**3GPP TSG-CT WG1 Meeting #137-eC1-224892**

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

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| --- |
| *CR-Form-v12.2* |
| **CHANGE REQUEST** |
|  |
|  | **24.193** | **CR** | **0097** | **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:***  | Support MAC address range type in ATSSS container |
|  |  |
| ***Source to WG:*** | Huawei, HiSilicon |
| ***Source to TSG:*** | C1 |
|  |  |
| ***Work item code:*** | ATSSS\_Ph2 |  | ***Date:*** | 2022-08-10 |
|  |  |  |  |  |
| ***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-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)Rel-19 (Release 19)* |
|  |  |
| ***Reason for change:*** | MAC address range type (Destination MAC address range type or Source MAC address range type) as a packet filter component has been supported in QoS rule, see below from TS 24.501:*1 0 0 0 0 0 0 1 Destination MAC address type1 0 0 0 0 0 1 0 Source MAC address type1 0 0 0 0 0 1 1 802.1Q C-TAG VID type1 0 0 0 0 1 0 0 802.1Q S-TAG VID type1 0 0 0 0 1 0 1 802.1Q C-TAG PCP/DEI type1 0 0 0 0 1 1 0 802.1Q S-TAG PCP/DEI type1 0 0 0 0 1 1 1 Ethertype type1 0 0 0 1 0 0 0 Destination MAC address range type1 0 0 0 1 0 0 1 Source MAC address range type*Encoding lots of MAC addresses as a MAC address range instead of one by one may save much signalling overhead. Hence it is better to introduce MAC address range into ATSSS container as a traffic descriptor component type. |
|  |  |
| ***Summary of change:*** | Introduce MAC address range into ATSSS container as a traffic descriptor component type. |
|  |  |
| ***Consequences if not approved:*** | Signalling overhead is not saved. |
|  |  |
| ***Clauses affected:*** | 6.1.3.2 |
|  |  |
|  | **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 \*\*\*\*\*

#### 6.1.3.2 Encoding of ATSSS rules

The ATSSS rules are encoded as shown in figure 6.1.3.2-1, figure 6.1.3.2-2 and figure 6.1.3.2-3 and table 6.1.3.2-1.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| ATSSS rule 1 | octet 4octet s |
| ATSSS rule 2 | octet s+1octet t |
| … | octet t+1octet u |
| ATSSS rule n | octet u+1octet a |

Figure 6.1.3.2-1: ATSSS parameter contents including one or more ATSSS rules

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| Length of ATSSS rule | octet 4octet 5 |
| ATSSS rule ID | octet 6 |
| ATSSS rule operation | octet 7 |
| Precedence value of ATSSS rule | octet 8 |
| Length of traffic descriptor | octet 9octet 10 |
| Traffic descriptor | octet 11octet f |
| Access selection descriptor | octet f+1octet s\* |

Figure 6.1.3.2-2: ATSSS rule

|  |  |
| --- | --- |
| Length of access selection descriptor | octet f+1 |
| Steering functionality | octet f+2 |
| Steering mode | octet f+3 |
| Steering mode information | octet f+4\* |
| Steering mode indicator | octet s\* |

Figure 6.1.3.2-3: Access selection descriptor

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 0Spare | 0Spare | 0Spare | 0Spare | 0Spare | 0Spare | 0Spare | ALB | octet s\* |

Figure 6.1.3.2-4: Steering mode indicator

Table 6.1.3.2-1: ATSSS parameter contents including an ATSSS rule

|  |
| --- |
| ATSSS rule ID (octet 6) |
| The ATSSS rule ID specifies the identity of the individual ATSSS rule on which the ATSSS rule operation in octet 7 is applied. |
|  |
| ATSSS rule operation (octet 7) |
| The ATSSS rule operation is encoded as follows: |
| Bits |
|  |
| **8** | **7** | **6** | **5** | **4** | **3** | **2** | **1** |  |  |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |  | Add or replace ATSSS rule |
| 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |  | Delete ATSSS rule |
| All other values are spare. |
|  |
| If "Add or replace ATSSS rule" is indicated, the ATSSS rule with identity as indicated in ATSSS rule ID and contents as indicated in the following octets of the ATSSS rule parameter is added to the set of ATSSS rules. If an ATSSS rule with the same ATSSS rule ID does not exist in the set of ATSSS rules, a new rule is created and added. If an ATSSS rule with the same ATSSS rule ID exists in the set of ATSSS rules, the old rule is replaced with the new ATSSS rule. If "Delete ATSSS rule" is indicated, the ATSSS rule with identity as indicated in the ATSSS rule ID parameter is deleted from the set of ATSSS set of rules and octets a+5 and onwards of the ATSSS rule parameter are ignored. If no ATSSS rule with identity as indicated in the ATSSS rule ID parameter exists in the set of ATSSS rules, the Delete ATSSS rule operation is successful without changes to the set of ATSSS rules. |
|  |
| Precedence value of an ATSSS rule (octet 8) |
| The precedence value of an ATSSS rule field shall be used to specify the precedence of the ATSSS rule among all ATSSS rules. This field shall include the binary encoded value of the precedence value in the range from 0 to 255 (decimal). The higher the value of the precedence value field, the lower the precedence of the ATSSS rule is. |
| The traffic descriptor length field (octets 9 to 10) indicates length of the traffic descriptor field. |
|  |
| Traffic descriptor (octets 11 to f) |
| The traffic descriptor field is, as defined in table 5.2.1 in 3GPP TS 24.526 [5], of variable size and contains a variable number (at least one) of traffic descriptor components (NOTE 3). Each traffic descriptor component shall be encoded as a sequence of one octet traffic descriptor component type identifier and a traffic descriptor component value field. The traffic descriptor component type identifier shall be transmitted first. |
|  |
| Traffic descriptor component type identifierBits |
| **8** | **7** | **6** | **5** | **4** | **3** | **2** | **1** |  |  |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |  | Match-all type |
| 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |  | OS Id + OS App Id type (NOTE 1) |
| 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |  | IPv4 remote address type |
| 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |  | IPv6 remote address/prefix length type |
| 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 |  | Protocol identifier/next header type |
| 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 |  | Single remote port type |
| 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 |  | Remote port range type |
| 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 |  | IP 3 tuple type |
| 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |  | Security parameter index type |
| 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 |  | Type of service/traffic class type |
| 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | Flow label type |
| 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |  | Destination MAC address type |
| 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |  | 802.1Q C-TAG VID type |
| 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |  | 802.1Q S-TAG VID type |
| 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |  | 802.1Q C-TAG PCP/DEI type |
| 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |  | 802.1Q S-TAG PCP/DEI type |
| 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 |  | Ethertype type |
| 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |  | DNN type |
| 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |  | Destination FQDN |
| 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |  | Regular expression |
| 11 | 00 | 11 | 00 | 00 | 00 | 00 | 01 |  | OS App Id typeDestination MAC address range type |
| All other values are spare. If received they shall be interpreted as unknown. |
|  |
| Length of access selection descriptor (octet f+1) |
| Bits |
| **8** | **7** | **6** | **5** | **4** | **3** | **2** | **1** |  |  |
| 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |  | If the steering mode is smallest delay |
| 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |  | If the steering mode is not smallest delay and steering mode indicator is not included |
| 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |  | If the steering mode is not smallest delay and steering mode indicator is included |
| All other values are spare. |
|  |
| Steering functionality (octet f+2) |
| The steering functionality field shall be encoded by one octet (octet f+2) as follows |
| Bits |
| **8** | **7** | **6** | **5** | **4** | **3** | **2** | **1** |  |  |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |  | UE's supported steering functionality (NOTE 2) |
| 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |  | MPTCP functionality |
| 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |  | ATSSS-LL functionality |
| All other values are spare.If the UE does not support the received encoded steering functionality in the ATSSS rule, the UE shall ignore the ATSSS rule. |
|  |
| Steering mode (octet f+3) |
| The steering mode descriptor field shall be encoded by one octet (octet f+3) as follows: |
| Bits |
| **8** | **7** | **6** | **5** | **4** | **3** | **2** | **1** |  |  |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |  | Active-standby |
| 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |  | Smallest delay |
| 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |  | Load balancing |
| 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |  | Priority based |
| All other values are spare. |
|  |
| Steering mode information (octet f+4) |
| If the steering mode is defined as active-standby, octet f+4 shall be defined as follows: |
| Bits |
| **8** | **7** | **6** | **5** | **4** | **3** | **2** | **1** |  |  |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |  | Active 3GPP and no standby |
| 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |  | Active 3GPP and non-3GPP standby |
| 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |  | Active non-3GPP and no standby |
| 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |  | Active non-3GPP and 3GPP standby |
| All other values are spare. |
|  |
| If the steering mode is defined as smallest delay, octet f+4 shall not be encoded. |
|  |
| If the steering mode is defined as load balancing, octet f+4 shall be encoded to show the percentage of the SDF traffic transmitted over 3GPP access and non-3GPP access as follows: |
| Bits |
| **8** | **7** | **6** | **5** | **4** | **3** | **2** | **1** |  |  |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |  | 100% over 3GPP and 0% over non-3GPP |
| 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |  | 90% over 3GPP and 10% over non-3GPP |
| 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |  | 80% over 3GPP and 20% over non-3GPP |
| 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |  | 70% over 3GPP and 30% over non-3GPP |
| 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |  | 60% over 3GPP and 40% over non-3GPP |
| 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |  | 50% over 3GPP and 50% over non-3GPP |
| 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 |  | 40% over 3GPP and 60% over non-3GPP |
| 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |  | 30% over 3GPP and 70% over non-3GPP |
| 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |  | 20% over 3GPP and 80% over non-3GPP |
| 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 |  | 10% over 3GPP and 90% over non-3GPP |
| 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 |  | 0% over 3GPP and 100% over non-3GPP |
| All other values are spare |
|  |
| If the steering mode is defined as priority-based, octet f+4 shall be encoded as: |
| Bits |
| **8** | **7** | **6** | **5** | **4** | **3** | **2** | **1** |  |  |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |  | 3GPP is high priority access |
| 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |  | non-3GPP is high priority access |
| All other values are spare. |
|  |
| Steering mode indicator (octet s) |
| The steering mode indicator provides information to adjust the traffic steering. The following indicators exist (NOTE 4). |
|  |
| ALB (autonomous load balance indicator) (octet s, bit 1) is set as follows: |
| Bit |
| **1** |  |
| 0 | Autonomous load-balance indicator is off |
| 1 | Autonomous load-balance indicator is on |
|  |
| NOTE 1: For "OS Id + OS App Id type", the traffic descriptor component value field does not specify the OS version number or the version number of the application. |
| NOTE 2: This value shall be set by the SMF if the UE supports only one steering functionality. The SMF knows the UE's supported steering functionality during the MA PDU session establishment. |
| NOTE 3: Traffic descriptor components of an ATSSS rule are not required to be the same as the traffic descriptor components, defined in table 5.2.1 in 3GPP TS 24.526 [5]. |
| NOTE 4: If the value is received for a steering mode other than load balancing, it shall be ignored. |

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