**3GPP TSG-CT WG4 Meeting #99eC4-204254**

**E-Meeting, 18th – 28th August 2020**

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| *CR-Form-v12.0* |
| **CHANGE REQUEST** |
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|  | **29.500** | **CR** | **0160** | **rev** | **1** | **Current version:** | **16.4.0** |  |
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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:***  | Notification Binding for Default Subscription |
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| ***Source to WG:*** | Ericsson |
| ***Source to TSG:*** | CT4 |
|  |  |
| ***Work item code:*** | 5G\_eSBA |  | ***Date:*** | 2020-08-24 |
|  |  |  |  |  |
| ***Category:*** | **F** |  | ***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:*** | 3GPP TS 29.500 has specified Binding indication for notifications, which is provided by the NF consumer to the NF producer when setup the subscription (implicitly or explicitly). When the target of the notification is not able to handle the notification (e.g. failed, overloaded, etc.) the NF producer (or SCP) will reselect an equivalent target to deliver the notification. Clause 6.12.4 describes how the binding is handled for explicit/implicit subscription, handling of default subscription is not described.When a NF producer (or SCP for indirect communication) delivers a notification to a default subscription and detected the target NF consumer is not available, the NF producer (or SCP) needs to reselect an alternative consumer to handle the notification, especially when the notification is target a specific NF consumer (e.g. when the AMF deliver uplink LPP/NRPPa message to the LMF who triggered the location procedure). The entity handling default subscription in the NF consumer may have different binding levels (NF Instance/NF Set/NF Service/NF Service Set) but there is NO WAY to indicate its binding level of default subscriptions to the NF producer for notification delivery.One alternative is to provide the binding indication for default subscription beforehand by the NF consumer to the producer. e.g. the LMF may provide the binding indication for default subscription LPP during N1/N2 Message Transfer invocation. Because binding indication may already be needed for N1/N2 delivery failure notification, to distinguish from this callback, a new scope (e.g. "default-sub") may be extended to explicitly indicate that the binding is for subsequent default subscription delivery. The drawback of this approach is that it create logic associations between different service operations for binding handling, and it also requires the NF producer to explicitly remember a context for default subscription to store the binding indication.Another alternative is that a NF consumer when register default subscriptions into NRF, also register binding indication for each default subscription. Thus the NF producer (or SCP) could easily fetch it from NRF when deliver the notification to a default subscription. scope "callback" can be used for this approach thus no extension is needed.This CR propose the alternative of NF consumer registering binding indication for default subscriptions in NRF. |
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| ***Summary of change:*** | Clarify that NF Service Consumer shall register and update binding indication information for default notification subscription in NF profile and NF Service Producer or SCP shall use the binding information for selecting or reselecting alternative NF Service Consumer. |
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| ***Consequences if not approved:*** | Binding indication cannot be supported for default notification subscription. |
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| ***Clauses affected:*** | 6.12.4 |
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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's revision history:*** |  |

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

### 6.12.4 Binding for explicit or implicit subscription requests

A NF Service Consumer may provide a Binding Indication in a service request creating an explicit or an implicit subscription by including a 3gpp-Sbi-Binding header (see clause 5.2.3.2.6) in an HTTP request, or provide a Binding Indication value for a default notification subscription in its NF profile in NRF (see clause 6.1.6.2.4 of 3GPP TS 29.510 [8]), with:

- the binding level (bl) parameter indicating a preferred binding to either a NF Service Instance, a NF Service Set, a NF Instance or a NF set;

- at least one of the NF Service Instance (nfservinst), NF Service Set (nfservset), NF instance (nfinst) and NF Set (nfset) parameters, set to a NF Service Instance ID, NF Service Set ID, NF Instance ID and NF Set ID respectively, as described in Table 6.3.1.0-1 of 3GPP TS 23.501 [3];

- the scope parameter indicating "subscription-events" if the binding information is applicable to subscription change event notification (see clause 4.17.12.4 of 3GPP TS 23.502 [4]);

- optionally, the scope parameter indicating "callback" if the binding information is applicable to notification and callback requests; the absence of this parameter shall also be interpreted as binding information is applicable to callback (i.e. notification) requests;

- optionally the service name parameter indicating the service that will handle the notification.

When binding information is applicable to notification/callback requests, corresponding notifications are bound to:

- the NF instance or NF set (according to the binding level), if no service name was received;

- the specific service (indicated by the service name parameter) of the NF instance or NF set (according to the binding level), if a service name was received; or

- the NF service instance or NF service set (according to the binding level).

NOTE 1: The NF Service Consumer in a NF Instance or NF Set can be identified by the NF Instance Id or NF Set Id, with or without a service name parameter, or a NF Service Instance Id (together with the NF Instance Id or the NF Service Set Id) or a NF Service Set Id, where the service can be either a standardised service or a custom service.

NOTE 2: A notification can be sent to a service instance of any binding entity included in the Binding Indication, i.e. the binding entity may be other than the one(s) indicated by the binding level, if the latter(s) are not reachable. For instance, if the Binding Indication contains an NF Set ID, an NF Instance ID and a binding level is set to NF Instance, the notification can be sent to any NF instance of the NF set if the NF instance identified by the NF Instance ID is not reachable. See clause 6.3.1.0 of 3GPP TS 23.501 [3].

The NF Service Producer shall store the Binding Indication received from the NF Service Consumer and include it in a 3gpp-Sbi-Routing-Binding header in subsequent notification requests it sends to the NF Service Consumer (that acts as an HTTP server) related to this subscription. For a default notification subscription, the NF Service Producer shall fetch the Binding Indication value (if available) from the NF profile of the NF Service Consumer and include it in a 3gpp-Sbi-Routing-Binding header in related notification requests. For notifications corresponding to default notification subscriptions using Indirect Communication with Delegated Disocvery (see clause 6.10.3.3), when the notification is targeting a specific NF instance/NF service instance, the SCP shall fetch the Binding Indication value (if available) for the default notification subscription from the NF profile of the NF Service Consumer. The NF Service Producer or the SCP shall use this information for selecting or reselecting an NF Service Consumer (HTTP server) which has access to the original consumer's NF Service Resource context, for direct or indirect communication respectively, as specified in clause 6.3.1.0 of 3GPP TS 23.501 [3]. If the notification endpoint provided in the subscription is not reachable, the NF Service Producer or SCP shall look up for an alternative notification endpoint address at the service level (i.e. NF Service registered in NRF) if the Binding Indication contains a service name or a binding to an NF Service Instance or NF Service Set, or at the NF instance level (i.e. NF Profile registered in NRF) otherwise. The NF Service Producer or SCP shall exchange the authority part of the notification URI (or callback URI) with the new notification endpoint address and shall use that URI in subsequent notifications.

The NF Service Consumer may provide an updated Binding Indication to the NF Service Producer in a service request modifying the subscription or in a notification response.

The NF Service Producer may also provide a Binding Indication in a service response creating or modifying an explicit or an implicit subscription by including a 3gpp-Sbi-Binding header (see clause 5.2.3.2.5) in the HTTP response as specified in clause 6.12.2. If the service request creates a resource and a subscription, the Binding Indication returned in the HTTP response shall apply to both the NF Service Resource and the subscription, i.e. the created resource and subscription shall be bound to the same (service) set of producers or producer instance. The NF Service Consumer shall store the Binding Indication received from the NF Service Producer and include it in a 3gpp-Sbi-Routing-Binding header in subsequent related service requests as specified in clause 6.12.2.

For a default notification subscription, a NF Service Consumer shall update the Binding Indication value in NF profile when binding information of the default notification subscription has changed.

A subscription request may also contain a Routing Binding Indication that can be used in case of indirect communication by the SCP to route the message to the NF Service Producer.

A service request creating an explicit subscription on behalf of another NF (e.g. UDM subscribing to an AMF event on behalf of the NEF) may include a Binding Indication for subscription change event notification (e.g. notifications to UDM upon AMF change) and a Binding Indication for the event notifications to the other NF (e.g. AMF notification to the NEF). The scope parameter shall be set to "subscription-events" in the former Binding Indication and it shall be set to "callback" or be absent in the latter Binding Indication.

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