**3GPP TSG-RAN WG3 Meeting #117-eR3-225030**

**Online, August 15th – 24th 2022**

Agenda Item: 13.2

Source: Ericsson (moderator)

Title: CB # IAB2\_Mobility - Summary of email discussion

Document for: Approval

# Introduction

The deadline for providing replies to Phase 1 is **Thursday, August 18th at 23.59 UTC.**

**Relevant papers:**

**[Hua4353]** Discussion on the full migration for mobile IAB (Huawei)

**[Hua4354]** Discussion on the inter-donor transport for full migration of mobile IAB (Huawei)

**[Nok4376]** IAB mobility (Nokia, Nokia Shanghai Bell)

**[Nok4377]** Discussion on mobile IAB aspects based on dual-DU (Nokia, Nokia Shanghai Bell)

**[Len4429]** Inter-donor full migration procedure of mobile IAB (Lenovo)

**[Eri4496]** The Migration Procedure for Mobile IAB-Nodes (Ericsson)

**[QC4504]** Topology adaptation for mobile IAB (Qualcomm Inc.)

**[Fuj4704]** Support of intra-m-CU mobility (Fujitsu)

**[Fuj4705]** Discussion on IAB full migration (Fujitsu)

**[ZTE4710]** Discussion on inter-donor full migration in mobile IAB scenario (ZTE)

**[ZTE4711]** Discussion on migration sequence of full migration procedure (ZTE)

**[Xmi4767]** Discussion on IAB full migration (Xiaomi)

**[Int4777]** Discussion on Full Migration of mobile IAB-node (Intel Corporation)

**[Sam4826]** Discussion on full migration procedure (Samsung)

# For the Chairman notes

**TBW**

# Discussion

At this meeting we will discuss the general principles of mIAB mobility procedure and the aspects of mIAB-DU HO that do not directly depend on these general principles.

## Mobility procedure for mIAB-nodes – general principles

### The high-level approach

Papers [Eri4496], [QC4504], [Nok4376], [Fuj4704] and [ZTE4711] consider the approach to mIAB mobility where the mIAB-MT can undergo multiple consecutive inter-CU handovers, without executing the inter-CU HO of the co-located mIAB-DU. Meanwhile, paper [Len4429] proposes to mandate the joint execution of mIAB-MT and mIAB-DU inter-CU HO.

**Q1-1: Should it be possible to execute the mIAB-MT and mIAB-DU inter-CU HOs independently, i.e., executing one without the other?**

|  |  |  |
| --- | --- | --- |
| **Company** | **Answer** | **Motivation** |
| **Ericsson** | **Yes** | Mandating the joint execution of the two HOs will cause frequent reconfigurations of both the mIAB-node and the UEs. It will also long service interruptions and mutual dependence of HO failures.  |
| Huawei | See comment | It is possible to execute the IAB-MT HO without IAB-DU HO, as already supported in partial migration. But it seems the IAB-DU migration will only occur when IAB-MT performs HO. |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

**Summary:**

### The reuse of partial migration

Papers [Eri4496], [QC4504], [Nok4376], [Fuj4704], [Sam4826] and [ZTE4711] propose to use the Rel-17 partial migration as the baseline procedure for mIAB node migration.

**Proposal 1-1: The Rel-17 partial migration is the baseline for supporting the F1 transport migration and inter-donor routing when an mIAB-DU and its co-located mIAB-MT are connected to different donor CUs.**

**Q1-2: Do you agree to the above proposal?**

|  |  |  |
| --- | --- | --- |
| **Company** | **Answer** | **Motivation** |
| **Ericsson** | **Yes** | Partial migration already enables an IAB-node to maintain the F1 and RRC to different donors, so let’s reuse it as much as possible. |
| Huawei | Yes |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

**Summary:**

###  Migration in the absence of XnAP connectivity

Paper [QC4504] proposes that RAN3 discusses how inter-donor topology adaptation can be supported for mobile IAB in absence of Xn and/or inter-donor IP routability. It is further proposed to consider F1-C transport over NGAP in case there is no inter-donor IP routability. Meanwhile, paper [Int4777] proposes that HOs of mIAB-MT and its co-located mIAB-DU are executed jointly in case IP connectivity between the target IAB-donor DU and the source IAB-donor CU is not available.

**Proposal 1-2: RAN3 to discuss how inter-donor topology adaptation can be supported for mobile IAB in absence of Xn and/or inter-donor IP routability.**

**Proposal 1-3: For inter-donor topology adaptation in the absence of inter-donor IP routability, RAN3 to consider F1-C transport over NGAP.**

**Q1-3: Do you agree to the above proposals?**

|  |  |  |
| --- | --- | --- |
| **Company** | **Answer** | **Motivation** |
| **Ericsson** | **Yes, to both.** | XnAP connectivity may not always be available. Meanwhile, we should find ways to reduce the number of DU HOs. |
| Huawei | Yes to P1-2 | If the inter-donor IP routability is not ensured, the full migration can be considered. Rather than the F1-C over NGAP. |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

**Summary:**

###  The scope of mobility support

Paper [Hua4353] proposes to preclude the support for mobility of dual-connected mIAB nodes. Paper [Len4429] proposes to preclude full migration for stationary IAB-nodes. Paper [Int4777] proposes to support both intra-donor CU migration and inter-donor CU migration of mIAB nodes. Meanwhile, paper [QC4504] proposes that any discussion related to the use of DAPS by mIAB nodes should be initiated by RAN2.

**Q1-4: Do you agree that:**

1. **Mobility of dual-connected mIAB nodes is outside the Rel-18 scope?**
2. **Full migration of stationary IAB-nodes is outside Rel-18 scope?**
3. **Intra-donor CU migration of mIAB nodes is within Rel-18 scope?**

|  |  |  |
| --- | --- | --- |
| **Company** | **Answer** | **Motivation** |
| **Ericsson** | **a), b) and d): yes****c): only if it “comes for free”.** | c): Only inter-donor mobility was mentioned in the WID, and we should not address any enhancements specific to supporting intra-donor mobility. |
| Huawei | **a) and b): yes****c): only if it “comes for free”.** | Agree with Ericsson |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

**Summary:**

## Handover of mIAB-DU

### mIAB-DU HO procedure

All the papers addressing the mIAB-DU HO assume that the HO is accomplished by establishing the second virtual mIAB-DU. Papers [Sam4826] and [Nok4377] are neutral with respect to whether Alt1 or Alt2 discussed in Rel-17 should be supported, while most of the remaining papers assume Alt1. Paper [Xmi4767] explicitly proposes to assume Alt1. Below is a set of basic proposals:

**Proposal 2-1: To execute the handover of the F1 connection and the served UEs, the mobile IAB-node concurrently supports two logical mIAB-DUs, which have F1AP associations with the source CU and the target CU, respectively.**

**Proposal 2-2: The UEs connected to the mIAB-node are handed over from the cell of the logical mIAB-DU that has an F1AP association with the source CU (i.e., the source logical mIAB-DU) to the cell of the logical mIAB-DU that has an F1AP association with the target CU (i.e., the target logical mIAB-DU).**

**Proposal 2-3: Use the Alt 1 (i.e., source and target logical mIAB-DUs use separate physical cell resources) as baseline for the handover of the F1AP connection of an mIAB-node and its served UEs.**

**Q2-1: Do you agree to the above proposals?**

|  |  |  |
| --- | --- | --- |
| **Company** | **Answer** | **Comment** |
| **Ericsson** | **P2-1: yes****P2-2: yes****P2-3: yes** |  |
| Huawei | Yes to all |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

**Summary:**

### Resource sharing between two logical mIAB-DUs

Papers [Hua4353] and [Int4777] propose that, for mIAB-DU HO, two logical mIAB-DUs use different PCIs with separate physical resources. Meanwhile, papers [QC4504] and [Hua4353] propose to send an LS asking RAN1 to discuss and clarify how the resource sharing between the layer-1 of the cells of two logical mIAB-DUs on the mIAB-node should be implemented.

**Proposal 2-4: Send an LS asking RAN1 to discuss and clarify how the resource sharing between the layer-1 of the cells of two logical mIAB-DUs on the mIAB-node should be implemented.**

**Q2-2: Do you agree to the above proposal?**

|  |  |  |
| --- | --- | --- |
| **Company** | **Answer** | **Comment** |
| **Ericsson** | **Yes.** |  |
| Huawei | See the comment | The current wording is somehow confusing, the “resource sharing” seems mention the alt 2 of how to implement the two logical DUs. So, suggest some rewording as proposed in our paper, we can send LS to ask RAN1 to clarify how to implement the “separate physical resource” for alt 1 of two logical DUs. |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

**Summary:**

### Multiple candidate configurations for the mIAB node

Papers [QC4504], [Nok4377] and [Sam4826] discuss, configuring the mIAB node with multiple (candidate) configurations that would be activated based on the movement of the mIAB node. The proposal in [QC4504] concerns the mIAB-MT, while the proposal in [Nok4377] concerns the mIAB-DU.

**Proposal 2-5: An mIAB node may be configured with multiple configurations, each corresponding to a different target donor, that can be activated upon fulfillment of certain condition(s).**

**Q2-3: Do you agree to the above proposal?**

|  |  |  |
| --- | --- | --- |
| **Company** | **Answer** | **Comment** |
| **Ericsson** | **Yes** | We see benefits in pre-configuration, such as reduction of service interruption and less “time pressure” when handing over the UEs.  |
| Huawei | Yes, but | Some clarification may be needed. First, is this more suitable for the predetermined trajectory of mobile IAB node? For the random route of mobile IAB-node, the number of candidate configurations seems will cause large overhead.Second, which configuration corresponds to the IAB-donor is included in this proposal. More clarifications are expected. |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

**Summary:**