3GPP TSG-SA WG2 Meeting #170 S2-2507799

Goteborg, Sweden, 25 – 29 August 2025

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| *CR-Form-v12.2* |
| **CHANGE REQUEST** |
|  |
|  | **23.501** | **CR** | **6416** | **rev** | **2** | **Current version:** | **19.4.0** |  |
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| *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:***  | Clarification on energy consumption information for Non-3GPP Access  |
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| ***Source to WG:*** | vivo |
| ***Source to TSG:*** | SA2 |
|  |  |
| ***Work item code:*** | EnergySys |  | ***Date:*** | 2025-08-10 |
|  |  |  |  |  |
| ***Category:*** | **F** |  | ***Release:*** | Rel-19 |
|  | *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)* |
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| ***Reason for change:*** | The Note 2 describing the behaviour for MA DPU sessions is incorrect. And should actually be normative text. |
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| ***Summary of change:*** | 1. The MA PDU sessions handling is clarified by making NOTE 2 technically correct and normative text.
2. Other editorial changes are proposed.
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| ***Consequences if not approved:*** | The description for energy consumption information for MA PDU session is not correct. |
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| ***Clauses affected:*** | 5.51.2.2.2 |
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|  | **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 \* \* \* \*

##### 5.51.2.2.2 Energy Consumption information collection from SMF

The serving SMFs are retrieved by the EIF from the UDM of the UE based on the provided input parameters including the UE ID and optional S-NSSAI or (S-NSSAI, DNN). Also, the EIF subscribes to the UDM to be notified with the applicable SMFs.

The EIF invokes Nsmf\_EventExposure\_Subscribe as defined in TS 23.502 [3] with the required granularities (UE ID, DNN/S-NSSAI, application information (e.g. Application Identifier, or Packet Filters)) to retrieve the information from SMF, which is shown in Table 5.51.2.2.2-1. The SMF receives the data volume of the required granularities from the PSA UPF. The SMF derives the gNB ID(s) from the AMF provided ULI as described in clause 4.3.2. If the I-SMF is involved in the PDU session, the SMF of PDU session requests I-SMF to report the current I-UPF ID and ULI and subsequent change of these entities.

The SMF then sends the collected data volume, along with the serving gNB ID(s) and (I-)UPF ID(s) to EIF for energy consumption calculation. And the information collected from SMF by EIF, is shown in Table 5.51.2.2.2-2. Upon release of a PDU session, the SMF terminates subscriptions related to the PDU session. The SMF periodically notifies EIF with the information at the end of each time interval T until the EIF unsubscribes as defined inTS 23.502 [3]. The SMF shall collect data volume only for the PDU session carried over the 3GPP Access. When the PDU session is over Non-3GPP Access type the SMF reports UL/DL Data volume in the measurement period equal to 0 (zero) and the gNB ID is not provided.

NOTE 1: The SMF can derive gNB ID(s) according to the AMF provided ULI as described in clause 4.3.2 of TS 23.502 [3].

In the case of MA PDU session, the SMF shall not include in the report the UL/DL Data volume related to the traffic over the Non-3GPP access leg and the serving gNB ID refers to the traffic over the 3GPP leg.

When the SMF receives the Nsmf\_EventExposure\_Subscribe for a Service Data Flow from the EIF, the SMF generates a URR for the Data Volume counting with a Periodic measurement threshold set according to the Timer interval T and associates the subscription from EIF to the generated URR. The SMF is then associating the generated URR to an appropriate PDR. SMF logic ensures that the PDRs and their precedence values are configured appropriately in the UPF so that both, the URRs for Data Volume counting for EIF and the traffic handling instructions derived from the existing PCC rules can co-exist and the traffic of the Service Data Flow is treated in the same way as before. For example, the SMF may behave as follows:

- If there is a PCC rule existing for that Service Data Flow, the SMF associates the generated URR with the PDR of that PCC rule.

- If there is no PCC rule for the Service Data Flow, the SMF generates a PDR for the Service Data Flow and associates the generated URR with that PDR. All other instructions of the PDR related to the match-all PCC rule are copied (so that the traffic of the Service Data Flow is treated in the same way as before).

- In all other cases, e.g. if the Service Data Flow is partially overlapping with an existing PCC rule (which can only occur when the subscription contains Packet Filters), the SMF may need to generate PDR(s), associate the generated URR with the(se) PDR(s) and copy all other instructions of the PDR related to the existing PCC rule so that both, the Data Volume counting for EIF and the traffic handling instructions derived from the existing PCC rule can be realized.

If the PCC rules are changed, the SMF shall again perform the above checks and actions.

When the SMF receives the Nsmf\_EventExposure\_Subscribe for the PDU Session from the EIF, the SMF associates the subscription from EIF to the PDU Session, generates a URR for the Data Volume counting (with a Periodic measurement threshold set according to the Timer interval T) and associates it with all PDRs of the PDU Session.

In both cases, the UPF will send the collected data volume information of this URR at the end of each Time interval to the SMF in a Usage Report (see clause 4.4.2.2 of TS 23.502 [3]). If there is a change in the user plane path (e.g. handover between gNBs or insertion/removal of I-UPF) during the Time interval, the SMF shall request the collected data volume information of this URR from the UPF. If this happens, the UPF will immediately send the collected data volume information to the SMF in a Usage Report (see clause 4.4.2.2 of TS 23.502 [3]) and the SMF shall then store this information together with the gNB ID and I-UPF ID that belong to the user plane path before the change happened.

Table 5.51.2.2.2-1: Information to SMF for user-plane energy consumption calculation

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| --- | --- |
| Information | Description |
| UE ID | SUPI. |
| S-NSSAI +DNN | Slice and DNN applicable to a PDU session. |
| IP 5-Tuple | IP-5-tuple. |

NOTE 2: The user-plane energy consumption information reporting interval from the SMFs is the network-wide configurable starting time and interval T.

Table 5.51.2.2.2-2: Information from SMF for user-plane energy consumption calculation

|  |  |
| --- | --- |
| Information | Description |
| UE IP address | UE IP address. |
| UE ID | SUPI. |
| S-NSSAI | Network Slice applicable to a UE |
| S-NSSAI +DNN | Slice and DNN applicable to a PDU session. |
| Packet Filters | Packet Filters as in clause 5.7.6 for IP or Ethernet traffic. |
| Application Identifier | Identification for the traffic of the service data flow. |
| List of Data Volume information | The data volume and the associated UPF(s) and gNB(s) serving the UE within the time interval. |
| > UL/DL Data Volume | The UL/DL Data Volume of a PDU Session identified by (UE-ID, S-NSSAI/DNN) or a Service Data flow (UE ID, S-NSSAI, DNN, Packet Filters/Application Identifier). |
| > (I-)UPF ID(s) | Identifier of any (I-)UPF(s) associated to a reported data volume used by a PDU Session identified by (UE-ID, S-NSSAI/DNN) or a Service Data flow (UE ID, S-NSSAI, DNN, Packet Filters/Application Identifier). |
| > gNB ID | Identifier of the gNB serving the UE. |
| Reference to Time Interval | Indicate the time interval of the collected information (e.g. time stamps). |

NOTE 3: Each entry of List of Data Volume information represents the serving gNB and UPF(s) corresponding to the same Data Volume regarding the required granularities. A new entry is added when the gNB or UPF(s) is changed.

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