**3GPP TSG-CT WG4 Meeting #110-eC4-223274**

**E-Meeting, 12th – 20th May 2022**

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| *CR-Form-v12.2* |
| **CHANGE REQUEST** |
|  |
|  | **29.244** | **CR** | **0644** | **rev** | **-** | **Current version:** | **17.4.0** |  |
|  |
| *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 |  | Radio Access Network |  | Core Network | **X** |

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|  |
| ***Title:***  | Outer Header Removal for PSA UPF  |
|  |  |
| ***Source to WG:*** | Ericsson |
| ***Source to TSG:*** | C4 |
|  |  |
| ***Work item code:*** | 5MBS |  | ***Date:*** | 2022-05-03 |
|  |  |  |  |  |
| ***Category:*** | **B** |  | ***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:*** | NOTE 1 in clause 8.2.64 requires:*The SGW-U/I-UPF shall store GTP-U extension header(s) required to be forwarded for this packet (as required by the comprehension rules of Figure 5.2.1-2 of 3GPP TS 29.281 [3]) that are not requested to be deleted by the GTP-U Extension Header Deletion field.*This requirement shall be extended to the PSA UPF as PSA UPF may receive GTP-U packets from the MB-UPF over N19 with GTP-U extension header - PDU Session Container. DL PDU SESSION INFORMATION frame.

|  |  |
| --- | --- |
|  Bits | Number of Octets |
| 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
| PDU Type (=0) | QMP | SNP | MSNP | Spare | 1 |
| PPP | RQI | QoS Flow Identifier  | 1 |
| PPI | Spare | 0 or 1 |
| DL Sending Time Stamp | 0 or 8 |
| DL QFI Sequence Number | 0 or 3 |
| DL MBS QFI Sequence Number | 0 or 4 |
| Padding  | 0-3 |

However. the PSA UPF shall not be considered as Intermediate Node, it may be instructed to modify some fields by the SMF, e.g. QFI, some field shall not be changed, e.g. DL QFI Sequence Number.

|  |  |
| --- | --- |
| 1 0 | Comprehension of this extension header is required by the Endpoint Receiver but not by an Intermediate Node. An Intermediate Node shall forward the whole field to the Endpoint Receiver. |

|  |  |
| --- | --- |
| 1000 0101 | PDU Session Container. See NOTE 4. |

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| ***Summary of change:*** | Add new Note for Outer Header Removal to cover the case when a PSA UPF receives a GTP-U packet from a MB-UPF/or another PSA UPF with a GTP-U extension header - PDU Session Container |
|  |  |
| ***Consequences if not approved:*** | Ambiguous requirements may lead interoperability problem.  |
|  |  |
| ***Clauses affected:*** | 8.2.64 |
|  |  |
|  | **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 \* \* \* \*

### 8.2.64 Outer Header Removal

The Outer Header Removal IE type shall be encoded as shown in Figure 8.2.64-1. It contains the instructions to remove an Outer Header.

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | Bits |  |
|  | Octets | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
|  | 1 to 2 | Type = 95 (decimal) |  |
|  | 3 to 4 | Length = n |  |
|  | 5 | Outer Header Removal Description |  |
|  | 6 | GTP-U Extension Header Deletion |  |
|  | 7 to (n+4) | These octet(s) is/are present only if explicitly specified |  |

Figure 8.2.64-1: Outer Header Removal

The Outer Header Removal Description field, when present, shall be encoded as specified in Table 8.2.64-1.

Table 8.2.64-1: Outer Header Removal Description

|  |  |
| --- | --- |
| Outer Header to be removed from the incoming packet | Value (Decimal) |
| GTP-U/UDP/IPv4 (NOTE 1), (NOTE 2), (NOTE X) | 0 |
| GTP-U/UDP/IPv6 (NOTE 1), (NOTE 2) | 1 |
| UDP/IPv4 (NOTE 3, NOTE 6) | 2 |
| UDP/IPv6 (NOTE 3, NOTE 6) | 3 |
| IPv4 (NOTE 6) | 4 |
| IPv6 (NOTE 6) | 5 |
| GTP-U/UDP/IP (NOTE 4) | 6 |
| VLAN TAG POP (i.e. removal of one VLAN tag, S-TAG or C-TAG) (See NOTE 5) | 7 |
| VLAN TAGs POP-POP (i.e. removal of 2 VLAN tags, S-TAG and C-TAG) (See NOTE 5) | 8 |
| Spare, for future use. (See NOTE 7) | 9 to 255 |
| NOTE 1: The SGW-U/I-UPF shall store GTP-U extension header(s) required to be forwarded for this packet (as required by the comprehension rules of Figure 5.2.1-2 of 3GPP TS 29.281 [3]) that are not requested to be deleted by the GTP-U Extension Header Deletion field.NOTE 2: The SGW-U/I-UPF shall store the GTP-U message type for a GTP-U signalling message which is required to be forwarded, e.g. for an End Marker message.NOTE 3: This value may apply to DL packets received by a PGW-U for non-IP PDN connections with SGi tunnelling based on UDP/IP encapsulation (see clause 4.3.17.8.3.3.2 of 3GPP TS 23.401 [14]).NOTE 4: The CP function shall use this value to instruct UP function to remove the GTP-U/UDP/IP header regardless it is IPv4 or IPv6.NOTE 5: This value may apply to DL packets received by a UPF over N6 for Ethernet PDU sessions (see clause 5.8.2.11.3 of 3GPP TS 23.501 [28]). The VLAN POP operation removes the VLAN tag from the top of the VLAN stack (outer VLAN tag), i.e. it removes the S-TAG or C-TAG if the user plane packet contains only one VLAN tag, or it removes the S-TAG if the user plane packet contains both a C-TAG and an S-TAG.NOTE 6: This value may apply e.g. to DL packets received by a UPF (PDU Session Anchor) over N6, when explicit N6 traffic routing information is provided to the SMF (see clause 5.6.7 of 3GPP TS 23.501 [28]).NOTE 7: If the UP function receives an unknown value, it shall reject the request message with the cause set to "Mandatory IE incorrect" together with the Offending IE set to the IE type of Outer Header Removal IE.NOTE X: The PSA UPF shall store GTP-U extension header(s) required to be forwarded and that are not requested to be deleted by the GTP-U Extension Header Deletion field, e.g. the PDU Session Container received from the MB-UPF (for MBS session data) over N19mb interface, and modify it as instructed by the SMF, e.g. the PSA UPF may be instructed to modify the QFI field in the PDU Session Container extension header for the packets received from the MB-UPF. |

The GTP-U Extension Header Deletion field (octet 6) shall be present if it is required to delete GTP-U extension header(s) from incoming GTP-PDUs. Octet 6 shall be absent if all GTP-U extension headers required to be forwarded shall be stored as indicated in NOTE 1 of Table 8.2.64-1.

The GTP-U Extension Header Deletion field, when present, shall be encoded as specified in Table 8.2.64-2. It takes the form of a bitmask where each bit provides instructions on the information to be deleted from the incoming GTP-PDU packet. Spare bits shall be ignored by the receiver.

Table 8.2.64-2: GTP-U Extension Header Deletion

|  |  |
| --- | --- |
| Octet / Bit | GTP-U Extension Header to be deleted from incoming packet |
| 6/1 | PDU Session Container (NOTE) |
| NOTE: This value shall be used for data forwarding during a 5GS to EPS handover for a UPF that supports EPS-5GS interworking (see clause 5.17.3). |

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