**SA WG2 Meeting # S2-20xxxxx**

**Source: OPPO**

**Title: Solution for KI#8 UE assisted analysis for traffic routing**

**Document for: Approval**

**Agenda Item: x.x**

**Work Item / Release: FS\_eNA\_ph2 / Rel-17**

*Abstract of the contribution:* It is proposed that UE provides data related to usage of URSP to NWDAF. The NWDAF collects the data from UE and PCF, to derive the analytics for usage of network slice and usage of URSP rules.

# 1. Introduction

This solution is proposed for Key Issue #8

# 2. Discussion

The URSP is introduced to associate traffic to a PDU session corresponding to network slice. As illustrated in the figure below, when a traffic appears, the UE will evaluate if it is matched a URSP rule according to the precedence of URSP rule and if matched UE will try to associate the traffic according to the precedence of RSDs in the URSP rule.



Currently, based on existing URSP mechanism, the URSP will be delivered to UE and UE will just perform URSP evaluation as specified in TS 23.503 and TS 24.526. However, some of issues below may happen:

* The parameters (especially the Application Descriptor) in Traffic Descriptor may not be identified by UE, so that the UE just ignores the URSP rule. For example, the Application Descriptor is defined by MNO and some of the UE may not identify it.
* Based on the URSP evaluation, the UE tries the URSP rules and the RSDs within a URSP rule in priority, the RSP rules or RSDs may be used by UE upon different network situation, UE’s priority, etc.
* When URSP is updated, the enforcement of updated URSP is implementation specific. E.g. some of UEs may enforce the new URSP immediately, some may enforce it when the UE goes into CM-IDLE.

**Observation-1: All the bullets mentioned above are normal and allowed by UE evaluation and the UE does not inform the network.**

Since the usage of URSP rule is only aware by UE (neither operator nor application server aware the situation), it will be helpful that the UE provides the usage of URSP rules so that the NWDAF can have analysis to guarantee a better user experience, e.g. NWDAF know whether the UE is always using the most prioritized URSP rule/RSD for a certain traffic flow, or adjust some improper URSP rule which the Traffic Descriptor can never be matched by UEs.

**Observation-2: only the UE knows the usage of URSP rule. Both the core network and Application server has no idea of which URSP rules is adopted by UE and whether the URSP rule is provisioned improperly.**

**Proposal: it is proposed that UE provides data related to usage of URSP to NWDAF.**

# 3. Proposal

The following changes are proposed for TR 23.700-91.

**\* \* \* \* Start of Change (All new text) \* \* \* \***

## 6.X Solution #X: UE assisted analysis for unexpected URSP behaviour

### 6.X.1 Description

#### 6.X.1.1 General

This solution is proposed to address KI#8.

It is proposed that UE provides data related to usage of URSP to NWDAF. To achieve it, the UE includes the data into a container and use the NAS message (e.g. registration request) to send the container to NWDAF.

The NWDAF collects the data from UE and PCF, to derive the analytics for usage of network slice and usage of URSP rules.

#### 6.X.1.2 Input data

To analyse the usage of URSP rule,

the following data may need to be collected from UE to NWDAF:

- The Traffic descriptor and RSDs of URSP rules which is being used by UE

 - Whether the updated URSP rules have been enforced

the following data may need to be collected from PCF or AF:

- The mapping between traffic descriptor and the Application(s);

Note: the Application can be referred by application id

- The URSP rules distributed to UE

#### 6.X.1.3 Output Analytics

NWDAF can analyse the data collected from UE, and NFs and make the output as below:

Table 6.X.1.3-1: statistics for UE’s usage of URSP

|  |  |
| --- | --- |
| Information | Description |
| Analytics for usage of network slice  |
| Whether a network slice (S-NSSAI) for an application is used for UEs  | Identification of abnormality related to delay in registration |
| Which percentage of UEs are using the network slice corresponding to the application  | Identification of abnormality related to no network coverage |
| How long on average that a network slice corresponding to the application is used for a UE | Identification of abnormality related to incorrect or sub-optimal RAT Retainability |
| Analytics for usage of URSP rules |
| Whether and how long on average for a URSP rule UE uses | Some URSP rules may never be used by UE and some traffic descriptor (e.g. application descriptor) may never be identified by the UEs from a certain UE vendor, the parameter is to illustrate this problem. |
| Whether and how long on average for each RSD in a URSP rule UE uses | Due to many scenarios like network situation, roaming agreement, UE level, different UE may be allowed to use different RSDs even they are installed by the same URSP rule. |

### 6.X.2 Impacts

### 6.X.3 Solution evaluation

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