**3GPP TSG-CT WG1 Meeting #133-bis-eC1-22xxxx**

**E-meeting, 17-21 January 2022 *was C1-220437***

|  |
| --- |
| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
|  |
|  | **24.501** | **CR** | **3941** | **rev** | **-** | **Current version:** | **17.5.0** |  |
|  |
| *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** |

|  |
| --- |
|  |
| ***Title:***  | Clarification on list indication value used with secured packet |
|  |  |
| ***Source to WG:*** | Huawei, HiSilicon |
| ***Source to TSG:*** | C1 |
|  |  |
| ***Work item code:*** | eCPSOR\_CON |  | ***Date:*** | 2022-01-03 |
|  |  |  |  |  |
| ***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)* |
|  |  |
|  | Currently, TS24.501 specially emphasizes the list indication can be used to indicate the PLMN ID and access technology lists in plain text (the list type is 1), see below.*If the SOR data type is set to value "0", the list type bit is set to value "1", and the additional parameters bit is set to value "1" then: - the octet o is present.**- if the list indication bit is set to "0" then the PLMN ID and access technology list field and the length of PLMN ID and access technology list field are absent.**- if the list indication bit is set to "1" then the PLMN ID and access technology list field and the length of PLMN ID and access technology list field are present.*It may give people wrong understanding: the list indication can only be used to indicate the PLMN list in plain text, but cannot be used with secured packet. But it is not the truth, because the list indication is also used to indicate the PLMN list in secured packet. To make the spec clear, similar description about secured packet is needed. |
|  |  |
| ***Summary of change:*** | Clarify the list indication also can be used to indicate the PLMN ID and access technology list in secured packet. |
|  |  |
| ***Consequences if not approved:*** | Wrong understanding that the list indication is useless with secured packet may exist. |
|  |  |
| ***Clauses affected:*** | 9.11.3.51 |
|  |  |
|  | **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 \*\*\*\*\*

#### 9.11.3.51 SOR transparent container

The purpose of the SOR transparent container information element in the REGISTRATION ACCEPT message is to provide the list of preferred PLMN/access technology combinations (or HPLMN indication that 'no change of the "Operator Controlled PLMN Selector with Access Technology" list stored in the UE is needed and thus no list of preferred PLMN/access technology combinations is provided'), or a secured packet (see 3GPP TS 23.122 [5] annex C) and optional indication of an acknowledgement request, SOR-CMCI, request the storage of the received SOR-CMCI in the ME, and SOR-SNPN-SI (or subscribed SNPN or HPLMN indication that 'no change of the SOR-SNPN-SI stored in the UE is needed and thus no SOR-SNPN-SI is provided'). The purpose of the SOR transparent container information element in the REGISTRATION COMPLETE message is to indicate the UE acknowledgement of successful reception of the SOR transparent container IE in the REGISTRATION ACCEPT message as well as to indicate the ME support of SOR-CMCI.

NOTE: When used in NAS transport procedure, the contents of the SOR transparent container information element in the Payload container IE of the DL NAS TRANSPORT message are used to provide the list of preferred PLMN/access technology combinations and optional indication of an acknowledgement request, SOR-CMCI, request the storage of the received SOR-CMCI in the ME, and SOR-SNPN-SI. The contents of the SOR transparent container information element in the Payload container IE of the UL NAS TRANSPORT message are used to indicate the UE acknowledgement of successful reception of the SOR transparent container IE in the DL NAS TRANSPORT message as well as to indicate the ME support of SOR-CMCI.

The SOR transparent container information element is coded as shown in figure 9.11.3.51.1, figure 9.11.3.51.2, figure 9.11.3.51.3, figure 9.11.3.51.4, figure 9.11.3.51.5, figure 9.11.3.51.6, figure 9.11.3.51.7, figure 9.11.3.51.8, figure 9.11.3.51.9, figure 9.11.3.51.10, figure 9.11.3.51.11, figure 9.11.3.51.12, figure 9.11.3.51.13, table 9.11.3.51.1, table 9.11.3.51.2, table 9.11.3.51.3, table 9.11.3.51.4, table 9.11.3.51.5 and table 9.11.3.51.6.

The SOR transparent container is a type 6 information element with a minimum length of 20 octets.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| SOR transparent container IEI | octet 1 |
| Length of SOR transparent container contents | octet 2octet 3 |
| SOR header | octet 4 |
| SOR-MAC-IAUSF | octet 5-20  |
| CounterSOR | octet 21-22 |
| Secured packet | octet 23\* - n\* |

Figure 9.11.3.51.1: SOR transparent container information element for list type with value "0" and SOR data type with value "0"

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| SOR transparent container IEI | octet 1 |
| Length of SOR transparent container contents | octet 2octet 3 |
| SOR header | octet 4 |
| SOR-MAC-IAUSF | octet 5-20  |
| CounterSOR | octet 21-22 |
| PLMN ID and access technology list | octet 23\*-m\* |

Figure 9.11.3.51.2: SOR transparent container information element for list type with value "1", SOR data type with value "0", and additional parameters with value "0"

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| SOR transparent container IEI | octet 1 |
| Length of SOR transparent container contents | octet 2octet 3 |
| SOR header | octet 4 |
| SOR-MAC-IAUSF | octet 5octet 20  |
| CounterSOR | octet 21octet 22 |
| Length of PLMN ID and access technology list | octet 23\* |
| PLMN ID and access technology list | octet 24\*octet m\* |
| 0Spare | 0Spare | 0Spare | 0Spare | 0Spare | SSSI | SSCMI | SI | octet o |
| SOR-CMCI | octet (o+1)\*octet p\* |
| SOR-SNPN-SI | octet (p+1)\*octet u\* |

Figure 9.11.3.51.2A: SOR transparent container information element for list type with value "1", SOR data type with value "0", additional parameters with value "1"

|  |  |
| --- | --- |
| PLMN ID 1 | octet 23\*- 25\* |
| access technology identifier 1 | octet 26\*- 27\* |
| … |  |
| PLMN ID n | octet (18+5\*n)\*-(20+5\*n)\* |
| access technology identifier n | octet (21+5\*n)\*-(22+5\*n)\* |

Figure 9.11.3.51.3: PLMN ID and access technology list (m=22+5\*n)

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| SOR transparent container IEI | octet 1 |
| Length of SOR transparent container contents | octet 2octet 3 |
| SOR header | octet 4 |
| SOR-MAC-IUE | octet 5 - 20 |

Figure 9.11.3.51.4: SOR transparent container information element for SOR data type with value "1"

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| 0Spare | 0Spare | 0Spare | AP | ACK | List type | List indication | SOR data type | octet 4 |

Figure 9.11.3.51.5: SOR header for SOR data type with value "0"

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| 0Spare | 0Spare | 0Spare | 0Spare | 0Spare | 0Spare | MSSI | SOR data type | octet 4 |

Figure 9.11.3.51.6: SOR header for SOR data type with value "1"

Table 9.11.3.51.1: SOR transparent container information element

|  |
| --- |
| SOR-MAC-IAUSF (see NOTE 1), SOR-MAC-IUE (see NOTE 2) and CounterSOR (see NOTE 1) are coded as specified in 3GPP TS 33.501 [24]. |
|  |
| SOR data type (octet 4, bit 1) |
| 0 | The SOR transparent container carries steering of roaming information. |
| 1 | The SOR transparent container carries acknowledgement of successful reception of the steering of roaming information. |
|  |
| List indication (octet 4, bit 2) (see NOTE 1 and NOTE X ) |
| 0 | HPLMN indication that 'no change of the "Operator Controlled PLMN Selector with Access Technology" list stored in the UE is needed and thus no list of preferred PLMN/access technology combinations is provided' |
| 1 | list of preferred PLMN/access technology combinations is provided |
|  |
| List type (octet 4, bit 3) (see NOTE 1) |
| 0 | The list type is a secured packet. |
| 1 | The list type is a "PLMN ID and access technology list". |
|  |  |
| Acknowledgement (ACK) value (octet 4, bit 4) (see NOTE 1) |
| 0 | acknowledgement not requested |
| 1 | acknowledgement requested |
|  |
| Additional parameters (AP) value (octet 4, bit 5) |
| Bit |
| **5** |
| 0 | Additional parameters not included  |
| 1 | Additional parameters included (see NOTE 3) |
|  |
| If the SOR data type is set to value "0", the list type bit is set to value "1", and the additional parameters bit is set to value "1" then: - the octet o is present.- if the list indication bit is set to "0" then the PLMN ID and access technology list field and the length of PLMN ID and access technology list field are absent.- if the list indication bit is set to "1" then the PLMN ID and access technology list field and the length of PLMN ID and access technology list field are present. |
|  |
| The secure packet is coded as specified in 3GPP TS 31.115 [22B]. (see NOTE 1) |
|  |
| The PLMN ID and access technology list consists of PLMN ID and access technology identifier and are coded as specified in 3GPP TS 31.102 [22] subclause 4.2.5. The PLMN ID and access technology identifier are provided in decreasing order of priority, i.e. PLMN ID 1 indicates highest priority and PLMN ID n indicates lowest priority. The PLMN ID and access technology list contains at minimum zero and at maximum 16 (decimal) PLMN IDs and access technology identifiers. (see NOTE 1) |
| ME support of SOR-CMCI indicator (MSSI) value (octet 4, bit 2) (see NOTE 2, NOTE 4) |
| 0 | SOR-CMCI not supported by the ME |
| 1 | SOR-CMCI supported by the ME |
|  |
| SOR-CMCI indicator (SI) value (octet o, bit 1)Bit |
| **1** |
| 0 | SOR-CMCI absent |
| 1 | SOR-CMCI present |
|  |  |
| If the SOR-CMCI indicator bit is set to "SOR-CMCI present", the SOR-CMCI field is present. If the SI bit is set to "SOR-CMCI absent", the SOR-CMCI field is absent. |
|  |
| Store SOR-CMCI in ME indicator (SSCMI) value (octet o, bit 2)Bit |
| **2** |
| 0 | Do not store SOR-CMCI in ME |
| 1 | Store SOR-CMCI in ME |
|  |
| SOR-CMCI (octet o+1 to octet p)The SOR-CMCI field is coded according to figure 9.11.3.51.7 and table 9.11.3.51.2. |
|  |
| SOR-SNPN-SI indicator (SSSI) value (octet o, bit 3)Bit |
| **3** |
| 0 | subscribed SNPN or HPLMN indication that 'no change of the SOR-SNPN-SI stored in the UE is needed and thus no SOR-SNPN-SI is provided' |
| 1 | SOR-SNPN-SI present |
|  |
| If the SSSI bit is set to "SOR-SNPN-SI present", the SOR-SNPN-SI field is present. If the SSSI bit is set to "subscribed SNPN or HPLMN indication that 'no change of the SOR-SNPN-SI stored in the UE is needed and thus no SOR-SNPN-SI is provided'", the SOR-SNPN-SI is absent. |
|  |
|  |
| NOTE 1: This bit or field applies for SOR header with SOR data type with value "0".NOTE 2: This bit or field applies for SOR header with SOR data type with value "1".NOTE 3: Additional parameters can be set to value "1" only when the ME supports SOR-CMCI or SOR-SNPN-SI, and the list type bit is set to value "1".NOTE 4: The "SOR-CMCI supported by the ME" is not set by a UE compliant to an earlier release of the specification.NOTE X: This bit or field applies for SOR header with list indication with value "1". |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| Length of SOR-CMCI contents | octet (o+1)octet (o+2) |
| SOR-CMCI rule 1 | octet (o+3)\*octet q\* |
| SOR-CMCI rule 2 | octet (q+1)\*octet r\* |
| ... | octet (r+1)\*octet s\* |
| SOR-CMCI rule n | octet (s+1)\*octet p\* |

Figure 9.11.3.51.7: SOR-CMCI

Table 9.11.3.51.2: SOR-CMCI

|  |
| --- |
| SOR-CMCI rule:The SOR-CMCI rule is coded according to figure 9.11.3.51.8 and table 9.11.3.51.3. |
|  |
| If the length of SOR-CMCI contents field indicates a length bigger than indicated in figure 9.11.3.51.7, receiving entity shall ignore any superfluous octets located at the end of the SOR-CMCI. |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| Length of SOR-CMCI rule contents | octet q+1octet q+2 |
| Tsor-cm timer value | octet q+3 |
| Criterion type | octet q+4 |
| Criterion value | octet (q+5)\*octet r\* |

Figure 9.11.3.51.8: SOR-CMCI rule

Table 9.11.3.51.3: SOR-CMCI rule

|  |
| --- |
| Tsor-cm timer valueThe Tsor-cm timer value field is coded according to octet 2 of the GPRS timer information element as specified in 3GPP TS 24.008 [12] subclause 10.5.7.3 and indicates the Tsor-cm timer value. When the unit field of the Tsor-cm timer value field indicates that the timer is deactivated, the receiving entity shall consider that Tsor-cm timer value is set to the infinity value. |
|  |
| Criterion type |
| Bits**8 7 6 5 4 3 2 1**0 0 0 0 0 0 0 1 DNN0 0 0 0 0 0 1 0 S-NSSAI SST0 0 0 0 0 0 1 1 S-NSSAI SST and SD0 0 0 0 0 1 0 0 IMS registration related signalling0 0 0 0 0 1 0 1 MMTEL voice call0 0 0 0 0 1 1 0 MMTEL video call0 0 0 0 0 1 1 1 MO SMS over NAS or MO SMSoIP0 0 0 0 1 0 0 0 SOR security check not successful1 1 1 1 1 1 1 1 match allAll other values are spare. |
|  |
| The receiving entity shall ignore SOR-CMCI rule with criterion of criterion type set to a spare value. |
|  |
| For "DNN", the criterion value field shall be encoded as a DNN length-value pair field.For "S-NSSAI SST", the criterion value field shall be encoded as one octet SST field.For "S-NSSAI SST and SD", the criterion value field shall be encoded as a sequence of one octet SST field and three octets SD field. The SST field shall be transmitted first.The DNN length-value pair field shall be encoded as a sequence of one octet DNN value length field and a DNN value field. The DNN value length field shall be transmitted first. The DNN value length field indicates the length in octets of the DNN value field. The DNN value field contains an APN as specified in 3GPP TS 23.003 [4].The SST field contains SST of HPLMN's S-NSSAI.The SD field contains SD of HPLMN's S-NSSAI.For "match all", "SOR security check not successful", "IMS registration related signalling", "MMTEL voice call", "MMTEL video call", and "MO SMS over NAS or MO SMSoIP", the criterion value field is zero octets long. |
|  |
| If the length of SOR-CMCI rule contents field indicates a length bigger than indicated in figure 9.11.3.51.8, receiving entity shall ignore any superfluous octets located at the end of the SOR-CMCI rule.The UE applies SOR-CMCI rules as described in 3GPP TS 23.122 [5] annex C.  |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| Length of SOR-SNPN-SI contents | octet (p+1)octet (p+2) |
| 0Spare | 0Spare | 0Spare | 0Spare | 0Spare | 0Spare | CLGI | CLSI | octet (p+3) |
| CH controlled prioritized list of preferred SNPNs | octet (p+4)\*octet t\* |
| CH controlled prioritized list of GINs | octet (t+1)\*octet u\* |

Figure 9.11.3.51.9: SOR-SNPN-SI

Table 9.11.3.51.4: SOR-SNPN-SI

|  |
| --- |
| CH controlled prioritized list of preferred SNPNs indicator (CLSI) value (octet p+3, bit 1)Bit |
| **1** |
| 0 | CH controlled prioritized list of preferred SNPNs absent |
| 1 | CH controlled prioritized list of preferred SNPNs present |
|  |
| If the CLSI bit is set to "CH controlled prioritized list of preferred SNPNs present", the CH controlled prioritized list of preferred SNPNs field is present. If the CLSI bit is set to "CH controlled prioritized list of preferred SNPNs absent", the CH controlled prioritized list of preferred SNPNs field is absent. |
|  |
| CH controlled prioritized list of GINs indicator (CLGI) value (octet p+3, bit 2)Bit |
| **2** |
| 0 | CH controlled prioritized list of GINs absent |
| 1 | CH controlled prioritized list of GINs present |
|  |
| If the CLGI bit is set to "CH controlled prioritized list of GINs present", the CH controlled prioritized list of GINs field is present. If the CLGI bit is set to "CH controlled prioritized list of GINs absent", the CH controlled prioritized list of GINs field is absent. |
|  |
| If the length of SOR-SNPN-SI contents field indicates a length bigger than indicated in figure 9.11.3.51.9, receiving entity shall ignore any superfluous octets located at the end of the SOR-SNPN-SI. |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| Length of CH controlled prioritized list of preferred SNPNs contents | octet p+4octet p+5 |
| SNPN identity 1 | octet (p+6)\*octet (p+14)\* |
| SNPN identity 2 | octet (p+15)\*octet (p+23)\* |
| ... | octet (p+24)\*octet (p+n\*9-2)\* |
| SNPN identity n | octet (p+n\*9-3)\*octet (p+n\*9+5)\* = octet t\* |

Figure 9.11.3.51.10: CH controlled prioritized list of preferred SNPNs

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| MCC digit 2 | MCC digit 1 | octet p+15 |
| MNC digit 3 | MCC digit 3 | octet p+16 |
| MNC digit 2 | MNC digit 1 | octet p+17 |
| 0Spare | 0Spare | 0Spare | 0Spare | NID assignment mode | octet p+18 |
| NID value digit 2 | NID value digit 1 | octet p+19 |
| NID value digit 4 | NID value digit 3 | octet p+20 |
| NID value digit 6 | NID value digit 5 | octet p+21 |
| NID value digit 8 | NID value digit 7 | octet p+22 |
| NID value digit 10 | NID value digit 9 | octet p+23 |

Figure 9.11.3.51.11: SNPN identity

Table 9.11.3.51.5: CH controlled prioritized list of preferred SNPNs

|  |
| --- |
| Mobile country code (MCC):The MCC field is coded as in ITU-T Recommendation E.212 [42], annex A. |
|  |
| Mobile network code (MNC):The coding of MNC 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, MNC digit 3 shall be coded as "1111". |
|  |
| NID assignment mode |
| NID assignment mode is coded as specified in 3GPP TS 23.003 [4]. |
|  |
| NID value |
| NID value is coded as specified in 3GPP TS 23.003 [4]. |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| Length of CH controlled prioritized list of GINs contents | octet t+1octet t+2 |
| GIN 1 | octet (t+3)\*octet (t+11)\* |
| GIN 2 | octet (t+12)\*octet (t+20)\* |
| ... | octet (t+21)\*octet (t+n\*9-5)\* |
| GIN n | octet (t+n\*9-6)\*octet (t+n\*9+2)\* = octet u\* |

Figure 9.11.3.51.12: CH controlled prioritized list of GINs

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| MCC digit 2 | MCC digit 1 | octet t+12 |
| MNC digit 3 | MCC digit 3 | octet t+13 |
| MNC digit 2 | MNC digit 1 | octet t+14 |
| 0Spare | 0Spare | 0Spare | 0Spare | NID assignment mode | octet t+15 |
| NID value digit 2 | NID value digit 1 | octet t+16 |
| NID value digit 4 | NID value digit 3 | octet t+17 |
| NID value digit 6 | NID value digit 5 | octet t+18 |
| NID value digit 8 | NID value digit 7 | octet t+19 |
| NID value digit 10 | NID value digit 9 | octet t+20 |

Figure 9.11.3.51.13: GIN

Table 9.11.3.51.6: CH controlled prioritized list of GINs

|  |
| --- |
| Mobile country code (MCC):The MCC field is coded as in ITU-T Recommendation E.212 [42], annex A. |
|  |
| Mobile network code (MNC):The coding of MNC 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, MNC digit 3 shall be coded as "1111". |
|  |
| NID assignment mode |
| NID assignment mode is coded as specified in 3GPP TS 23.003 [4]. |
|  |
| NID value |
| NID value is coded as specified in 3GPP TS 23.003 [4]. |
|  |

Editor's note (WI eNPN, CR#3584): Whether the secured packet can contain SOR-SNPN-SI is FFS.

\*\*\*\*\* End of changes \*\*\*\*\*