**3GPP T****SG-RAN WG3 Meeting #126 R3-247795**

**Orlando, Florida, U.S., 18th – 22nd November 2024**

**Agenda Item: 16.3**

**Source: Moderator (Ericsson)**

**Title: [TP for TR 38.769] CB:#AIoT2\_SignallingFlow**

**Document for: Discussions & Approval**

# 1 Introduction

This TP represents the result of offline discussion on AIoT2\_SignallingFlow during RAN3#126.

Starting point, as tasked during the online session were documents R3-247786 and R3-247314.

# 2 Text Proposal

<<<<<<<<<<<<<<<<<<<< First Change >>>>>>>>>>>>>>>>>>>>

##### 6.5.3.1.2 NAS/UP solution

Figure 6.5.3.1.2-1: Message flow A-IoT Inventory in Topology 2 - NAS/UP based solution

0a. The AIoT CN requests AIoT session resources.

0b The AIoT enabled gNB coordinates AIoT radio resources and allocates AIoT radio resources to the AIoT enabled UE accordingly.

0c. The AIoT enabled gNB confirms the request for AIoT session resources.

NOTE 1: In step 0c, the AIoT-enable gNB can reject the request for AIoT session resource.

1. The AIoT CN sends an Inventory request message to the AIoT-enabled UE.

2. The AIoT-enabled UE(s) sends an Inventory response message to the AIoT CN.

NOTE 2: In step 2, the AIoT-enabled UE may instead fail the Inventory request.

3. The AIoT-enabled UE performes the inventory procedure towards the AIoT device(s).

4/4b. The AIoT-enabled UE may send one or multiple Inventory reports towards the AIoT CN including the received inventory result.

NOTE 4: Steps 4/4b may happen in parallel with Step 3 for different AIoT devices.

Editor’s Note 2: how and where to depict signalling suitable for triggering A-IoT RAN node functions for A-IoT radio resource management needs further discussions for direct communication between A-IoT CN and A-IoT-enabled UE.

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6.5.2.x1 Candidate procedures for A-IoT Command in Topology 1

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**Figure 6.5.2.x1-1: Message flow for A-IoT Command in Topology 1**

1. The Inventory procedures are performed in step 1, which are the same as in Figure 6.5.2.1-1 in step 1-4.

Editor’s Note 1: Step 1 is performed for the “A-IoT Inventory and Command” case. Whether and under which conditions step 1 may be skipped in case of “Command-only” and which consequences this would have for the overall message flow depends on discussions led by SA2, SA3 and RAN2.

2a. The A-IoT CN node sends a Command Request message to the A-IoT RAN.

2b. The A-IoT RAN node coordinates the usage of A-IoT radio resources and allocates AIoT radio resources for the AIoT command session.

3. The A-IoT RAN node performs A-IoT command procedures towards the A-IoT device over the A-IoT radio interface.

4. The A-IoT RAN node sends a Command Response message to the A-IoT CN, if any command result is received from A-IoT device, the A-IoT RAN node may include the command result in the Command response message.

NOTE 4: In step 4, the A-IoT RAN node may instead send a Command Failure message to the A-IoT CN indicating that the command procedure has failed.

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#### 6.5.3.x1 Candidate procedures for A-IoT Command for Topology 2

##### 6.5.3.x1.1 RRC solution



**Figure 6.5.3.x1-1: Message flow for A-IoT Command in Topology 2 (RRC-based solution)**

1. The Inventory procedures are performed in step 1, which are the same as in Figure 6.5.3.1-1 in step 1-4.

Editor’s Note 1: Step 1 is performed for the “A-IoT Inventory and Command” case, Whether and under which conditions step 1 may be skipped in case of “Command-only” and which consequences this would have for the overall message flow depends on discussions led by SA2, SA3 and RAN2.

2a. The A-IoT CN sends a Command Request message to the A-IoT enabled gNB.

2b. The A-IoT enabled gNB coordinates AIoT radio resources and allocates AIoT radio resources to the AIoT enabled UE accordingly.

2c. The A-IoT enabled gNB sends a RRC Command Request message to the A-IoT enabled UE.

Editor’s Note 1: RRC based communication, i.e. performing the Command procedure and allocation of AIoT radio resources, is only depicted schematically, details in RAN2 FFS.

3. The A-IoT-enabled UE performs A-IoT command procedures at A-IoT interface towards the A-IoT device over the A-IoT radio interface.

4a. A-IoT enabled UE sends a Command Response message to A-IoT enabled gNB, if the command result is received from A-IoT device, the A-IoT enabled UE may include the command result in the Command Response message.

4b. The A-IoT enabled gNB sends a Command Response message to the A-IoT CN, it may include the command result in the Command Response message, if any.

NOTE 5: In step 4b, the A-IoT enabled gNB may instead send a Command Failure message to the A-IoT CN indicating that the command procedure is failed towards the A-IoT device.

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#### 6.5.1.3 A-IoT radio resource allocation in case of NAS/UP based solutions

In NAS/UP based solutions, A-IoT radio resources are requested by the AIoT CN in advance to the NAS/UP based communication with the A-IoT device..

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