**3GPP TSG-RAN WG3 Meeting #120 R3-23xxxx**

**Incheon, Korea, May 22 – 26, 2023**

**Agenda item:** 13.1

**Source:** Qualcomm Incorporated (Rapporteur)

**Title:** Offline discussion on Mobile IAB

**Document for:** Discussion

# 1 Introduction

This document contains a Rapporteur-initiated offline discussion on Rel-18 Mobile IAB.

# For the Chairman’s Notes

**The following is proposed:**

…

# 2 Discussion

AI 13.2

### Issue 1: mIAB-node integration: MT and DU can integrate to separate CUs

After Monday’s offline, we converged on:

**Proposal 1a: WA: The mIAB-DU and mIAB-MT can integrate at different CUs. This is based on the assumption that OAM indicates the DU’s CU to the mIAB-node.**

**Q1a: Any comments on this draft proposal:**

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| **Company** | **Comment** |
| **Ericsson** | Rewording:  **Proposal 1a: WA: The mIAB-DU and mIAB-MT can integrate at different CUs. This is based on the assumption that OAM configures at the mIAB-DU the donor CU for the mIAB-DU to connect to, and the parameters needed for the mIAB-DU to establish F1 connectivity to this donor CU.** |
| Nokia | Agree with Ericsson text |
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For further converged on a proposal prototype:

**Proposal 1b: WA: During network integration, the MT’s gNB-ID and MT’s UE XnAP ID can be passed to the DU’s CU via F1AP.**

Some companies felt that it would be beneficial capturing that the UE XnAP ID is passed transparently. For this, we need to also capture that RRC is used as well.

Further, for SA2’s request to enhance the UE’s ULI, we agreed in prior a meeting that the MT’s NCGI needs to be passed from MT’s CU to DU’s CU. It is therefore sufficient to just pass the MT’s NCGI, which contains the gNB-ID. In case the MT’s CU needs to know the explicit MT’s gNB-ID for to determine the Xn-C connection, it can derive it based on TS 38.300:

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| 15.3.4 Xn-C TNL address discovery …  The NG-RAN node may determine the gNB ID length of the candidate gNB based on, e.g.OAM configuration or UE reporting in ANR function. If the NG-RAN node is not able to make this determination, it may include the NR cell identifier in the UPLINK RAN CONFIGURATION TRANSFER message to the AMF. The AMF may, if supported, determine the target gNB ID by matching the NR cell identifier with a gNB ID of a gNB it connects to. |

We end up with the following draft proposal:

**Proposal 1b-new: During network integration, the mIAB-MT’s UE XnAP ID is transparently passed from the mIAB-MT’s CU to the mIAB-DU’s CU via the IAB-node using RRC and F1AP. The MT’s NCGI is passed to the mIAB-MT’s CU via F1AP.**

**Q1b: Any comments on this draft proposal:**

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| **Company** | **Comment** |
| **Ericsson** | OK |
| Nokia | We do not understand the last sentence. What is MT’s NCGI? Is it the NCGI of the IAB-MT’s serving(or parent) cell? But MT’s CU already know it during RRC, and does not need to use F1AP to know it. Is it mIAB-**DU**’s CU which requires to know the IAB-MT’s serving cell’s NCGI?  Reword it a little bit to make it clear:  **Proposal 1b-new: During network integration, the mIAB-MT’s UE XnAP ID is transparently passed from the mIAB-MT’s CU to the mIAB-MT via RRC, then from the co-located mIAB-DU to mIAB-DU’s CU via F1AP. The mIAB-MT’s NCGI is passed to the mIAB-DU’s CU via F1AP.** |
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### Issue 3: F1AP transport of F1-Setup Trigger and F1-Setup Outcome

We identified that two separate class-1 procedures are needed.

* One class-1 procedure is used to trigger F1-Setup (CU🡪IAB-node),
* A separate class-1 procedure is needed to report the successful outcome of the F1-Setup (IAB-node🡪CU).

It is necessary to have two separate procedures for this purpose since the first procedure is only needed in case F1-Setup if triggered by the source-DU’s CU. This first procedure is not needed in case the F1-Setup is indicated to the IAB-node via OAM. We should capture this in a proposal:

**Proposal 3a: One class-1 procedure is used by the source mIAB-DU’s CU to trigger the F1-Setup procedure, and another class-1 procedure is used by the mIAB-DU to report the outcome of the F1-Setup procedure to its CU.**

**Q3a: Any comments on this draft proposal:**

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| **Company** | **Comment** |
| **Ericsson** | OK, but rewording:  **Proposal 3a: One class-1 procedure is used by the source mIAB-DU’s CU to trigger the F1-Setup procedure, and, for OAM-configured triggering of F1 setup, another class-1 procedure is used by the mIAB-DU to report the outcome of the F1-Setup procedure to its CU.** |
| Nokia | In both cases, the source DU’s CU need to know the outcome of the F1 setup. For Ericsson text, does the response of the 1st class-1 procedure indicate the outcome of the F1 setup? If so, agree with the modification. |
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We did not converge if existing or new procedures should be used for this purpose. In case we use existing procedures, those would be the gNB-CU Configuration Update and gNB-DU Configuration Update procedures. We could try to narrow down the down in the following manner.

**Proposal 3b: RAN3 to decide if the** **gNB-CU Configuration Update and gNB-DU Configuration Update procedures are used for this purpose or if new procedures are introduced for this purpose.**

**Q3b: Any comments on this draft proposal:**

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| **Company** | **Comment** |
| **Ericsson** | **OK** |
| Nokia | Ok |
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We may want to add the following in the Chair notes:

**Proposal 3c: Add to Chair notes:**

**“To be continued:**

**Proponents of using the existing procedures should identify a precedence where an existing procedure is used to pass information that is no related to at least one of the end points of the procedure.**

**Proponents of introducing new procedures should discuss the technical benefits, if any, of using new over existing procedures in the present scenario.”**

**Q3c: Any comments on this draft proposal:**

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| **Company** | **Comment** |
| **Ericsson** | Makes sense, but is such a detailed TBC needed? |
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### Issue 4: DU migration: Do we need mapping from source to target cell IDs?

We converged that the source-DU’s CU needs to know the mapping between the source-DU’s cells and the target-DU’s cells so that it can initiate blind UE handover. Based on the discussion, this mapping may be needed, e.g., in case the cells reflect separate sectors of the DU, or in case only a subset of the cells are special cells.

**Proposal 4: The IAB-node to provide to the source DU’s CU the mapping between the source DU’s activated cells and the target DU’s activated cells.**

**Q4: Any comments on this draft proposal:**

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| **Company** | **Comment** |
| **Ericsson** | We are not against, but this needs some further discussion. The interplay with the baseline solution is unclear. Also, do we expect that an mIAB nide will really have more than one cell? |
| Nokia | Agree.  R16/17 IAB can have more than 1 cell. This should be the same for R18. |
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### Issue 6: Generation of F1-terminating CU’s UE XnAP ID.

We converged on the following open issue from last meeting:

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| **To be continued:**  **Discuss whether the mIAB-DU’s CU is allowed to generate an XnAP UE ID for an mIAB-MT even if it has never terminated the RRC connection of the mIAB-MT.** |

**Proposal 6: The DU’s CU can initiate the Xn TM Management Procedure pertaining to an mIAB-MT even though it has never had an RRC connection with this IAB-MT.**

**Q6: Any comments on this draft proposal:**

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| **Company** | **Comment** |
| **Ericsson** | **OK** |
| Nokia | Ok |
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**AI 13.3**

### Issue 7: NCGI reconfiguration

On NCGI reconfiguration, we converged on the following two draft proposals:

**Proposal 6a: The donor CU can reconfigure the mobile IAB-DU’s NCGI in F1 Setup Response based on a list of NCGIs configured on this donor CU via OAM or preconfigured. This should not affect the existing procedure of configuring NCGI of cells served by a stationary DU via OAM.**

**Proposal 6b: RAN3 to send an LS to SA5 and include proposal 6a as RAN3 agreement, and ask SA5 to provide feedback, if any.**

The LS will not be drafted until we have officially agreed on P6b in the online session.

**Q7: Any comments on this draft proposal:**

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| **Company** | **Comment** |
| **Ericsson** | If R3 is really going to go for this, we should discuss and describe in stage2 the interplay with the OAM-based approach for assigning the NCGIs to the mIAB.  R3 and S5 should also clarify whether the OAM needs to be aware that the NCGI has been overwritten. |
| Nokia | Current proposal does not include the NCGI configuration via OAM. Suggest change P6a to  **Proposal 6a: The mIAB-DU’s NCGI is configured by OAM, and it may be reconfigured by t~~T~~he donor CU ~~can reconfigure the mobile IAB-DU’s NCGI~~ in F1 Setup Response based on a list of NCGIs configured on this donor CU via OAM or preconfigured. This should not affect the existing procedure of configuring NCGI of cells served by a stationary DU via OAM.** |
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# References

1. Chairman notes, TSG-RAN WG3 Meeting #119bis-e, e-meeting, April, 2023.