**3GPP TSG CT WG3 Meeting #137 *C3-245087***

**Hefei, CN, 14th – 18th October, 2024**

|  |
| --- |
| *CR-Form-v12.3* |
| **CHANGE REQUEST** |
|  |
|  | **29.537** | **CR** | **0036** | **rev** | **-** | **Current version:** | **18.4.0** |  |
|  |
| *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:***  | MBS charging support |
|  |  |
| ***Source to WG:*** | Nokia, Huawei |
| ***Source to TSG:*** | CT3 |
|  |  |
| ***Work item code:*** | 5MBS\_Ph2 |  | ***Date:*** | 2024-10-07 |
|  |  |  |  |  |
| ***Category:*** | **F** |  | ***Release:*** | Rel-18 |
|  | *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 canbe 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:*** |  TS 32.279 has the following requirement in Clause 5.1.2:*The quota management shall be per rating group per MBS session*.To address this requirement, SA2 agreed S2-2408774 (CR#0371), which introduces charging support to be included as part of MBS policy information.6.10.1 General- MBS policy information consists of:- 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).NOTE: If a unicast tunnel is used over the N6mb/Nmb9 interface to transport MBS data towards the MB-UPF (see Figure 8.2-1), the Service data flow template relates to the inner IP layer within the unicast tunnel.- Policy Control: 5G QoS Identifier (5QI), DL-maximum bitrate, DL-guaranteed bitrate, ARP, Priority Level, Averaging Window, Maximum Data Burst Volume.- Charging: Charging key (to indicate a rating group), metering method |
|  |  |
| ***Summary of change:*** | Charging key (i.e. rating group), metering method data types that is is already defined in TS 29.571 and TS 29.512 is reused and included within MbsPolicyDecision data structure and the corresponding clauses updated. |
|  |  |
| ***Consequences if not approved:*** | Charging for MBS session cannot be implemented.  |
|  |  |
| ***Clauses affected:*** | 5.2.3.1.1, 5.2.3.1.6, 5.2.3.2.6, 6.1.6.1, 6.1.6.2.3, 6.1.6.2.7, 6.1.6.2.13 (new), 6.1.8, A.2 |
|  |  |
|  | **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 backward compatible feature support to the open API - Npcf\_MBSPolicyControl API |
|  |  |
| ***This CR's revision history:*** |  |

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

##### 5.2.3.1.1 MBS PCC Rule definition

An MBS PCC rule enables to provide MBS policy and/or charging control for an MBS service data flow. It is composed of the following information, as defined in table 5.2.3.1.1-1.

- Information enabling the detection of the MBS service data flow.

- A set of MBS Policy Control parameters to be enforced for the MBS service data flow.

Table 5.2.3.1.1-1: Content of an MBS PCC rule

|  |  |  |
| --- | --- | --- |
| Name | Description | Category |
| MBS PCC Rule identifier | Uniquely identifies the MBS PCC rule, within an MBS Session.It is used between the PCF and the MB-SMF for referencing the MBS PCC rules of an MBS Session. | Mandatory |
|  | MBS service data flow detection |  |
| Precedence | Determines the order in which the MBS service data flow template of the MBS PCC rule is applied relative to the MBS service data flow templates of the other MBS PCC rules of the MBS session, during MBS service data flow detection and policy enforcement. | Mandatory |
| MBS Service Data Flow Template | The list of MBS service data flow filter(s) for the detection of the MBS service data flow. | Mandatory |
|  | **MBS charging parameters** |  |
| Charging key | The MBS charging key is used to determine the tariff to apply to the MBS service data flow. | Mandatory |
|  |  |  |
| Measurement method | Indicates whether the MBS service data flow data volume, duration, combined volume/duration or event shall be measured. | Optional |
|  | MBS policy control parameters |  |
| 5QI | Identifier of the authorized set of QoS parameters for the MBS service data flow. | Mandatory |
| ARP | The authorized Allocation and Retention Priority for the MBS service data flow, consisting of the priority level, the pre-emption capability and the pre-emption vulnerability. | Mandatory |
| MBR – Maximum BitRate (DL) | The downlink maximum bitrate authorized for the MBS service data flow. | Optional |
| GBR – Guaranteed BitRate (DL) | The downlink guaranteed bitrate authorized for the MBS service data flow. | Optional |
| Averaging Window | Represents the duration over which the guaranteed and maximum bitrates shall be calculated. | Optional |
| Priority Level | Indicates the level of priority in scheduling resources among MBS QoS flows. | 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 |

NOTE: If the user plane towards the MB-UPF uses a unicast tunnel, the MBS Service Data Flow Template relates to the inner IP layer within the unicast tunnel.

An MBS PCC rule is encoded via the MbsPccRule data structure defined in clause 6.1.6.2.7 and is composed of the following information:

- An MBS PCC rule identifier that uniquely identifies the MBS PCC rule within the related MBS Session, within the "mbsPccRuleId" attribute.

- The MBS service data flow template for MBS service data flow detection, within the "mbsDlIpFlowInfo" attribute.

- The precedence information, i.e. the order in which the MBS service data flow template of the MBS PCC rule is applied relative to the MBS service data flow templates of the other MBS PCC rules of the MBS session, during MBS service data flow detection and policy enforcement, within the "precedence" attribute.

- The MBS authorized QoS to be applied for the MBS service data flow corresponding to the MBS PCC rule, i.e. a reference to an MBS QoS decision instance provisioned by the PCF at MBS Policy Decision level, within the "refMbsQosDec" attribute.

- If the "5MBS2" feature is supported, One or several reference(s) to the MBS Charging Data instance(s) to be applied for the MBS PCC Rule, within the "refMbsChgData" attribute.

The following operations are allowed on MBS PCC rule(s):

- Installation, i.e. to provision MBS PCC rule(s).

- Modification, i.e. to modify MBS PCC rule(s).

- Removal, i.e. to remove MBS PCC rule(s).

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

##### 5.2.3.1.6 MBS Charging Data

If the "5MBS2" feature is supported, then the MBS Charging Data defines charging related parameters associated with an MBS PCC rule. An MBS Charging data is encoded via the MbsChargingData data structure defined in clause 6.1.6.2.13 and composed of the following information:

- An unique identifier for the MBS Charging Data within the MBS Session, within the "mbsChgId" attribute.

- The MBS Charging key, i.e., the Rating Group for the MBS PCC rule used for rating purposes, within the "mbsRatingGrp" attribute.

- The measurement method to be applied to an MBS session, within the "mbsMtrMeth" attribute.\*\*\* Next Change \*\*\*

##### 5.2.3.2.6 Provisioning and enforcement of MBS Charging Data

If the "5MBS2" feature is supported, the PCF may provision the MBS Charging Data to support MBS Charging. In order to do so, the PCF shall:

* include the MBS Charging Decision within "mbsChargingData" attribute containing the MBS Charging Data instance(s) within the MbsPolicyDecision data structure; and
* in order to provision the applicable MBS Charging Data for an MBS PCC Rule, include the "refMbsChgData" attribute within the MbsPccRule data structure to indicate the MBS Charging Data instance(s) to be applied for the MBS PCC Rule.

During the lifetime of the MBS Policy Association, the PCF may update and/or remove previously provisioned MBS Charging Data instance(s).

\*\*\* 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 |
| MbsChargingData | 6.1.6.2.13 | Contains the MBS Charging Data. | 5MBS2 |
| MbsErrorReport | 6.1.6.2.10 | Contains the reporting of MBS Policy decision level failure(s) and/or MBS PCC rule level failure(s). |  |
| MbsFailureCode | 6.1.6.3.4 | Represents the reason behind the MBS Policy Decision(s) enforcement failure or the MBS PCC rule(s) installation failure. |  |
| MbsMaxDataBurstVol | 6.1.6.3.2 | Represents the maximum MBS data burst volume. |  |
| MbsPccRule | 6.1.6.2.7 | Represents the parameters constituting an MBS PCC rule. |  |
| MbsPcrt | 6.1.6.3.3 | Represents an MBS Policy Control Request Trigger. |  |
| MbsPolicyCtxtData | 6.1.6.2.2 | Contains the parameters used to request the creation of an Individual MBS Policy resource. |  |
| MbsPolicyCtxtDataUpdate | 6.1.6.2.11 | Contains the parameters to update an existing MBS Policy Association. |  |
| 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 parameters constituting an MBS Policy Decision. |  |
| MbsPccRuleStatus | 6.1.6.3.5 | Represents the status of an MBS PCC rule. |  |
| MbsQosChar | 6.1.6.2.9 | Represents the parameters constituting a set of explicitly signalled QoS Characteristics. |  |
| MbsQosDec | 6.1.6.2.8 | Represents the parameters constituting an MBS QoS Decision. |  |
| 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). |  |

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. |  |
| AreaSessionPolicyId | 3GPP TS 29.571 [15] | Indicates the Area Session Policy Identifier. | AreaSessPolicy |
| 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 filtering information for an IP flow. |  |
| MbsExtProblemDetails | Clause 6.2.6.4.1 | Identifies the MBS related extensions to the ProblemDetails data structure. |  |
| MbsServiceInfo | 3GPP TS 29.571 [15] | Represents MBS Service Information. |  |
| MbsSessionId | 3GPP TS 29.571 [15] | Represents an MBS Session Identifier. |  |
| MeteringMethod | 3GPP TS 29.512 [18] | Represents the metering method. | 5MBS2 |
| PacketDelBudget | 3GPP TS 29.571 [15] | Indicates the Packet Delay Budget. |  |
| PacketErrRate | 3GPP TS 29.571 [15] | Indicates the Packet Error Rate. |  |
| ProblemDetails | 3GPP TS 29.571 [15] | Contains error related additional information. |  |
| QosResourceType | 3GPP TS 29.571 [15] | Indicates the QoS resource type. |  |
| RatingGroup | 3GPP TS 29.571 [15] | Represents the rating group. | 5MBS2 |
| 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. |  |
| Uinteger | 3GPP TS 29.571 [15] | Represents an unsigned integer. |  |

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

##### 6.1.6.2.3 Type: MbsPolicyDecision

Table 6.1.6.2.3-1: Definition of type MbsPolicyDecision

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| mbsPccRules | map(MbsPccRule) | O | 1..N | A map of MBS PCC rule(s) with the content being the MbsPccRule as described in clause 6.1.6.2.7. The key used in this map for each entry is the "mbsPccRuleId" attribute of the corresponding MbsPccRule instance. |  |
| mbsQosDecs | map(MbsQosDec) | O | 1..N | Map of MBS QoS Decision(s). The key used in this map for each entry is the "mbsQosId" attribute of the corresponding MbsQosDec instance.(NOTE) |  |
| mbsQosChars | map(MbsQosChar) | O | 1..N | Map of QoS characteristics for non-standard 5QIs and non-preconfigured 5QIs. The key of the map is the 5QI value within the "5qi" attribute of the corresponding MbsQosChar instance.(NOTE) |  |
| authMbsSessAmbr | BitRate | O | 0..1 | The Authorized MBS Session-AMBR. |  |
| mbsPcrts | array(MbsPcrt) | O | 1..N | The MBS Policy Control Request Triggers(s) that the PCF requests to subscribe to. |  |
| mbsChargingData | map(MbsChargingData) | O | 1..N | Contains the MBS Charging Decision consisting of the MBS Charging Data instance(s) applicable for the MBS Session.The key of the map shall be set to the value of the "mbsChgId" attribute of the corresponding map value encoded using the MbsChargingData data structure. | 5MBS2 |
| NOTE: This attribute shall not be removed if it was provisioned. |

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

##### 6.1.6.2.7 Type: MbsPccRule

Table 6.1.6.2.7-1: Definition of type MbsPccRule

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| mbsPccRuleId | string | M | 1 | Univocally identifies the MBS PCC rule within the related MBS session. |  |
| mbsDlIpFlowInfo | array(FlowDescription) | C | 1..N | Contains the MBS downlink IP flow packet filter(s) information.(NOTE 3) |  |
| precedence | Uinteger | O | 0..1 | Determines the order in which this MBS PCC rule is applied relative to other MBS PCC rules within the same MBS session.(NOTE 1) |  |
| refMbsQosDec | array(string) | C | 1..N | A reference to the MbsQosDec policy decision type. It contains the value of the "mbsQosId" attribute of the referred MbsQosDec policy decision defined in clause 6.1.6.2.8.(NOTE 2, NOTE 3) |  |
| refMbsChgData | array(string) | O | 1..N | Contains one or several reference(s) to the MBS Charging Data instance(s) to be applied for this MBS PCC Rule.Each array element contains a string that corresponds to the value of the "mbsChgId" attribute of the MBSChargingData data type encoding the referenced MBS Charging Data.(NOTE 2, NOTE 4) | 5MBS2 |
| NOTE 1: The "precedence" attribute is used to specify the precedence of the MBS PCC rule among all MBS PCC rules associated to an MBS session. It includes an integer value in the range of 0 to 255 (decimal). The higher the value of the "precedence" attribute, the lower the precedence of the MBS PCC rule to which it applies.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.NOTE 3: This attribute shall be present in the response to an MBS Policy Association Creation request and may be present in the response to an MBS Policy Association Update request.NOTE 4: If this attribute is absent, then the MBS PCC Rule shall not be subject to charging. If this attribute is set to "NULL" after being previously provisioned with a value, then charging shall be deactivated for the MBS PCC Rule. |

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

##### 6.1.6.2.13 Type: MbsChargingData

Table 6.1.6.2.13-1: Definition of type MBSChargingData

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| mbsChgId | string | M | 1 | Contains the unique identifier of the MBS Charging Data within the related MBS Session. |  |
| mbsRatingGrp | RatingGroup | M | 1 | Contains the identifier of the applicable rating group. |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| mbsMtrMeth | MeteringMethod | O | 0..1 | Contains the applicable metering method.If the attribute is not present, then the metering method pre-configured at the MB-SMF shall be applicable as a default metering method. |  |
|  |

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

### 6.1.8 Feature negotiation

The optional features listed in table 6.1.8-1 are defined for the Npcf\_MBSPolicyControl API. They shall be negotiated using the extensibility mechanism defined in clause 6.6 of 3GPP TS 29.500 [4].

Table 6.1.8-1: Supported Features

|  |  |  |
| --- | --- | --- |
| Feature number | Feature Name | Description |
| 1 | AreaSessPolicy | This feature indicates the support of the Area Session Policy ID related handling for location-dependent MBS services.The following functionalities are supported:- Support the provisioning of the Area Session Policy ID to the PCF for MBS Sessions that are instances of a location-dependent MBS service. |
| 2 | 5MBS2 | This feature indicates the support of the Rel-18 enhancements to the 5G Multicast/Broadcast services.The following functionalities are supported:- Support MBS Charging Data provisioning within the MBS PCC Rule to enable MBS session charging. |

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

# A.2 Npcf\_MBSPolicyControl API

openapi: 3.0.0

info:

 title: Npcf\_MBSPolicyControl API

 version: 1.1.0

 description: |

 MBS Policy Control Service

 © 2024, 3GPP Organizational Partners (ARIB, ATIS, CCSA, ETSI, TSDSI, TTA, TTC).

 All rights reserved.

externalDocs:

 description: >

 3GPP TS 29.537 V18.4.0; 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 MBS Policy Association.

 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.

 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

 '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: 'TS29537\_Npcf\_MBSPolicyAuthorization.yaml#/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'

 /mbs-policies/{mbsPolicyId}:

 parameters:

 - name: mbsPolicyId

 in: path

 description: >

 Contains the identifier of the concerned Individual MBS Policy resource.

 required: true

 schema:

 type: string

 get:

 summary: Read an Individual MBS Policy resource.

 operationId: GetIndMBSPolicy

 tags:

 - Individual MBS Policy (Document)

 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'

 '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: Deletes an existing Individual MBS Policy resource.

 operationId: DeleteIndMBSPolicy

 tags:

 - Individual MBS Policy (Document)

 parameters:

 - name: mbsPolicyId

 in: path

 description: >

 Contains the identifier of the concerned Individual MBS Policy resource.

 required: true

 schema:

 type: string

 responses:

 '204':

 description: >

 No Content. The concerned Individual MBS Policy 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'

 '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'

 /mbs-policies/{mbsPolicyId}/update:

 post:

 summary: Request the update of an existing MBS Policy Association.

 operationId: UpdateIndMBSPolicy

 tags:

 - Individual MBS Policy (Document)

 parameters:

 - name: mbsPolicyId

 in: path

 description: >

 Contains the identifier of the concerned Individual MBS Policy resource.

 required: true

 schema:

 type: string

 requestBody:

 required: true

 content:

 application/json:

 schema:

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

 responses:

 '200':

 description: >

 OK. The targeted Individual MBS Policy resource is successfully updated.

 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':

 description: Forbidden.

 content:

 application/problem+json:

 schema:

 $ref: 'TS29537\_Npcf\_MBSPolicyAuthorization.yaml#/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'

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 MBS Policy

 Association.

 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'

 areaSessPolId:

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

 mbsServInfo:

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

 suppFeat:

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

 required:

 - mbsSessionId

 MbsPolicyDecision:

 description: >

 Represents the parameters constituting an MBS Policy Decision.

 type: object

 properties:

 mbsPccRules:

 type: object

 additionalProperties:

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

 minProperties: 1

 description: >

 A map of MBS PCC rule(s) with each map entry containing the MbsPccRule data structure.

 The key of the map for each entry is the mbsPccRuleId attribute of the corresponding

 MbsPccRule data structure.

 nullable: true

 mbsQosDecs:

 type: object

 additionalProperties:

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

 minProperties: 1

 description: >

 A map of MBS QoS Decision(s) with each map entry containing the MbsQosDec data

 structure.

 The key of the map for each entry is the mbsQosId attribute of the corresponding

 MbsQosDec data structure.

 mbsQosChars:

 type: object

 additionalProperties:

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

 minProperties: 1

 description: >

 A map of MBS QoS Characteristics set(s) with each map entry containing the MbsQosChar

 data

 structure. The key of the map for each entry is the 5QI attribute of the corresponding

 MbsQosDec data structure.

 authMbsSessAmbr:

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

 mbsPcrts:

 type: array

 items:

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

 minItems: 1

 nullable: true

 mbsChargingData:

 type: object

 additionalProperties:

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

 minProperties: 1

 description: >

 Map of MBS Charging data policy decisions. The key used in this map for each entry

 is the mbsChgId attribute of the corresponding MbsChargingData.

 nullable: true

 MbsPolicyData:

 description: >

 Contains the MBS policy data provisioned as part of an MBS Policy Association.

 type: object

 properties:

 mbsPolicyCtxtData:

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

 mbsPolicies:

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

 suppFeat:

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

 required:

 - mbsPolicyCtxtData

 MbsPccRule:

 description: Represents the parameters constituting an MBS PCC rule.

 type: object

 properties:

 mbsPccRuleId:

 type: string

 mbsDlIpFlowInfo:

 type: array

 items:

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

 minItems: 1

 precedence:

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

 refMbsQosDec:

 type: array

 items:

 type: string

 minItems: 1

 maxItems: 1

 refMbsChgData:

 type: array

 items:

 type: string

 minItems: 1

 maxItems: 1

 nullable: true

 required:

 - mbsPccRuleId

 MbsQosDec:

 description: Represents the parameters constituting an MBS QoS Decision.

 type: object

 properties:

 mbsQosId:

 type: string

 5qi:

 $ref: 'TS29571\_CommonData.yaml#/components/schemas/5Qi'

 priorityLevel:

 $ref: 'TS29571\_CommonData.yaml#/components/schemas/5QiPriorityLevel'

 mbrDl:

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

 gbrDl:

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

 arp:

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

 averWindow:

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

 mbsMaxDataBurstVol:

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

 required:

 - mbsQosId

 MbsQosChar:

 description: >

 Represents the parameters constituting a set of explicitly signalled QoS characteristics.

 type: object

 properties:

 5qi:

 $ref: 'TS29571\_CommonData.yaml#/components/schemas/5Qi'

 priorityLevel:

 $ref: 'TS29571\_CommonData.yaml#/components/schemas/5QiPriorityLevel'

 resourceType:

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

 packetDelayBudget:

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

 packetErrorRate:

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

 averWindow:

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

 mbsMaxDataBurstVol:

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

 required:

 - 5qi

 - resourceType

 - priorityLevel

 - packetDelayBudget

 - packetErrorRate

 - mbsMaxDataBurstVol

 MbsPolicyCtxtDataUpdate:

 description: >

 Contains the parameters to request the modification of an existing MBS Policy Association.

 type: object

 properties:

 mbsServInfo:

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

 mbsPcrts:

 type: array

 items:

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

 minItems: 1

 mbsErrorReport:

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

 MbsErrorReport:

 description: >

 Represents the reporting of MBS Policy decision level failure(s) and/or MBS PCC rule level

 failure(s).

 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/MbsFailureCode'

 MbsChargingData:

 description: Contains the MBS charging related parameters.

 type: object

 properties:

 mbsChgId:

 type: string

 description: Identifies the MBS charging control policy data within an MBS session.

 mbsMtrMeth:

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

 mbsRatingGrp:

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

 required:

 - mbsChgId

 nullable: true

# Simple data types:

 MbsMaxDataBurstVol:

 description: Represents the MBS Maximum Data Burst Volume expressed in Bytes.

 type: integer

 minimum: 1

 maximum: 2000000

# ENUMS:

 MbsPcrt:

 anyOf:

 - type: string

 enum:

 - MBS\_SESSION\_UPDATE

 - type: string

 description: >

 This string provides forward-compatibility with future extensions to the enumeration

 and is not used to encode content defined in the present version of this API.

 description: |

 Represents the MBS Policy Control Request Trigger.

 Possible values are:

 - MBS\_SESSION\_UPDATE: Indicates the MBS Session Update policy control request trigger.

 MbsPccRuleStatus:

 anyOf:

 - type: string

 enum:

 - ACTIVE

 - INACTIVE

 - type: string

 description: >

 This string provides forward-compatibility with future extensions to the enumeration

 and is not used to encode content defined in the present version of this API.

 description: |

 Represents the MBS PCC rule status.

 Possible values are:

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

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

 MbsFailureCode:

 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: >

 This string provides forward-compatibility with future extensions to the enumeration

 and is not used to encode content defined in the present version of this API.

 description: |

 Represents the reason for the MBS Policy Decision(s) enforcement failure or

 the MBS PCC rule(s) installation failure.

 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 the 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 \*\*\*