**3GPP SA WG2 Meeting #161 S2-240**

**Athens, February 26 – March 1, 2024 (rev of S2-2402262)**

**Source: Ericsson**

**Title:** **KI #2, New Solution: Device ID(s) for AIoT Devices**

**Document for: Approval**

**Agenda Item: 19.14**

**Work Item / Release: FS\_AmbientIoT / Rel-19**

*Abstract of the contribution: The contribution discusses and proposes a new solution for Ambient IoT device IDs.*

**1. Introduction**

Ambient IoT devices are IoT devices powered by energy harvesting, being either battery-less or with limited energy storage capability (e.g. using a capacitor). It can have, e.g., lower complexity, smaller size, reduced capabilities and lower power consumption than previously defined 3GPP IoT devices. The data rate of Ambient IoT devices is usually low.

In KI#2 of TR 23.700-13 v0.1.0, the study objectives include:

- Study how to identify Ambient IoT Device or group of devices and how to format the identifier.

This pCR proposes a solution to study the aspects above.

**2. Proposal**

It is proposed to agree the following changes to 3GPP TR 23.700-13 v0.1.0:

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

## 6.0 Mapping of Solutions to Key Issues

Table 6.0-1: Mapping of Solutions to Key Issues

|  |  |
| --- | --- |
|  | Key Issues |
| Solutions | Key Issue #1 | Key Issue #2 | Key Issue #3 |
| #1 |  |  |  |
| #2 |  |  |  |
| #X |  | X |  |

\* \* \* Next of Change (ALL TEXTS ARE NEW) \* \* \* \*

## 6.X Solution #X: Device ID(s) for AIoT Devices

### 6.X.1 Description

This solution addresses device ID aspect of Key Issue #2.

The intention of this solution is to analyze whether different identifies for UEs are needed for AIoT devices, and also look into how those identifiers should be defined for AIoT devices. D(same or similar as used for 5GS or new ones e.g. one ID for functionalities where 5GS uses more than one ID) could

NOTE: The device ID proposal in this solution does not mandate the usage of the device IDs, does not restrict other device ID proposals or other mechanism proposed in other solutions.

In 5GS, there are the following identifiers which are described in TS 23.501 [4]:

* Subscription Permanent Identifier (SUPI)
* Subscription Concealed Identifier (SUCI)
* Permanent Equipment Identifier (PEI)
* 5G Globally Unique Temporary Identifier (5G-GUTI)
* Generic Public Subscription Identifier (GPSI)

Internal-Group Identifiers and External-Group Identifiers are used to identify a group of UEs.

To be able to perform authentication and authorization procedures in 5GS, it is necessary to introduce SUPI like and SUCI like IDs for AIoT devices. The SUCI like AIoT device ID is a concealed format of SUPI like AIoT device ID, which is used to transmit the device ID from AIoT devices towards network, similar as SUCI in registration request.

The SUPI like AIoT device ID and SUCI like AIoT device ID should contains the following parts:

* Network ID: the network which hosts the device credentials, possibly including routing information.
* Unique ID: The unique ID within the network which hosts the device credentials.

NOTE: It is assumed that the Network ID is sent in cleartext while the Unique ID can be protected (concealed).

Editor's note: Further content and details of the SUPI/SUCI like AIoT device ID is FFS, including whether one or multiple IEs are used.

For 5G-GUTI like AIoT device ID, similar as 5G-GUTI, is allocated by the CN after authentication and authorization. The 5G-GUTI like AIoT device ID is passed from CN towards an AIoT device, and the AIoT device stores it and then use it in the following communication towards network to identify the authenticated AIoT device.

Depending on AIoT device capabilities, the 5G-GUTI like AIoT device ID can be used.

Editor's note: Further content and details of the 5G-GUTI like AIoT device ID, including whether one or muliple IEs are used.

The PEI is an identifier of the ME and is used e.g. to check whether the ME been stolen etc.

Editor's note: It is FFS whether PEI like AIoT device ID is needed or not. And if needed, the content and details are FFS.

To be able to communicate with external AF, a GPSI like AIoT device ID needs to be introduced. It is the NEF which perform the mapping between the SUPI like AIoT device ID and GPSI like AIoT device ID. The AF utilizes the GPSI like AIoT Device ID in requests towards the CN, and the NEF maps it to the SUPI like AIoT device ID, which is used inside CN. And when the CN responds or notifies the AF, the NEF maps the SUPI like AIoT device ID back to GPSI like AIoT device ID.

Editor's note: Further content and details of the GPSI like AIoT device ID, including whether one or muliple IEs are used and whether GPSI can be used as is.

Regarding the group of AIoT devices, Internal Group Identfier and External Group Identifier can be reused. And the NEF can perform the mapping between the Internal Group Identifiers and External Group Identifiers.

Editor's note: It is FFS whether the differentiation of Internal Group Identifier and External Group Identifier is needed or not.

### 6.X.2 Procedures

Editor's note: It is FFS whether there is procedure impact, e.g., what IDs are used in what procedures.

### 6.X.3 Impacts on services, entities and interfaces

Editor's note: The services, entities and interfaces are FFS.

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