**3GPP TSG-CT WG1 Meeting #137-eC1-224695**

**E-Meeting, 18th – 26th August 2022**

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| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **24.501** | **CR** | **4484** | **rev** | **-** | **Current version:** | **17.7.1** |  |
|  | | | | | | | | |
| *For* [***HELP***](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:*** | NSAG for random access | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Ericsson | | | | | | | | | |
| ***Source to TSG:*** | C1 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | NRslice | | | | |  | ***Date:*** | | | 2022-08-23 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **F** |  | | | | | ***Release:*** | | | Rel-17 |
|  | *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-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | Stage-2 CR3676(S2-2205763) clarifies the NSAG handling for Network Slice based cell reselection and random access.  In addition, the stage-2 CR3676 makes it clear that the NSAG priority information for the NSAGs shall be provided by AMF in the NSAG Information.  These requirements shall be reflected in stage 3. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | 1) Clarify the NSAG support for random access;  2) Remove the note about value 0 indicates no NSAG priority and add text about value 0 is reserved. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | NSAG feature remains ambiguous for random access. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 4.6.2.6, 4.6.2.3, 9.11.3.87 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | | **X** |  | Other core specifications | | | | TS 23.501 CR 3676 | | |
| ***affected:*** | |  | **X** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

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

#### 4.6.2.6 Provision of NSAG information to lower layers

NSAG information includes a list of NSAG IDs each of which is associated with:

a) a list of S-NSSAIs, which shall be the ones included in the configured NSSAI;

b) an NSAG area containing a list of TAIs which identify an area where the mapping between the S-NSSAI(s) in bullet a) and the NSAG ID is valid; and

c) a priority value that is associated with each NSAG ID in the NSAG information.

If NSAG information is available, the UE NAS layer shall provide the lower layers with the most recent NSAG information.

NOTE: Along with the NSAG information, the UE NAS layer provides to the lower layers with allowed NSSAI and requested NSSAI for the purpose of NSAG-aware cell reselection and random access.

\* \* \* Next Change \* \* \* \*

#### 4.6.2.3 Provision of NSSAI to lower layers in 5GMM-IDLE mode

The UE NAS layer may provide the lower layers with an NSSAI (either requested NSSAI or allowed NSSAI) when the UE in 5GMM-IDLE mode sends an initial NAS message.

The AMF may indicate, via the NSSAI inclusion mode IE of a REGISTRATION ACCEPT message, an NSSAI inclusion mode in which the UE shall operate over the current access within the current PLMN or SNPN, if any (see subclauses 5.5.1.2.4 and 5.5.1.3.4), where the NSSAI inclusion mode is chosen among the following NSSAI inclusion modes described in table 4.6.2.3.1.

Table 4.6.2.3.1: NSSAI inclusion modes and NSSAI which shall be provided to the lower layers

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Initial NAS message | NSSAI inclusion mode A | NSSAI inclusion mode B | NSSAI inclusion mode C | NSSAI inclusion mode D |
| REGISTRATION REQUEST message: i) including the 5GS registration type IE set to "initial registration" | Requested NSSAI, if any | Requested NSSAI, if any | Requested NSSAI, if any | No NSSAI |
| REGISTRATION REQUEST message: i) including the 5GS registration type IE set to "mobility registration updating"; and ii) initiated by case other than case g) or n) in subclause 5.5.1.3.2 | Requested NSSAI, if any | Requested NSSAI, if any | Requested NSSAI, if any | No NSSAI |
| REGISTRATION REQUEST message: i) including the 5GS registration type IE set to "mobility registration updating"; and ii) initiated by case g) or n) in subclause 5.5.1.3.2 | Allowed NSSAI, if any | Allowed NSSAI, if any | No NSSAI, if any | No NSSAI |
| REGISTRATION REQUEST message: i) including the 5GS registration type IE set to "periodic registration updating" | Allowed NSSAI, if any | Allowed NSSAI, if any | No NSSAI | No NSSAI |
| SERVICE REQUEST message | Allowed NSSAI, if any | See NOTE 1 | No NSSAI | No NSSAI |
| NOTE 1: All the S-NSSAIs of the PDU sessions that have the user-plane resources requested to be re-established by the service request procedure or the S-NSSAIs of a control plane interaction triggering the service request is related to (see 3GPP TS 23.501 [8])  NOTE 2: For a REGISTRATION REQUEST message which is triggered by emergency services, a DEREGISTRATION REQUEST message and a SERVICE REQUEST message which includes the service type IE set to "emergency services" or "emergency services fallback", no NSSAI is provided to the lower layers. If the UE performs initial registration for onboarding services in SNPN or is registered for onboarding services in SNPN, the UE NAS layer shall not provide the lower layers with an NSSAI.  NOTE 3: The mapped configured S-NSSAI(s) from the S-NSSAI(s) of the HPLMN are not included as part of the S-NSSAIs in the requested NSSAI or the allowed NSSAI when it is provided to the lower layers. | | | | |

The UE shall store the NSSAI inclusion mode:

a) indicated by the AMF, if the AMF included the NSSAI inclusion mode IE in the REGISTRATION ACCEPT message; or

b) decided by the UE, if the AMF did not include the NSSAI inclusion mode IE in the REGISTRATION ACCEPT message;

together with the identity of the current PLMN or SNPN and access type in a non-volatile memory in the ME as specified in annex C.

The UE shall apply the NSSAI inclusion mode received in the REGISTRATION ACCEPT message over the current access within the current PLMN and its equivalent PLMN(s) or the current SNPN, if any, in the current registration area.

When a UE performs a registration procedure to a PLMN which is not a PLMN in the current registration area or an SNPN, if the UE has no NSSAI inclusion mode for the PLMN or the SNPN stored in a non-volatile memory in the ME, the UE shall provide the lower layers with:

a) no NSSAI if the UE is performing the registration procedure over 3GPP access; or

b) requested NSSAI if the UE is performing the registration procedure over non-3GPP access.

When a UE performs a registration procedure after an inter-system change from S1 mode to N1 mode, if the UE has no NSSAI inclusion mode for the PLMN stored in a non-volatile memory in the ME and the registration procedure is performed over 3GPP access, the UE shall not provide the lower layers with any NSSAI over the 3GPP access.

If NSAG information is available, and as specified in 3GPP TS 23.501 [8], when the UE in 5GMM-IDLE mode sends an initial NAS message, the UE NAS layer indicates the corresponding S-NSSAI(s) triggering the initial NAS message to lower layers.\* \* \* Next Change \* \* \* \*

#### 9.11.3.87 NSAG information

The purpose of the NSAG information information element is to provide NSAG information to the UE.

The NSAG information information element is coded as shown in figures 9.11.3.87.1, 9.11.3.87.2, 9.11.3.87.3 and table 9.11.3.87.1.

The NSAG information information element can contain a maximum of 32 NSAG entries.

The NSAG information is a type 6 information element, with a minimum length of 10 octets.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| NSAG information IEI | | | | | | | | octet 1 |
| Length of NSAG information contents | | | | | | | | octet 2  octet 3 |
| NSAG 1 | | | | | | | | octet 4  octet m |
| NSAG 2 | | | | | | | | octet m+1\*  octet n\* |
| … | | | | | | | | octet n+1\*  octet u\* |
| NSAG x | | | | | | | | octet u+1\*  octet v\* |

Figure 9.11.3.87.1: NSAG information information element

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| Length of NSAG | | | | | | | | octet 4 |
| octet 5 |
| NSAG identifier | | | | | | | | octet 6 |
| S-NSSAI list of NSAG | | | | | | | | octet 7  octet j |
| NSAG priority | | | | | | | | octet j+1 |
| TAI list | | | | | | | | octet j+2\*  octet m\* |

Figure 9.11.3.87.2: NSAG

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| Length of S-NSSAI list of NSAG | | | | | | | | octet 7 |
| S-NSSAI value 1 | | | | | | | | octet 8  octet k |
| S-NSSAI value 2 | | | | | | | | octet k+1\*  octet s\* |
| … | | | | | | | | octet s+1\*  octet i-1\* |
| S-NSSAI value x | | | | | | | | octet i\*  octet j\* |

Figure 9.11.3.87.3: S-NSSAI list of NSAG

Table 9.11.3.87.1: NSAG information information element

|  |
| --- |
| NSAG part of the NSAG information information element (octet 4 to m)  Each entry of the NSAG information information element consists of one NSAG in the NSAG information IE. |
| NSAG identifier(octet 6)  NSAG identifier field contains an 8 bits NSAG ID value. |
| S-NSSAI list of NSAG (octet 7 to j)  S-NSSAI list of NSAG field consists of one or more S-NSSAIs in the configured NSSAI. Each NSSAI in S-NSSAI list of NSAG field is coded as the length and value part of S-NSSAI information element as specified in subclause 9.11.2.8 starting with the second octet, without the mapped HPLMN SST field and without the mapped HPLMN SD field. |
| NSAG priority (octet j+1) (see NOTE)  The NSAG priority field indicates the priority of NSAG for cell reselection, random access, or both. ~~The value 0 (decimal) is reserved.~~ |
| TAI list (octet j+2 to m)  The TAI list field is coded as the length and value part of the 5GS tracking area identity list IE defined in subclause 9.11.3.9 starting with the second octet. |
| NOTE: The same priority for two or more NSAGs in the same TAI is not allowed. |

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