**3GPP TSG-SA WG2 Meeting #137E** **S2-2001847**

**February 24-27 2020, Electronic Meeting**

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| *CR-Form-v12.0* |
| **CHANGE REQUEST** |
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|  | **23.501** | **CR** | **2136**  | **rev** | **-** | **Current version:** | **16.3.0** |  |
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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 | **X** | Radio Access Network |  | Core Network | **x** |

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| ***Title:***  | Correction to UE configuration update procedure conditions for re-registration |
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| ***Source to WG:*** | Ericsson, Nokia, Nokia Shanghai Bell, Telecom Italia |
| ***Source to TSG:*** | SA2 |
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| ***Work item code:*** | 5GS\_Ph1, TEI16 |  | ***Date:*** | 2020-02-18 |
|  |  |  |  |  |
| ***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:*** | The current text implies that when an AMF provides new Allowed NSSAI using the UE Configuration Update procedure, then the AMF always indicates to the UE the need for the UE to perform a Registration procedure, but that is not required unless an AMF re-allocation is to be performed. Further, providing such indication will cause the UE to locally release the RRC connection and go to CM\_IDLE.Also, the text is not aligned with the agreed 23.501 CR2059. |
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| ***Summary of change:*** | The AMF requirement to provide an indication to the UE to perform a Registration procedure is made optional and kept as a AMF local policy also when changes does not affect the existing connectivity to Network Slices. |
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| ***Consequences if not approved:*** | Interruption of existing services when using the UE Configuration Update procedure. |
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| ***Clauses affected:*** | 5.15.5.2.2 |
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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 proposed Changes

##### 5.15.5.2.2 Modification of the Set of Network Slice(s) for a UE

The set of Network Slices for a UE can be changed at any time while the UE is registered with a network, and may be initiated by the network, or by the UE, under certain conditions as described below.

The network, based on local policies, subscription changes and/or UE mobility, operational reasons (e.g. a Network Slice instance is no longer available or load level information for a network slice instance provided by the NWDAF), may change the set of Network Slice(s) to which the UE is registered and provide the UE with a new Registration Area and/or Allowed NSSAI and the mapping of this Allowed NSSAI to HPLMN S-NSSAIs, for each Access Type over which the UE is registered. In addition, the network may provide the Configured NSSAI for the Serving PLMN, the associated mapping information, and the rejected S-NSSAIs. The network may perform such a change over each Access Type during a Registration procedure or trigger a notification towards the UE of the change of the Network Slices using a UE Configuration Update procedure as specified in TS 23.502 [3], clause 4.2.4. The new Allowed NSSAI(s) and the mapping to HPLMN S-NSSAIs are determined as described in clause 5.15.5.2.1 (an AMF Re-allocation may be needed). The AMF provides the UE with:

- an indication that the acknowledgement from UE is required;

- Configured NSSAI for the Serving PLMN (if required), rejected S-NSSAI(s) (if required) and TAI list, and

- the new Allowed NSSAI with the associated mapping of Allowed NSSAI for each Access Type (as applicable) unless the AMF cannot determine the new Allowed NSSAI (e.g. all S-NSSAIs in the old Allowed NSSAI have been removed from the Subscribed S-NSSAIs).

 Furthermore:

- If the changes to the Allowed NSSAI does not require the UE to perform immediately a Registration procedure because they do not affect the existing connectivity to Network Slices (i.e. any S-NSSAI(s) the UE is connected to), then the serving AMF takes no further action after receiving the acknowledgement from the UE.

- If the changes to the Allowed NSSAI require the UE to perform immediately a Registration procedure because they affect the existing connectivity to Network Slices (e.g. the new S-NSSAIs require a separate AMF that cannot be determined by the current serving AMF, or the AMF cannot determine the Allowed NSSAI) or due to AMF local policies also when the changes does not affect the existing connectivity to Network Slices:

- The serving AMF indicates to the UE the need for the UE to perform a Registration procedure without including the GUAMI or 5G-S-TMSI in the access stratum signalling after entering CM-IDLE state. The AMF shall release the NAS signalling connection to the UE to allow to enter CM-IDLE after receiving the acknowledgement from UE.

- When the UE receives indications to perform a Registration procedure without including the GUAMI or 5G-S-TMSI in the access stratum signalling after entering CM-IDLE state, then:

- The UE deletes any stored (old) Allowed NSSAI and associated mapping as well as any (old) rejected S-NSSAI.

- The UE shall initiate a Registration procedure with the registration type Mobility Registration Update after the UE enters CM-IDLE state as specified in as described in TS 23.502 [3] step 4 of clause 4.2.4.2. The UE shall include a Requested NSSAI (as described in clause 5.15.5.2.1) with the associated mapping of Requested NSSAI in the Registration Request message. Also, the UE shall include, subject to the conditions set out in clause 5.15.9, a Requested NSSAI in access stratum signalling but no GUAMI.

If there are established PDU Session(s) associated with emergency services, then the serving AMF indicates to the UE the need for the UE to perform a Registration procedure but does not release the NAS signalling connection to the UE. The UE performs the Registration procedure only after the release of the PDU Session(s) used for the emergency services.

In addition to sending the new Allowed NSSAI to the UE, when a Network Slice used for a one or multiple PDU Sessions is no longer available for a UE, the following applies:

- If the Network Slice becomes no longer available under the same AMF (e.g. due to UE subscription change), the AMF indicates to the SMF(s) which PDU Session ID(s) corresponding to the relevant S-NSSAI shall be released. SMF releases the PDU Session according to clause 4.3.4.2 in TS 23.502 [3].

- If the Network Slice becomes no longer available upon a change of AMF (e.g. due to Registration Area change), the new AMF indicates to the old AMF that the PDU Session(s) corresponding to the relevant S-NSSAI shall be released. The old AMF informs the corresponding SMF(s) to release the indicated PDU Session(s). The SMF(s) release the PDU Session(s) as described in clause 4.3.4 of TS 23.502 [3]. Then the new AMF modifies the PDU Session Status correspondingly. The PDU Session(s) context is locally released in the UE after receiving the PDU Session Status in the Registration Accept message.

The UE uses either the URSP rules (which includes the NSSP) or the UE Local Configuration as defined in clause 6.1.2.2.1 of TS 23.503 [45] to determine whether ongoing traffic can be routed over existing PDU Sessions belonging to other Network Slices or establish new PDU Session(s) associated with same/other Network Slice.

In order to change the set of S-NSSAIs the UE is registered to over an Access Type, the UE shall initiate a Registration procedure over this Access Type as specified in clause 5.15.5.2.1.

If, for an established PDU Session:

- none of the values of the S-NSSAIs of the HPLMN in the mapping of the Requested NSSAI to S-NSSAIs of the HPLMN included in the Registration Request matches the S-NSSAI of the HPLMN associated with the PDU Session; or

- none of the values of the S-NSSAIs in the Requested NSSAI matches the value of the S-NSSAI of HPLMN associated with the PDU Session and the mapping of the Requested NSSAI to S-NSSAIs of the HPLMN is not included in the Registration Request,

the network shall release this PDU Session as follows.

- the AMF informs the corresponding SMF(s) to release the indicated PDU Session(s). The SMF(s) release the PDU Session(s) as described in clause 4.3.4 of TS 23.502 [3]. Then the AMF modifies the PDU Session Status correspondingly. The PDU Session(s) context is locally released in the UE after receiving the PDU Session Status from the AMF.

A change of the set of S-NSSAIs (whether UE or Network initiated) to which the UE is registered may, subject to operator policy, lead to AMF change, as described in clause 5.15.5.2.1.

End of proposed Changes