3GPP TSG-RAN WG3 #116-e R3-223708

Online, 09th -19th May, 2022

Agenda Item: 9.1.2.1

Source: Huawei (moderator)

Title: Summary of CB: # IAB\_04\_CR38.473

Document for: Approval

# Introduction

This paper is for the following offline discussion:

|  |
| --- |
| **CB: # IAB\_04\_CR38.473****- Agree on needed corrections****- Converge on Single CR**(HW - moderator)Summary of offline disc [R3-223708](file:///C%3A%5Ctemporary%5CRAN3%5CRAN3%20May%2022%5CCB%20sessions%5CIAB_04_38473%5CInbox%5CR3-223708.zip) |

The following papers will be covered as assigned by the chair:

|  |  |  |
| --- | --- | --- |
| [R3-223253](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_116-e%5CDocs%5CR3-223253.zip) | Corrections for IAB (F1AP) (Nokia, Nokia Shanghai Bell) | CR0891r, TS 38.473 v17.0.0, Rel-17, Cat. F |
| [R3-223296](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_116-e%5CDocs%5CR3-223296.zip) | Corrections on IAB in TS 38.473 (ZTE) | CR0898r, TS 38.473 v17.0.0, Rel-17, Cat. F |
| [R3-223387](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_116-e%5CDocs%5CR3-223387.zip) | Correction for IAB inter-donor DU re-routing and resource multiplexing (Huawei, Lenovo) | CR0910r, TS 38.473 v17.0.0, Rel-17, Cat. F |
| [R3-223222](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_116-e%5CDocs%5CR3-223222.zip) | BAP header rewriting list configuration in NR eIAB (Fujitsu) | CR0881r, TS 38.473 v17.0.0, Rel-17, Cat. F |
| [R3-223120](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_116-e%5CDocs%5CR3-223120.zip) | (CR TS 38.473): IAB Rel-17 Corrections (Ericsson) | CR0869r, TS 38.473 v17.0.0, Rel-17, Cat. FMove to 9.1.2.1 |
| [R3-223299](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_116-e%5CDocs%5CR3-223299.zip) | ASN.1 corrections on IAB in TS 38.473 (ZTE) | CR0899r, TS 38.473 v17.0.0, Rel-17, Cat. FMove to 9.1.2.1 |
| [R3-223388](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_116-e%5CDocs%5CR3-223388.zip) | Correction for IAB resource coordination (Huawei) | CR0911r, TS 38.473 v17.0.0, Rel-17, Cat. FMove to 9.1.2.1 |
| [R3-223675](file:///C%3A%5Ctemporary%5CRAN3%5CRAN3%20May%2022%5CCB%20sessions%5CIAB_04_38473%5CInbox%5CR3-223675.zip) | CR to 38.473 for Rel-17 IAB (Qualcomm Incorporated) | CR0962r, TS 38.473 v17.0.0, Rel-17, Cat. FLate contribution |

The moderator merged the changes which maybe easy to be agreed from these papers to one CR, which has also been uploaded in the same folder for further checking. In addition, some changes which may need further discussion, are listed in the section 3.

Please note that the late contribution R3-223675 has also been contained in this discussion.

**Phase I**：Converge on the CRs. Please give your feedback before Wednesday, 11th May, 2022, 12:00 UTC.

**Phase II**：if any need to be further discussed.

# For the Chairman’s Notes

**[To be updated].**

# Discussion-Phase I

## Remaining issues to be discussed

### Issue 1. The condition for a descendant IAB-node of the migrating IAB-node to send the buffered RRCReconfiguration to the child IAB-node.

In [R3-223253], the following change is proposed, for the descendant IAB-node for the concurrent TNL migration.

If the gNB-DU belongs to a descendant node of the migrating IAB-node, that the collocated IAB-MT has received an *RRCReconfiguration* message including the intra-donor migration configurations, e.g., new TNL address(es) and the new default UL BAP routing ID, and the IAB-node has one or more routing entries for the target path.

Since similar issue has been covered by the CB: # IAB\_02\_CR38.401, we can discuss the condition for a descendant IAB-node there, and capture the change if necessary after we have conclusion in that CB. Consequently, there is no question about this issue in this CB.

###  Issue 2: RB set Configuration.

Several papers propose change to the RB set configuration in 9.3.1.230. [R3-223387] suggest to change “RB set” to “RB sets” in the RB set List IE since the terminology should be RB sets based on RAN1 discussion and agreement.

[R3-223120] propose to remove the *RB set list* IE and just add “The value is at least the number of PRBs corresponding to the number of configured IAB-MT’s PRBs” to the semantics description of the *RB Set Size* IE, while [R3-223296], [R3-223120] and [R3-223675] propose to remove the *RB set list* IE. [R3-223296] and [R3-223675] further propose to add a new *Number of RB Sets* IE in the 9.3.1.230, the change is pasted below:

9.3.1.230 RB Set Configuration

This IE contains the RB Set Configuration. The IE is only applicable if the gNB-DU is an IAB-DU.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **IE/Group Name** | **Presence** | **Range** | **IE type and reference** | **Semantics description** |
| Subcarrier Spacing | M |  | ENUMERATED (kHz15, kHz30, kHz60, kHz120, kHz240, spare3, spare2, spare1, …) | Subcarrier spacing used as reference for the RB set configuration. |
| RB Set Size | M |  | ENUMERATED (rb2, rb4, rb8, rb16, rb32, rb64) | Number of PRBs in each RB set. The value is at least the number of PRBs corresponding to the number of configured IAB-MT’s PRBs. |
| Number of RB Sets | M |  | INTEGER(1.. *maxnoofRBsetsPerCell)* | Number of configured RB sets. The RB sets are contiguous and non-overlapping.The start RB index of the first RB set is the lowest index of RB of the IAB-DU cell. |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

|  |  |
| --- | --- |
| **Range bound** | **Explanation** |
| maxnoofRBsetsPerCell | Maximum no. of RB sets per IAB-DU or IAB-donor-DU cell. Value is 8.  |
| maxnoofPhysicalResourceBlocks | Maximum no. of Physical Resource Blocks. Value is 275. |

**Q1-1: Do you agree that the terminology “RB set” should be “RB sets” in the *RB set List* IE?**

**Q1-2: Do you agree that the *RB set List* IE be replaced by the “number of RB sets”?**

**Q1-3: Do you agree to add “The value is at least the number of PRBs corresponding to the number of configured IAB-MT’s PRBs” to the semantics description of the *RB Set Size* IE?**

**Q1-4: Do you agree with removing the words “or IAB-donor-DU” from the explanation of maxnoofRBsetsPerCell in the table below the tabular?**

|  |  |  |
| --- | --- | --- |
| **Company** | **Yes/No** | **Reasons/Comments** |
| Huawei | **Q1-1: Yes****Q1-2: No****Q1-3: No** | **Q1-1:** Yes, this reflects the real terminology, can avoid misunderstanding.**Q1-2:** Such change only make sense in the case that each RB sets in a cell has common size, but there is no such agreement from RAN1’s LS (R3-222799), so the change is not correct. **Q1-3**: The added sentence is not necessary and somehow confusing. Since the LS R3-222799 stated that “List of values for N = {2, 4, 8, 16, 32, 64}” (agreed in RAN1 106-e) and the current version is clear enough. [R3-223120] which propose the change, refers to the RAN1 105-e meeting agreement “*N is at least the # PRBs that are corresponding to the MT’s # PRBs of an RBG)*”, according to my understanding, this agreement is just for discussing the value of N. Now that the value of N has been agreed in RAN1 106-e, this agreement is outdated. |
| **Ericsson** | **Q1-1: No****Q1-2: Yes****Q1-3: Yes****Q1-4: Yes** | **Q1-1:** to start with, **the RB Set List IE should not be there at all**. Reasons:* RB Set Index is already present in 9.3.1.107. This means that ***RB Set Index* IE is not needed.**
* Initial RB index is not necessary, as RAN1 has agreed the following at RAN1#108-e: “*The start RB index of the first RB set for the Rel-17 IAB-DU HSNA resource configuration is the lowest index of RB of the IAB-DU cell*”. This means that ***Initial RB Index* IE is not needed**.

**Q1-2:** We support the change proposed by QC and ZTE. Wrt Huawei’s comment, in fact, **all RB sets in a cell do have the same size.** Please check the below agreement.**RAN1 #106bis-e****Agreement**A single value for the RB set size, N, is configured for a given IAB-DU cell’s Rel-17 frequency domain H/S/NA configuration**Q1-3:** At the RAN1#105-e it was agreed:“*N is at least the #PRBs that are corresponding to the MT’s #PRBs of an RBG*”.A comment **to Huawei**: it is **incorrect that the RAN1#105-e agreement above is outdated, it is still valid**. Please check the agreement that you claim is making it outdated:**RAN1 #106-e****Agreement**N is a configured number of PRBs, where the CU configures N* N = {2, 4, 8, 16, 32, 64}
* FFS: Value(s) of N in case of multiple configured BWPs at the IAB-MT
* This agreement does not revert any existing RAN1 agreement

The “does not revert” refers to “at least #PRBs” from the RAN1#105-e agreement above. Some RAN1 companies wanted the reversion, but RAN1 rejected it.**Q1-4:** the words **“or IAB-donor-DU” should be removed** from the explanation of maxnoofRBsetsPerCell in the table below the tabular. The **donor-DU has no MT**, so there is no resource coordination (time or frequency HSNA) required. RAN1 never considered to configure a donor-DU with HSNA. For example, the meaning of Soft is “can transmit when the co-located MT is not impacted” – but there is no co-located MT at the donor-DU.  |
| QC | **Q1-1: No****Q1-2: Yes****Q1-3: Yes****Q1-4: No** | Q1-1: Agree with EricssonQ1-2: Yes, to align with RAN1.Q1-3: Not needed.Q1-4: The IAB-donor-Du should remain. The donor-DU can be configured with H/N, e.g., if resource is hard-partitioned between donor-DU and its child. |
| Samsung  | Q1-1: No Q1-2: YESQ1-3: NoQ1-4: No | Need to align with XnAP. |
| ZTE | Q1-1: NoQ1-2: YesQ1-3: NoQ1-4: No  | Q1-1: The RB Set List IE should be removed according to the last RAN1 LS. Q1-2: Yes, number of RB sets IE is needed according to the last RAN1 LS.Q1-3: The sentence “The value is at least the number of PRBs corresponding to the number of configured IAB-MT’s PRBs” is not clear and confusing. We think there are the following two understandings and we are not sure which one is correct:Understanding 1: the value is equal to or larger than the number of MT's PRBs; Understanding 2: the number of MT's PRBs could be configured as the value of RB Set size, meanwhile values that are smaller than the number of MT's PRBs may be configured as the value of RB Set size as well. In current specification, the value range of RB Set Size is {2, 4, 8, 16, 32, 64}, which is clear enough. So we don’t think we need to add additional description. Q1-4: Wo, we share the same view with QC that donor DU could be configured with H/N configuration so that resource multiplexing could be achieved at child node.  |
| Lenovo | Q1-1: No Q1-2: YesQ1-3: NoQ1-4: Yes | Q1-1: Agree with EricssonQ1-2: Agree with Ericsson to align with the RAN1’s agreements.Q1-3: Not necessary to add such description.Q1-4: Yes, the IE is only applicable if the gNB-DU is an IAB-DU. |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

###  Issue 3: terminology

[R3-223675] proposed to use “Non-F1-Terminating IAB-donor’s Topology Indicator” instead of “Non-F1-Terminating Topology Indicator”, and will result in several changes as below.

9.2.9.1 IAB messages – BAP Mapping configuration:

* Changed name of “Non-F1-Terminating Topology Indicator” IE to “Non-F1-Terminating IAB-donor’s Topology Indicator” and the associated semantics description inside the “BAP MAPPING CONFIGURATION” IE.

9.3.1.98 BAP layer – BH RLC channel mapping Information List

* Changed names of “Ingress Non-F1-terminating Topology Indicator” IE and “Egress Non-F1-terminating Topology Indicator” IE to “Ingress Non-F1-terminating IAB-donor’s Topology Indicator” IE and “Egress Non-F1-terminating IAB-donor’s Topology Indicator” IE respectively and the associated semantics description inside the “BAP layer BH RLC channel mapping Information List” IE.

 9.3.1.114 BH Information

* Changed name of “Non-F1-Terminating Topology Indicator” IE to “Egress Non-F1-Terminating IAB-donor’s Topology Indicator” and the associated semantics description inside the “BH Information” IE.

**Q2: Do you agree to change “Non-F1-Terminating Topology Indicator” to be “Non-F1-Terminating IAB-donor’s Topology Indicator” for several clauses in the F1AP spec?**

|  |  |  |
| --- | --- | --- |
| **Company** | **Yes/No** | **comments if any** |
| Huawei | No | Not necessary, the change is not essential, the current terminology is simpler, and clear enough. |
| **Ericsson** | **Yes,** with a modification | The current name does not explicitly refer to IAB, so we support the change. The addition should be **“IAB-donor”**, the “’s” is unnecessary and the apostrophe cannot be written in asn.1.  |
| QCOm | Yes | We should use proper terminology. There is no (non-)F1-terminating topology! |
| Samsung  | Yes |  |
| ZTE | Yes  | Agree with Ericsson that “Non-F1-Terminating Topology Indicator” could be changed to be “Non-F1-Terminating IAB-donor Topology Indicator” |
| Lenovo | Yes | “Non-F1-Terminating IAB-donor’s Topology Indicator” is better. |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |