**3GPP TSG-SA3 Meeting #107e *draft\_S3-221050-r2***

e-meeting, 16 – 20 May 2022

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| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  |  | **CR** | **1407** | **rev** | **2** | **Current version:** |  |  |
|  | | | | | | | | |
| *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:*** | Update Subscription and unsubscription procedure of NSACF notification service | | | | | | | | | |
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| ***Source to WG:*** | Xiaomi | | | | | | | | | |
| ***Source to TSG:*** | S3 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | TEI17 | | | | |  | ***Date:*** | | | 2022-05-09 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **F** |  | | | | | ***Release:*** | | |  |
|  | *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 can be 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-15 (Release 15) Rel-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18)* | |
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| ***Reason for change:*** | | CAPIF can authorize AF outside the 3GPP operator domain to access the service of NEF. Specifically, CAPIF can generate a token for the AF. And the NEF needs to verify the token before offering service to the AF.  Therefore, the EN “*It is FFS how AF outside the 3GPP operator domain is authorized*.” in clause 16.6.3 of TS 33.501 can be removed. | | | | | | | | |
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| ***Summary of change:*** | | The authorization procedure for AF outside the 3GPP operator domain is added.  “*Editor’s Note: It is FFS how AF outside the 3GPP operator domain is authorized*” in clause 16.6.3 of TS 33.501 is removed. | | | | | | | | |
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| ***Consequences if not approved:*** | | The Editor’s Note remains unresolved and the procedure is imcomplete. | | | | | | | | |
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| ***Clauses affected:*** | | 16.6.3 | | | | | | | | |
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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 ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Start of the Change \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

### 16.6.3 Subscription/unsubscription procedure of NSACF notification service

Editor's Note: the procedure shall be aligned with SA2.



Figure 16.6.3-1: Subscription/unsubscription of NSACF notification procedure

1. AF is authenticated by NEF based on description in clause 13 or clause 12. A token is generated for AF after authorization. CAPIF-1e authentication and secure session establishment is performed as specified in subclause 6.3.1 of TS 33.122 [53].
2. After successful establishment of TLS session over CAPIF-1e, as described in subclause 6.3.1 of TS 33.122 [53], the AF shall send an Access Token Request message to the CAPIF core function as per the OAuth 2.0 specification (IETF RFC 6749 [43]). The AF should include the required Nnef\_EventExposure\_Subscribe/Unsubscribe service and AF’s identity in the Access Token Request message.
3. The CAPIF core function shall verify the Access Token Request message per OAuth 2.0 specification (IETF RFC 6749 [43]).
4. If the CAPIF core function successfully verifies the Access Token Request message, the CAPIF core function shall generate an access token specific to the AF and return it in an Access Token Response message. The token claim should include the required Nnef\_EventExposure\_Subscribe/Unsubscribe service and AF’s identity in the Access Token Request message.
5. On CAPIF-2e, the API invoker authenticates to the NEF by establishing a TLS session with the NEF based on the authentication and authorization method (i.e. Server (NEF) side certificate authentication or certificate-based mutual authentication) as indicated by CAPIF core function. The TLS connection can be built according to clause 6.5.2.3 of TS 33.122 [53].
6. To subscribe or unsubscribe for the number of UEs or the number of PDU Sessions per network slice notification with the NSACF, the AF sends Nnef\_EventExposure\_Subscribe/Unsubscribe Request (Event ID, Event Filter, Event Reporting information) message to the NEF as described in TS 23.502 [8]. The Event Filter parameter shall be AF-Service-Identifier for an AF deployed outside the 3GPP operator domain. Other parameters are specified in TS 23.502 [8].

6. The NEF checks whether the AF is authorised for the requested subscription based on the AF token. The NEF verifies the integrity of the access token by verifying the CAPIF core function signature. If validation of the access token is successful, the NEF shall verify the AF’s request against the authorization claims in access token, it needs to check whether the token claims match the AF’s identity and the required Nnef\_EventExposure\_Subscribe/Unsubscribe service request. If the token is successfully verified and NEF can accept the Event Filter parameter in the request message, the NEF confirms with Nnef\_ SliceStatusEventExposure \_Subscribe/Unsubscribe Response message to the AF. The Event Filter parameter is the mapped AF-Service-Identiferfor the AF deployed outside the 3GPP operator domain. Otherwise, the NEF rejects the service request.

7. NEF may query the NRF to find the NSACF responsible for the requested S-NSSAI (NEF needs to map to S-NSSAI based on AF-Service-Identifierfor the AF deployed outside the 3GPP operator domain).

8. The NEF forwards the request to the NSACF with Nnsacf\_SliceEventExposure\_Subscribe/Unsubscribe Request (Event ID, Event Filter, Event Reporting information). The Event Filter parameter shall be the mapped S-NSSAI for the AF deployed outside the 3GPP operator domain.

9. The NSACF confirms with Nnsacf\_SliceEventExposure\_Subscribe/Usubscribe Response message to the NEF as in TS 23.502 [8].

10-11a. The NSACF triggers a notification towards the AF and sends the Nnsacf\_SliceEvent Exposure\_Notify (Event ID, Event Filter, Event Reporting information) message to the NEF as described in TS 23.502 [8].

11b-13. The NEF forwards the message to the AF for single NSACF or aggregates reporting information for multiple NSACFs in the Nnef\_EventExposure\_Notify (Event ID, Event Filter, Event Reporting information) message as described in TS 23.502 [8]. The Event Filter parameter shall be the mapped AF-Service-Identifier from the S-NSSAI for the AF deployed outside the 3GPP operator domain.

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* End of the Change \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*