3GPP TSG-RAN WG3 #119-e R3-230904

Athens, Greece, 27th February - 3rd March 2023

Agenda Item: 13.1

Source: Qualcomm (Moderator)

Title: CB: #mIAB\_1\_LS: SoD Reply LS to SA2 LS in R3-230032

Document for: Discussion

# Introduction

This paper captures the following CB discussion:

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| **CB: # mIAB\_1\_LS**  **Converge on answers to points 1, 2, 6, 7 for LS in R3-230032. If possible, to converge on a reply LS**  **For point 6, the reply should capture that RAN3 will conduct further discussions.**  **For point 7, RAN3 should converge whether the requested functionality can be achieved in Rel-18.**  With respect to mobile IAB, for issues concerning the control of UE access to MBSR using CAG function no enhancement is needed and no replies are foreseen from RAN3 on this matter.  SoD in R3-230904  (Qualcomm) |

Actions requested by SA2 in LS R3-230032:

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| ***ACTION:*** *SA2 kindly ask RAN3 to take the above comments into account and provide feedbacks for point#1, #2, #6, and #7, and the conclusions on KI#7.* |

Deadline of the CB **Thursday, March 2, End of day.**

# For the Chairman’s Notes

**Proposal 11: RAN3 is still discussing procedures and configurations for mobile IAB and has so far not identified any new OAM configuration parameters. RAN3 will provide information on additional parameters to be configured on the mobile IAB by OAM, if any, when these discussions have been finalized.**

**Proposal12: RAN3 to reply on Point#2:**

**“Regarding TAC, RAN3 has agreed:**

***Capture on stage 2 that the TAC/RANAC broadcast by the mobile IAB-DU can be changed in order to reflect the mIAB-node’s physical location. It needs to be further discussed how the mobile IAB-DU’s TAC/RANAC is changed and what Stage 3 impacts are (if any).***

**RAN3 will inform SA2 on further progress regarding TAC for mobile IAB, if any.”**

**Proposal 13: RAN3 needs to conduct further discussions to converge on a solution. RAN3 will inform SA2 for any progress.**

**Proposal 14: “RAN3 believes that the functionality requested to provide UE location in point#7 can be accommodated within Rel-18.”**

**Proposal 15: RAN3 to not reply on conclusions on point #7.**

# Discussion

## Point #1

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| * *For point#1 (regarding KI#1), SA2 will work to ensure that the MBSR is able to establish a secure and trusted connection with OAM server in a serving PLMN. SA2 would like to ask RAN3 to provide information on additional parameters for mobile IAB if RAN3 has identified any.* |

RAN3 already replied to SA2 in a prior LS in R3-226048:

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| **RAN3’s feedback on point #1:** For the non-roaming case, RAN3 assumes that the OAM configures the mobile IAB-node in the same way as a Rel-16/17 IAB-node. The OAM-based parameter configuration is out-of-scope for RAN3. Some parameters may also be configured by the IAB-donor as specified in TS 38.473 and TS 38.331. RAN3 further achieved the following agreement:  **RAN3 to discuss which of the OAM-configured and network-configured parameters may be pre-configured at a mobile IAB-node, after a baseline procedure for IAB-DU migration is developed.**  The roaming case is out-of-scope for Rel-18 mIAB. Therefore, OAM-configuration and OAM-connectivity for roaming mobile IAB-nodes have not been discussed. |

RAN3 is presently discussing how mIAB-DU parameters will be configured. At this stage, we are not able to provide concrete answers to SA2.

**Proposal1: RAN3 to reply on Point#1:**

**“RAN3 is still discussing procedures and configurations for mobile IAB. RAN3 will provide information on additional parameters to be configured on the mobile IAB by OAM when these discussions have been finalized.”**

[Nokia]: agree.

[ZTE]: Since we are not sure whether there will be additional parameters for mobile IAB node via OAM, we suggest to add “if any”.

**“RAN3 is still discussing procedures and configurations for mobile IAB. RAN3 will provide information on additional parameters to be configured on the mobile IAB by OAM when these discussions have been finalized, if any.”**

**Ericsson:** rewording:

**RAN3 is still discussing procedures and configurations for mobile IAB and has so far not identified any new OAM configuration parameters. RAN3 will provide information on additional parameters to be configured on the mobile IAB by OAM, if any, when these discussions have been finalized.**

[Huawei]: Fine with Ericsson’s version

CATT: Ericsson’s rewording is ok.

[Xiaomi]ok with E///’s version.

[Samsung] OK with E///’s version

**Moderator:**

The Moderator doesn’t really understand why it takes such a long answer to convey such a simple message. However, the final Ericsson rewording looks fine.

**Proposal 11: RAN3 is still discussing procedures and configurations for mobile IAB and has so far not identified any new OAM configuration parameters. RAN3 will provide information on additional parameters to be configured on the mobile IAB by OAM, if any, when these discussions have been finalized.**

## Point #2

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| * *For point#2 (regarding KI#3), SA2 has concluded the study from SA2 perspective (as in clause 8.3 of TR 23.700-05v1.2.0). Corresponding system impacts of supporting dynamic TAC or static TAC were documented in clause 6.16.4 and 6.17.4. SA2 will align the normative specification of the work item based on RAN 2/3 feedback.* |

**Proposal2: RAN3 to reply on Point#2:**

**“Regarding TAC, RAN3 has agreed:**

***Capture on stage 2 that the TAC/RANAC broadcast by the mobile IAB-DU can be changed in order to reflect the mIAB-node’s physical location. It needs to be further discussed how the mobile IAB-DU’s TAC/RANAC is changed and what Stage 3 impacts are (if any).***

**RAN3 will inform SA2 on further progress regarding TAC for mobile IAB, if any.”**

[Nokia]: Please find our update above. There is no need to capture the outdated agreements.

[ZTE]: Agree with nokia to only capture the latest RAN3 agreements on TAC/RANAC in the reply LS.

**Ericsson:** same view as Nokia.

[Huawei]: Agree with Nokia.

CATT: OK with Nokia’s revision.

[Xiaomi] Ok with Nokia’s version

[Samsung] fine with Nokia’s version

**Moderator:**

We have agreement here:

**Proposal12: RAN3 to reply on Point#2:**

**“Regarding TAC, RAN3 has agreed:**

***“Capture on stage 2 that the TAC/RANAC broadcast by the mobile IAB-DU can be changed in order to reflect the mIAB-node’s physical location. It needs to be further discussed how the mobile IAB-DU’s TAC/RANAC is changed and what Stage 3 impacts are (if any).”***

**RAN3 will inform SA2 on further progress regarding TAC for mobile IAB, if any.”**

## Point #6

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| * For point#6 (regarding KI#5), based on the SA2 study, NRPPa triggered procedure for the LMF to obtain MBSR location information i.e., location and velocity at a specific scheduled time could be a good alternative to the GMLC based MT-LR solution. Additionally, SA2 would also like to allow the LMF to obtain the UE ID of the MBSR via NRPPa from the donor gNB. SA2 would like to ask RAN3 to consider supporting such solution within Rel-18 timeframe. |

There have been 4 contributions to R3#119 that discuss replies to SA2 on point #6 with the following proposals:

**R3-230187 (Xiaomi)**

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| **Proposal 4, RAN3 agrees GPSI can be used as IAB-MT UE ID within NG-RAN.**  **Proposal 5, RAN3 discuss how to provide and update the mapping relation between the cell identifies and GPSI considering all the scenarios of migration.**  **Proposal 6, RAN3 answers SA2 that RAN3 would like to support SA2’s conclusion and needs to further discuss the potential enhancements.** |

**R3-230228 (Qualcomm)**

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| **Proposal 1a: An optional Mobile-TRP-info IE carrying:**   * + **the GPSI of the mIAB-MT collocated with the TRP,**   + **the current geolocation of the TRP,**   + **the current velocity of the TRP,**   + **the timestamp of the geolocation and velocity measurement**   **to be added for each TRP in the following messages:**   * + **NRPPa TRP INFORMATION RESPONSE**   + **NRPPa MEASUREMENT RESPONSE**   + **NRPPa MEASUREMENT REPORT**   + **NRPPa MEASUREMENT UPDATE**   + **F1AP TRP INFORMATION RESPONSE**   + **F1AP POSITIONING MEASUREMENT RESPONSE**   + **F1AP POSITIONING MEASUREMENT REPORT**   + **F1AP POSITIONING MEASUREMENT UPDATE**   **Proposal 1b: RAN3 to reply to SA2 on point#6: “RAN3 can accommodate Point#6 within Rel-18. RAN3 will enhance NRPPa messages to the LMF and F1AP positioning messages to the gNB to optionally include mobile-TRP-specific information for each TRP reported. The mobile-TRP-specific information includes the GPSI of the mIAB-MT co-located with the TRP, the mobile TRP’s current geolocation and velocity, and the timestamp of the geolocation and velocity measurement. RAN3 expects that SA2 will follow up with the necessary enhancements defined in TR 23.700-05.”** |

**R3-230298 (Huawei)**

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| **Proposal 2：Before supporting the solution, RAN3 suggest SA2 should ask SA3 whether there is any security problem if using NRPPa procedure to enable the LMF obtaining the UE ID (GPSI) of the mobile IAB, e.g. the GPSI of IAB-MT will be forwarded from IAB-DU to CU.** |

**230390 (Ericsson)**

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| **Proposal 3: Add a new codepoint ‘mobile trp’ in the TRP Type IE in the TRP Information IE in clause 9.2.25 of TS 38.455 and clause 9.3.1.176 of TS 38.473.**  **Proposal 4: Add a new Velocity IE in the TRP INFORMATION RESPONSE messages in TS 38.455 and TS 38.473, with an equivalent codepoint in the request messages.**  **Proposal 5: No NRPPa enhancements are needed to support inter-CU migration.**  **Proposal 6: To support Option2 for MBSR positioning, add UE ID in the TRP INFORMATION RESPONSE TS 38.455 and TS 38.473 messages.**  **Proposal 6bis: The details of the UE ID, whether it is needed for both options and its encoding are FFS**  **Proposal 7: Discuss the support for the two solutions for MBSR positioning agreed by SA2 in CR for TS 23.273 in S2-2301478.** |

The following conclusions can be drawn from these contributions:

* All 4 contributions indicate that SA’2 requested enhancements to NRPPa and F1AP are feasible.
* There is overlap among the solutions proposed by the 4 contributions. However, there are also significant differences, which implies that more discussion is needed to converge on a solution.
* One contribution raises security-related issues in the transport of GPSI via F1AP/NRPPa.

In summary, while several companies believe that SA’2 requested enhancements can be done, RAN3 still needs to converge on a solution, and at present, it is not known if this can be achieved within the time available in Rel-18. We should communicate this notion to SA2. We should further include the security concerns seen by one company.

**Proposal3: RAN3 to reply on Point#6:**

**“RAN3 needs to conduct further discussions to converge on a solution. RAN3 will inform SA2 for any progress** One company in RAN3 suggests that SA2 to ask SA3 whether there is a security problem when the mIAB-MT’s GPSI is passed to the LMF via F1AP and NRPPa**”**

**Nokia: Why SA2 did not consider this issue? why need RAN3 decide/care that SA2 need to ask SA3? We do not see any security problem. Please note that SA2 agreed the 23.273 CR (S2-2301478) in Jan, and the agreed CR already include the TRP Information … procedure. So let’s stop the debate on the feasibility. (If companies have concern, please raise it in SA2). Please find our update above.**

[ZTE]: It is captured in the SA2 LS that “SA2 would also like to allow the LMF to obtain the UE ID of the MBSR via NRPPa from the donor gNB.”. From the text, we are not sure whether SA2 has concluded which ID is used for the UE ID of the mobile IAB node. Or is RAN3 supposed to discuss the details for the UE ID of the mobile IAB node and decide which ID is used. So we suggest to ask SA2 for more information on the UE IE of the mobile IAB node so that RAN3 could conduct further discussion.

**Ericsson:** Nokia’s changes are OK. We think that the GPSI is currently not available at the RAN.We would also like to add the following proposal for RAN3 discussion (not for the LS):

**Proposal: RAN3 to discuss the details of the UE ID, whether it is needed for both options for MBSR positioning, and its encoding.**[Huawei]: In our view, introducing GPSI in RAN message may have some privacy issue, but should be checked by SA3. We have never introduced GPSI transmission in F1AP. Either we check with SA3, or we inform SA2 the security concern before deciding to capture that. We prefer to keep the text “One company in RAN3 suggests that SA2 to ask SA3 whether there is a security problem when the mIAB-MT’s GPSI is passed to the LMF via F1AP and NRPPa”.

[Xiaomi]Nokia’s version looks good to us.

Reply to ZTE, it’s very clear in SA2’s TR and agreed CR S2-2301478, the UE ID of IAB-MT is GPSI.

For the privacy issue raised by HW, as we already discussed in our paper in R3-230187, according to the definition and usage of GPSI (i.e. it’s like a nick name of the UE used outside 3GPP network) and internal check with SA3, we believe there’s no privacy issue on GPSI.

[Samsung] Nokia’s version looks good to us

**Moderator:**

On UE ID issue: GPSI refers to an IE that can include various UE IDs.

On proposals outside LS: We can discuss this in the next meeting where we will try to find a solution for Point#6.

On privacy issue: We are not certain if SA2 has already investigated this issue. We are further not aware of any security issue (e.g., prior discussions), which could be a potential motivation to raise this point. Aside from that, we don’t have to tell SA2 how to do their job.

This leaves us with Nokia’s version for the proposal:

**Proposal 13: RAN3 needs to conduct further discussions to converge on a solution. RAN3 will inform SA2 for any progress.**

## Point #7

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| * *For point#7 (regarding KI#6), SA2 would like to clarify that additional information besides existing ULI from donor-gNB (as defined in Rel-17) is needed, so that the 5GC can understand that the existing ULI cannot be used directly. This is crucial for the support of services that rely on the cell ID to infer the UE locations, e.g. emergency services. Therefore, SA2 would like to request RAN3 to either confirm the support of additional ULI for the UE serviced by an MBSR or provide an alternative solution.* |

There have been 4 contributions to R3#119 that discuss replies to SA2 on point#7.

**R3-230187 (Xiaomi)**

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| **Proposal 7, RAN3 discuss how to provide the additional ULI of the UE served by mobile IAB.**  **Proposal 8, RAN3 agree that IAB-MT’s serving IAB-donor-CU provide the ULI of IAB-MT to IAB-DU’s serving IAB-donor-CU.**  **Proposal 9, RAN3 answers SA2 the solution agreed by RAN3 if any or discussion status.** |

**R3-230228 (Qualcomm)**

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| **Proposal 2a: The User Location Information IE in NGAP to be enhanced by including an optional NCGI for the mobile IAB-MT that is collocated with the UE’s mIAB-DU.**  **Proposal 2b: RAN3 to reply to SA2 on point#7: “RAN3 can accommodate point#7 within Rel-18. RAN3 will enhance the User Location Information IE in NGAP messages to the AMF to optionally include the NCGI of the cell, where the mIAB-MT, which is collocated with the UE’s mIAB-DU, is connected to.”** |

**R3-230298 (Huawei)**

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| **Proposal 3a：For the scenario that the mobile IAB-MT and mobile IAB-DU connects to different donor CU, the additional ULI (e.g. cell ID of the mobile IAB-MT) will be notified to the donor CU serving the UE (i.e. the F1 terminating donor).**  **Proposal 3b: RAN3 reply to SA2 on the conclusion for supporting additional ULI.** |

**230390 (Ericsson)**

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| **Proposal 8: Inform SA2 that, since RAN3 has agreed to pursue a dynamic TAC solution, the TAC of the mIAB-DU will reflect the location of the mIAB node, and thus no ULI enhancements are needed.** |

It seems that the requested enhancement is feasible and can be accommodated within Rel-18.

**Proposal4: RAN3 to reply on Point#7:**

**“RAN3 believes that the functionality requested to providing UE location in point#7 can be accommodated within Rel-18.”**

[Nokia]: this needs further discussion. In case IAB-MT’s CU and IAB-DU’s CU is different, this is not possible without enhancement. On the other hand, as commented by Ericsson, is it still needed considering RAN3 agreement on dynamic TAC?

[ZTE] On nokia’s comment, RAN3 already agreed that the TAC/RANAC broadcast by the mobile IAB-DU can be changed in order to reflect the mIAB-node’s physical location. So there is no problem with TAC. So we are not sure what needs to be considered on RAN3 agreement on dynamic TAC.

**Ericsson:** P4 is OK.

[Huawei]: ULI contains not only TAC but also NCGI. We need some further discussion on the details of the additional ULI solution or other alternative solutions, and then reply our views to SA2. Suggest some rewording as below:

**“RAN3 believes that the functionality requested to providing UE location in point#7 can be accommodated within Rel-18.”**

CATT: P4 is ok to us. Per the latest agreement, TAC broadcast by the mIAB-DU has to reflect the mIAB-node’s physical location and RAN3 will further discuss how to update the TAC of mIAB-DU. We think it’s sufficient to address SA2’s concern.

[Xiaomi]agree with HW.

[Samsung]: Suggest to modify proposal as “RAN3 will inform SA2 on further progress regarding the functionality requested in point#7, if any”.

**Moderator:**

We all know that MT and DU may be served by separate CUs, and therefore, the DU’s CU needs to somehow obtain the MT’s ULI. We all know that this needs more discussion, but we also know that this can be done without a problem. This is the only thing we are stating here.

P4 therefore becomes:

**Proposal 14: “RAN3 believes that the functionality requested to provide UE location in point#7 can be accommodated within Rel-18.”**

## Conclusions on Point #7

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| *Additionally, SA2 would like to further inform that SA2 has reached conclusions for KI#7 in SA2 study related to control of UE access to MBSR using CAG function. See more detailed text in clause 8.7 of the latest TR 23.700-05v1.2.0.* |

RAN3 agreed:

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| **With respect to mobile IAB, for issues concerning the control of UE access to MBSR using CAG function no enhancement is needed and no replies are foreseen from RAN3 on this matter.** |

**Proposal 5: RAN3 to not reply on conclusions on point #7.**

**[Nokia]: ok.**

**[ZTE] ok.**

**Ericsson: OK**

[Huawei]: ok

CATT: ok.

[Xiaomi] OK

[Samsung] OK

**Proposal 15: RAN3 to not reply on conclusions on point #7.**