**3GPP TSG-CT WG1 Meeting #124-eC1-203538**

**Electronic meeting, 2-10 June 2020**

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| *CR-Form-v12.0* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **24.501** | **CR** | **1990** | **rev** | **2** | **Current version:** | **16.4.1** |  |
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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:*** | Updating NSSAI status in AMF | | | | | | | | | |
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| ***Source to WG:*** | NEC, Huawei, HiSilicon | | | | | | | | | |
| ***Source to TSG:*** | C1 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | eNS | | | | |  | ***Date:*** | | | 2020-4-25 |
|  |  | | | |  | |  | | |  |
| ***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 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-12 (Release 12)* *Rel-13 (Release 13) Rel-14 (Release 14) Rel-15 (Release 15) Rel-16 (Release 16)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | **[Background]**  SA2 requirements says that when an NSSAA procedure is started and is ongoing for an S-NSSAI, the **AMF stores the NSSAA status of the S-NSSAI as pending** as follows.  *TS23.501 subclause 5.15.10 (NSSAA and re-NSSAA common requirement, and it DOES define status management at AMF)*  *-----------------*  *To perform the Network Slice-Specific Authentication and Authorization for an S-NSSAI, the AMF invokes an EAP- based Network Slice-Specific authorization procedure documented in TS 23.502 [3] clause 4.2.9 (see also TS 33.501 [29]) for the S-NSSAI. When an NSSAA procedure is started and is ongoing for an S-NSSAI, the AMF stores the NSSAA status of the S-NSSAI as pending, the NSSAA status of each S-NSSAI, if any is stored, is transferred when the AMF changes.*  *-----------------*  The status management at AMF is **a common requirement for both NSSAA and re-NSSAA** as   * It indicates NSSAA procedure as *EAP- based Network Slice-Specific authorization procedure documented in TS 23.502 [3] clause 4.2.9,and* * *TS 23.502 [3] clause 4.2.9* includes both NSSAA and re-NSSAA.   Furthermore, TS23.501 is clear on the requiremnet scope if particular requirement is only applicable to NSSAA or re-NSSAA. And the fact is that **status management at AMF is defined in the way that it is applied for both NSSAA and re-NSSAA.**  NOTE: **The status management at AMF here and updating UE with UCU is for different objective**. Former is for considering N2 handover and latter is to avoid unnecessary signaling from the UE.  **[Reason for change]**  Currently TS24.501 covers the case where EAP- based Network Slice-Specific authorization procedure is performed for an S-NSSAI in requested NSSAI.  But TS24.501 **does not cover** the case where EAP- based Network Slice-Specific authorization procedure is performed **for an S-NSSAI in allowed NSSAI (e.g., authorized S-NSSAI).**  Hence, this CR intends to complete the status management requirement at AMF. | | | | | | | | |
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| ***Summary of change:*** | | When the NSSAA is initiated for S-NSSAI(s) already in allowed NSSAI in the AMF, then the AMF includes the S-NSSAI in the pending NSSAI. | | | | | | | | |
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| ***Consequences if not approved:*** | | Without clarification, NF service may not be correctly implemented. | | | | | | | | |
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| ***Clauses affected:*** | | 4.6.2.4 | | | | | | | | |
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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 ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

\*\*\*\*\* Next change \*\*\*\*\*

#### 4.6.2.4 Network slice-specific authentication and authorization

The UE and network may support network slice-specific authentication and authorization.

A serving PLMN shall perform network slice-specific authentication and authorization for the S-NSSAI(s) of the HPLMN which are subject to it based on subscription information. The UE shall indicate whether it supports network slice-specific authentication and authorization in the 5GMM Capability IE in the registration procedure.

The upper layer stores an association between each S-NSSAI and its corresponding credentials for the network slice-specific authentication and authorization.

NOTE: The credentials for network slice-specific authentication and authorization and how to provision them in the upper layer are out of the scope of 3GPP.

The network slice-specific authentication and authorization procedure shall not be performed unless:

a) the primary authentication and key agreement procedure as specified in the subclause 5.4.1 has successfully been completed; and

b) the initial registration procedure or the mobility and periodic registration update procedure has been completed.

When the network slice-specific authentication and authorization procedure is initiated for an S-NSSAI in the requested NSSAI or for an S-NSSAI that has been in the allowed NSSAI, the AMF moves the S-NSSAI to the pending NSSAI.

The AMF informs the UE about S-NSSAI(s) subject to network slice-specific authentication and authorization in the pending NSSAI. The AMF handles allowed NSSAI, pending NSSAI, rejected NSSAI, and 5GS registration result in the REGISTRATION ACCEPT message according to subclauses 5.5.1.2.4 and 5.5.1.3.4.

To perform network slice-specific authentication and authorization for an S-NSSAI, the AMF invokes an EAP- based network slice-specific authorization procedure for the S-NSSAI (see subclause 5.4.7, 3GPP TS 33.501 [24] and 3GPP TS 23.502 [9]).

The AMF updates the allowed NSSAI and the rejected NSSAI using the generic UE configuration update procedure as specified in the subclause 5.4.4 after the network slice-specific authentication and authorization procedure is completed.

The network slice-specific authentication and authorization procedure can be invoked or revoked by an AMF for a UE supporting network slice-specific authentication and authorization at any time. After the network performs the network slice-specific re-authentication and re-authorization procedure:

a) if network slice-specific authentication and authorization for some but not all S-NSSAIs in the allowed NSSAI fails, the AMF updates the allowed NSSAI and the rejected NSSAI accordingly using the generic UE configuration update procedure as specified in the subclause 5.4.4 and release all PDU session associated with the S-NSSAI for which network slice-specific re-authentication and re-authorization fails; or

b) if network slice-specific authentication and authorization fails or revoked for all S-NSSAIs in the allowed NSSAI and the pending NSSAI, then AMF performs the network-initiated de-registration procedure and includes the rejected NSSAI in the DEREGISTRATION REQUEST message as specified in the subclause 5.5.2.3 except when the UE has an emergency PDU session established or the UE is establishing an emergency PDU session. In this case the AMF shall send CONFIGURATION UPDATE COMMAND containing rejected NSSAI and release all PDU session associated with the S-NSSAI for which network slice-specific re-authentication and re-authorization fails. After the emergency PDU session is released, the AMF performs the network-initiated de-registration procedure as specified in the subclause 5.5.2.3.

If authorization is revoked for an S-NSSAI that is in the current allowed NSSAI for an access type, the AMF shall:

a) provide a new allowed NSSAI, excluding the S-NSSAI(s) for which the authorization is revoked; and

b) provide a new reject NSSAI for the failed or revoked NSSAA, including the S-NSSAI for which the authorization is revoked, with the reject cause "S-NSSAI is not available due to the failed or revoked network slice-specific authentication and authorization";

to the UE using the generic UE configuration update procedure as specified in the subclause 5.4.4 and release all PDU sessions associated with the S-NSSAI for which the authorization is revoked for this access type.

Editor's Note: How to secure that a UE does not wait indefinitely for completion of the network slice-specific authentication and authorization is FFS.