**3GPP TSG CT WG1 Meeting #141-e C1-232062**

**E-meeting, 17th - 21st April 2023**

**3GPP TSG CT WG3 Meeting #127-e C3-231081**

**E-meeting, 17th - 21st April 2023**

**3GPP TSG CT WG4 Meeting #115-e C4-231179**

**E-meeting, 17th - 21st April 2023**

**Source: Intel**

**Title: Revised WID on CT aspects of enhancement of 5G UE Policy**

**Document For: Approval**

**Agenda Item: 18.2 (CT1) / 18.1.2 (CT3) / 5 (CT4)**

3GPP™ Work Item Description

Information on Work Items can be found at <http://www.3gpp.org/Work-Items>
See also the [3GPP Working Procedures](http://www.3gpp.org/specifications-groups/working-procedures), article 39 and the TSG Working Methods in [3GPP TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm)

Title: CT aspects of enhancement of 5G UE Policy

Acronym: eUEPO

Unique identifier: 980037

Potential target Release: Rel-18

# 1 Impacts

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Affects: | UICC apps | ME | AN | CN | Others (specify) |
| Yes |  | X |  | X |  |
| No | X |  | X |  | X |
| Don't know |  |  |  |  |  |

# 2 Classification of the Work Item and linked work items

## 2.1 Primary classification

### This work item is a …

|  |  |
| --- | --- |
|  | Feature |
| X | Building Block |
|  | Work Task |
|  | Study Item |

## 2.2 Parent Work Item

|  |
| --- |
| Parent Work / Study Items  |
| Acronym | Working Group | Unique ID | Title (as in 3GPP Work Plan) |
| eUEPO | SA2 | 970025 | Enhancement of 5G UE Policy |

### 2.3 Other related Work Items and dependencies

|  |
| --- |
| Other related Work /Study Items (if any) |
| Unique ID | Title | Nature of relationship |
| 940072 | Study on Enhancement of 5G UE Policy | SA2 Study Item |

# 3 Justification

SA2 has identified several gaps in the current design of UE Policy regarding the support for applications requiring VPLMN specific URSP for home-routed and LBO roaming scenarios, regarding the need to validate the URSP enforcement in the UE by the network, support for URSP provisioning in EPS, and support for operator-specific traffic categories in the traffic descriptor of URSP.

The stage 2 work of eUEPO started at SA#94-e with the SA2 study item on Enhancement of 5G UE Policy (FS\_eUEPO). The key issues, solutions, and conclusions of the SA2 study are captured in TR 23.700-85. The conclusions specified in TR 23.700-85 will be the base for the normative work in SA2.

Furthermore, a new SA2 work item “Enhancement of 5G UE Policy” (eUEPO) was approved by TSG SA at SA#97-e.

Considering the above, impacts on protocols and interfaces under CT WGs' responsibilities are foreseen. The CT WGs will need to carry out stage-3 work in Rel-18 to satisfy the normative requirements arising out of stage-2 work.

Based on progress in SA2, this WID will be updated as needed.

# 4 Objective

The objective of this work item is to specify the CT aspects of eUEPO in 5GS and EPS. The stage-3 work shall be started after the applicable normative stage-2 requirements in SA2 are available.

The stage-3 aspects will include the following (CT WGs impact areas will be identified based on the progress in the normative work in SA2):

NOTE: The CT WG impact for enhancing the URSP procedures to support scenarios from FS\_EDGE\_Ph2 where the EHE is accessed via an LBO PDU Session will be added based on the progress in the eUEPO normative work in SA2.

CT1:

* Enhancements for VPLMN specific URSP rules and new URSP evaluation trigger upon PLMN change.
1. Potential update to support a new URSP re-evaluation trigger in case of PLMN change.
2. Potential updates to support a list of PSIs associated to each VPLMN ID with roaming agreements sent by the PCF to the UE. The associated VPLMN ID(s) are sent to the UE together with the URSP.
* Support 5GC awareness of URSP enforcement in UE.
1. Update to the registration procedure for the UE to indicate to the network the UE support for reporting of URSP rule enforcement.
2. Updates to the PDU session establishment and modification procedure for the UE to report to the network the connection capabilities contained in the URSP TD for URSP rule enforcement.
* Enhancements for provisioning UE with consistent URSP across 5GC and EPC based on URSP provisioning via ePCO in EPS:
1. In EPS potential updates to the attach, PDN connectivity, default EPS bearer context activation, dedicated EPS bearer context activation, and EPS bearer context modification procedures to enable the UE policy delivery service using a new ePCO to transport the UE Policy Container.
2. Potential updates to the UE policy management procedures, and UE requested PDN connectivity procedure (in EPS) to enable the UE to indicate to the network its support for URSP Provisioning in EPS.
* Support for standardized and operator-specific traffic categories in the Connection Capability of Traffic Descriptor of URSP rule:
1. Updates to the URSP TD component type connection capabilities to enhance the support for standardized and operator defined traffic categories based on the conclusion on KI#4 in TR 23.700-85 clause 8.4.

CT3:

* Enhancement of URSP generation influence in HPLMN by V-AF or V-PCF in VPLMN and URSP evaluation trigger upon PLMN change based on the conclusion in TR 23.700-85 for KI#1.

a) Potential update to the NEF and UDR to support VPLMN specific service parameter provisioning for URSP guidance.

b) Potential update to the Npcf\_UEPolicyControl Service to support VPLMN specific URSP provisioning.

c) Potential updates to the UE Policy Association management procedures for the AMF to report PLMN change. Potential updates to the UE Policy Association management procedures for the AMF to report configured NSSAI and mapping to HPLMN S-NSSAI values.

- Support 5GC awareness of URSP enforcement in UE and new Analytics ID by NWDAF to monitor the traffic in one or multiple PDU Session.

a) Potential update to the Nnwdaf\_EventsSubscription and Nnwdaf\_AnalyticsInfo Service to support a new type of analytic event information for traffic monitoring.

b) Updates to the UE Policy Association management procedures for the AMF to indicate UE support for reporting of URSP rule enforcement.c) Updates to the SM Policy Association management procedures for the SMF to report connection capabilities for URSP rule enforcement and potential update to the UE Policy Association management procedures for the PCF of the PDU session to report connection capabilities for URSP rule enforcement.

* Enhancements for provisioning UE with consistent URSP across 5GC and EPC based on URSP provisioning via ePCO in EPS:
1. Updates to the SM Policy Association management and UE Policy Association management procedures to support transport of the UE Policy Containers between the SMF+PGW-C and the UE-PCF via the SM-PCF.
2. During 5GS to EPS mobility with N26 potential updates to the UE Policy Association management procedures for the AMF to request the UE-PCF to delay termination of the UE Policy Association for a configured period allowing the SM-PCF to initiate UE Policy Association Establishment procedure before the UE-PCF initiates UE Policy Association Termination procedure.
3. During EPS to 5GS mobility with N26 potential updates to the UE Policy Association management procedures to support the termination of the old UE policy association in EPS after the new UE policy association is established in 5GS.
4. Updates to the UE context policy control subscription information in UDR to include a new parameter URSP Provisioning Support Indication in EPS.
5. Updates to the Npcf\_SMPolicyControl Service to support the transport of the UE Policy Container.
6. Potential updates to the Npcf\_UEPolicyControl Service to support a new parameter ("5GS to EPS handover").

CT4

- Enhancements for provisioning UE with consistent URSP across 5GC and EPC based on URSP provisioning via ePCO in EPS:

1. Update to the UDR to support a new feature capability for the support of URSP provisioning in EPS.
* Support 5GC awareness of URSP enforcement in UE and new Analytics ID by NWDAF to monitor the traffic in one or multiple PDU Session based on conclusion.
1. Potential update to the UPF to support application traffic reporting that is not matched against allowed traffic to a specific S-NSSAI/DNN.
2. Potential update to the Nupf\_EventExposure Service API to support application traffic reporting that is not matched against allowed traffic to a specific S-NSSAI/DNN.

# 5 Expected Output and Time scale

|  |
| --- |
| New specifications {One line per specification. Create/delete lines as needed} |
| Type  | TS/TR number | Title | For info at TSG#  | For approval at TSG# | Rapporteur |
|  |  |  |  |  |  |

|  |
| --- |
| Impacted existing TS/TR {One line per specification. Create/delete lines as needed} |
| TS/TR No. | Description of change  | Target completion plenary# | Remarks |
| 24.008 | New PCO parameter to be included in ePCO IE for supporting UE policy delivery. | CT#103 (March 2024) | CT1 Responsibility |
| 24.301 | Updates to PDN connectivity, default EPS bearer context activation, dedicated EPS bearer context activation, and EPS bearer context modification procedures to enable the UE policy delivery. | CT#103 (March 2024) | CT1 Responsibility |
| 24.501 | Updates to UE policy management procedure to enable UE policy delivery in EPS. Updates to support URSP rule enforcement.  | CT#103 (March 2024) | CT1 Responsibility |
| 24.526 | Updates to the URSP TD component type to enhance the support for standardized and operator defined traffic categories. Potential update to support a new URSP re-evaluation trigger in case of PLMN change. Potential update to support VPLMN specific URSP. Updates to support URSP rule enforcement. | CT#103 (March 2024) | CT1 Responsibility |
| 29.512 | Updates to Npcf\_SMPolicyControl Service to enable UE policy delivery in EPS, and URSP rule enforcement. | CT#103 (March 2024) | CT3 Responsibility |
| 29.513 | Potential updates to SM Association management and UE Policy Association management procedures to enable UE policy delivery in EPS. Potential update to support VPLMN specific URSP provisioning. Potential updates to support URSP rule enforcement. | CT#103 (March 2024) | CT3 Responsibility |
| 29.519 | Updates to context policy control subscription information in UDR to enable UE policy delivery in EPS. Potential update to support VPLMN specific service parameter provisioning for URSP guidance. | CT#103 (March 2024) | CT3 Responsibility |
| 29.520 | Potential update to support a new type of analytic event information for traffic monitoring. | CT#103 (March 2024) | CT3 Responsibility |
| 29.522 | Potential update to support VPLMN specific service parameter provisioning for URSP guidance. | CT#103 (March 2024) | CT3 Responsibility |
| 29.525 | Updates to Npcf\_UEPolicyControl Service to enable UE policy delivery in EPS. Potential update to support VPLMN specific URSP provisioning, and URSP rule enforcement. | CT#103 (March 2024) | CT3 Responsibility |
| 29.244 | Potential updates to support application traffic related reporting. | CT#103 (March 2024) | CT4 Responsibility |
| 29.504 | Update to include a new feature capability for the support of URSP provisioning in EPS.  | CT#103 (March 2024) | CT4 Responsibility |
| 29.564 | Potential updates to the Nupf\_EventExposure Service to support application traffic related reporting. | CT#103 (March 2024) | CT4 Responsibility |

# 6 Work item Rapporteur(s)

Thomas Luetzenkirchen, Intel, (thomas.luetzenkirchen@intel.com)

# 7 Work item leadership

CT3

# 8 Aspects that involve other WGs

SA3 for any security aspects.

# 9 Supporting Individual Members

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| --- |
| Supporting IM name |
| Intel |
| Ericsson |
| Qualcomm Incorporated |
| Google Inc. |
| Apple |
| Huawei |
| Vodafone |
| NTT Docomo |
| Vivo |
| ZTE |
| Xiaomi |
| Charter |
| CATT |
| KDDI |
| MediaTek |
| InterDigital |
| NEC |
| Lenovo |
| OPPO |
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