bitrate shall be calculated. | Optional |
| Maximum Data Burst Volume | Denotes the largest amount of data that is required to be transferred within a period of 5G-AN PDB. | Optional |

The exact encoding of MBS PCC rules is defined in subclause 6.1.6.2.x.

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

#### 5.2.X.2 MBS PCC rules operation

For MBS PCC rules, the following applies:

-     Installation: to provision the MBS PCC rules.

-     Modification: to modify the MBS PCC rules.

-     Removal: to remove the MBS PCC rules.

\* \* \* 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 |
| MbsPccRule | 6.1.6.2.x | Represents an MBS PCC rule's information |  |
| 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 | 6.1.6.2.6 | 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 | TS 29.571 [15] | Identifies a DNN. |  |
| FlowDescription | TS 29.512 [xx] | Represents packet filter for an IP flow. |  |
| MbsSessionId | TS 29.571 [15] | Represents an MBS Session Identifier. |  |
| RedirectResponse | TS 29.571 [15] | Contains redirection related information. |  |
| Snssai | TS 29.571 [15] | Identifies an S-NSSAI. |  |
| SupportedFeatures | TS 29.571 [15] | Represents the list of supported features. It is used to negotiate the applicability of the optional features. |  |
| Uri | TS 29.571 [15] | Represents a URI. |  |
| Uinteger | TS 29.571 [15] | Represents an unsigned integer |  |

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

##### 6.1.6.2.x Type: MbsPccRule

Table 6.1.6.2.x-1: Definition of type MbsPccRule

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| dlIpFlowInfos | array(FlowDescription) | O | 1..N | An array of downlink IP flow packet filter information. |  |
| pccRuleId | string | M | 1 | Univocally identifies the PCC rule within a MBS session. |  |
| precedence | Uinteger | O | 0..1 | Determines the order in which this PCC rule is applied relative to other PCC rules within the same MBS session. (NOTE 1) |  |
| refMbsQosInfo | array(string) | O | 1..N | A reference to the MbsQosInfo policy decision type.  (NOTE 2) |  |
| NOTE 1: The "precedence" attribute is used to specify the precedence of the PCC rule among all PCC rules associated with the MBS session. It includes an integer value in the range from 0 to 255 (decimal). The higher the value of the "precedence" attribute, the lower the precedence of that PCC rule is.  NOTE 2: Arrays are only introduced for future compatibility. In this release of the specification the maximum number of elements in the array is 1. | | | | | |

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

# A.2 Npcf\_MBSPolicyControl API

openapi: 3.0.0

info:

title: Npcf\_MBSPolicyControl API

version: 1.0.0-alpha.2

description: |

MBS Session Policy Control Service

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externalDocs:

description: >

TS 29.537 V0.2.0; 5G System; Multicast/Broadcast Policy Control Services.

url: 'https://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 clause 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':

$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'

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'

delete:

summary: Deletes an existing Individual MBS Policy resource.

operationId: DeleteMBSPolicy

tags:

- Individual MBS Policy

parameters:

- name: mbsPolicyId

in: path

description: >

Contains the identifier of the concerned Individual MBS Session Policy.

required: true

schema:

type: string

responses:

'204':

description: >

No Content. The concerned Individual MBS Policy resource was 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-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

MbsPccRule:

description: Contains a PCC rule information for MBS sessions.

type: object

properties:

dlIpFlowInfos:

type: array

items:

$ref: 'TS29512\_Npcf\_SMPolicyControl.yaml#/components/schemas/FlowDescription'

minItems: 1

description: An array of downlink IP flow packet filter information.

pccRuleId:

type: string

description: Univocally identifies the PCC rule within a MBS session.

precedence:

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

refMbsQosInfo:

type: array

items:

type: string

minItems: 1

maxItems: 1

description: >

A reference to the MbsQosInfo policy decision type.

# ENUMS:

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 \* \* \* \*