**3GPP TSG-RAN WG3 Meeting #126 R3-247902**

**Orlando, US, Nov 18- Nov 22, 2024**

**Agenda Item: 16.1**

**Source: CMCC**

**Title: CB: # AIoT4\_SIConclusionandTR**

**Document for: Approval**

# 1 Introduction

**CB: # AIoT4\_SIConclusionandTR**

**- Capture all the TPs agreed on AI16.2, AI16.3 and AI16.4, and cleanup all the Editor’s notes**

**- Draft the conclusion of this SI**

**- Send the LS to RAN1 together with the DraftTR**

(moderator - CMCC)

# 2 For the Chairman’s Note

**For topology 1, A-IoT RAN needs to store the A-IoT Device Identification received from the inventory request.**

**NOTE: Whether to interpret and process needs further discussion.**

**NOTE: For topology 1, whether device ID received from the device is sent transparently to the A-IoT CN by the A-IoT RAN depends on RAN2 and SA2.**

**NOTE: Whether command can be performed for a group of devices depends on RAN2, SA2 and SA3.**

**For topology 1, A-IoT RAN should be able to differentiate b/w command and inventory.**

**Whether the above descriptions apply to topology 2 needs further discussion, and is dependent on SA2 and RAN2.**

# 3 The Remaining Issue

Question 1: Whether A-IoT RAN needs to interpret/store/process the A-IoT Device Identification in the inventory request?

[QC] We need for SA2/SA3 final decision on Device ID security and encoding. So this can left for further discussion.

E///: Interpret do not know

Qual: Why store

HW: Store for paging, received in the inventory request.

Agreements: **For topology 1, A-IoT RAN needs to store the A-IoT Device Identification received from the inventory request.**

**NOTE: Whether to interpret and process needs further discussion.**

Question 2: Whether device ID received from the device is sent transparent or not by A-IoT RAN?

[QC] Same as above. Need to wait.

**NOTE: For topology 1, whether device ID received from the device is sent transparent or not depends on RAN2 and SA2.**

Question 3: It is FFS for command on a group of devices, or all devices?

[QC] RAN2 agreed that Command can be sent for more than 1 device. So we can refer to RAN2 text and not have any restriction in our TR. But this also needs SA2/SA3 conclusion

**NOTE: Whether to command on a group of devices depends on RAN2, SA2 and SA3.**

Question 4: Whether A-IoT RAN can remain agnostic of the type of request from the A-IoT CN (need to differentiate command and inventory).

[QC] For Topology 1, A-IoT RAN node should be able to differentiate b/w command and inventory (implicitly or explicitly). Signaling details TBD. For Topology 2, it needs further discussion depending on contents of UE request vs. CN request

**For topology 1, A-IoT RAN node should be able to differentiate b/w command and inventory.**

**Whether the above descriptions apply to A-IoT-enabled-gNB needs further discussion, which depends on SA2 and RAN2.**

# 4 Removal of Editor's Note

We prepare to remove the Editor’s Note listed below and we will discuss the reason to remove them respectively.

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| --- | --- | --- |
| 6.4 | **A-IoT RAN**: Hosts certain functions for A-IoT as part of the functional in RAN.  Editor’s Note 4: Further details regarding A-IoT functions hosted in the A-IoT RAN and the respective functional split to be decided by RAN2, RAN3 and SA2.  **A-IoT CN**: Hosts certain functions for A-IoT as of the functional in CN.  NOTE: the details of A-IoT CN are subject to SA2.  Editor’s Note 6: Further details regarding A-IoT functions hosted in the A-IoT CN and the respective functional split to be decided by RAN2, RAN3 and SA2. | The A-IoT functions have already been covered by existing discussion in RAN3 and SA2, i.e. reader selection, resource control. Change the definition for A-IoT RAN and A-IoT CN to identify the distinction, and no need to keep these two Editor’s notes. |
| 6.4 | **A-IoT radio**: Radio interface between A-IoT device and A-IoT RAN node in topology 1 and between A-IoT device and A-IoT-enabled UE in topology 2.  **Common reader function:** A function that communicates with the A-IoT device by means of A-IoT radio. | The aspects are in RAN1 and RAN2 scope, and nothing to be done in RAN3. Remove two Editor’s notes. |
| 6.4.1 | Editor’s Note 3: The A-IoT CN may include AMF and A-IoT related functions which is up to SA2 decision. | SA2 already made related interim conclusions in their TR, this EN can be updated to a Note. |
| 6.4.2 | Editor’s Note 1: Figure 6.4.2-1 doesn’t illustrate the protocol between A-IoT enabled UE and A-IoT CN, if needed, the figure needs to be revised in case such is defined by SA2. | The protocol between A-IoT enabled UE and A-IoT CN is out of RAN3 scope. |
| 6.4.2 | Editor’s Note 2: In Topology 2, the XX interface could be based on NG or a new interface carried over NG or a new interface. XX signaling could be transported via XX-C or XX-U, which is FFS. | Based on the SA2 progress, remove the FFS part and remaining part is not an Editor’s Note, which only reflects the discussion status of SA2. |
| 6.4.2 | Editor’s Note 3: The A-IoT CN could include AMF and A-IoT related functions, which is up to SA2 decision. | SA2 already made related interim conclusions in their TR, which can be updated to a Note. |
| 6.4.2 | Editor’s Note 4: The A-IoT enabled gNB performs radio resource management for A-IoT related radio resources, details are pending on RAN1 and RAN2 mechanisms. | Should be updated to a Note, and the first half states the agreements and the second half “details are pending on RAN1 and RAN2 mechanisms.” can be removed or change to “details subject to RAN1 and RAN2”. |
| 6.5 | Editor’s Note: Corresponds to the first RAN3 objective in the SID, to identify necessary impacts on signaling and procedures for CN-RAN interface. | In other sections of other WGs, the similar ENs to record objective within the SID have already been removed. |
| 6.5.3.1.1 | Editor’s Note 1: RRC based communication is only depicted schematically, details in RAN2 FFS.  Editor’s Note 2: Step 4a/4b between A-IoT-enable UE and A-IoT-enabled gNB can be refined by RAN2. | The Details of RRC impact is subject to RAN2 discussion, we should change this EN to a Note, and describe that the message flow for RRC based solution is only depicted schematically, details are subject to RAN2. |
| 6.9.x | Editor’s note: Corresponds to the third RAN3 objective in the SID, to identify potential solutions for locating an Ambient IoT device with no specification impact, e.g., reusing existing user location report, or minimal specification impact to convey location information to core network. | In other sections of other WGs, the similar ENs to record objective within the SID have already been removed. |

# 5 RAN3 Conclusions and Recommendations

The summary for RAN3 conclusions is described as follows:

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| Logical system architectures have been studied, , as documented in clause 6.4.  Impacts on CN-RAN interface, signaling and procedures have been studied to support A-IoT Inventory operation and Command operation for topology 1 and topology 2 respectively, as documented in clause 6.5.  Solutions for locating an Ambient IoT device with minimal specification impact are identified, as documented in clause 6.9. |

# 6 Reference

[1] R3-245849, (BL pCR to TR 38.769) Study on solutions for Ambient IoT in NR, Huawei, CMCC;