**3GPP TSG-CT WG1 Meeting #130-eC1-21xxxx**

**Electronic meeting, 20–28 May 2021 Revision of C1-213094**

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| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
|  |
|  | **24.501** | **CR** | **3215** | **rev** | **1** | **Current version:** | **17.2.1** |  |
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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 | **X** | Radio Access Network |  | Core Network |  |

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| ***Title:***  | Providing wildcard CAG-ID in the USIM |
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| ***Source to WG:*** | China Mobile, China Telecom, China Unicom, Huawei, HiSilicon, ZTE, vivo, MediaTek Inc  |
| ***Source to TSG:*** | C1 |
|  |  |
| ***Work item code:*** | 5GProtoc17 |  | ***Date:*** | 2021-04-28 |
|  |  |  |  |  |
| ***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 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-15 (Release 15)Rel-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)* |
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| ***Reason for change:*** | In CT1#127e meeting, two editor’s notes were added for the operator’s PNI-NPN deployment demand raised in CT1 meetings in 2020:Editor's note (WI 5GProtoc17, CR#0611): It is FFS whether and how to enable the operators to configure the USIM so that the entry for HPLMN of the "CAG information list" stored in the USIM can contain an optional wild card CAG ID in the allowed CAG list or an optional PLMN selected range of allowed CAG IDs.Editor's note (WI 5GProtoc17, CR#0611): It is FFS whether and how to enable a wild card CAG ID or a PLMN selected range of the allowed CAG IDs to match the available CAG IDs of the HPLMN and how the NAS and the AS interact.In CT1#128e meeting, the wildcard CAG-ID was re-discussed in the discussion paper C1-210701 as a proposed solution.This CR is a suggested implemention of C1-210701.This CR is related to C1-213093, C1-213095 and C1-213096. |
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| ***Summary of change:*** | Add the description of providing wildcard CAG-ID in the USIM. |
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| ***Consequences if not approved:*** | 1. The demand from NPN customers cannot be met.
2. The demand from operators of decoupling USIM management and NPN design for practicality cannot be met.
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| ***Clauses affected:*** | 4.14.3, 5.5.1.2.5, 5.5.1.3.5, 5.5.2.3.1, 5.5.2.3.2, 5.6.1.5 |
|  |  |
|  | **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:*** | 1. Consider the cases the network doesn’t provide a CAG information list in REGISTRATION REJECT, DEREGISTRATION REQUEST or SERVICE REJECT message.
2. Update the description in the NOTE.
3. Add NOTE for the case the AMF needs to provide a CAG information list including no entry if no "CAG information list" exists in the subscription in 5.5.1.3.5, 5.5.2.3.1 and 5.6.1.5, as the NOTE in 5.5.1.2.5.
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#### 9.11.3.18A CAG information list

The purpose of the CAG information list information element is to provide "CAG information list" or to delete the "CAG information list" at the UE.

The CAG information list information element is coded as shown in figures 9.11.3.18A.1 and 9.11.3.18A.2 and table 9.11.3.18A.1.

The CAG information list is a type 6 information element, with a minimum length of 3 octets.

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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| CAG information list IEI | octet 1 |
| Length of CAG information list contents | octet 2octet 3 |
| Entry 1 | octet 4\*octet a\* |
| Entry 2 | octet a+1\*octet b\* |
| … | octet b+1\*octet q-1\* |
| Entry n | octet q\*octet h\* |

Figure 9.11.3.18A.1: CAG information list information element

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| Length of entry contents | octet q |
| MCC digit 2 | MCC digit 1 | octet q+1 |
| MNC digit 3 | MCC digit 3 | octet q+2 |
| MNC digit 2 | MNC digit 1 | octet q+3 |
| 0Spare | 0Spare | 0Spare | 0Spare | 0Spare | 0Spare | CAGrange | CAGonly | octet q+4 |
| CAG-ID 1 | octet q+5\*octet q+8\* |
| CAG-ID 2 | octet q+9\*octet q+12\* |
| … | octet q+13\*octet q+4m\* |
| CAG-ID m | octet q+4m+1\*octet q+4m+4\* |

Figure 9.11.3.18A.2: Entry n – CAG range = 0

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| Length of entry contents | octet q |
| MCC digit 2 | MCC digit 1 | octet q+1 |
| MNC digit 3 | MCC digit 3 | octet q+2 |
| MNC digit 2 | MNC digit 1 | octet q+3 |
| 0Spare | 0Spare | 0Spare | 0Spare | 0Spare | 0Spare | CAGrange | CAGonly | octet q+4 |
| CAG-ID pair 1 | octet q+5octet q+12 |
| CAG-ID pair 2 | octet q+13\*octet q+20\* |
| … | octet q+21\*octet q+8k-4\* |
| CAG-ID pair k | octet q+8k-3\*octet q+8k+4\* |

Figure 9.11.3.18A.2: Entry n – CAG range = 1

Table 9.11.3.18A.1: CAG information list information element

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| --- |
| MCC, Mobile country code (octet q+1 and bits 1 to 4 octet q+2)The MCC field is coded as in ITU-T Recommendation E.212 [42], annex A. |
|  |
| MNC, Mobile network code (bits 5 to 8 of octet q+2 and octet q+3)The coding of this field is the responsibility of each administration but BCD coding shall be used. The MNC shall consist of 2 or 3 digits. If a network operator decides to use only two digits in the MNC, bits 5 to 8 of octet 6 shall be coded as "1111". |
|  |
| The contents of the MCC and MNC digits are coded as octets 6 to 8 of the Temporary mobile group identity IE in figure 10.5.154 of 3GPP TS 24.008 [12]. |
|  |
| Indication that the UE is only allowed to access 5GS via CAG cells (CAGonly) (bit 1 of octet q+4) |
| Bit |
| 1 |  |
| 0 | "Indication that the UE is only allowed to access 5GS via CAG cells" is not set (i.e. the UE is allowed to access 5GS via non-CAG cells) |
| 1 | "Indication that the UE is only allowed to access 5GS via CAG cells" is set (i.e. the UE is not allowed to access 5GS via non-CAG cells) |
|  |
| Indication that one or more ranges of CAG-IDs are included (CAGrange) (bit 2 of octet q+4) (NOTE 3) |
| Bit |
| 1 |  |
| 0 | The entry does not include a range of CAG-IDs |
| 1 | The entry includes one or more range of CAG-IDs |
|  |
| CAG-ID m (octet q+4m+1 to octet q+4m+4)This field contains the 32 bit CAG-ID. The coding of the CAG-ID is defined as the CAG-Identifier in 3GPP TS 23.003 [4].CAG-ID pair k (octet q+8k-3 to octet q+8k+4)This field contains two consecutive CAG-IDs. The coding of the CAG-ID is defined as the CAG-Identifier in 3GPP TS 23.003 [4].NOTE 1: The Length of CAG information list contents shall be 3 if no subscription data for CAG information list exists. NOTE 2: The Length of entry contents shall be 4 if there is no allowed CAG-ID for the PLMN. |
| NOTE 3: The indication shall be set to "The entry does not include a range of CAG-IDs" when the CAG information list IE is sent by the AMF. |

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* END of CHANGE \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*