**3GPP TSG-WG SA2 Meeting #166S2-24xxxxx**

**Orlando, USA, November 18 – 22, 2024**

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| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **23.502** | **CR** | **xxxx** | **rev** | **-** | **Current version:** | **19.1.0** |  |
|  | | | | | | | | |
| *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)*.* | | | | | | | | |
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| ***Proposed change affects:*** | UICC apps |  | ME |  | Radio Access Network |  | Core Network | **X** |

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|  | | | | | | | | | | |
| ***Title:*** | Network energy information exposure | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | CATT | | | | | | | | | |
| ***Source to TSG:*** | S2 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | EnergySys | | | | |  | ***Date:*** | | | 2024-11-08 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | B |  | | | | | ***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 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-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | Clause 8.1 of TR 23.700-66 includes the following conclusions for Key Issue #1 "Network energy related information exposure":  “1) A new network functionality is defined to collect and calculate the energy related information and exposes to the authorized consumer subject to operator's policy:  - If the authorized consumer is AF, the granularities include: per UE, per UE per application, per PDU session.  - If the authorized consumer is 5GC NFs, the granularities include: per application, per UE, per-UE-per-QoS flow, per PDU session.  NOTE 1: The new network functionality can be deployed standalone or co-located with other NFs under SA WG2 responsibility.  - The energy related information for the granularities above include:  - Energy consumption information;  - Renewable energy information.  2) The consumer NFs including 5GC NFs and /or AF, may request the energy consumption information exposure with reporting request e.g. Periodic reporting or Threshold based reporting. ”  Based on the conclusion, the definition of services provided by the new NF for network energy information exposure is proposed. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Add definition of services provided by the new NF for network energy information exposure. | | | | | | | | |
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| ***Consequences if not approved:*** | | Network energy information exposure by the new NF is not supported. | | | | | | | | |
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| ***Clauses affected:*** | | 5.2.x (new), 5.2.x.1 (new), 5.2.x.2 (new), 5.2.x.2.1 (new), 5.2.x.2.2 (new), 5.2.x.2.3 (new), 5.2.x.2.4 (new), 5.2.6.2.2 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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:*** | |  | | | | | | | | |

\* \* \* Start of Change \* \* \* \*

### 5.2.x EIF Services

#### 5.2.x.1 General

The following table shows the EIF Services and Service Operations:

Table 5.2.x.1-1: NF Services provided by the EIF

|  |  |  |  |
| --- | --- | --- | --- |
| Service Name | Service Operations | Operation  Semantics | Example Consumer(s) |
| **Neif\_EnergyInfo** | Subscribe | Subscribe/Notify | AF, PCF |
|  | Unsubscribe |  | AF, PCF |
|  | Notify |  | AF, PCF |

#### 5.2.x.2 Neif\_EnergyInfo service

##### 5.2.x.2.1 General

**Service Description**: This service enables the consumer to subscribe/unsubscribe for network energy related information, e.g. network energy consumption information per UE.

When the subscription for network energy related information is accepted by the EIF, the consumer receives from the EIF an identifier (Subscription Correlation ID) allowing to further manage (modify, delete) this subscription.

##### 5.2.x.2.2 Neif\_EnergyInfo\_Subscribe operation

**Service operation name:** Neif\_EnergyInfo\_Subscribe

**Description:** The consumer subscribes to receive network energy related information, or modify an existing subscription for network energy related information.

**Inputs, Required:** Network energy information type (e.g. network energy consumption information), Target of network energy reporting (GPSI, SUPI, External Group Identifier, Internal Group Identifier, or indication that any UE is targeted), Notification Target Address (+ Notification Correlation ID).

**Inputs, Optional:** Reporting granularity (per UE, per PDU Session, per QoS flow, per application), S-NSSAI, DNN, Application Identifier(s), Reporting mode (Periodic reporting or Threshold based reporting), Reporting periodicity, Reporting thresholds, Reporting time window, Area of Interest, Subscription Correlation ID (in the case of modification of the subscription).

**Outputs, Required:** When the subscription is accepted: Subscription Correlation ID, Expiry time (required if the subscription can be expired based on the operator's policy)*.*

**Outputs, Optional:** First corresponding network energy information is included, if available.

##### 5.2.x.2.3 Neif\_EnergyInfo\_Unsubscribe service operation

**Service operation name:** Neif\_EnergyInfo\_Unsubscribe

**Description:** the consumer deletes an existing subscription for network energy related information.

**Inputs, Required:** Subscription Correlation ID.

**Outputs, Required:** Operation execution result indication*.*

##### 5.2.x.2.4 Neif\_EnergyInfo\_Notify service operation

**Service operation name:** Neif\_EnergyInfo\_Notify

**Description:** The EIF reports to the consumer the network energy related information that has been subscribed.

**Inputs, Required:** Network energy related information, Notification Correlation Information.

**Inputs, Optional:** Time stamp, Validity period, Validity area.

**Outputs, Required:** Operation execution result indication*.*

**Outputs, Optional:** None.

\* \* \* Next Change \* \* \* \*

##### 5.2.6.2.2 Nnef\_EventExposure\_Subscribe operation

**Service operation name:** Nnef\_EventExposure\_Subscribe

**Description:** the consumer subscribes to receive an event, or if the event is already defined in NEF, then the subscription is updated.

**Inputs, Required:** (Set of) Event ID(s) as specified in clause 4.15.3.1 or Npcf\_PolicyAuthorization\_Notify, Naf\_EventExposure\_Subscribe and Neif\_EnergyInfo\_Subscribe service operation, Target of Event Reporting (GPSI, SUPI, UE IPv4 address(es), UE IPv6 prefix(es), External Group Identifier, S-NSSAI, Internal Group Identifier, UE addressing information (IP or MAC address), or indication that any UE is targeted), Event Reporting Information defined in Table 4.15.1-1, Notification Target Address (+ Notification Correlation ID), MTC Provider Information.

**Inputs, Optional:** Event Filter, (set of) External Application Identifier(s), Subscription Correlation ID (in the case of modification of the event subscription), Expiry time, list of group member UE(s) whose subscription to event notification(s) are removed or added for a group-based event notification subscription, operation indication (cancellation or addition), DNN, S-NSSAI, Idle Status Indication request (if UE reachability or Availability after DDN failure reporting is requested).

**Outputs, Required:** When the subscription is accepted: Subscription Correlation ID, Expiry time (required if the subscription can be expired based on the operator's policy)*.*

**Outputs, Optional:** First corresponding event report is included, if available (see clause 4.15.1). External Identifier (representing an AF specific UE Identifier).

\* \* \* End of Changes \* \* \* \*