**3GPP TSG-CT WG1 Meeting #141eC1-232077v1**

**Online 17– 21 April 2023**

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| *CR-Form-v12.2* |
| **CHANGE REQUEST** |
|  |
|  | **24.501** | **CR** | **5178** | **rev** | **1** | **Current version:** | **18.2.1** |  |
|  |
| *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:***  | Define maximum length of Alternative NSSAI IE |
|  |  |
| ***Source to WG:*** | ZTE, Nokia, Nokia Shanghai Bell |
| ***Source to TSG:*** | C1 |
|  |  |
| ***Work item code:*** | eNS\_Ph3 |  | ***Date:*** | 2023-04-10 |
|  |  |  |  |  |
| ***Category:*** | **F** |  | ***Release:*** | Rel-18 |
|  | *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-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)Rel-19 (Release 19)* |
|  |  |
| ***Reason for change:*** | As specified in TS 23.501 clause 5.15.19, there is one alternative S-NSSAI for one S-NSSAI to be replaced. Since the S-NSSAI to be replaced is one S-NSSAI included in the allowed NSSAI and there is only one alternative S-NSSAI for one S-NSSAI to be replaced, the maximum number of entries in the alternative NSSAI should be eight, the same as the maximum number of entries in the allowed NSSAI.Furthermore, based on the format of Alternative NSSAI IE defined in TS 24.501 clause 9.11.3.97, the Alternative NSSAI IE has at most eight entries, and each entry consists of one S-NSSAI to be replaced and one alternative S-NSSAI. So the maximum length of Alternative NSSAI IE is calculated as follows:1(Alternative NSSAI IEI) + 1(length of Alternative NSSAI contents) + 8(at most eight entries) \* ( 9(S-NSSAI to be replaced) + 9(Alternative S-NSSAI) ) = 1+1+8\*(9+9)=146.Besides, since the S-NSSAI to be replaced and the alternative S-NSSAI are mandatory in each entry and each S-NSSAI has its own length octet, the length octet of each entry is not needed. |
|  |  |
| ***Summary of change:*** | 1. Remove the editor’s note regarding whether an S-NSSAI included in the allowed NSSAI can be replaced with more than one alternative S-NSSAI.
2. Define the maximum number of entries in the Alternative NSSAI IE to be eight.
3. Remove the 'length of entry contents' octet of Alternative NSSAI IE.
4. As calculated above, define the maximum length of Alternative NSSAI IE as 146 octets.
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|  |  |
| ***Consequences if not approved:*** | Whether an S-NSSAI included in the allowed NSSAI can be replaced with more than one alternative S-NSSAI is unclear. The maximum length of Alternative NSSAI IE is unclear. |
|  |  |
| ***Clauses affected:*** | 4.6.2.7, 8.2.19.1, 9.11.3.97 |
|  |  |
|  | **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:*** |  |

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

#### 4.6.2.7 Mobility management based network slice replacement

If the UE and network support network slice replacement, and the AMF determines that an S-NSSAI included in the allowed NSSAI needs to be replaced with an alternative S-NSSAI, the AMF provides the alternative S-NSSAI in the allowed NSSAI (if not included yet) and in the configured NSSAI (if not included yet) and the mapping information between the S-NSSAI to be replaced and the alternative S-NSSAI to the UE during UE configuration update procedure as follows:

a) for non-roaming UE, the AMF provides the mapping information between the S-NSSAI included in the allowed NSSAI and the alternative S-NSSAI to the UE; and

b) for roaming UE:

1) if the S-NSSAI included in the allowed NSSAI needs to be replaced, the AMF provides the mapping information between the S-NSSAI included in the allowed NSSAI and the alternative S-NSSAI to the UE; and

2) if the S-NSSAI included in the mapped S-NSSAI(s) for the allowed NSSAI needs to be replaced, the AMF provides the mapping information between the S-NSSAI included in the mapped S-NSSAI(s) for the allowed NSSAI and the alternative S-NSSAI to the UE.

NOTE: The alternative S-NSSAI may be part of or not part of the subscribed S-NSSAI(s) in the UE subscription.

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

#### 8.2.19.1 Message definition

The CONFIGURATION UPDATE COMMAND message is sent by the AMF to the UE. See table 8.2.19.1.1.

Message type: CONFIGURATION UPDATE COMMAND

Significance: dual

Direction: network to UE

Table 8.2.19.1.1: CONFIGURATION UPDATE COMMAND message content

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| IEI | Information Element | Type/Reference | Presence | Format | Length |
|  | Extended protocol discriminator | Extended protocol discriminator9.2 | M | V | 1 |
|  | Security header type | Security header type9.3 | M | V | 1/2 |
|  | Spare half octet | Spare half octet9.5 | M | V | 1/2 |
|  | Configuration update command message identity | Message type9.7 | M | V | 1 |
| D- | Configuration update indication | Configuration update indication9.11.3.18 | O | TV | 1 |
| 77 | 5G-GUTI | 5GS mobile identity9.11.3.4 | O | TLV-E | 14 |
| 54 | TAI list | 5GS tracking area identity list9.11.3.9 | O | TLV | 9-114 |
| 15 | Allowed NSSAI | NSSAI9.11.3.37 | O | TLV | 4-74 |
| 27 | Service area list | Service area list9.11.3.49 | O | TLV | 6-114 |
| 43 | Full name for network | Network name9.11.3.35 | O | TLV | 3-n |
| 45 | Short name for network | Network name9.11.3.35 | O | TLV | 3-n |
| 46 | Local time zone | Time zone9.11.3.52 | O | TV | 2 |
| 47 | Universal time and local time zone | Time zone and time9.11.3.53 | O | TV | 8 |
| 49 | Network daylight saving time | Daylight saving time9.11.3.19 | O | TLV | 3 |
| 79 | LADN information | LADN information9.11.3.30 | O | TLV-E | 3-1715 |
| B- | MICO indication | MICO indication9.11.3.31 | O | TV | 1 |
| 9- | Network slicing indication | Network slicing indication9.11.3.36 | O | TV | 1 |
| 31 | Configured NSSAI | NSSAI9.11.3.37 | O | TLV | 4-146 |
| 11 | Rejected NSSAI | Rejected NSSAI9.11.3.46 | O | TLV | 4-42 |
| 76 | Operator-defined access category definitions | Operator-defined access category definitions9.11.3.38 | O | TLV-E | 3-8323 |
| F- | SMS indication | SMS indication9.11.3.50A | O | TV | 1 |
| 6C | T3447 value | GPRS timer 39.11.2.5 | O | TLV | 3 |
| 75 | CAG information list | CAG information list9.11.3.18A | O | TLV-E | 3-n |
| 67 | UE radio capability ID | UE radio capability ID9.11.3.68 | O | TLV | 3-n |
| A- | UE radio capability ID deletion indication | UE radio capability ID deletion indication9.11.3.69 | O | TV | 1 |
| 44 | 5GS registration result | 5GS registration result9.11.3.6 | O | TLV | 3 |
| 1B | Truncated 5G-S-TMSI configuration | Truncated 5G-S-TMSI configuration9.11.3.70 | O | TLV | 3 |
| C- | Additional configuration indication | Additional configuration indication9.11.3.74 | O | TV | 1 |
| 68 | Extended rejected NSSAI | Extended rejected NSSAI9.11.3.75 | O | TLV | 5-90 |
| 72 | Service-level-AA container | Service-level-AA container9.11.2.10 | O | TLV-E | 6-n |
| 70 | NSSRG information | NSSRG information9.11.3.82 | O | TLV-E | 7-4099 |
| 14 | Disaster roaming wait range | Registration wait range9.11.3.84 | O | TLV | 4 |
| 2C | Disaster return wait range | Registration wait range9.11.3.84 | O | TLV | 4 |
| 13 | List of PLMNs to be used in disaster condition | List of PLMNs to be used in disaster condition9.11.3.83 | O | TLV | 2-n |
| 71 | Extended CAG information list | Extended CAG information list9.11.3.86 | O | TLV-E | 3-n |
| 1F | Updated PEIPS assistance information | PEIPS assistance information9.11.3.80 | O | TLV | 3-n |
| 73 | NSAG information | NSAG information9.11.3.87 | O | TLV-E | 9-3143 |
| E- | Priority indicator | Priority indicator9.11.3.91 | O | TV | 1 |
| 4B | RAN timing synchronization | RAN timing synchronization9.11.3.95 | O | TLV | 3 |
| 78 | Extended LADN information | Extended LADN information9.11.3.96 | O | TLV-E | 3-1787 |
| 4C | Alternative NSSAI | Alternative NSSAI9.11.3.97 | O | TLV | 7-146 |

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

#### 9.11.3.97 Alternative NSSAI

The purpose of the Alternative NSSAI information element is to identify a list of mapping information between the S-NSSAI to be replaced and the alternative S-NSSAI.

The Alternative NSSAI information element is coded as shown in figure 9.11.3.97.1, figure 9.11.3.97.2 and table 9.11.3.97.1.

The Alternative NSSAI is a type 4 information element with minimum length of 7 octets and maximum length of 146 octets.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| Alternative NSSAI IEI | octet 1 |
| Length of Alternative NSSAI contents | octet 2 |
| Entry 1 | octet 3octet a |
| Entry 2 | octet a+1\*octet b\* |
| … | octet b+1\*octet c\* |
| Entry n | octet c+1\*octet d\* |

Figure 9.11.3.97.1: Alternative NSSAI information element

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
|  |  |
| S-NSSAI to be replaced | octet 3octet x |
| Alternative S-NSSAI | octet x+1octet a |

Figure 9.11.3.97.2: Entry

Table 9.11.3.97.1: Alternative NSSAI information element

|  |
| --- |
| Value part of the Alternative NSSAI information element (octet 3 to d)The value part of the Alternative NSSAI information element consists of one or more entries, each entry consists of one S-NSSAI to be replaced and one alternative S-NSSAI. The number of entries shall not exceed eight.S-NSSAI to be replaced (octet 3 to x) (see NOTE)S-NSSAI to be replaced 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. |
| Alternative S-NSSAI (octet x+1 to a) |
| Alternative S-NSSAI 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. |
| NOTE: The S-NSSAI to be replaced shall be one S-NSSAI included in the allowed NSSAI. |

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