**3GPP TSG-CT WG1 Meeting #127-eC1-20xxxx**

**Electronic meeting, 13-20 November 2020 *was* C1-207449**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.0* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **24.193** | **CR** | **0023** | **rev** | **1** | **Current version:** | **16.1.0** |  |
|  | | | | | | | | |
| *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)*.* | | | | | | | | |
|  | | | | | | | | |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Proposed change affects:*** | UICC apps |  | ME | **X** | Radio Access Network |  | Core Network | **X** |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | | | | | |
| ***Title:*** | Introduction of IP 3-tuple type | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | ZTE, Nokia, Nokia Shanghai Bell | | | | | | | | | |
| ***Source to TSG:*** | C1 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | ATSSS | | | | |  | ***Date:*** | | | 2020-11-16 |
|  |  | | | |  | |  | | |  |
| ***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-12 (Release 12)* *Rel-13 (Release 13) Rel-14 (Release 14) Rel-15 (Release 15) Rel-16 (Release 16) Rel-17 (Release 17)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | It was not well defined how to transmit the traffic descriptor components for IP 3 tuples with "IPv4 remote address type, IPv6 remote address/prefix length type, Protocol identifier/next header type, Single remote port type  Remote port range type" in URSP, then IP 3 tuple type is defined as another traffic descriptor component type to describe IP traffic in URSP (see C1-203964 CR#0077).  Multiple tuples are required for IP descriptor as one of traffic descriptors in ATSSS rule (see table 5.32.8-1 in TS 23.501). Without the use of IP 3-tuple component type, only a single IP descriptor can be included within a single ATSSS rule.  Thus, IP 3-tuple should be introduced in traffic descriptor in ATSSS rule as well. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Introduce IP 3-tuple type as one of traffic descriptor component types in ATSSS rule. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | It was not well defined how to transmit the traffic descriptor components for IP 3-tuples when evaluating ATSSS rule. | | | | | | | | |
|  | |  | | | | | | | | |
| ***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:*** | |  | | | | | | | | |

\* \* \* 1st 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 a+1  octet s |
| ATSSS rule 2 | | | | | | | | octet s+1  octet t |
| … | | | | | | | | octet t+1  octet u |
| ATSSS rule n | | | | | | | | octet u+1  octet b |

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 a+1  octet a+2 |
| Precedence value of ATSSS rule | | | | | | | | octet a+3 |
| Length of traffic descriptor | | | | | | | | octet a+4  octet a+5 |
| Traffic descriptor | | | | | | | | octet a+6  octet s-4 |
| Access selection descriptor | | | | | | | | octet s-3  octet s\* |

Figure 6.1.3.2-2: ATSSS rule

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| Length of access selection descriptor | | | | | | | | octet s-3 |
| Steering functionality | | | | | | | | octet s-2 |
| Steering mode | | | | | | | | octet s-1 |
| Steering mode information | | | | | | | | octet s\* |

Figure 6.1.3.2-3: Access selection descriptor

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

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Precedence value of an ATSSS rule (octet a+3) | | | | | | | | | | | | | |
| 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. | | | | | | | | | | | | | |
|  | | | | | | | | | | | | | |
| Traffic descriptor (octets a+6 to s-4) | | | | | | | | | | | | | |
| 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 identifier  Bits | | | | | | | | | | | | | |
| **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 | 1 | 0 | 0 | 0 | 0 | | 0 | |  | | OS App Id type | |
| All other values are spare. If received they shall be interpreted as unknown. | | | | | | | | | | | | | |
|  | | | | | | | | | | | | | |
| Length of access selection descriptor (octet s-3) | | | | | | | | | | | | | |
| 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 | |
| All other values are spare. | | | | | | | | | | | | | |
|  | | | | | | | | | | | | | |
| Steering functionality (octet s-2) | | | | | | | | | | | | | |
| The steering functionality field shall be encoded by one octet (octet s-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 s-1) | | | | | | | | | | | | | |
| The steering mode descriptor field shall be encoded by one octet (octet s-1) 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 s) | | | | | | | | | | | | | |
| If the steering mode is defined as active-standby, octet s 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 s shall not be encoded. | | | | | | | | | | | | | |
|  | | | | | | | | | | | | | |
| If the steering mode is defined as load balancing, octet s 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 s 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. | | | | | | | | | | | | | |
|  | | | | | | | | | | | | | |
| 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]. | | | | | | | | | | | | | |

\* \* \* End of Change \* \* \* \*