**3GPP TSG-CT WG3 Meeting #111eC3-204144**

**E-Meeting, 19th – 28th August 2020**

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| *CR-Form-v12.0* |
| **CHANGE REQUEST** |
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|  | **29.594** | **CR** | **0056** | **rev** | **-** | **Current version:** | **16.2.0** |  |
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| *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)*.* |
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| ***Proposed change affects:*** | UICC apps |  | ME |  | Radio Access Network |  | Core Network | **X** |

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| ***Title:***  | Correction to spending limit subscribe and unsubscribe procedures |
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| ***Source to WG:*** | Huawei |
| ***Source to TSG:*** | CT3 |
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| ***Work item code:*** | 5GS\_Ph1-CT |  | ***Date:*** | 2020-08-12 |
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| ***Category:*** | **A** |  | ***Release:*** | Rel-16 |
|  | *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-12 (Release 12)**Rel-13 (Release 13)Rel-14 (Release 14)Rel-15 (Release 15)Rel-16 (Release 16)* |
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| ***Reason for change:*** | It’s specified that CHF assign a SubsciptionCorrlectionId when creating subsciption resource, however the SubsciptionCorrlectionId is not used in any procedures in the specification. In fact, the procedures use the SubsciptionId as part of Resource URI.In addition, during the update/delete of the subscription to notification of changes of policy counter status it may happen that, due to delivery problems, a subscription is already removed in CHF but it’s still valid in the NF service consumer. Specification is needed to provide for CHF and NF service consumer behavior in such scenario. |
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| ***Summary of change:*** | Describe the SubsciptionId is assigned and used during the procedures. And describe the response of the update/delete service operations. |
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| ***Consequences if not approved:*** | Lack of detailed information will lead to misinterpretations and wrong implementations that result in interoperability problems |
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| ***Clauses affected:*** | 4.2.2.2, 4.2.2.3, 4.2.3.2, 4.2.4.1 |
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|  | **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 ...  |
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| ***Other comments:*** | This CR does not impact the OpenAPI file of this specification. |
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| ***This CR's revision history:*** |  |

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| **First change** |

#### 4.2.2.2 Initial spending limit retrieval

Figure 4.2.2.2-1 shows the scenario where the NF service consumer sends a request to the CHF to retrieve the status of policy counters available at the CHF and to subscribe to spending limit reporting (see also 3GPP TS 23.502 [3], figure 4.16.8.2.1).



Figure 4.2.2.2-1: NF service consumer subscribes to retrieve policy counter status and spending limit reporting

The NF service consumer shall send an HTTP POST request to the resource "{apiRoot}/nchf-spendinglimitcontrol/v1/subscriptions" representing the "Spending Limit Retrieval Subscriptions", as shown in figure 4.2.2.2-1, step 1, to create a subscription for retrieval of the policy counter status and spending limit reporting.

The "SpendingLimitContext" data structure provided in the request body shall include:

- the Subscription Permanent Identifier (SUPI) encoded in the "supi" attribute; and

- the notification correlation target address encoded in the "notifUri" attribute.

The "SpendingLimitContext" data structure provided in the request body may include:

- the General Public Subscription Identifier (GPSI) encoded in the "gpsi" attribute;

- Event Filter information "list of policy counter identifier(s)" encoded in the "policyCounterIds" attribute. The "policyCounterIds" attribute shall contain the list of policy counter identifiers to be subscribed to. If the "policyCounterIds" attribute is omitted, the subscription is to all available policy counters; and

- when the feature "SubscriptionExpirationTimeControl" is supported by the NF service consumer, the NF service consumer may include an expiry time encoded in the "expiry" attribute, representing the time up to which the subscription is desired to be kept active. When the "expiry" attribute is omitted in the request, it represents the NF service consumer does not have any time constraint in the duration of the subscription.

If the CHF cannot successfully fulfil the received HTTP POST request due to an internal CHF error or due to the error in the HTTP POST request, the CHF shall send the HTTP error response as specified in subclause 5.7.

If the subscriber specified in the request is unknown to the CHF, the CHF shall indicate in an HTTP "400 Bad Request" response the cause for the rejection with the "cause" attribute set to "USER\_UNKNOWN".

If the CHF has no available policy counters specified for the subscriber, the CHF shall indicate in an HTTP "400 Bad Request" response the cause for the rejection with the "cause" attribute set to "NO\_AVAILABLE\_POLICY\_COUNTERS ".

If one or more policy counters specified in the request in the "policyCounterIds" attribute are unknown to the CHF, and the CHF is configured to reject request, the CHF shall indicate in an HTTP "400 Bad Request" response the cause for the rejection with the "cause" attribute set to "UNKNOWN\_POLICY\_COUNTERS" and the unknown policy counter identifiers within the "invalidParams" attribute.

Otherwise, upon the reception of an HTTP POST request the CHF shall:

- create a new subscription resource, which contains the list the policy counters included in the "policyCounterId" attribute, or if the "policyCounterId" attribute is omitted, all the policy counters of the subscriber;

- assign a subscriptionId; and

- store the subscription resource.

After the CHF created an "Individual Spending Limit Retrieval Subscription" resource, the CHF shall respond with "201 Created" response with a Location header field containing the URI of the created subscription resource and the message body containing a representation of the created subscription, as shown in figure 4.2.2.2-1, step 2.

The SpendingLimitStatus data structure provided in the response body shall include the status of the requested subscribed policy counters in the "statusInfos" map, where every PolicyCounterInfo entry shall contain:

- the policy counter identifier in the "policyCounterId" attribute; and

- the policy counter status in the "currentStatus" attribute.

When a requested policy counter identifier is known by the CHF, but it is not applicable to the subscriber (e.g. not provisioned), the CHF may include it in the "statusInfos" map, and set the "currentStatus" attribute to an operator configured policy counter status to indicate this to the NF service consumer.

When one or more policy counters specified in the request in the "policyCounterIds" attribute are unknown to the CHF, and the CHF is configured to accept the request, the CHF may include the unknown policy counters in the "statusInfos" map, and set the "currentStatus" attribute to an operator configured policy counter status to indicate this to the NF service consumer.

A PolicyCounterInfo data structure may include the list of the pending policy counter statuses and their activation times within the attribute "penPolCounterStatuses".

When the feature "SubscriptionExpirationTimeControl" is supported, the CHF may include the "expiry" attribute, representing the time up to which the subscription shall be kept active. If an expiry time was included in the subscription request, then the expiry time shall be returned in the response, and the value shall be less than or equal to the requested value. When the "expiry" attribute is omitted in the request and in the response, it represents neither the CHF or the NF service consumer have time constrains in the duration of the subscription and shall be kept active till the explicit subscription termination as described in subclause 4.2.3.2 and subclause 4.2.4.3.

NOTE 1: If the NF Service Consumer does not include a expiry time in the request, the CHF can include a expiry time in the response that represents the time after which the subscription becomes invalid.

NOTE 2: Once the subscription expires, if the NF service consumer wants to keep receiving notifications, it needs to create a new subscription in the CHF, as specified in this subclause.

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| **Next change** |

#### 4.2.3.2 Unsubscribe from spending limit reporting

Figure 4.2.3.2-1 shows the scenario where the NF service consumer sends a request to the CHF to unsubscribe from spending limit reporting (see also 3GPP TS 23.502 [3] figure 4.16.8.4.1).



Figure 4.2.3.2-1: NF service consumer unsubscribes from spending limit reporting

The NF service consumer shall invoke the Nchf\_SpendingLimitControl\_Unsubscribe service operation to unsubscribe from the spending limit reporting (status change for all policy counters available is no more required). The NF service consumer shall send an HTTP DELETE request to the resource "{apiRoot}/nchf-spendinglimitcontrol/v1/subscriptions /{subscriptionId}", whereby the "{subscriptionId}" is the identification of the existing subscription to be deleted. Upon the reception of an HTTP DELETE request the CHF removes the corresponding subscription.

If the HTTP DELETE request is accepted by the CHF, it shall respond with "204 No Content" as shown in figure 4.2.3.2-1, step 2.

If the HTTP DELETE request is not accepted by the CHF (e.g. the HTTP DELETE request is for a nonexistent subscription), it shall indicate the appropriate cause for the rejection in the HTTP response code to the NF service consumer.

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| **Next change** |

#### 4.2.4.1 General

The Nchf\_SpendingLimitControl\_Notify service operation is used by the CHF:

- to notify the change of the status of the subscribed policy counters available at the CHF for that subscriber; and/or

- to provide one or more pending statuses for a subscribed policy counter together with the time they shall be applied; and/or

- to request the termination of the subscription of status changes for all policy counters for a subscriber (e.g. the subscriber is removed from the CHF system).

NOTE: The SUPI represents the subscription correlation Id.

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| **End of change** |