**3GPP TSG-RAN WG3 Meeting #122 R3-23xxxx**

**Chicago, IL, November 13 - 17, 2023**

**Agenda item:** 13.1

**Source:** Qualcomm Incorporated (WI Rapporteur)

**Title:** Offline discussion on mIAB

**Document for:** Discussion

# 1 Introduction

This document includes a summary of a Rapporteur-initiated offline discussion on mobile IAB.

# 2 Proposals

The following is proposed:

Issue 0: Missing Stage-2 procedure and terminology issue

***Proposal 0-1: Capture the mIAB-MT RLF Recovery procedure via RRC Reestablishment in 38.401 section 8.YY****.*

***Proposal 0-2: Update the following in all BL CRs, as needed:***

* ***The Rel-17 term “non-F1-terminating donor” is not applicable to mobile IAB.***
* ***The term “RRC-terminating donor” should be used instead.***
* ***The definition for “F1-terminating donor” should not only refer to the Rel-17 boundary node but also to the mIAB-DU’s CU.***

***Proposal 0-3: For TP to 38.420, use R3-237411 as the baseline.***

Issue 1: Sequence of procedures for UE HO and IAB TMM in stage 2 of DU migration

***Proposal 1-1: The sequence of procedures for UE HO and IAB TMM of DU migration is up to implementation. Remove corresponding Editor’s Note in 38.401.***

***Proposal 1-2: Capture in BL CR to 38.401, section 8.YY.3 for DU migration that the source DU’s CU requests release of traffic offloaded to the MT’s CU via TMM.***

Issue 2: WA that BAP address is used to indicate mIAB-node

***Proposal 2: Turn the following WA into agreement: “Use the BAP address as the identifier for the MT in the initial TMM message sent by the DU’s CU to the MT’s CU.” Remove Editor’s Note in BL CR to TS 38.473 related to this WA.***

Issue 3: BAP address in UL F1AP messages

***Proposal 3: In BL CR to 38473, the 9.3.1.X3 IE with BAP address and gNB-ID of MT’s CU to be included in the F1 Setup Request and to replace the explicit gNB-ID for the MT’s CU. The procedure text to be updated accordingly. The semantics description of the IE to capture that the 9.3.1.X3 IE is used in case the MT’s CU is different from DU’s CU.***

Issue 4: “Authorized” indication by MT’s CU to DU’s CU

***Proposal 4a: Agree******TP to BL CR for TS 38.413 in R3-237200: Transfer of mobile IAB authorization state in NGAP DOWNLINK NAS TRANSPORT.***

***Proposal 4b: Add mIAB authorization status indicator in mIAB-MT’s Xn Context Retrieve Response message analogue to Xn HO Request message.***

***Proposal 4b-2: If P4b is agreed, use TP to 38.423 in R3-237431 as a baseline for stage 3.***

***Proposal 4c-1: Capture in BL CR to 38.401, section 8.9.x1 that, after receiving the ‘non authorized’ indication, the F1-terminating CU first sends the IAB TRANSPORT MIGRATION MODIFICATION RESPONSE message to the RRC-terminating CU to confirm the reception of the mIAB-node authorization status indication, and then performs the orderly F1 release.***

***Proposal 4c-2: Capture in BL CR to 38.401, section 8.9.X1, the following sequence: After the orderly release of F1, the DU’s CU initiates the IAB TRANSPORT MIGRATION MANAGEMENT Procedure toward the MT’s CU to indicate the release of all traffic. After traffic release, the MT’s CU removes the backhaul support.***

***Proposal 4d: RAN3 to decide whether MT’s CU sends an NGAP indication to AMF to inform that BH has been removed and F1 properly released (potentially SoH).***

***Proposal 4e: Capture in BL CR to 38.401, section 8.9.X1, the following behavior:***

* ***In case the authorization status is changed back from “non-authorized” to “authorized”, mIAB-DU integration follows the DU integration procedure as defined in section 8.12.X for network integration.***
* ***In case the mIAB-MT receives the authorization status change to “authorized” in short sequence after the prior authorization status change to “not authorized”, and the mIAB-MT-s CU has not yet received the confirmation of the orderly F1 release due to this prior status change, the mIAB-MT may send the authorization status “authorized” to the DU’s CU via the TM Modification Request. Upon reception of this indication, the DU’s CU may discontinue the orderly F1 release procedure.***

Issue 5: Support for dual connectivity

***Proposal 5: Dual-connectivity is not supported for the mobile IAB-MT.***

Issue 8: MT migration

***Proposal 8a: The target gNB shall ignore the PDU Session Resource Setup List IE and not take action to setup the PDU session, when the IAB-MT does not have PDU session.***

***Proposal 8b: Capture P8a, if agreed, in BL CR for 38.413 following TP in R3-237430.***

Issue 11: Retaining XnAP IDs

***Proposal 11a: For consecutive partial migration, the F1-terminating donor-CU retains the UE XnAP IDs that it allocated for the mobile IAB-MT as long as the corresponding mobile IAB-DU connects to this CU, and retains the UE XnAP ID allocated for the mIAB-MT by the RRC-terminating CU until it is notified that the mIAB-MT has been handed over to another CU.***

***Proposal 11b: For consecutive partial migration, the source donor CU of IAB-MT should retain the UE XnAP IDs allocated for the mobile IAB-MT as long as the mobile IAB-MT is connected.***

***Proposal 11c: Capture P11a and P11b, if agreed, in BL CR for 38.413 following TP in R3-237355.***

Issue 13: RACH-less HO

***Proposal 13a: Send Reply LS to RAN2 on support of RACH-less HO capturing the following as a baseline:***

***RAN3 identified the following issues:***

***(1) During DU migration, UE handovers may not only occur from the source logical DU’s cell but also from other cells to the target logical DU’s cell. RAN3 assumes that RACH-less handover can only be applied to those UEs that are handed over from the source logical DU’s cell. The target logical DU therefore needs to be able to derive from the information it receives during UE handover preparation, whether the UE is presently connected to the source logical DU.***

***(2) When the target logical DU configures the UE’s beam to be used in the target cell for RACH-less handover based on network-implementation-specific knowledge, it needs to identify the beam configuration this UE presently uses in the source logical DU’s cell. For this purpose, it needs to able to derive from the information it receives during UE handover preparation an identifier the UE uses in the source logical DU’s cell.***

***(3) When the target logical DU configures the UE’s beam to be used in the target cell for RACH-less handover based on legacy measurements, it needs to able to obtain the beam information the UE reported to the source logical DU’s CU in the measurement report.***

***RAN3 kindly asks RAN2 to verify that the above issues can be addressed based on the information contained in the RRC HandoverPreparationInformation that is passed during handover preparation to the target logical DU.***

Issue 12: TAC/RANAC reconfiguration

***Proposal 12a: RAN3 do decide whether TAC/RANAC of the mIAB-DU’s cell can also be obtained via the following options:***

* ***Configured via DU’s CU***
* ***Copied over from MT’s cell***
* ***Configured via MT’s CU (if different that MT’s cell)***

Issue 7: DU migration issues

***Proposal 7a: RAN3 to decide whether it is possible that triggers for DU-migration may be concurrently provided by both, the IAB-node’s OAM and the source mIAB-DU’s CU, and that this may result in conflicting DU migration indications (potentially SoH).***

***Proposal 7b: In case RAN3 has decided that such conflicting DU migration indications may exist, RAN3 to select between the following two options to resolve such conflicting DU migration indications (potentially SoH):***

***Option 1: Based on OAM configuration, the (source) mIAB-DU indicates in its F1 Setup Request message that OAM-triggered DU migration is preferred. The DU’s CU can overwrite this preference in the F1 Setup Response message with an indication that it itself will trigger DU migration.***

***Option 2: Both, OAM and source mIAB-DU’s CU can trigger DU migration. In case the trigger is first received from the CU, the mIAB-node ignores OAM-based triggers until DU migration has completed. In case the trigger is first received from OAM, the mIAB-node ignores CU-based triggers until DU migration has completed, and it reports the gNB-ID of target DU’s CU to the source DU’s CU in the MIAB F1 Setup Outcome Notification.***

Issue 10: Concurrent DU/MT migration

***Proposal 10: Capture in BL CR to 38401 that in case the mIAB-MT migration occurs concurrently with an ongoing mIAB-DU migration, both the source and the target mIAB-DUs should update their respective donor CUs with the gNB-ID of mIAB-MT's target CU and mIAB-MT's new BAP address.***

Issue 9: Served- cell/neighbor-cell indication

***Proposal 9a: Introduce a new attribute for Served Cell Information NR and Neighbour Information NR IEs in XnAP to indicate that the cell is a mobile IAB cell.***

Issue 14: mobile IAB supported indication in the NGAP NG SETUP RESPONSE message

***Proposal 14: Introduce a mobile IAB supported indication in the NGAP NG SETUP RESPONSE message.***

# 3 F2F Discussion

## Issue 0: Missing Stage-2 procedure and terminology issue

**Proposal 0-1: Capture the mIAB-MT RLF Recovery procedure via RRC Reestablishment in 38.401 section 8.YY**.

The term “non-F1-terminating donor” is used in Rel-17 to refer the boundary node’s donor that terminates RRC. For mIAB, this term cannot be reused since the mIAB-node is not referred to as a “boundary node”, and since the donor terminating RRC may be the same as the donor terminating F1. We will therefore use the term “RRC-terminating donor” for mIAB, instead of “non-F1-terminating donor”. Further, the term “F1-terminating donor” needs to be extended to mIAB-nodes since the IAB-node is not a boundary node.

**Proposal 0-2: Update the following in all BL CRs, as needed:**

* **The Rel-17 term “non-F1-terminating donor” is not applicable to mobile IAB.**
* **The term “RRC-terminating donor” should be used instead.**
* **The definition for “F1-terminating donor” should not only refer to the Rel-17 boundary node but also to the mIAB-DU’s CU.**

## Issue 1: Sequence of procedures for UE HO and IAB TMM in stage 2 of DU migration

The DU migration procedure in BL CR to 38.401 currently contains in Step 5:

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| --- |
| 5. UE HANDOVER, IAB TMM procedure between Target F1-terminating IAB-donor-CU and the RRC-terminating IAB-donor CU. |

The TP to the stage-2 BL CR in R3-235776 includes the following Editor’s Note:

|  |
| --- |
| Editor’s NOTE: The sequence of procedures of UE HO and IAB TMM procedures is FFS. |

As discussed in F2F offline, TMM procedure may not be required for each UE HO. Therefore, a specific sequence for UE HO and IAB TMM procedure cannot be defined, but should be left up to implementation.

**Proposal 1-1: The sequence of procedures for UE HO and IAB TMM of DU migration is up to implementation. Remove corresponding Editor’s Note.**

The present procedure is missing for the DU migration, that the source DU’s CU should request release of traffic offloaded to the MT’s CU via TMM.

**Proposal 1-2: Capture in BL CR to 38.401, section 8.YY.3 for DU migration that the source DU’s CU should request release of traffic offloaded to the MT’s CU via TMM.**

## Issue 2: WA that BAP address is used to indicate mIAB-node

Last meeting agreed the following WA:

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| --- |
| **WA: Use the BAP address as the identifier for the MT in the initial TMM message sent by the DU’s CU to the MT’s CU.** |

The TP to BL CR 38.473 in [R3-235918](file:///C%3A%5Ctemporary%5CRAN3%5CRAN3%20October%2023%5COutcome%5CTPs%5CInbox%5CR3-235918.zip) includes the following Editor’s Note:

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| Editor’s Note: it is a working assumption to use the BAP address as the identifier for the MT in the initial TMM message sent by the DU’s CU to the MT’s CU. |

**Proposal 2: Turn the following WA into agreement: “Use the BAP address as the identifier for the MT in the initial TMM message sent by the DU’s CU to the MT’s CU.” Remove Editor’s Note in BL CR to TS 38.473 related to this WA.**

## Issue 3: BAP address in UL F1AP messages

Since Rel-16, the F1 Setup Request contains the BAP address and defines the following behaviour:

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| If the *BAP Address* IE is included in the F1 SETUP REQUEST, the receiving gNB-CU shall, if supported, consider the information therein for discovering the collocation of an IAB-DU and an IAB-MT. |

The TP to BL CR 38.473 in [R3-235918](file:///C%3A%5Ctemporary%5CRAN3%5CRAN3%20October%2023%5COutcome%5CTPs%5CInbox%5CR3-235918.zip) introduces the RRC-terminating CU’s gNB-ID to the F1 Setup Request and defines the following behaviour:

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| --- |
| If the *RRC Terminating IAB-Donor gNB-ID* IE is included in the F1 SETUP REQUEST message, the gNB-CU shall, if supported, use this information for the subsequent IAB Transport Migration Management procedure as specified in TS 38.423 [28]. |

Present BL CR to 38473 uses explicit IEs for BAP address and gNB-ID of MT’s CU in F1 Setup Request, but a new IE, that includes both, BAP address and gNB-ID of MT’s CU, in GNB-DU Configuration Update Request. To align both messages, it is better to allow using the new IE also for the F1 Setup Request in case the MT’s CU is different from the DU’s CU.

**Proposal 3: In BL CR to 38473, the 9.3.1.X3 IE with BAP address and gNB-ID of MT’s CU to be included in the F1 Setup Request and to replace the explicit gNB-ID for the MT’s CU. The procedure text to be updated accordingly. The semantics description of the IE to capture that the 9.3.1.X3 IE is used in case the MT’s CU is different from DU’s CU.**

## Issue 4: “Authorized” indication by MT’s CU to DU’s CU

**Proposal 4a: Agree** **TP to BL CR for TS 38.413 in R3-237200: Transfer of mobile IAB authorization state in NGAP DOWNLINK NAS TRANSPORT.**

**Proposal 4b: Add mIAB authorization status indicator in mIAB-MT’s Xn Context Retrieve Response analogue to Xn HO Request.**

**Proposal 4c: Capture in BL CR to 38.401, section 8.9.X1, the following sequence: After the orderly release of F1, the DU’s CU initiates the TMM toward the MT’s CU to indicate the release of all traffic. After traffic release, the MT’s CU removes the backhaul support.**

**Proposal 4d: RAN3 to decide whether MT’s CU sends an NGAP indication to AMF to inform that BH has been removed and F1 properly released (potentially SoH).**

**Proposal 4e: Capture in BL CR to 38.401, section 8.9.X1, the following behavior for the scenario, where the AMF indicates to the MT’s CU that the mIAB-node is authorized again:**

* **In case the AMF’s re-authorization indication arrives at the MT’s CU before orderly F1 release has been completed, the MT’s CU sends the authorization status change to “authorized” to the DU’s CU via the TM Modification Request. In case the AMF’s re-authorization indication arrives after orderly F1 release, the mIAB-DU integration follows the DU integration procedure as defined in section 8.12.X for network integration.**

## Issue 5: Support for dual connectivity

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| * + The mobility of dual-connected IAB-nodes is down-prioritized.
 |

**Proposal 5: Dual-connectivity is not supported for the mobile IAB-MT.**

## Issue 6: Concurrent operation as mobile IAB-node and legacy IAB-node

The RAN3 chair notes include the following statement [1]:

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| **It is common understanding that a mIAB node cannot be supported by a non mIAB capable gNB.** |

In the last meeting, RAN2 discussed whether a node can concurrently operate as mIAB-node and as IAB-node. RAN2 achieved the following agreements [2]:

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| --- |
| * From R2 perspective It is not supported that Rel-18 mobile IAB-node concurrently operate as a Rel-16/17 IAB-node, as e.g. mobile-IAB doesn’t support child IAB nodes.
* This means that there are restrictions for the network in configuring concurrent use of R-18 mIAB feature(s) and rel-16/17 IAB features (details FFS).
* FFS if an IAB-node may send both MSG5 indications to the network, and the network decides (or if the IAB-node should decide).
 |

Open issues:

* Should the (m)IAB-node be allowed to simultaneously include both mIAB and IAB indicators in Msg. 5?
* If yes, how does the network select the operation mode?
* How is the operation mode indicated to the node?

During F2F offline discussion, companies we aligned that RAN3 should not pursue this issue until RAN2 has made progress on this matter.

## Issue 7: DU migration issues

**Proposal 7a: RAN3 to decide how to resolve reception of DU migration triggers from OAM and from the source DU’s CU with these triggers hold conflicting information about the target DU’s CU:**

* **Option 1: Based on OAM configuration, the (source) mIAB-DU indicates in its F1 Setup Request message that OAM-triggered DU migration is preferred. The DU’s CU can overwrite this preference in the F1 Setup Response message with an indication that it itself will trigger DU migration.**
* **Option 2: Both, OAM and source mIAB-DU’s CU can trigger DU migration. In case the trigger is first received from the CU, the mIAB-node ignores OAM-based triggers until DU migration has completed. In case the trigger is first received from OAM, the mIAB-node ignores CU-based triggers until DU migration has completed, and it reports the gNB-ID of target DU’s CU to the source DU’s CU in the MIAB F1 Setup Outcome Notification.**

**Proposal 7b: Capture RAN3’s decision on this matter in BL CRs to 38.473 and 38.401, section on DU migration.**

Issues identified by MITRE in R3-237469:

**Proposal 7c: For DU migration, capture in BL CR to 38401 in section on DU migration, that the MT’s CU might receive traffic offload requests for a UE from the target CU, while it still holds traffic offload from the source CU for the same UE, and that the MT’s CU can identify by implementation that such traffic offload from two CUs is due to DU migration.**

## Issue 8: MT migration

Based on R3-237430 (Nokia, Nokia Shanghai Bell, Huawei, ZTE):

**Proposal 8a: The target gNB shall ignore the PDU Session Resource Setup List IE and not take action to setup the PDU session, when the IAB-MT does not have PDU session.**

**Proposal 8b: Capture P8a, if agreed, in BL CR for 38.413 following TP in R3-237430.**

## Issue 9: Served- cell/neighbor-cell indication

Based on R3-237432, Nokia, Nokia Shanghai Bell.

Observation 2-1: The current Cause values in XnAP Handover Preparation Failure do not allow the source donor to conclude that the target cell requested in Handover Request is a mobile-IAB cell.

Observation 2-2: Exchanging the information about the mobile cells over Xn allows the source node to optimize IAB-MT measurement configuration, to eliminate useless IAB-MT measurement reporting and to avoid initiation of unnecessary HO procedures.

**Proposal 9a: Introduce a new attribute for Served Cell Information NR and Neighbour Information NR IEs in XnAP to indicate that the cell is a mobile IAB cell.**

**Proposal 9b: Capture P9a, if agreed, in BL CR for 38.423 following TP in R3-237432.**

## Issue 10: Concurrent DU/MT migration

Issue identified by MITRE in R3-237469:

**Proposal 10a: Capture in BL CR to 38401 that in case the mIAB-MT migration occurs concurrently with an ongoing mIAB-DU migration, both the source and the target mIAB-DUs should update their respective donor CUs with the gNB-ID of mIAB-MT's target CU and mIAB-MT's new BAP address.**

## Issue 11: Retaining XnAP IDs

Issues identified by Huawei in R3-237355

**Proposal 11a: For consecutive partial migration, the F1-terminating donor-CU retains the UE XnAP IDs allocated for the mobile IAB-MT by itself as long as the corresponding mobile IAB-DU connects to this CU, and retains the UE XnAP ID allocated for the mIAB-MT by the mIAB-MT’s CU until it is notified that the mIAB-MT has been handed over to another CU.**

**Proposal 11b: For consecutive partial migration, the source donor CU of IAB-MT should retain the UE XnAP IDs allocated for the mobile IAB-MT as long as the mobile IAB-MT is connected.**

**Proposal 11c: Capture P11a and P11b, if agreed, in BL CR for 38.413 following TP in R3-237455.**

## Issue 12: TAC/RANAC reconfiguration

**Proposal 12a: RAN3 do decide whether TAC/RANAC of the mIAB-DU’s cell can also be obtained via the following options:**

* **Configured via DU’s CU**
* **Copied over from MT’s cell**
* **Configured via MT’s CU (if different that MT’s cell)**

## Issue 13: RACH-less HO

**Proposal 13a: Send Reply LS to RAN2 on support of RACH-less HO capturing the following as a baseline:**

**RAN3 identified the following issues:**

**(1) During DU migration, UE handovers may not only occur from the source logical DU’s cell but also from other cells to the target logical DU’s cell. RAN3 assumes that RACH-less handover can only be applied to those UEs that are handed over from the source logical DU’s cell. The target logical DU therefore needs to be able to derive from the information it receives during UE handover preparation, whether the UE is presently connected to the source logical DU.**

**(2) When the target logical DU configures the UE’s beam to be used in the target cell for RACH-less handover based on network-implementation-specific knowledge, it needs to identify the beam configuration this UE presently uses in the source logical DU’s cell. For this purpose, it needs to able to derive from the information it receives during UE handover preparation an identifier the UE uses in the source logical DU’s cell.**

**(3) When the target logical DU configures the UE’s beam to be used in the target cell for RACH-less handover based on legacy measurements, it needs to able to obtain the beam information the UE reported to the source logical DU’s CU in the measurement report.**

**During UE handover preparation, the target logical DU receives the F1AP UE Context Setup Request message from the target CU containing the RRC container sent in the handover request. RAN3 kindly asks RAN2 to ensure that the above issues can be addressed through the information provided in this RRC container, and to get back to RAN3 in case explicit signaling via Xn or F1 is needed.**

# 4 Email Discussion

Issue 0: Missing Stage-2 procedure and terminology issue

**Proposal 0-1: Capture the mIAB-MT RLF Recovery procedure via RRC Reestablishment in 38.401 section 8.YY**.

**E///: We notice that RLF recovery is not a part of the WID, so just wondering is it still OK to support the scenario?**

*Moderator: The WID states: “*Define Procedures for migration/topology adaptation to enable IAB-node mobility*”. RLF Recovery via RRC Reestablishment is certainly covered by this objective.*

**Proposal 0-2: Update the following in all BL CRs, as needed:**

* **The Rel-17 term “non-F1-terminating donor” is not applicable to mobile IAB.**
* **The term “RRC-terminating donor” should be used instead.**
* **The definition for “F1-terminating donor” should not only refer to the Rel-17 boundary node but also to the mIAB-DU’s CU.**

**[Lenovo]: R3-237411 provides a TP for 38.420 to reflect P0-2. Suggest to use this TP as the start point.**

*Moderator: Yes, we can use this TP.*

*Moderator: In summary, we can keep P0-1 and P02 and include Proposal 0-3:*

***Proposal 0-1: Capture the mIAB-MT RLF Recovery procedure via RRC Reestablishment in 38.401 section 8.YY****.*

***Proposal 0-2: Update the following in all BL CRs, as needed:***

* ***The Rel-17 term “non-F1-terminating donor” is not applicable to mobile IAB.***
* ***The term “RRC-terminating donor” should be used instead.***
* ***The definition for “F1-terminating donor” should not only refer to the Rel-17 boundary node but also to the mIAB-DU’s CU.***

***Proposal 0-3: For TP to 38.420, use R3-237411 as the baseline.***

Issue 1: Sequence of procedures for UE HO and IAB TMM in stage 2 of DU migration

**Proposal 1-1: The sequence of procedures for UE HO and IAB TMM of DU migration is up to implementation. Remove corresponding Editor’s Note in 38.401.**

**Proposal 1-2: Capture in BL CR to 38.401, section 8.YY.3 for DU migration that the source DU’s CU should request release of traffic offloaded to the MT’s CU via TMM.**

[Huawei]: we still suggest to use "may" instead of "should", because, the MT's CU will release the backhaul resources if receiving the release request from the source F1 terminating donor, and these backhaul resources need to be re-established again based on request from the target F1 terminating donor. as an optimization, such release and re-configuration for the backhaul link of the MT's CU topology can be avoided, considering the MT's backhaul link not change during DU migration.

Proposal 1-2: Capture in BL CR to 38.401, section 8.YY.3 for DU migration that the source DU’s CU may request release of traffic offloaded to the MT’s CU via TMM.

[Samsung] I guess the intention of P1-2 is to indicate the source DU’s CU should trigger the request for release of traffic offloaded to the MT’s CU. However, it does not mention how does MT’s CU react to such request. If this is the intention, “Should ” should be OK. To address the concern from HW, we can further mention that the handling to the backhaul resource at MT’s CU is up to implementation. How about:

Proposal 1-2: Capture in BL CR to 38.401, section 8.YY.3 for DU migration that the source DU’s CU  should request release of traffic offloaded to the MT’s CU via TMM, and it is up to MT’s CU implementation on how to handle the backhaul resource configured for the traffic offloaded from DU’s CU.

**E///: We are OK with Huawei’s version, i.e., to replace ‘should’ in the original proposal with ‘may’. If we use ‘should’, then, the MT’s CU has no choice but to fulfill the release request from the DU’s source CU (because we do not have an IE called ‘resources not released’).**

[MITRE]: This was discussed yesterday. As captured in original proposal 1-2, Source DU’s CU should request release of traffic to clean up its own resources. However, MT’s CU knows the traffic has moved to the target DU’s CU during DU migration, and it does not need to release backhaul resources. We think the Samsung version of the proposal clarifies it.

CATT: Understand the motivation of HW for BH resource management. But RAN3 have ruled out the optimization on sharing the BH UL mapping information between the source and target logical DU, that means the target donor-CU should initiate the TMM for configuring the BH UL mapping on the target logical DU, as a baseline procedure. From source donor point of view, whether the BH resource is reused for the same UE is not known. To prevent the duplicated BH resources for the same UE, the source donor CU should initiate the TMM to release the BH resource after the UE context release on the source logical DU. So, both TMM procedures from source/target donor-CU are necessary.

*Moderator: As discussed in F2F, the source DU’s CU SHOULD inform the MT’s CU so that the MT’s CU knows that it can free up the resources. It reports back that it has released the resources. This is just an acknowledgement. The MT’s CU is always allowed to configure additional BH resources. To mellow down the harsh language implied by SHOULD, we can make it simply a statement rather than an order.*

***Proposal 1-1: The sequence of procedures for UE HO and IAB TMM of DU migration is up to implementation. Remove corresponding Editor’s Note in 38.401.***

***Proposal 1-2: Capture in BL CR to 38.401, section 8.YY.3 for DU migration that the source DU’s CU requests release of traffic offloaded to the MT’s CU via TMM.***

Issue 2: WA that BAP address is used to indicate mIAB-node

**Proposal 3: In BL CR to 38473, the 9.3.1.X3 IE with BAP address and gNB-ID of MT’s CU to be included in the F1 Setup Request and to replace the explicit gNB-ID for the MT’s CU. The procedure text to be updated accordingly. The semantics description of the IE to capture that the 9.3.1.X3 IE is used in case the MT’s CU is different from DU’s CU.**

[Huawei]:  this proposal is same as the proposal for Issue 3. Is the original intention for Proposal here is to turn the WA that using BAP address to be the identifier of MT into agreement?

[Nokia] this seems a copy&paste issue. There are 2 “proposal 3”.

**E///: indeed, this proposal should be: ”Turn into an agreement the following WA:….”**

*Moderator: Something went wrong here. It should indeed be “turn into an agreement,…”. The proposal is trivial, so we just keep it:*

***Proposal 2: Turn the following WA into agreement: “Use the BAP address as the identifier for the MT in the initial TMM message sent by the DU’s CU to the MT’s CU.” Remove Editor’s Note in BL CR to TS 38.473 related to this WA.***

Issue 3: BAP address in UL F1AP messages

**Proposal 3: In BL CR to 38473, the 9.3.1.X3 IE with BAP address and gNB-ID of MT’s CU to be included in the F1 Setup Request and to replace the explicit gNB-ID for the MT’s CU. The procedure text to be updated accordingly. The semantics description of the IE to capture that the 9.3.1.X3 IE is used in case the MT’s CU is different from DU’s CU.**

[ZTE] OK to use indentical IE in both F1 setup request and DU configuration update messages. Do we need to add some description regarding how to handle the legacy BAP address IE in the F1 setup request message, e.g., the BAP address IE is ignored if the RRC Terminating IAB-Donor Related Info IE is included.

And ZTE would like to volunteer to prepare the 38.473 TP (based on revision of R3-237199), since the proposed change is almost the same as the previous version the corresponding 38.473 TP during last meeting. Thanks!

[Huawei]: As an alternative solution, in R3-237612, we propose a simper change in the procedure text for F1 Setup to solve the co-location discovery issue, to avoid change on the tabular and ASN.1 part. The required change part is copied below.

 If the BAP Address IE is included in the F1 SETUP REQUESTwhile the RRC Terminating IAB-Donor gNB-ID IE is not present in the F1 SETUP REQUEST, the receiving gNB-CU shall, if supported, consider the information therein for discovering the collocation of an IAB-DU and an IAB-MT.

>>>>>>>>>>unchanged parts are skipped<<<<<<<<<<<

If the RRC Terminating IAB-Donor gNB-ID IE is included in the F1 SETUP REQUEST message, the gNB-CU shall, if supported, use this informationwith the BAP Address IE for the subsequent IAB Transport Migration Management procedure towards the RRC-terminating IAB-donor of the mobile IAB-node, as specified in TS 38.423 [28].

**If majority companies in favor of the solution proposed by Proposal 3, rather than such alternative solution, we can follow majority.**

[Samsung] We prefer to the solution given in P3 since we can avoid using one existing IE for two different purposes.

**E///: We prefer P3, it is more elegant than changing the normative text. Besides, Rel-18 has not been frozen yet.**

CATT: OK with P3. The stage-2 procedure text for the mobile IAB integration should be updated, i.e., clarifying in the DU integration step that the mobile IAB-node reports BAP address with the BAP address IE if the MT’s CU is same as DU’s CU, while reports BAP address as well as gNB-ID of the MT’s CU with the RRC Terminating IAB-Donor Related Info if the MT’s CU and Du’s CU are different.

Update the description of the RRC Terminating IAB-Donor Related Info to capture:

“This IE contains the information for the MT’s CU when the MT’s CU is different with the DU’s CU.”

Update the semantics description of BAP address IE to capture:

“Indicates a BAP address assigned to the IAB-node or to the mobile IAB-node when the MT’s CU is the same as the DU’s CU”.

***Moderator: It seems there is support for P3. We can discuss the exact rewording or the procedure in the CB.***

***Proposal 3: In BL CR to 38473, the 9.3.1.X3 IE with BAP address and gNB-ID of MT’s CU to be included in the F1 Setup Request and to replace the explicit gNB-ID for the MT’s CU. The procedure text to be updated accordingly. The semantics description of the IE to capture that the 9.3.1.X3 IE is used in case the MT’s CU is different from DU’s CU.***

Issue 4: “Authorized” indication by MT’s CU to DU’s CU

**Proposal 4a: Agree** **TP to BL CR for TS 38.413 in R3-237200: Transfer of mobile IAB authorization state in NGAP DOWNLINK NAS TRANSPORT.**

**Proposal 4b: Add mIAB authorization status indicator in mIAB-MT’s Xn Context Retrieve Response message analogue to Xn HO Request message.**

[Nokia]: We have a related TP R3-237431 for P4b.  So please consider “if P4b is agreed, RAN3 agree TP to BL CR for TS 38.423 in R3-237431.”

**E///: We notice that RLF recovery is not a part of the WID, so is it still OK to support the scenario?**

***Moderator: Again, the WID does not preclude using RRC Reestablishment as a form of mobility. P4a and P4b are fine. We can add P4b-2 to capture R3-237431 as the baseline.***

***Proposal 4a: Agree******TP to BL CR for TS 38.413 in R3-237200: Transfer of mobile IAB authorization state in NGAP DOWNLINK NAS TRANSPORT.***

***Proposal 4b: Add mIAB authorization status indicator in mIAB-MT’s Xn Context Retrieve Response message analogue to Xn HO Request message.***

***Proposal 4b-2: If P4b is agreed, use TP to 38.423 in R3-237431 as a baseline for stage 3.***

**Proposal 4c: Capture in BL CR to 38.401, section 8.9.X1, the following sequence: After the orderly release of F1, the DU’s CU initiates the TMM toward the MT’s CU to indicate the release of all traffic. After traffic release, the MT’s CU removes the backhaul support.**

**[Xiaomi] we’re ok for p4c, but we think the interaction procedure text should also be introduced in stage 3 spec in TS 38.423, an example can be following as captured in Annex A in R3-237384:**

Interaction with IAB Transport Migration Management procedure

After F1-terminating IAB-donor hand over all the UEs served by the mobile IAB-node and releases the F1 interface towards the mobile IAB-DU, it shall initiate Transport Migration Management procedure by sending the IAB TRANSPORT MIGRATION MANAGEMENT REQUEST message including the Traffic to Be Released Information IE, and the All Traffic Indication IE in the Traffic to Be Released Information IE shall be set to "true".

[Huawei]: regarding Xiaomi's comments, we think P4c looks clear enough to describe the procedure in stage 2. Do we really repeat the same thing in stage 3?

[Samsung] Share the similar view as HW. Since stage 2 will have the above clarification, text in stage-3 may not so necessary.

**E///: We first need to clarify what happens before this. Namely, when the MT’s CU indicates via TMM to the DU’s CU that the node is unauthorized, DU’s CU should not delay the response until after F1 has been release. It should ACK the indication first, then release F1 and then request the BH release. So, we need to clarify the content of the response message from the DU’s CU to MT’s CU, as per October FFS. The proposal is:**

* **Proposal 4c-2: Capture in BL CR to 38.401, section 8.9.x1 that, after receiving the ‘unauthorized’ indication, the F1-terminating CU first sends the IAB TRANSPORT MIGRATION MODIFICATION RESPONSE message to the RRC-terminating CU, to confirm the reception of the mIAB-node authorization status indication, and then performs the orderly F1 release.**

**Then regarding the present proposal, rewording is needed. The reason is that the formal requirement is that the CU serving an unauthorized MT should ‘ensure that the node does not serve any UEs’. This is accomplished by means of F1 removal, and the MT’s CU should be notified that the F1 has been removed. So:**

* **Proposal 4c-1: Capture in BL CR to 38.401, section 8.9.X1, the following sequence: After the orderly release of F1, the DU’s CU indicates the successful F1 release to the MT’s CU by using the TMM procedure to request the release of all traffic. After traffic release, the MT’s CU removes the backhaul support.**

CATT: OK with P4a-P4c. The same concern with HW. The procedure should be included in stage-2 spec.

Moderator: It seems that all companies are fine with stage 2. Most companies believe that stage 3 is necessary. Ericsson is right in that we should capture the reply to the TMModification Request. We should flip the numbering of the proposals. The original 4c should then also explicitly refer to the TMManagement procedure.

***Proposal 4c-1: Capture in BL CR to 38.401, section 8.9.x1 that, after receiving the ‘unauthorized’ indication, the F1-terminating CU first sends the IAB TRANSPORT MIGRATION MODIFICATION RESPONSE message to the RRC-terminating CU, to confirm the reception of the mIAB-node authorization status indication, and then performs the orderly F1 release.***

***Proposal 4c-2: Capture in BL CR to 38.401, section 8.9.X1, the following sequence: After the orderly release of F1, the DU’s CU initiates the IAB TRANSPORT MIGRATION MANAGEMENT Procedure toward the MT’s CU to indicate the release of all traffic. After traffic release, the MT’s CU removes the backhaul support.***

**Proposal 4d: RAN3 to decide whether MT’s CU sends an NGAP indication to AMF to inform that BH has been removed and F1 properly released (potentially SoH).**

**[Xiaomi] we think NGAP should also follow the same principle in XnAP to indicate the release work had been done to AMF.**

[Samsung] For this one, we are concerning why the AMF should be aware of the status of RAN side resource? Can someone further elaborate it?

**E///: This is needed. The problem is essentially equivalent to the one discussed on XnAP, so we should be consistent and follow the same principle – that the node that is supposed to perform an action related to de-authorization, notified that it may now perform it. To Samsung: this is not about indicting the RAN resource status, but rather about RAN telling to the AMF that the AMF may now deregister the UE without any consequences.**

Moderator: So indeed, it seems that RAN3 needs to decide. If necessary, via SoH.

***Proposal 4d: RAN3 to decide whether MT’s CU sends an NGAP indication to AMF to inform that BH has been removed and F1 properly released (potentially SoH).***

**Proposal 4e: Capture in BL CR to 38.401, section 8.9.X1, the following behavior for the scenario, where the AMF indicates to the MT’s CU that the mIAB-node is authorized again:**

* **In case the AMF’s re-authorization indication arrives at the MT’s CU before orderly F1 release has been completed, the MT’s CU sends the authorization status change to “authorized” to the DU’s CU via the TM Modification Request. In case the AMF’s re-authorization indication arrives after orderly F1 release, the mIAB-DU integration follows the DU integration procedure as defined in section 8.12.X for network integration.**

[Nokia]: It may be rare for above “**before**”, e.g. changed to “not authorized”, then change back to “Authorized” within a very short period. In case, it does happen, it can be left to implementation.

[Huawei]: our paper R3-237612 propose to add the mobile IAB authorization status in the IAB Transport Management Response message. Because in some scenario, e.g. the mobile IAB integration procedure or the authorization status is changed from not authorized to authorized, the MT's CU only know who is the DU's CU after receiving the IAB Transport Management Request message, and the corresponding response message is the first message send from the MT's CU to the DU's CU, if the mobile IAB authorization status can be included in such response message, the consequent  IAB Transport modification procedure can be avoided if the intention is only  providing authorization status. So, we add the following proposal 4f, and companies’ comments are welcome.

Proposal 4f: Add the mobile IAB authorization status in the IAB TRANSPORT MANAGAMENT RESPONSE message.

[Samsung] For this proposal, the behavior of DU’s CU is unclear. We may need clarify it, e.g., when re-authorization is received before completing orderly F1 release, DU’s CU can stop the UE handover.

**E///: We think that the re-authorization scenario is possible.**

CATT: Disagree with the last sentence. The MT’s CU can receive the authorization status only when MT is RRC connected to NW. But the mIAB-DU integration procedure is used when mIAB-MT has no RRC connection. While the mobile IAB turns from “not authorized” to “authorized”, it has already connected with the NW.  We don’t understand how the network integration procedure can be performed in this case. When the MT’s CU receives “authorization” status from AMF, the only thing needed is that it should ensure the allocation of the default BAP resource to the mIAB-node, so that F1 can be set up.

Propose to use the TP from our contribution R3-237615:

If the updated authorization status for the mobile IAB node is “authorized”, the F1-terminating donor may store it and stop those handovers for the UEs served by the mobile IAB-node due to the last status for the mobile IAB node is “not authorized”. The F1-terminating IAB-donor responds the RRC-terminating donor with an IAB TRANSPORT MIGRATION MODIFICATION RESPONSE message and the RRC-terminating donor will establish default backhaul resources (including BAP address, TNL address and default BAP configuration) for this mobile IAB-node if the RRC-terminating IAB-donor-CU has not established backhaul to the mobile IAB-node.

*The moderator believes that there is some support for the “before” scenario. However, we need to capture that the DU’s CU should discontinue the F1 release upon reception of this “authorized” indication. Further, we should first capture the general behavior and then the exception.*

***Proposal 4e: Capture in BL CR to 38.401, section 8.9.X1, the following behavior:***

* ***In case the authorization status is changed back from “non-authorized” to “authorized”, mIAB-DU integration follows the DU integration procedure as defined in section 8.12.X for network integration.***
* ***In case the mIAB-MT receives the authorization status change to “authorized” in short sequence after prior authorization status change to “not authorized” and the orderly F1 release has not yet been confirmed by the DU’s CU, the mIAB-MT may send the authorization status “authorized” to the DU’s CU via the TM Modification Request. Upon reception of this indication, the DU’s CU may discontinue the orderly F1 release procedure.***

Issue 5: Support for dual connectivity

***Proposal 5: Dual-connectivity is not supported for the mobile IAB-MT.***

Issue 8: MT migration

**Proposal 8a: The target gNB shall ignore the PDU Session Resource Setup List IE and not take action to setup the PDU session, when the IAB-MT does not have PDU session.**

**E///: The proposal is in the chicken and egg spirit. It should be reworded to mention the ‘no PDU session’ indication.**

**Proposal 8b: Capture P8a, if agreed, in BL CR for 38.413 following TP in R3-237430.**

The moderator does not understand E///’s comment. We keep P8a/b for now:

***Proposal 8a: The target gNB shall ignore the PDU Session Resource Setup List IE and not take action to setup the PDU session, when the IAB-MT does not have PDU session.***

***Proposal 8b: Capture P8a, if agreed, in BL CR for 38.413 following TP in R3-237430.***

Issue 11: Retaining XnAP IDs

**Proposal 11a: For consecutive partial migration, the F1-terminating donor-CU retains the UE XnAP IDs allocated for the mobile IAB-MT by itself as long as the corresponding mobile IAB-DU connects to this CU, and retains the UE XnAP ID allocated for the mIAB-MT by the mIAB-MT’s CU until it is notified that the mIAB-MT has been handed over to another CU.**

**Proposal 11b: For consecutive partial migration, the source donor CU of IAB-MT should retain the UE XnAP IDs allocated for the mobile IAB-MT as long as the mobile IAB-MT is connected.**

**Proposal 11c: Capture P11a and P11b, if agreed, in BL CR for 38.413 following TP in R3-237455.**

**[ZTE] R3-237455 is not related to mIAB, is it a wrong tdoc number?**

[Huawei]: The two proposal is copied from R3-237355, and the proposed change to capture the two proposals is for 38.401. So, the P11c can be updated with the correct information.

 **E///: rewording is needed: “the UE XnAP IDs allocated for the mobile IAB-MT by itself” - > “the UE XnAP IDs that it allocated for the mobile IAB-MT”**

*Moderator followed E///’s rewording, changed “mIAB-MT’s CU” to “RRC-terminating CU” and updated the tdoc number.*

***Proposal 11a: For consecutive partial migration, the F1-terminating donor-CU retains the UE XnAP IDs that it allocated for the mobile IAB-MT as long as the corresponding mobile IAB-DU connects to this CU, and retains the UE XnAP ID allocated for the mIAB-MT by the RRC-terminating CU until it is notified that the mIAB-MT has been handed over to another CU.***

***Proposal 11b: For consecutive partial migration, the source donor CU of IAB-MT should retain the UE XnAP IDs allocated for the mobile IAB-MT as long as the mobile IAB-MT is connected.***

***Proposal 11c: Capture P11a and P11b, if agreed, in BL CR for 38.413 following TP in R3-237355.***

Issue 13: RACH-less HO

**Proposal 13a: Send Reply LS to RAN2 on support of RACH-less HO capturing the following as a baseline:**

**RAN3 identified the following issues:**

**(1) During DU migration, UE handovers may not only occur from the source logical DU’s cell but also from other cells to the target logical DU’s cell. RAN3 assumes that RACH-less handover can only be applied to those UEs that are handed over from the source logical DU’s cell. The target logical DU therefore needs to be able to derive from the information it receives during UE handover preparation, whether the UE is presently connected to the source logical DU.**

**[Xiaomi] actually, we have different understandings, there’re two types of RACH-less, i.e. TA=0 and TA is not changed. If the coverage of the mobile IAB-cell is small (e.g. in the car), the TA can be 0, it means the RACH-less is not limited to the case that UEs are handed over from the source logical DU to target logical DU, but also can be applied to the UEs are handed over from non-mobile IAB cell to a mobile IAB cell, we can check this with RAN2.**

[Huawei]: Prefer the original description from the moderator, for the mIAB case, the RACH-less HO only applicable for the RRC connected UEs served by the mobile IAB. Besides, in case of PCI collision in mIAB, if the PCI change is done through activating a new cell with new PCI to serve the UEs, the RACH-less HO seems also applicable for such intra-CU HO case.

**[Huawei-2]: based on our above comment, suggest to change the last sentence to be : whether the UE is presently connected to the mobile IAB.**

**CATT: OK with (1).**

*The Moderator disagrees with Xiaomi. RAN2 does not support TA=0 for mIAB. We are also not discussing PCI. Therefore (1) remains unaffected.*

**(2) When the target logical DU configures the UE’s beam to be used in the target cell for RACH-less handover based on network-implementation-specific knowledge, it needs to identify the beam configuration this UE presently uses in the source logical DU’s cell. For this purpose, it needs to able to derive from the information it receives during UE handover preparation an identifier the UE uses in the source logical DU’s cell.**

[Huawei]: instead of UE identifier, another option is to indicate the Beam ID used in the source cell to the target logical DU. Propose the rewarding for the last sentence: For this purpose, it needs to able to derive from the information it receives during UE handover preparation an identifier the UE uses in the source logical DU’s cell, or the beam information assigned to the UE in the source logical DU’s cell.

[Samsung] We think an identifier could be a simple solution, which can be the gNB-DU UE F1AP ID. This information can help the target mIAB-DU to identify the UE context in source mIAB-DU. And, this ID is not only used for the RACH-less HO, it can be applied for normal HO as well.

[Nokia]: agree with Samsung. This is the last meeting, the most simple solution is to add a UE ID (e.g. DU F1AP ID assigned by source DU) in the Xn HO Req and F1, rather ask RAN2 to check/feedback in next meeting.

**CATT：OK with (2).But it can be combined in (3).**

*The Moderator disagrees with all comments. The RRC container in the HO request already includes the UE ID. No more discussion. We raise the issue but leave it up to RAN2 to confirm that there is no issue. Certainly not for RAN3.*

**(3) When the target logical DU configures the UE’s beam to be used in the target cell for RACH-less handover based on legacy measurements, it needs to able to obtain the beam information the UE reported to the source logical DU’s CU in the measurement report.**

**During UE handover preparation, the target logical DU receives the F1AP UE Context Setup Request message from the target CU containing the RRC container sent in the handover request. RAN3 kindly asks RAN2 to ensure that the above issues can be addressed through the information provided in this RRC container, and to get back to RAN3 in case explicit signaling via Xn or F1 is needed.**

**[Huawei]: Propose the following rewording to make it more clear for RAN2 check:**

When the target logical DU configures the UE’s beam to be used in the target cell for RACH-less handover based on legacy measurements, it needs to able to obtain the beam information the UE reported to the source logical DU’s CU in the measurement report.

During UE handover preparation, the target logical DU receives the F1AP UE Context Setup Request message from the target CU containing the RRC container HandoverPreparationInformation sent in the handover request. RAN3 kindly asks RAN2 to check ~~ensure~~ that the above issues can be addressed through the information provided in this RRC container, and to get back to RAN3 in case explicit signaling via Xn and/or F1 is needed.

[Samsung] If the gNB-DU F1AP UE ID at the source mIAB-DU is provided in HO request message, and such ID is further provided via the UE context setup request message to target mIAB-DU, all lower layer information at the source mIAB-DU can be known. There is no need to be provided in the HO preparation information.

[Nokia]: as explained above, we disagree with this last paragraph. There is no need to ask RAN2 to change the RRC. Please remember, this is the last meeting.

**CATT: Propose following rewording of (2) and (3) and adding (4):**

**(2) When legacy measurement result to the beams of target cell is included in the HO preparation information, the target logical DU configures the UE’s beam to be used in the target cell for RACH-less handover based on legacy measurements.**

**(3) When legacy measurement result to the beams of target cell is not included in the HO preparation information, the target logical DU configures the UE’s beam to be used in the target cell for RACH-less handover based on network-implementation-specific knowledge, it needs to identify the beam configuration this UE presently uses in the source logical DU’s cell. For this purpose, it needs to able to derive from the information it receives during UE handover preparation an identifier the UE uses in the source logical DU’s cell.**

**(4) RAN3 kindly asks RAN2 to ensure that the above issues (1) and (3) can be addressed through the information provided in this RRC container, and to get back to RAN3 in case explicit signaling via Xn or F1 is needed.**

[Huawei-2]: another issue we raised during the Monday’s offline session is: From the NW point of view, the RACH-less HO can be considered as completed when the target F1-terminating Donor-CU receives the RRCReconfigurationComplete message. And then, the target F1-terminating Donor-CU needs to inform the target logical DU of the RACH-less HO completion so that the target logical DU can send a PDCCH to UE (according to RAN2 agreement, this PDCCH addressing the UE’s C-RNTI in the target cell will schedule a new transmission to the UE), and then from UE side, the RACH-less HO is complete. So, suggest to add the 4th bullet below:

**(4) From the NW point of view, the RACH-less HO can be considered as completed when the target F1-terminating Donor-CU receives the RRCReconfigurationComplete message. And the target F1-terminating donor-CU needs to inform the target IAB-DU of the RACH-less HO completion.**

*Moderator’s view: Using RRC HanodverPreparationInformation as proposed by Huawei since it includes all the information above. Therefore, nothing needs to be done for RAN2, and neither for RAN3. Agree with Nokia that we should not offer any F1 or Xn changes at this stage of the WI. We should also slim down the final statement. It is not necessary to teach RAN2 how handover works.*

***Proposal 13a: Send Reply LS to RAN2 on support of RACH-less HO capturing the following as a baseline:***

***RAN3 identified the following issues:***

***(1) During DU migration, UE handovers may not only occur from the source logical DU’s cell but also from other cells to the target logical DU’s cell. RAN3 assumes that RACH-less handover can only be applied to those UEs that are handed over from the source logical DU’s cell. The target logical DU therefore needs to be able to derive from the information it receives during UE handover preparation, whether the UE is presently connected to the source logical DU.***

***(2) When the target logical DU configures the UE’s beam to be used in the target cell for RACH-less handover based on network-implementation-specific knowledge, it needs to identify the beam configuration this UE presently uses in the source logical DU’s cell. For this purpose, it needs to able to derive from the information it receives during UE handover preparation an identifier the UE uses in the source logical DU’s cell.***

***(3) When the target logical DU configures the UE’s beam to be used in the target cell for RACH-less handover based on legacy measurements, it needs to able to obtain the beam information the UE reported to the source logical DU’s CU in the measurement report.***

***RAN3 kindly asks RAN2 to verify that the above issues can be addressed based on the information contained in the RRC HandoverPreparationInformation that is passed during handover preparation to the target logical DU.***

Issue 12: TAC/RANAC reconfiguration

**Proposal 12a: RAN3 do decide whether TAC/RANAC of the mIAB-DU’s cell can also be obtained via the following options:**

* **Configured via DU’s CU**
* **Copied over from MT’s cell**
* **Configured via MT’s CU (if different that MT’s cell)**

[Nokia]: Not ok. we do not understand why RAN3 need to discuss this. What is the issue to be solved? Please remember that Rel-16/17 IAB are OAM configured with the TAC/RANAC, just like normal gNB-DU. The TAC/RANAC assignment is based on operator’s network planning. There is no way for CU to make the re-configuration. The OAM-configuration works for Rel-18. Please note this is different to NCI reconfiguration that OAM-configure NCI collision may happen. There is NO TAC/RANAC collision. So please first clarify the issue need to be discussed.

 **E///: we are against any mechanism on top of legacy, so the 2nd bullet is sufficient and it can be supported without any impact. In other words, the proposal is not needed.**

**CATT: OAM based solution is already there. The issue is whether we introduce the enhancement on TAC reconfiguration.**

**Copied from MT’s cell should be pre-configured by OAM. It is indeed the same as OAM-based solution which is already there.**

*The Moderator sees the feedback as confirmation that RAN3 indeed needs to decide.*

***Proposal 12a: RAN3 do decide whether TAC/RANAC of the mIAB-DU’s cell can also be obtained via the following options:***

* ***Configured via DU’s CU***
* ***Copied over from MT’s cell***
* ***Configured via MT’s CU (if different that MT’s cell)***

Issue 7: DU migration issues

**Proposal 7a: RAN3 to decide how to resolve reception of DU migration triggers from OAM and from the source DU’s CU with these triggers hold conflicting information about the target DU’s CU (potentially SoH):**

* **Option 1: Based on OAM configuration, the (source) mIAB-DU indicates in its F1 Setup Request message that OAM-triggered DU migration is preferred. The DU’s CU can overwrite this preference in the F1 Setup Response message with an indication that it itself will trigger DU migration.**
* **Option 2: Both, OAM and source mIAB-DU’s CU can trigger DU migration. In case the trigger is first received from the CU, the mIAB-node ignores OAM-based triggers until DU migration has completed. In case the trigger is first received from OAM, the mIAB-node ignores CU-based triggers until DU migration has completed, and it reports the gNB-ID of target DU’s CU to the source DU’s CU in the MIAB F1 Setup Outcome Notification.**

**[Xiaomi] we think both options work, we slightly prefer option 2 which is more flexible.**

**[ZTE] For option 2, I wonder whether we need to add new IEs in the MIAB F1 Setup Outcome Notification message. As we know, the NCGI of target logical DU cell is already included in the Activated Cells Mapping List IE. If we assume Xn is always available, the source DU's CU can derive the gNB ID according to the NCGI.**

**[Lenovo]: prefer to use option 1 which has less impacts. And the indication in the F1 setup request may be also omitted, and only DU’s CU to configure the trigger entity in the F1 setup response message.**

[Huawei]: For option 2, In case the trigger is first received from the CU, the mIAB-node should also report the gNB-ID of the target DU's CU to the OAM. This is important to allow the OAM to provide the suitable configuration(e.g. the NCGI) to the IAB-DU. And regarding ZTE's comment, the gNB-ID of the target DU's CU is necessary to be included in the MIAB F1 Setup Outcome Notification, because the NCGI of the targt cell is optional, and the target cell is a totally new cell, which may not have been informed to the source DU's CU(in such case, the source DU's CU cannot derive the gNB ID from the NCGI of the target DU's cell).

Accordingly, we propose the following update to option 2

Option 2: Both, OAM and source mIAB-DU’s CU can trigger DU migration. In case the trigger is first received from the CU, the mIAB-node ignores OAM-based triggers until DU migration has completed, and report the gNB-ID of the target DU's CU to the OAM. In case the trigger is first received from OAM, the mIAB-node ignores CU-based triggers until DU migration has completed, and it reports the gNB-ID of target DU’s CU to the source DU’s CU in the MIAB F1 Setup Outcome Notification.

[Samsung] Do we need explicitly mention the information reported to the OAM in our specification? In legacy, we also face the case, i.e., how does OAM know which gNB-CU is connected by the gNB-DU? However, in legacy specification, we didn’t mention anything on information reported by the gNB-DU

[Nokia]: not ok for 7a/7b. The issue is invalid. OAM configure either IAB, or configure DU’s CU. so the issue does not happen. Please clarify why both IAB and DU’s CU are configured with different information. OAM configuration is based on operator’s network planning. Even the issue happens, how can DU’s CU make the decision to overwrite the IAB’s indicaton/Operator’s network planning decision (Option 1)?

 **E///: same view as Nokia.**

**Proposal 7b: Capture RAN3’s decision for P7a in BL CRs to 38.473 and 38.401, section on DU migration.**

**[Xiaomi] Xiaomi is volunteer to prepare the 38.473 TP (R3-237385 can be revised) if we can down-select in this meeting.**

[Huawei]: Xiaomi's 38.473 TP in R3-237385 can be the baseline for option 1, and if RAN3 selects option 2, we want to recommend Huawei's F1AP TP R3-237612 as baseline.

 **E///: see our comment for P7a**

CATT: Option 2 is preferred, but it’s not clear what the “comes first” means and what’s the motivation to report gNB-ID of target DU’s CU. Instead, the F1 setup failure cause can be reported if the mIAB-node does not follow the CU instruction, so that the source CU will not trigger again. Propose following revised Option 2:

**“In case CU triggers Du migration when there is no OAM configuration, the mIAB-node follows CU triggered DU migraiton. In case the CU-based trigger is received when there is already OAM configuration, the mIAB-node ignores CU-based triggers, and it reports cause of F1 setup failure to the source DU’s CU in the MIAB F1 Setup Outcome Notification.**

*The Moderator believes that RAN3 needs to first converge that there is an issues, and if this is confirmed, we need to discuss the solution.*

***Proposal 7a: RAN3 to decide whether it is possible that triggers for DU-migration may be concurrently provided by both, the IAB-node’s OAM and the source mIAB-DU’s CU, and that this may result in conflicting DU migration indications (potentially SoH).***

***Proposal 7b: In case RAN3 has decided that such conflicting DU migration indications may exist, RAN3 to select between the following two options to resolve such conflicting DU migration indications (potentially SoH):***

***Option 1: Based on OAM configuration, the (source) mIAB-DU indicates in its F1 Setup Request message that OAM-triggered DU migration is preferred. The DU’s CU can overwrite this preference in the F1 Setup Response message with an indication that it itself will trigger DU migration.***

***Option 2: Both, OAM and source mIAB-DU’s CU can trigger DU migration. In case the trigger is first received from the CU, the mIAB-node ignores OAM-based triggers until DU migration has completed. In case the trigger is first received from OAM, the mIAB-node ignores CU-based triggers until DU migration has completed, and it reports the gNB-ID of target DU’s CU to the source DU’s CU in the MIAB F1 Setup Outcome Notification.***

**Proposal 7c: For DU migration, capture in BL CR to 38401 in section on DU migration, that the MT’s CU might receive traffic offload requests for a UE from the target CU, while it still holds traffic offload from the source CU for the same UE, and that the MT’s CU can identify by implementation that such traffic offload from two CUs is due to DU migration.**

[Huawei]: How can this proposal work？there is no UE information in the TMM procedure, the MT's CU cannot realize that the traffic offload request is for which UE. only the source donor CU and target donor CU  know the UE information. So, we propose the following revised version:

* Proposal 7c: For DU migration, capture in BL CR to 38401 in section on DU migration, that , for the UE HO, the target DU's CU may not initiate TMM procedure to MT’s CU, since the MT's CU still holds traffic offload from the source CU for the same UE.

[Samsung] We think HW’s point is valid. How to identify the UE at the MT’s CU? For HW’s new proposal, we also have concern. If the target DU’s CU does not initiate the TMM procedure, how to configure the mIAB-DU? For P7c, we may need further discussion.

**[MITRE]: This was discussed in the offline session. When UEs are handing over between source and target DU’s CUs, each donor CU may independently perform TMM with MT’s CU (with their specific traffic profiles). This is a transitionary phase for traffic profiles and F1-U tunnels. However, on the MT’s CU side, the traffic profiles can be aggregated and the backhaul need not be duplicated because eventually both logical DUs are collocated with the same MT (sharing the BAP address and MT’s CU’s gNB-ID?). How the MT’s CU handles this, is left to the implementation. However, since this is a new requirement on MT’s CU for Rel-18 while we are still using Rel-16/17 TMM messages, we need to capture this in Stage-2 procedures for mIAB.**

 **E///: we do not understand why this scenario is considered at all, especially since the proposal is to solve this by implementation.**

**CATT: Ok with P7c. And propose following revision to the last sentence:**

**“**the MT’s CU can identify the two TMM requests from two donor-CUs target to the same UE.”

**[Lenovo]: as mentioned during the offline discussion, in case failure of CU-based triggering IAB-DU migration, source F1-terminating IAB-donor-CU may need to be aware of the failure cause and minimum waiting time for F1 setup failure. So companies are kindly invited to provide views on proposal 7-d as below:**

**Proposal 7d: In case failure of CU-based triggering IAB-DU migration, source F1-terminating IAB-donor-CU may need to be aware of the failure cause and minimum waiting time for F1 setup procedure.**

[Huawei]: more clarification on the motivation is needed: What kind of cause value to be added？Will there be any different reactions for the source F1 terminating donor if receiving different cause value?

 [Samsung] Now, the “failure” has been indicated to the DU’s source CU. The purpose of detailed cause may need further clarification.

**CATT: We are OK to consider the failure cause of F1 setup.**

*The Moderator believes that P7c is not sufficiently clear. Since P7c solely proposes a stage-2 mechanism that is based on implementation, it is not critical to the completion of the WI and can be discussed in the next meeting.*

Issue 10: Concurrent DU/MT migration

**Proposal 10a: Capture in BL CR to 38401 that in case the mIAB-MT migration occurs concurrently with an ongoing mIAB-DU migration, both the source and the target mIAB-DUs should update their respective donor CUs with the gNB-ID of mIAB-MT's target CU and mIAB-MT's new BAP address.**

[Huawei]: This proposal is technically correct but the change is not needed.

we already captured the following step 3 for the MT partial migration procedure in 8.YY.1 of the BL CR for 38.401, and it is obvious that each logical IAB-DU will report the new BAP address to their corresponding F1 terminating donor CU, if their is two activated logical  IAB-DUs.

 3. The mIAB-DU passes the gNB ID of the target RRC-terminating IAB-donor-CU and the mIAB-node’s BAP address allocated by the target RRC-terminating IAB-donor-CU to the F1-terminating IAB-donor-CU via F1AP.
"What's the difference  already captured in the MT partial migration part.

[Samsung] Here, the thing to be emphasized is that the mIAB node will trigger two F1 UL messages, each of which is for different DU’s CU. The current step 3 only mention to mIAB-DU passes information to one IAB-donor CU.

[MITRE]: Like Samsung, we believe there is no harm in capturing this explicitly for the DU migration concurrent with MT migration. First, the Figure in BL CR for 38.401, 8.YY.1 does not indicate two mIAB-DUs may be involved (if there is no DU migration in progress, there may be only one active). Second, it shows only one F1-terminating IAB-donor-CU. The current text also uses singular terms. So, there is no acknowledgement in the current diagram/text that we have discussed concurrent MT/DU migration, and this section can be applied for both the standalone MT migration and concurrent MT/DU migration cases, with additional clarification.

 **E///: this scenario is not realistic**

The Moderator believes that P10 is not absolutely necessary since step 3 refers to the “mIAB-DU updates its CU…” which obviously implies that this should be done by each of the mIAB-DU’s on the IAB-node. We can keep P10 and have a brief discussion in the meeting:

***Proposal 10: Capture in BL CR to 38401 that in case the mIAB-MT migration occurs concurrently with an ongoing mIAB-DU migration, both the source and the target mIAB-DUs should update their respective donor CUs with the gNB-ID of mIAB-MT's target CU and mIAB-MT's new BAP address.***

Issue 9: Served- cell/neighbor-cell indication

**Proposal 9a: Introduce a new attribute for Served Cell Information NR and Neighbour Information NR IEs in XnAP to indicate that the cell is a mobile IAB cell.**

**[ZTE] If the target cell is a mobile IAB cell, the target cell will reject the HO request initiated for a mobile IAB node, so there seem to be no problem here. The benefit might be to reduce the initiation of handover of a mobile IAB node to another mobile IAB node, which seems to be an enhancement and OAM might be able to handle the work.**

[Huawei] The existing Xn procedures, e.g., Xn setup and NG-RAN node configuration update, can exchange the “mobile IAB support” broadcasted in each NG-RAN node’s serving cell, since the PLMN-IdentityInfoList will be included as Served Cell Information NR (in Broadcast PLMN Identity Info List NR IE). So, no need the explicit indication via such new attribute.

[Nokia]: For ZTE comments, how can source donor know the HO is rejected due to target cell is a mobile IAB cell? The HO may fail for many reasons. Even it is rejected for this purpose, there is no appropriate cause value to tell source donor. In addition, RAN3 never mandate to use a specific cause value. In a summary, current std cannot tell source CU that HO is rejected due to a mobile IAB cell.

For HW comments, the mobile IAB support indicator is not exchanged over Xn. It is included in RRC PLMN-IdentityInfoList, but not in XnAP.

**CATT: It’s not clear why the HO of UE should be rejected while the target cell is a mobile IAB cell.**

**Proposal 9b: Capture P9a, if agreed, in BL CR for 38.423 following TP in R3-237432**

 **[ZTE] We suggest to discuss the issue of sending mobile IAB supported indication from the AMF to the IAB donor, since we agreed that the IAB donor selects an AMF that support mobile IAB after receiving mobile IAB indication in msg5. And this is also aligned with the way we adopted in R16/17 IAB.  Please companies kindly provide views on proposal 10 as below:**

***Let’s discuss during the online session, time permitting.***

***Proposal 9a: Introduce a new attribute for Served Cell Information NR and Neighbour Information NR IEs in XnAP to indicate that the cell is a mobile IAB cell.***

**Proposal 14: Introduce a mobile IAB supported indication in the NGAP NG SETUP RESPONSE message.**

[Nokia]: was this discussed before and concluded?

 **E///: what special superpowers does an IAB-supporting AMF need, to be able to support mIAB as well?**

*The moderator disagrees with E///. The AMF needs to be upgraded to support mIAB. If it is not, it won’t do it. Let’s keep this proposal alive and discuss in session, time permitting.*

***Proposal 14: Introduce a mobile IAB supported indication in the NGAP NG SETUP RESPONSE message.***