**3GPP TSG-CT WG3 Meeting #122-eC3-223155**

**E-Meeting, 12th – 20th May 2022**

**Source: Nokia, Nokia Shanghai Bell**

**Title: Pseudo-CR on the error cases update to Npcf\_MBSPolicyControl UpdateNotify 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**

Error cases for Npcf\_MBSPolicyControl\_UpdateNotify service operation needs to be specified. Error cases as specified in Ts 29.512 are referred and the common error cases applicable to MBS sessions are specified.

**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 \* \* \* \*

##### 5.2.2.3.2 PCF initiated MBS Session Policy Association Update



Figure 5.2.2.3.2-1: MBS Session Policy Association update

1. The PCF may decide to provision policies related to an Individual MBS Policy resource in response to e.g. an internal trigger within the PCF. The PCF shall send for this purpose an HTTP POST request to the NF service consumer (e.g. MB-SMF) using the URI"{notificationUri}/update" with the "notificationUri" set to the notification URI received during MBS Session Policy Association establishment procedure as defined in clause 5.2.2.2. The request message body shall contain a MbsPolicyNotif data structure that shall contain:

- the representation of the updated policies within the "mbsPolicyDecision" attribute; and

- the identifier of the Individual MBS Policy resource related to the notification, within the "mbsPolicyId" attribute.

2. In case of a successful update of MBS policies, a "204 No Content" response code shall be returned in the response.

If errors occur when processing the HTTP POST request, the NF service consumer shall send an HTTP error response as specified in clause 6.1.7

Editor's Note: The complete list of Error cases and the related status codes are FFS.

If the NF service consumer received one or more PCC rules from the PCF, but the validation of all these PCC Rules was unsuccessful, the NF service consumer shall reject the request and include in an HTTP "400 Bad Request" response message the MbsErrorReport data structure. Within the MbsErrorReport data structure, the NF service consumer shall include the "error" attribute containing the "cause" attribute of the ProblemDetails data structure set to "MBS\_PCC\_RULE\_EVENT" or "MBS\_PCC\_QOS\_FLOW\_EVENT" and the "MbsRuleReports" attribute to report the PCC rule status of the affected PCC rules.

Otherwise, if the validation of only some of the received PCC rules was unsuccessful, the SMF shall reply to the PCF with an HTTP "200 OK" status code and include in the corresponding response message one or more MbsRuleReport data structure(s) to report the failure for the affected PCC rule(s) within the PartialMbsSuccessReport data structure.

Within each MbsRuleReport instance, the MB-SMF shall identify the failed PCC rule(s) by including their identifiers within the "pccRuleIds" attribute, identify the failure reason code by including a "failureCode" attribute, and include the PCC rule(s) status within the "ruleStatus" attribute containing a value as follows:

- If the installation of one or more new PCC rules (i.e. rules which were not previously successfully installed) fails, the MB-SMF shall set the "ruleStatus" attribute value to "INACTIVE".

- If the modification of a currently active PCC rule fails, the MB-SMF shall retain the existing PCC rule as active without any modification, unless the reason for the failure has an impact also on the existing PCC rule.

Editor's Note: The handling of predefined rules is FFS.

Editor's Note: The complete list of attributes within PartialMbsSuccessReport and MbsErrorReport is FFS.

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

6.1.5.2.3.1 POST

This method shall support the request data structures specified in table 6.1.5.2.3.1-1 and the response data structures and response codes specified in table 6.1.5.2.3.1-2.

Table 6.1.5.2.3.1-1: Data structures supported by the POST Request Body

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| MbsPolicyNotif | M | 1 | Provision/Update of MBS policies by the PCF. |

Table 6.1.5.2.3.1-2: Data structures supported by the POST Response Body

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response codes | Description |
| n/a |  |  | 204 No Content | The MBS policies are provisioned/updated successfully. |
| array(PartialMbsSuccessReport) | O | 1..N | 200 OK | Some of the PCC rules provisioned by the PCF are not installed successfully. |
| MbsErrorReport | M | 1 | 400 Bad Request | The MBS policies including all the PCC rules provisioned by the PCF are not installed successfully. |
| RedirectResponse | O | 0..1 | 307 Temporary Redirect | Temporary redirection. The response shall include a Location header field containing an alternative URI representing the end point of an alternative NF service consumer (service) instance where the notification should be sent. |
| RedirectResponse | O | 0..1 | 308 Permanent Redirect | Permanent redirection. The response shall include a Location header field containing an alternative URI representing the end point of an alternative NF service consumer (service) instance where the notification should be sent. |
| NOTE: The mandatory HTTP error status codes for the POST method listed in Table 5.2.7.1-1 of TS 29.500 [4] also apply. | | | | |

Editor's Note: The handling of predefined rules is FFS.

Table 6.1.5.2.3.1-3: Headers supported by the 307 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | String | M | 1 | An alternative URI representing the end point of an alternative NF consumer (service) instance towards which the notification should be redirected. |
| 3gpp-Sbi-Target-Nf-Id | String | O | 0..1 | Identifier of the target NF (service) instance towards which the notification request is redirected |

Table 6.1.5.2.3.1-4: Headers supported by the 308 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | String | M | 1 | An alternative URI representing the end point of an alternative NF consumer (service) instance towards which the notification should be redirected. |
| 3gpp-Sbi-Target-Nf-Id | String | O | 0..1 | Identifier of the target NF (service) instance towards which the notification request is redirected |

Editor's Note: There may be updates (e.g. additional scope) depending on the progress of the related stage 2 work.

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

### 6.1.6 Data Model

#### 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 |
| 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. |  |
| PartialMbsSuccessReport | 6.1.6.2.X | Includes the information reported by the NF service consumer when some of the PCC rules are not successfully installed. |  |
| MbsErrorReport | 6.1.6.2.Y | Contains the rule reports. |  |

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. |  |
| 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. |  |

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

##### 6.1.6.2.X Type: PartialMbsSuccessReport

Table 6.1.6.2.X-1: Definition of type PartialMbsSuccessReport

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
|  |  |  |  |  |  |

Editor's Note: The attributes are FFS.

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

##### 6.1.6.2.Y Type: MbsErrorReport

Table 6.1.6.2.Y-1: Definition of type MbsErrorReport

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
|  |  |  |  |  |  |

Editor's Note: The attributes are FFS.

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

#### 6.1.7.3 Application Errors

The application errors defined for the Npcf\_MBSPolicyControl service are listed in Table 6.1.7.3-1 and 6.1.7.3-2. The NF service consumer shall include in the HTTP status code a "ProblemDetails" data structure with the "cause" attribute indicating the application error as listed in table 6.1.7.3-2 when NF service consumer acts as a server.

Table 6.1.7.3-1: Application errors

|  |  |  |
| --- | --- | --- |
| Application Error | HTTP status code | Description |
|  |  |  |

Table 6.1.7.3-2: Application errors when NF service consumer acts as a server

|  |  |  |
| --- | --- | --- |
| Application Error | HTTP status code | Description |
| MBS\_PCC\_RULE\_EVENT | 400 Bad Request | The HTTP request is rejected because all the PCC rules provisioned by the PCF in the request cannot be installed. It is used to inform the PCF that the request failed and should not be attempted again. (NOTE) |
| MBS\_PCC\_QOS\_FLOW\_EVENT | 400 Bad Request | The HTTP request is rejected because for some reason all the PCC rules provisioned by the PCF in the request cannot be enforced or modified successfully in a network initiated procedure. It is used to inform the PCF that the request could not be satisfied at the time it was received but may be able to satisfy the request in the future. (NOTE) |
| NOTE: These application errors are used by the UpdateNotify service operation (see subclause 5.2.2.3) and included in the responses to the POST request. | | |

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