**3GPP TSG-CT WG3 Meeting #123-eC3-224118r2**

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

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

**Title: Pseudo-CR on the Data model update for MBS error reports update.**

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

**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 and Authorization services.

**2. Reason for Change**

MBS error reports for the failed PCC rules and Policy Decisions in the Npcf\_MBSPolicyControl\_UpdateNotify service operation needs to be specified.

**3. Conclusions**

N/A.

**4. Proposal**

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

\* \* \* First 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 | 6.1.6.2.7 | 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. |  |
| MbsQosChar | 6.1.6.2.9 | Represents explicitly signalled QoS characteristics. |  |
| MbsQosInfo | 6.1.6.2.8 | Represents MBS QoS information. |  |
| MbsTermNotif | 6.1.6.2.6 | Represents an MBS policy termination notification. |  |
|  |  |  |  |
|  |  |  |  |
| MbsErrorReport | 6.1.6.2.11 | Includes the information reported by the NF service consumer when MBS Policy Decision enforcement failure occurs and/or all the MBS PCC rules are not successfully installed. |  |
| MbsReport | 6.1.6.2.12 | Includes the Information about the MBS Policy Decision level failure(s) and/or the MBS PCC rule level failure(s). |  |
| FailureCode | 6.1.6.3.4 | Represents the reason for the MBS Policy Decision(s) enforcement failure or the MBS PCC rule(s) installation failure. |  |
| MbsPccRuleStatus | 6.1.6.3.5 | Represents the MBS PCC rule status |  |

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 |
| 5Qi | 3GPP TS 29.571 [15] | Indicates the 5G QoS Identifier. |  |
| 5QiPriorityLevel | 3GPP TS 29.571 [15] | Indicates the 5QI Priority Level. |  |
| Arp | 3GPP TS 29.571 [15] | Indicates the allocation and retention priority. |  |
| AverWindow | 3GPP TS 29.571 [15] | Indicates the Averaging Window. |  |
| BitRate | 3GPP TS 29.571 [15] | Indicates the Bit Rate. |  |
| Dnn | 3GPP TS 29.571 [15] | Identifies a DNN. |  |
| FlowDescription | 3GPP TS 29.512 [18] | Represents packet filter for an IP flow. |  |
| MbsSessionId | 3GPP TS 29.571 [15] | Represents an MBS Session Identifier. |  |
| PacketDelBudget | 3GPP TS 29.571 [15] | Indicates Packet Delay Budget. |  |
| PacketErrRate | 3GPP TS 29.571 [15] | Indicates Packet Error Rate. |  |
| 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. |  |
| Uinteger | 3GPP TS 29.571 [15] | Represents an unsigned integer |  |

Editor's note: Whether the data type MbsMaxDataBurstVol will be defined in 3GPP TS 29.537 or 3GPP TS 29.571 is FFS.

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

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

##### 6.1.6.2.11 Type: MbsErrorReport

Table 6.1.6.2.11-1: Definition of type MbsErrorReport

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| mbsReports | array(MbsReport) | O | 1..N | Used to report the MBS Policy decision level failure(s) and/or MBS PCC rule level failure(s). |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
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\* \* \* Next Change \* \* \* \*

##### 6.1.6.2.12 Type: MbsReport

Table 6.1.6.2.12-1: Definition of type MbsReport

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| mbsPccRuleIds | array(string) | C | 1..N | Contains the identifier(s) of the affected MBS PCC rule(s).This attribute shall be present if the reported failure is related to the MBS PCC rule(s) installation.(NOTE) |  |
| mbsPccRuleStatus | MbsPccRuleStatus | C | 0..1 | Indicates the status of the MBS PCC rule(s) identified by the "mbsPccRuleIds" attribute.This attribute shall be present only if the "mbsPccRuleIds" attribute is present. |  |
| failureCode | FailureCode | C | 0..1 | Indicates the reason of the failure of the MBS Policy Decision or the MBS PCC rule(s) identified by the "mbsPccRuleIds" attribute.This attribute shall be present when the NF service consumer reports the failure of the enforcement of the MBS Policy Decision or the installation of the MBS PCC rule(s) identified by the "mbsPccRuleIds" attribute.(NOTE) |  |
| NOTE: If the reported failure is due to MBS Policy Decision failure, then the "mbsPccRuleIds" attribute shall not be present and the "failureCode" attribute indicates the appropriate failure cause illustrating the MBS Policy Decision failure that occurred. |

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

##### 6.1.6.3.4 Enumeration: FailureCode

 The enumeration FailureCode represents the reason for the MBS Policy Decision enforcement failure or the MBS PCC rule(s) installation failure. It shall comply with the provisions of table 6.1.6.3.4-1.

Table 6.1.6.3.4-1: Enumeration FailureCode

|  |  |  |
| --- | --- | --- |
| Enumeration value | Description | Applicability |
| NF\_MALFUNCTION | Indicates that the MBS PCC rule could not be successfully installed due to MB-SMF/MB-UPF malfunction. |  |
| NF\_RESOURCES\_UNAVAILABLE | Indicates that the MBS PCC rule could not be successfully installed due to resources unavailable at MB-SMF/MB-UPF. |  |
| RESOURCE\_ALLOCATION\_FAILURE | Indicates that the MBS PCC rule could not be successfully installed or maintained since the associated MBS QoS flow establishment/modification failed or the associated MBS QoS flow was released. |  |
| MBS\_QOS\_VALIDATION\_FAILURE | Indicate that MBS QoS validation has failed. |  |
| NO\_MBS\_QOS\_FLOW | Indicates that there is no MBS QoS flow to which the MB-SMF can bind the MBS PCC rule(s). |  |
| MBS\_QOS\_DECISION\_ERROR | Indicates failure in the provisioning of MBS QoS Decision data. |  |
| MBS\_POLICY\_PARAM\_ERROR | Indicates that the information related to the provisioned MBS policy parameter(s) is incorrect, incomplete or inconsistent. |  |

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

##### 6.1.6.3.5 Enumeration: MbsPccRuleStatus

The enumeration MbsPccRuleStatus represents the MBS PCC rule status. It shall comply with the provisions of table 6.1.6.3.5-1.

Table 6.1.6.3.5-1: Enumeration RuleStatus

|  |  |  |
| --- | --- | --- |
| Enumeration value | Description | Applicability |
| ACTIVE | Indicates that the MBS PCC rule(s) are successfully installed. |  |
| INACTIVE | Indicates that the MBS PCC rule(s) are removed. |  |

\* \* \* 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

 MbsErrorReport:

 description:>

 Includes the information reported by the NF service consumer when MBS Policy Decision

 failure(s) occur and/or all the MBS PCC rule(s) are not successfully installed.

 type: object

 properties:

 mbsReports:

 type: array

 items:

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

 minItems: 1

 MbsReport:

 description:>

 Contains information about the MBS Policy Decision level failure(s) and/or the MBS PCC

 rule level failure(s).

 type: object

 properties:

 mbsPccRuleIds:

 type: array

 items:

 type: string

 minItems: 1

 mbsPccRuleStatus:

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

 failureCode:

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

# ENUMS:

 MbsPolicyAssociationReleaseCause:

 anyOf:

 - type: string

 enum:

 - UNSPECIFIED

 - type: string

 description: >

 This string provides forward-compatibility with future

 extensions to the enumeration but is not used to encode

 content defined in the present version of this API.

 description: |

 Possible values are:

 - UNSPECIFIED: PCF requests the termination of the MBS policy association for unspecified

 reason.

 MbsPccRuleStatus:

 anyOf:

 - type: string

 enum:

 - ACTIVE

 - INACTIVE

 - type: string

 description: >

 This string provides forward-compatibility with future

 extensions to the enumeration but is not used to encode

 content defined in the present version of this API.

 description: |

 Possible values are:

 - ACTIVE: Indicates that the MBS PCC rule(s) are successfully installed.

 - INACTIVE: Indicates that the MBS PCC rule(s) are removed.

 FailureCode:

 anyOf:

 - type: string

 enum:

 - NF\_MALFUNCTION

 - NF\_RESOURCES\_UNAVAILABLE

 - RESOURCE\_ALLOCATION\_FAILURE

 - MBS\_QOS\_VALIDATION\_FAILURE

 - NO\_MBS\_QOS\_FLOW

 - MBS\_QOS\_DECISION\_ERROR

 - MBS\_POLICY\_PARAM\_ERROR

 - type: string

 description: >

 string provides forward-compatibility with future

 extensions to the enumeration but is not used to encode

 content defined in the present version of this API.

 description: |

 Possible values are:

 - NF\_MALFUNCTION: Indicates that the MBS PCC rule could not be successfully installed due to MB-SMF/MB-UPF malfunction.

 - NF\_RESOURCES\_UNAVAILABLE: Indicates that the MBS PCC rule could not be successfully installed due to resources unavailable at MB-SMF/MB-UPF.

 - RESOURCE\_ALLOCATION\_FAILURE: Indicates that the MBS PCC rule could not be successfully installed or maintained since the associated MBS QoS flow establishment/modification failed or the associated MBS QoS flow was released.

 - MBS\_QOS\_VALIDATION\_FAILURE: Indicates that MBS QoS validation has failed.

 - NO\_MBS\_QOS\_FLOW: Indicates that there is no MBS QoS flow to which the MB-SMF can bind the MBS PCC rule(s).

 - MBS\_QOS\_DECISION\_ERROR: Indicates failure in the provisioning of MBS QoS Decision data.

 - MBS\_POLICY\_PARAM\_ERROR: Indicates that the information related to the provisioned MBS policy parameter(s) is incorrect, incomplete or inconsistent.

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