**3GPP TSG-CT WG1 Meeting #133-eC1-21xxxx**

**E-meeting, 11-19 November 2021 Revision of C1-217023**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **24.501** | **CR** |  | **rev** | **3** | **Current version:** |  |  |
|  | | | | | | | | |
| *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 |  | Radio Access Network |  | Core Network | **X** |

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|  | | | | | | | | | | |
| ***Title:*** | The solution to the case the allowed CAG IDs of a PLMN beyond the limit of one Entry | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | China Mobile, NTT DOCOMO | | | | | | | | | |
| ***Source to TSG:*** | C1 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | Vertical\_LAN | | | | |  | ***Date:*** | | | 2021-11-03 |
|  |  | | | |  | |  | | |  |
| ***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-15 (Release 15) Rel-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | As discussed in CT1#131-e meeting, in TS 24.501 9.11.3.18A, the “Length of entry contents” of CAG information list IE is one octet, which means there is a limit to the number of the CAG-IDs for one PLMN.  On the other hand, there's no restriction on the number of the allowed CAG IDs in one PLMN on UDM side and SBI. And Rel-16 TS 38.413 defines the max number of allowed CAG IDs per PLMN in the can be 256 in the mobility restriction data for a UE.  How the network and the UE handle the case the number of the allowed CAG IDs in one PLMN exceeds the limit of an Entry(i.e. 63 ) and below 256 is not specified in Rel-16/Rel-17 TS, which causes practical problems.  The discussion paper C1-217022 proposes a solution for Rel-16 network. This CR is the implementation of the solution.  This CR is related to C1-217024. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | To clarify that there cannot be more than one entry associated with the same PLMN ID in CAG information list IE. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | How the network and the UE handle the case the number of the allowed CAG IDs in one PLMN exceeds the limit of an Entry is not specified in Rel-16 TS, which causes problems in practice. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 9.11.3.18A | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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:*** | | 1. Add NTT DOCOMO to the Source. 2. Update the format of the table NOTE. 3. Update the cover sheet to include the maxmum number of allowed CAG-IDs specified in TS 38.413. | | | | | | | | |

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* NEXT CHANGE \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

#### 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.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| CAG information list IEI | | | | | | | | octet 1 |
| Length of CAG information list contents | | | | | | | | octet 2  octet 3 |
| Entry 1 | | | | | | | | octet 4\*  octet a\* |
| Entry 2 | | | | | | | | octet a+1\*  octet b\* |
| … | | | | | | | | octet b+1\*  octet g\* |
| Entry n | | | | | | | | octet g+1\*  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 |
| 0  Spare | 0  Spare | 0  Spare | 0  Spare | 0  Spare | 0  Spare | 0  Spare | CAG  only | 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 n | | | | | | | | octet q+4m+1\*  octet q+4m+4\* |

Figure 9.11.3.18A.2: Entry n

Table 9.11.3.18A.1: CAG information list information element

|  |  |
| --- | --- |
| 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) |
|  | |
| 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]. | |
| NOTE: For a given PLMN ID, there shall be up to one Entry containing the MCC value and the MNC value of the PLMN ID. | |

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