**3GPP TSG-RAN WG2 Meeting #125 R2-240xxxx**

**Athens, Greece, 26th February – 1st March 2024**

**Agenda Item: x.x.x.x.x**

**Source: Ericsson**

**Title: Discussion on RILs conclusion Mobile IAB**

**Document for: Discussion, Decision**

1 Introduction

In this contribution, a list of RILs for the Mobile IAB work item with relating conclusion and comment is provided.

# 2 Discussion

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **ID** | **Delegate** | **Work Item** | **Class** | **Proposed Conclusion** | **Comments to Proposed Conclusion** | **RIL source leader (who should provide tdoc)** | **Description** | **Proposed Change** | **Comments**  **(Example 🡪 [Ericsson-Tony] bla bla bla)** |
| E073 | Ericsson (Tony) | IAB | 1 | Disc | [Ericsson-Tony] An offline has been triggered with few companies and we reached to a conclusion that maybe a note to clarify that whenever is written "IAB-Node" this applies also to "mobile IAB-node" would be the best. I will provide a tdoc with some proposal that we can agree at the meeting. | Ericsson (to coordinate with other companies) | The BAP entity is also configured for the case of mobile IAB but here is missing. Since IAB and mobile IAB may be two different type of node, it would be good to add also mobile IAB in this sentence. | Implement the following change: - Configuration of BAP entity and BH RLC channels for the support of IAB-node and Mobile IAB-node. | **[Ericsson-Tony] Yes, I agree with Qualcomm and the intention of this is clarify the parts where something is“not applicable to mobile IAB”. About having a note in RRC or note, I guess that this should not hurst, since the note will refer mostly to the RRC procedure, whereas 38.300 may be something more in general.**  [Qualcomm - Georg] TS 38.300, section 4.7.5.1, already states: "Mobile IAB supports the same functionality as IAB unless explicitly specified". I don’t believe it is necessary to replicate this in 38.331. In any case, we should make ensure that all references to IAB that do not apply to mobile IAB are clearly marked as ‘not applicable to mobile IAB’.  [Nokia – Andrew] We tend to agree with Ericsson that it would be helpful to still clarify this in 38.331 as a note or within the definitions for mobile IAB-node/mobile IAB-MT. |
| H750 | Huawei (Yulong) | mIAB | 1 | PropAgree | [Ericsson-Tony] I think the intention is correct, but I am wondering whether we can simply say "if the UE is ONLY a IAB-MT". Maybe this solve the issue. |  | iab-Support should not be checked by mobile IAB-MT. In the whole spec, mobile IAB-MT will apply the behaviour defined for IAB-MT by default. So, in this sentence, mobile IAB-MT should be explicitly excluded. | 3> else if UE is IAB-MT but not mobile IAB-MT and if iab-Support is not provided for the selected PLMN nor the registered PLMN nor PLMN of the equivalent PLMN list nor the selected SNPN nor the registered SNPN nor SNPN of the equivalent SNPN list |  |
| E070 | Ericsson (Tony) | IAB | 2 | Disc |  | Ericsson (to coordinate with other companies) | It should be possible for the network to bar a UE when the mobileIAB-Support is not provided for the selected PLMN nor the registered PLMN nor PLMN of the equivalent PLMN list nor the selected SNPN nor the registered SNPN nor SNPN of the equivalent SNPN list. RAN2 should confirm this. This RIL is just for bookkeeping and the understanding is that this will be discussed based on companies contributions. | Confirm that a UE conside the cell as barred when the mobileIAB-Support is not provided for the selected PLMN nor the registered PLMN nor PLMN of the equivalent PLMN list nor the selected SNPN nor the registered SNPN nor SNPN of the equivalent SNPN list. | [CATT - Yang]: Not quite understand what the open issue is here. Is it only to confirm the function of mobileIAB-Support?  The field description of *mobileIAB-Support* already states that the cell is barred for mIAB-MT if the field is absent:  “This field indicates the support of mobile IAB. If the field is absent, the cell is barred for mobile IAB-node.”  [Nokia – Andrew] We think there could be some cases where an MT that is capable of acting as a mobile IAB-MT should be allowed to access a cell that is not broadcating iab-Support or mobileIAB-Support, e.g. so the MT could still be reachabe to an operator even if it has moved to an area with non-IAB-supporting cells, We will submit a contribution on this topic. |
| H751 | Huawei (Yulong) | mIAB | 1 | Duplicate | [Ericsson-Tony] See H750, I guess we would need to have the same outcome |  | iab-NodeIndication should not be included in Msg5 for mobile IAB node. In the whole spec, mobile IAB-node will apply the behaviour defined for IAB-node by default. So, in this sentence, mobile IAB-node should be explicitly excluded. | 2> if connecting as an IAB-node and not as mobile IAB-node: 3> include the iab-NodeIndication; |  |
| E101 | Ericsson (Tony) | IAB | 1 | Duplicate | [Ericsson-Tony] See E073 |  | These actions are also valid for a mobile IAB-MT and thus it would be good to add mobile IAB-MT also. | Add mobile IAB-MT in the first sentence of this clause. |  |
| E101 | Ericsson (Tony) | IAB | 1 | Duplicate | [Ericsson-Tony] See E073 |  | These actions are also valid for a mobile IAB-MT and thus it would be good to add mobile IAB-MT also. | Add mobile IAB-MT in the first sentence of this clause. |  |
| E101 | Ericsson (Tony) | IAB | 1 | Duplicate | [Ericsson-Tony] See E073 |  | These actions are also valid for a mobile IAB-MT and thus it would be good to add mobile IAB-MT also. | Add mobile IAB-MT in the first sentence of this clause. |  |
| E101 | Ericsson (Tony) | IAB | 1 | Duplicate | [Ericsson-Tony] See E073 |  | These actions are also valid for a mobile IAB-MT and thus it would be good to add mobile IAB-MT also. | Add mobile IAB-MT in the first sentence of this clause. |  |
| E101 | Ericsson (Tony) | IAB | 1 | Duplicate | [Ericsson-Tony] See E073 |  | These actions are also valid for a mobile IAB-MT and thus it would be good to add mobile IAB-MT also. | Add mobile IAB-MT in the first sentence of this clause. |  |
| E101 | Ericsson (Tony) | IAB | 1 | Duplicate | [Ericsson-Tony] See E073 |  | These actions are also valid for a mobile IAB-MT and thus it would be good to add mobile IAB-MT also. | Add mobile IAB-MT in the first sentence of this clause. |  |
| E101 | Ericsson (Tony) | IAB | 1 | Duplicate | [Ericsson-Tony] See E073 |  | These actions are also valid for a mobile IAB-MT and thus it would be good to add mobile IAB-MT also. | Add mobile IAB-MT in the first sentence of this clause. |  |
| Z601 | ZTE(Ying) | mIAB | 1 | Duplicate | [Ericsson-Tony] See H753 |  | As stated in the comment to H753, RAN2 agreed that mobile-IAB cell doesn’t support child IAB nodes. That means neither iab-Support nor mobileIAB-Support shall be broadcast by a mobile IAB cell. So the field iab-Support and mobileIAB-Support shall be absent if mobileIAB-Cell is broadcast in a cell, which needs to be captured somewhere in the specification. | Add “If this field is present, neither iab-Support nor mobileIAB-Support shall be broadcast in this cell.” |  |
| B002 | Lenovo (Hyung-Nam) | IAB | 2 | PropAgree |  |  | New field mobileIAB-Freq should not be added in the legacy IE InterFreqCarrierFreqInfo after the extension marker. Otherwise, it would create additional ASN.1 encoding overhead of appr. 3 bytes. Instead, it should be added in IE InterFreqCarrierFreqInfo-v1800. Furthermore, suffix "-r18" is missing. | Add field mobileIAB-Freq in IE InterFreqCarrierFreqInfo-v1800 as shown below. InterFreqCarrierFreqInfo-v1800 ::= SEQUENCE { frequencyBandListAerial-r18 MultiFrequencyBandListNR-Aerial-SIB-r18 OPTIONAL, -- Need S mobileIAB-CellList-r18 PCI-Range OPTIONAL, -- Need R mobileIAB-Freq-r18 ENUMERATED {true} OPTIONAL, -- Need R eRedCapAccessAllowed-r18 ENUMERATED {true} OPTIONAL, -- Need R tn-AreaIdList-r18 SEQUENCE (SIZE (1..maxTN-AreaInfo-r18)) OF TN-AreaId-r18 OPTIONAL -- Need R } |  |
| H752 | Huawei (Yulong) | mIAB | 2 | Duplicate | [Ericsson-Tony] See B002 |  | This field should be put in InterFreqCarrierFreqInfo-v1800, rather than in InterFreqCarrierFreqInfo. | Move the mobileIAB-Freq field into InterFreqCarrierFreqInfo-v1800 |  |
| I128 | Intel (Sudeep) | IAB | 1 | PropAgree |  |  | This is oneshot and should use Need N | Change to Need N |  |
| C701 | CATT(Yang) | IAB | 2 | PropReject | [Ericsson - Tony] We have already agreed to use TCI state ID for mobile IAB and SSB for NTN in case of RACH-less HO. These two fields should be included in a CHOICE structure as only one beam should be indicated at the time. Also, this is for RACH-less handover and we are not sure what is has to do with “for RA…” mentioned in the comment. |  | Both dg-beam and tci-StateID fields are used to indicate beam that the UE uses in the target cell to monitor PDCCH now, one is used for NTN while the other is used for mIAB. For RA, SSB level beam selection is sufficient. SSB based beam indication is applicable in mIAB case as well, there is no need to introduce TCI-state based indication just for more accurate beam indication. | Remove the tci-StateID-r18 IE. Dg-beam-r18 is reused for beam indication in mobile IAB case. | [Nokia – Andrew] We agree that a CHOICE structure is appropriate; however we are doubtful whether a restriction is needed so that TCI state ID is only indicated for mIAB and SSB index is only indicated for NTN (even if that was agreed earlier). We understand the technical arguments why TCI state ID vs SSB index could apply more to mIAB vs NTN scenarios respectively, but this is based on certain assumptions about the network configuration/implementation. For mIAB, RAN2 agreed that the network can indicate a beam based on the UE measurement or based on network implementation, so we do not see why we need to restrict this indication to TCI state ID for mIAB. Probably this issue needs to be considered under the more general discussion on RACH-less HO at the meeting. |
| A100 | Apple (Peng) | IAB | 2 | PropReject | [Ericsson-Tony] I agree with the intention, but having this field mandatory now it may cause problem if in later releases we want to add more cases than the one currently supported for the N\_TA. My proposal would be to clarify in the field description that in this version of the specification this field is mandatory |  | This field should be mandatory. Our understanding is that as long as RACH-LessHO-r18 is configured, NW should provide NTA. | Modify this field to be mandatory present. | **[Ericsson-Tony] I tend to agree that having this field mandatory is not necessary.**  [Qualcomm - Georg] Disagree with the change to mandatory. RAN2 agreed that the network CAN always configure a beam, but RAN2 did NOT agree that it SHOULD always configure a beam. On Samsung's comment: The discussion on mandatory/optional for the beam indication is independent of the scenarios where RACHless HO can be applied. |
| C700 | CATT(Yang) | IAB | 1 | PropReject | [Ericsson-Tony] The RRC specification is written from the UE point of view, and the UE does not distinguish/knows whether the source and target are co-located or not. For this reason, the suggested clarification is not useful. |  | It is a little misleading that if only the source cell is a mobile IAB cell RACH-less HO can be applied. To be more accurate, only when source cell and target cell are co-located on the mIAB-node, RACH-less HO is configured to UE. | Rewording to “in case source cell and target cell are co-located on a mobile IAB-node.” | [Qualcomm - Georg] Agree on Reject. The term "source" refers to the value N\_TA the UE is supposed to use. This is the value of the source cell. The reference to "source" has nothing to do with collocation of source and target cells.  [CATT – Yang]: Agree with rapporteur that the RRC is written from the UE point of view. But the original wording has problem since UE may not know the source cell is a mIAB cell or not. If companies have concern on our rewording, we suggest to update the field description for short: “Only value *source* is configured by the network **for mobile IAB**.” |
| C702 | CATT(Yang) | IAB | 1 | Duplicate | [Ericsson-Tony] See E701 |  | Based on C701 (i.e., remove tci-StateID-r18), dg-beam-r18 is used not only for NTN but also for mobile IAB mobile IAB. | Delete “in NTN”. |  |
| C703 | CATT(Yang) | IAB | 2 | Duplicate | [Ericsson-Tony] See E701 |  | Based on C701(i.e., remove tci-StateID-r18), this condition is not necessary any more. | Remove this condition. |  |
| A101 | Apple (Peng) | IAB | 2 | PropReject | [Ericsson-Tony] I agree with the intention, but having this field mandatory now it may cause problem if in later releases we want to add more cases than the one currently supported for the N\_TA. My proposal would be to clarify in the field description that in this version of the specification this field is mandatory |  | This field should be mandatory for mobile IAB. Note that in mobile IAB, it was agreed that: Þ    for mIAB, the network can always provide a beam indication | Modify it to: “The field is mandatory present in case mobileIAB-Cell is broadcasted in SIB1. Otherwise, it is absent, Need N.” | **[Ericsson-Tony] Similar comment as A100. I think there are cases where this info is needed. We can also leave this to network to be consistent, but leaving the UE behavior unspecified when some not reasonable configuration is received is a bit dangerous.**  [Qualcomm - Georg] Disagree with the change to mandatory. RAN2 agreed that the network CAN always configure a beam, but RAN2 did NOT agree that it SHOULD always configure a beam. On Samsung's comment: The discussion on mandatory/optional for the beam indication is independent of the scenarios where RACHless HO can be applied.  [CATT – Yang]: Not sure whether the intention is to make it mandatory for DG RACH-less HO in mIAB. This field is not mandatory for mIAB, actually it is just mandatory in DG RACH-less HO in mIAB. In addition, it’s not mandatory for a mIAB-node to broadcast the *mIAB-Cell* in SIB1, it’s not proper to mention that in description. We suggest this rewording: “The field is **mandatory** present when **dynamic grant** is used for initial uplink transmission in RACH-less handover in mobile IAB.” |
| C704 | CATT(Yang) | IAB,NTN,MULTI | 2 | Disc | [Ericsson-Tony] The intention is correct, but we should strive to have a general IE for the CG and then SDT, LTM, NTN, and IAB can refer to it. This is more a general problem to be solved. |  | It can be observed that most of the parameters for mIAB CG configuration and NTN CG configuration are the same. As indicated by AI 7.0.4, the issue whether NTN and mIAB can share the same RACH-less HO procedure would probably be discussed. As result, CG for mIAB and NTN will use exactly the same parameters or those of little difference. Whatever conclusion is made in this AI, separate sets of CG configuration for mIAB and NTN is not necessary. | Remove the fields of mIAB CG configuration, keep the fields of NTN CG configuration and remove “NTN” prefix of the field names. |  |
| S264 | Samsung (Milos Tesanovic) | IAB | 2 | Disc | [Ericsson-Tony] This is fine, but the change should be done in line to what is decided for C704 and the other related RILs |  | cg-RACH-Less-RetransmissionTimer is missing for mIAB, despite this being agreed in RAN2#124 or unify the RACH-less for IAB/LTM/NTN framework under one IE. | Introduce cg-RACH-Less-RetransmissionTimer in cg-mIAB-Configuration-r18 |  |
| I133 | Intel (Sudeep) | IAB | 1 | Disc | [Ericsson-Tony] This is fine, but the change should be done in line to what is decided for C704 and the other related RILs |  | The parent field is Need N. All the child fields should also be Need N. | Change this and next field, mIAB-NrofDMRS-Sequences-r18 to Need N. |  |
| H507 | Huawei (YinghaoGuo) | IAB, Mob, NTN, MULTI | 2 | Disc | [Ericsson-Tony] This is fine, but the change should be done in line to what is decided for C704 and the other related RILs |  | Almost exactly the same as cg-sdt-Configuration for the NTN, IAB, LTM configuration | Maybe can reuse the legacy CG-SDT type. can consider how to handle the field name in R17 and handle it also correspondingly in MAC specification. At the very minimum, for SSB-PerCG-PUSC, P0-PUSCH, DMRS-Ports and NrofDMRS-Sequences, ranges shoudl be defined that are used by all CG-xxx-Configuration-rX types. |  |
| V507 | vivo-Stephen | NTN, IAB | 1 | PropReject | [Ericsson-Tony] I tend to agree with the intention. However, there is no formal agreement and we do not think these kind of restrictions should be captured in Stage 3 |  | The periodicity that can be used for RACH-less should be clarified | Clarify only 1, 2, 4, 5, 8, 10, 16, 20, 32, 40, 64, 80, 128, 160, 320, 640 can be used for RACH-less CG. |  |
| H753 | Huawei (Yulong) | mIAB | 1 | PropAgree |  |  | mobile-IAB doesn’t support child IAB node, i.e. iab-Support should not be broadcasted by mobile IAB cell. | Add “This field is absent if the mobileIAB-Support is broadcasted in a cell.” | **[Ericsson-Tony] It seems that the change as it is does not convince all companies. Maybe we can go with the proposal from Qualcomm.**  [ZTE-Ying] Disagree. The proposed change is incorrect though we agree with the motivation of the change.  The proposed change is to add“This field is absent if the *mobileIAB-Support* is broadcasted in a cell.” in the description for *iab-Support*. That means the *mobileIAB-Support* and *iab-Support* cannot be broadcast simultaneously, which contradicts the RAN2 agreement “A parent node indicates support of both, mobile IAB and Rel-16/17 IAB, by broadcasting “mobile IABsupported” and “IABsupported” in SIB1.” achieved in last meeting.  In our understanding, “a mobile-IAB cell doesn’t support child IAB nodes” means neither *iab-Support* nor *mobileIAB-Support* shall be broadcast by a mobile IAB cell. So the field *iab-Support* and *mobileIAB-Support* shall be absent if *mobileIAB-Cell* is broadcast in a cell since the IE *mobileIAB-Cell* is used to indicate that the cell is a mobile IAB cell.  And we suggest to add “If this field is present, neither *iab-Support* nor *mobileIAB-Support* shall be broadcast in this cell.” in the field description of *mobileIAB-Cell* to avoid adding duplicated text (e.g. this field is absent if the cell is a mobile IAB cell) in the field description for *iab-Support* and *mobileIAB-Support*.  [Qualcomm - Georg] We agree with ZTE’s observation. The parent node can broadcast both “iabSupport” and ‘mobileIAB-Support” together. We do not need any explanation about child node support since this has already been captured in 38.300.  - The mobile IAB-node shall not have descendent nodes. A mobile-IAB cell shall therefore not broadcast any indication that it is a suitable parent node for IAB-nodes or mobile IAB-nodes.  However, we need to add that the “iabSupport” indicator field does not apply to mobile IAB. This is necessary since 38.300 states that all IAB specification also applies to mobile IAB unless explicitly specified.  Therefore, it needs to be added “This field does not apply to mobile IAB”.  ~~There seems to be a misunderstanding. The field iab-Support is only broadcasted by candidate parent nodes of IAB-nodes. It has nothing to do with mobile IAB. However, as discussed above for E073, we need to add that this field does not apply to mobile IAB. We propose to add: "This field is not used for mobile IAB." The comment by ZTE is technically correct, i.e., that the mobile IAB-DU is not allowed to be a candidate for IAB-nodes and therefore, the mobile IAB-DU should not broadcast the “iab-Support” indicator. This, however, has already been captured in 38.300 section, 4.7.5.1: "The mobile IAB-node shall not have descendent nodes. A mobile-IAB cell shall therefore not broadcast any indication that it is a suitable parent node for IAB-nodes or mobile IAB-nodes." It is not necessary to replicate this in 38.331.~~  [ZTE-Ying 2] Agree with QC and the proposed change.  [Nokia – Andrew] Agree with both suggestions from ZTE and QC, i.e. a cell indicating mobileIAB-Cell shall not broadcast iab-Support nor mobileIAB-Support; and iab-Support does not indicate support of mobile IAB or the cell status for mobile IAB. |
| Z600 | ZTE (Ying) | mIAB | 1 | PropAgree | [Ericsson-Tony] We can clarify in the field description that: “This field indicates the support of mobile IAB. If the field is absent, the cell is barred for mobile IAB-node. If the field is present, the cell can be considered by mobile IAB-nodes as a candidate for cell (re)selection.” |  | The field description is incomplete. As stated in the second sentence “If the field is absent, the cell is barred for mobile IAB-node”, this field is also used to indicate the cell status for mobile IAB, which is similar as the iab-Support. | Replace the current field description with “This field indicates the support of mobile IAB and the cell status for mobile IAB. If the field is present, the cell supports mobile IAB and the cell is also considered as a candidate for cell (re)selection for mobile IAB-nodes; If the field is absent, the cell does not support mobile IAB and/or the cell is barred for mobile IAB-node.” | **[Ericsson-Tony] If no complains, we can make a change which is along the line with what Qualcomm proposes. Will change this to “propAgree” and clarify what the change it.**  [ZTE-Ying] Disagree. I am not sure about“we agreed to have two separate flags for the cell status and the support of the mobile IAB node. ”. Could you please elaborate?  In our understanding, if mobileIAB-Support is not provided, a mobile IAB-MT considers the cell as barred as specified in the procedure text, that means mobileIAB-Support indicates the cell status. Meanwhile mobileIAB-Support indicates the support of mobile IAB as already specified. Our intention is just to make some rewording to make the text aligned.  [Qualcomm - Georg] ~~Agree with Rapporteur's decision.~~ ~~Disagree with the Rapporteur’s proposal.~~ ~~For clarification: the mobileIAB-Support indicator is broadcasted by candidate parent nodes of mobile IAB-nodes, not by mobile IAB-DUs themselves. The mobile IAB-DU broadcasts the mobileIAB-Cell indicator in SIB1-v1800-IEs.~~  Disagree with the proposed rewording. The proposed rewording has been copied over from the iabSupport field. However, for mobile IAB, it becomes confusing. It is not clear, for instance what it is supposed to mean for a cell to ”support the cell status for mobile IAB”. The rapporteur, for instance, interpreted this “cell status” the same as the ”mobileIAB-Cell” indicator, which it is not. Therefore, we should not simply copy and past from iabSupport but provide a more suited mobile-IAB-specific description. We propose:  "This field indicates the support of mobile IAB. If the field is absent, the cell is barred for mobile IAB-node. If the field is present, the cell can be considered by mobile IAB-nodes as a candidate for cell (re)selection."  [ZTE-Ying 2] On QC’s comment, “cell status” means whether it is barred for mobile IAB-MT or not, which is similar as for the IAB case. And we suggest the following rewording based on QC’s version:  "This field indicates the support of mobile IAB. If the field is absent, the cell doesn’t support mobile IAB or the cell is barred for mobile IAB-node. If the field is present, the cell can be considered by mobile IAB-nodes as a candidate for cell (re)selection."  The reason is that if this field is absent, there may be two cases as listed in the below. However, the wording from QC only covers case 2 while case 1 is missing.  Case 1: the cell doesn’t support mobile IAB;  Case 2: the cell supports mobile IAB and the cell is barred for mobile IAB node |
| H754 | Huawei (Yulong) | mIAB | 1 | PropAgree |  |  | RACH-less HO is still handover. It is already covered by intra-NR handover. | For T304 of MCG, in case of the handover from NR or intra-NR handover, or path switch from a L2 U2N Relay UE to a NR cell, or a reconfiguration with sync without performing random access procedure, or an LTM cell switch procedure, initiate the RRC re-establishment procedure; In case of handover to NR, perform the actions defined in the specifications applicable for the source RAT. If any DAPS bearer is configured and if there is no RLF in source PCell, initiate the failure information procedure. |  |
| S293 | Samsung (Sedin) | IAB | 1 | PropReject | [Ericsson-Tony] This was under discussion of the WI and the outcome was to have only a PCI-Range. The reason is that the PCI-Range is per-frequency. Don't see the need to have a list of PCI range. This is only in line with the PCI partitioning we talked about in the beginning of the work item. |  | The mobileIAB-CellList is only a single PCI-Range. This present some unnecessary limitations for instance if there are multiple vehicles with mIAB cells. Other cases of cell lists are typically a list of PCI-Ranges. | Make mobileIAB-CellList a list of PCI-Ranges |  |