**3GPP TSG-RAN WG3 Meeting #107-e R3-20xxxx**

**Electronic Meeting, February 24th – March 6th, 2020**

**Agenda item:** 13.3.2.1

**Source:** Qualcomm Incorporated

**Title:** CB: # 49\_Email049-IAB\_migration\_criteria

**Document for:** Agreement

# 1 Introduction

This document discusses:

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| **CB: # 49\_Email049-IAB\_migration\_criteria****- RLF recovery st2? (QC), (SS), (HW)****- any other aspects? (AT&T), (HW 0756), (KDDI)****- attempt agreement on “common denominator” st2 TP; merge/revise as needed; check details**(QC)Summary of offline disc R3-201147 |

**The following contributions have been considered:**

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| R3-200571 | (TP for NR-IAB BL CR for 38.401) IAB node reestablishment (Samsung) | other |
| R3-200761 | (TP for NR\_IAB BL CR for TS 38.401): Backhaul RLF Recovery (Huawei) | other |
| R3-200418 | (TP for NR\_IAB BL CR to TS 38.401) BH RLF recovery (Qualcomm Incorporated) | otherMove to 13.3.2.1 |
| R3-200637 | (TP for NR-IAB BL CR for TS 38.473): F1AP signaling to indicate IAB node congestion (AT&T) | discussionMove to 13.3.2.1 |
| R3-200756 | CP based E2E flow control for IAB (Huawei) | discussionMove to 13.3.2.1 |
| R3-200319 | Considerations on Intra-CU topology adaptation procedure (KDDI Corporation) | discussionMove to 13.3.2.1 |

**These contributions cover the following distinct topics:**

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| [R3-200571](file:///C%3A%5C%5Ctemporary%5C%5CUsers%5C%5Cghampel%5C%5CAppData%5C%5CLocal%5C%5CTemp%5C%5CTemp1_RAN3_107-e_agenda_with_Tdocs_20200221_1346.zip%5C%5Cdocs%5C%5CR3-200571.zip), [R3-200761](file:///C%3A%5C%5Ctemporary%5C%5CUsers%5C%5Cghampel%5C%5CAppData%5C%5CLocal%5C%5CTemp%5C%5CTemp1_RAN3_107-e_agenda_with_Tdocs_20200221_1346.zip%5C%5Cdocs%5C%5CR3-200761.zip), [R3-200418](file:///C%3A%5C%5Ctemporary%5C%5CUsers%5C%5Cghampel%5C%5CAppData%5C%5CLocal%5C%5CTemp%5C%5CTemp1_RAN3_107-e_agenda_with_Tdocs_20200221_1346.zip%5C%5Cdocs%5C%5CR3-200418.zip) | **BH RLF recovery procedure** |
| [R3-200637](file:///C%3A%5C%5Ctemporary%5C%5CUsers%5C%5Cghampel%5C%5CAppData%5C%5CLocal%5C%5CTemp%5C%5CTemp1_RAN3_107-e_agenda_with_Tdocs_20200221_1346.zip%5C%5Cdocs%5C%5CR3-200637.zip), [R3-200756](file:///C%3A%5C%5Ctemporary%5C%5CUsers%5C%5Cghampel%5C%5CAppData%5C%5CLocal%5C%5CTemp%5C%5CTemp1_RAN3_107-e_agenda_with_Tdocs_20200221_1346.zip%5C%5Cdocs%5C%5CR3-200756.zip) | **F1AP congestion notification** |
| [R3-200319](file:///C%3A%5C%5Ctemporary%5C%5CUsers%5C%5Cghampel%5C%5CAppData%5C%5CLocal%5C%5CTemp%5C%5CTemp1_RAN3_107-e_agenda_with_Tdocs_20200221_1346.zip%5C%5Cdocs%5C%5CR3-200319.zip) | **Intra-CU topology adaptation** |

**BH RLF recovery procedure**

The three contributions discuss intra-CU BH RLF recovery procedures for SA mode. R3-200418 also discusses inter-CU BH RLF recovery for SA mode as well as intra/inter-CU BH RLF recovery for NSA mode.

These contributions have been merged in the TP to IAB BL CR to TS 38.401 below.

The following issue has been identified:

**How does the IAB-node identify if a parent node selected for recovery belongs to the same or a different IAB-donor CU?**

**Option 1: The IAB-node is pre-configured with the local CU gNB-ID.**

**Option 2: The CU sends the gNB-ID to the IAB-node (e.g. via RRC).**

***Please provide your view on Option 1 vs. Option 2.***

***Please review the TP in section 4 and propose corrections/additions as necessary.***

**Ericsson:** this enhancement is not necessary for non-mobile IAB nodes. We think that it is highly unlikely that a node will try to reconnect to a cell other than the original one and it is also very unlikely that the best cell is another cell than the one which was first camped. Besides, if the MT tries to connect to a cell under another CU, that CU can reject and redirect it to another cell.

Please see some changes on the TP as well.

Huawei: Firstly, we agree with Ericsson that the IAB node is fixed for R16 and the IAB node select a parent node be served by a different donor CU is corner case, we do not need to set such constraint for IAB node to perform recovery. And then, even if IAB node want to connect to parent node under same donor CU, the IAB node can identify the parent node becomes to the same or a different IAB-donor CU from the NCGI of the parent node, because the gNB ID is included in the NCGI, no need special solution with standardization impact.

ZTE: Based on 38.300,the CU ID can be identified by NR cell identity (NCI) which contains the gNB ID, so no additional indication is needed.

**F1AP congestion reporting**

The two contributions propose that the IAB-node reports congestion-related information via F1-AP to the CU-CP. In this manner, the CU-CP can apply congestion alleviation measures such as changes to resource configuration or changes to topology and routing.

Both contributions propose leverage the GNB-DU STATUS INDICATION message for such congestion reporting. The discussion will therefore focus on extensions to this message only.

R3-200637 proposes that the IAB-node reports congestion in binary format (congested/non-congested) per DU. R3-200756 proposes reporting of congestion or link load with child link granularity.

Companies are invited to provide their view on the support of this feature. Rapporteur has enclosed the TP to BL CR 38.473 from R3-200637, which can serve as baseline.

***Please provide feedback on the following questions:***

***Q1: Should congestion reporting via F1AP GNB-DU STATUS INDICATION be supported in Rel-16 IAB?***

Huawei: Yes

***Q2: If yes, with what granularity (e.g. per DU, per child link, etc).***

Huawei: we prefer per child link, from our point view, the current overload indication in gNB-DU STATUS INDICATION is a per DU level report, per child link reporting enhancement is beneficial to let the CU-CP know which link is congested.

**Ericsson:** this issue is within the Rel17 scope and should not be treated within Rel16.

ZTE: agree with Ericsson.

**Intra-CU topology adaptation procedure**

This topic is handed by email discussion **CB: # 50\_Email050-IAB\_migration\_same\_donor** and will not be addressed here.

# 3 Conclusion

TBD…

# 4 TP for IAB BL CR to TS 38401: RLF Recovery

START OF CHANGE

### 8.2.z Intra-CU Backhaul RLF recovery for IAB-nodes in SA mode

The intra-CU backhaul RLF recovery procedure for IAB-node in SA mode enables migration to another parent node underneath the same IAB-donor CU, when the IAB-node’s MT determines a backhaul RLF. The determination of backhaul RLF is described in TS 38.331 [yy].

Figure 8.2.v-1 shows an example of the BH RLF recovery procedure for an IAB-node in SA mode. In this example, the IAB-node changes from its initial parent node to a new parent node, and the new parent node is served by a different IAB-donor DU than the initial parent node.



**Figure 8.2.z: IAB intra-CU backhaul RLF recovery procedure for an IAB-node in SA mode**

1. The IAB-node MT determines BH RLF as described in TS 38.3331 [yy], clause [9.2.7].
2. The recovering IAB-node MT conducts the RRC re-establishment procedure at the recovery parent node as defined in clause 8.7. In this procedure, the IAB-donor CU may include new TNL address(es), which are anchored at the recovery-path IAB-donor DU.

3. The remaining part of the procedure follow steps 11-15 of the intra-CU topology adaptation procedure as defined in clause 8.2.x.

Descendant nodes of the IAB-node recovering from RLF may also need to switch to new TNL address(es) that is (are) anchored at the target-path IAB-donor DU, following the same mechanism as described for IAB inter-CU topology adaptation procedure [clause 8.2.x].

END OF CHANGE

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