

[93e-20-IAB-WI] - Version 0.0.7
RAN

3GPP TSG-RAN Meeting #93e Electronic

RP-21xxxx

Electronic meeting, September 13 – 17 Sep 2021

Agenda items: 9.3.2.6, 9.3.2.2

Title: Email discussion [93e-20-IAB-WI]

Source: Qualcomm (Moderator)

Document for: Discussion

1 Introduction

This email discussion considers 8 contributions to RAN#93 related to the down-scoping of WI objectives for Rel-17 IAB and the moving of TUs from Rel-17 IAB WI to NTN WI.

RP-211769 [1] assesses the progress of all RAN WGs for NR_IAB_enh. It is observed that in RAN2, no agreement could be achieved for the WID sub-objective “enhancements to improve topology-wide fairness, multi-hop latency and congestion mitigation”. Based on this analysis, the authors propose:

Proposal: TSG RAN to consider rescoping the RAN2-led WI objective on topology, routing and transport enhancements:

- **Deprioritize “enhancements to improve topology-wide fairness, multi-hop latency and congestion mitigation” since no agreements have been achieved.**
- **Prioritize enhancements to LCG-range, RLF indication, and local rerouting in the WID, since progress has been made on these topics.**
- **Reflect these changes in the WID.**

RP 211768 [2] provides a WID update that captures the proposal in RP-211769. The following change is proposed:

- Specifications of enhancements to **LCG range, RLF indication and local rerouting** improve topology-wide fairness, multi-hop latency and congestion mitigation.

RP-211775 [3] has a similar view on the progress in RAN2. The contribution includes the chairman notes on related to the WID sub-objective ”enhancements to improve topology-wide fairness, multi-hop latency and congestion mitigation”:

Chair: It seems all proposals have strong opposition.

Chair: None of the proposals can be agreed for now. P3 not agreeable at all. P4 seems to have significant resistance with objections. P2 and potentially P5 (or variants thereof) can possibly be kept on the table for another meeting cycle.

Chair expect deprioritization proposals for discussion at RP (as previous RP).Noted, no agreements.

-> Noted

The contribution proposes:

Proposal:

- **RAN plenary make guidance for deprioritization of RAN2 Rel-17 IAB work in RAN#93.**
- **RAN approve the following guidance: RAN2 deprioritize “topology-wide fairness, latency reduction and congestion mitigation” EXCEPT already RAN2 agreed topics (i.e., LCG range extension, RLF indication and local rerouting based on flow-control feedback).**

RP-212025 [4] also believes that no further progress can be made for topology-wide fairness and multi-hop latency. The authors emphasize that RAN3 has made progress in CP-based congestion mitigation while deprioritizing UP-based congestion mitigation. The contribution therefore disregards from down-scoping congestion mitigation:

Proposal: RAN plenary to discuss the down-scope of the following enhancement options:

- **Topology-wide fairness;**
- **latency reduction.**

RP-212203 [5] discusses the RAN2-led main objective on “topology, routing and transport enhancement”. The contribution emphasizes that RAN2 needs to make progress on RAN3-related topics, on local rerouting, type-2/3 RLF handling, etc., but it should discontinue discussion on “enhancements to improve topology-wide fairness, multi-hop latency and congestion mitigation”. The following proposal is made:

Proposal: The ”Topology, routing and transport enhancements”-objective is removed from eIAB.

The moderator believes that the objective of ”topology, routing and transport enhancements” includes some of the topics the contribution considers important, i.e., local-rerouting, and type-2/3 RLF handling, for instance.

RP-212236 [6] performs the same analysis as the prior contributions and reaches the following conclusion:

Proposal: In the WID, the RAN2-led objective on ‘enhancements to improve topology-wide fairness, multi-hop latency and congestion mitigation’ should be deprioritized except for the previously agreed enhancements (e.g., on LCG range extension).

RP-212417 [7] discusses RAN2 progress on WID sub-objective “enhancements to improve topology-wide fairness, multi-hop latency and congestion mitigation”. The contribution elaborates on the most recent RAN2 discussion related to the configuration of remaining hop count and UL hop-by-hop flow control, which did not achieve consensus in RAN2. The following proposal is made:

Proposal 1: Considering the stringent timeline of R17 IAB, it is suggested that RAN plenary give guidance to RAN2 to de-prioritize issues on topology-wide fairness/latency/congestion expect LCG range extension, RLF indication and local re-routing.

The contribution further discusses the topic of inter-donor DU migration, which relates to the RAN3-based on WID objective on “Specification of procedures for inter-donor IAB-node migration to enhance robustness and load-balancing, including enhancements to reduce signalling load”. RAN3 sent LSs to RAN1, RAN2 and RAN4. The authors believe that none of the four RAN WGs has found a problem with one of the solution candidates, referred to as *Alternative 1*. The contribution therefore recommends that TSG RAN provide some guidance to RAN WGs to make faster progress:

Proposal 2: It is suggested that RAN plenary give guidance to RAN2&3 to prioritize full migration support with alternative 1 in upcoming meetings.

RP-212359 [8] discusses Rel-17 IAB as well as NTN WIs. The contribution emphasizes that both WIs lag with respect to their WID objectives. For Rel-17 IAB, the authors propose:

Proposal 1: Descope the objective of fairness, latency and congestion mitigation enhancements from the eIAB WID.

Further, the contribution demands that time units to be shifted from eIAB to NTN:

Proposal 2: Reuse the remaining TUs after descoping eIAB objectives of fairness, latency and congestion mitigation enhancements to NR NTN items which are pending LS responses from other WGs.

2 Initial Email Discussion

All contributions propose to deprioritize objectives related to enhancements to improve topology-wide fairness and multi-hop latency.

Feedback Form 1: Q1: Do you agree that the objectives related to enhancements to improve topology-wide fairness and multi-hop latency should be deprioritized?

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| 1 – vivo Mobile Communication Co. Yes |
| 2 – InterDigital Germany GmbH We recognize the issue and so would support deprioritization, but this is a important objective that needs to be finished in release 18 thus needs to be added to the scope of R18 work for IAB. |
| 3 – Futurewei Technologies Yes, we support the downscoping of enhancements for topology-wide fairness and multi-hop latency from Rel-17 WI. |

4 – Intel Corporation (UK) Ltd

Agree. In RAN2 #115e meeting, this objective took around 80% of online e-meeting and also a long email discussion to discuss the details of each proposed solutions. It is considered RAN2 has analyzed and understood the pros and cons of each solution. Based on the result of show-of-hand, there are still remaining strong objections to two remaining solutions of topology-wide fairness and multi-hop latency. Considering current progress and limited remaining time in Rel-17, it is hard to reach consensus in remaining RAN2 meeting. Hence, we think it would be good to deprioritized the objectives of topology-wide fairness and multi-hop latency.

5 – Verizon UK Ltd

Yes considering the slowness of progress, but these objectives are relevant and need to be added to Rel-18

6 – CATT

Yes, based on our analysis in RP-212236.

7 – Apple Poland Sp. z.o.o.

The issue from our view is very important but due to the lack of any agreements we are wasting precious RAN2 time. We agree to de-prioritize. Also, it would be good to investigate this topic at a future point (maybe R18) as Interdigital has suggested and not waste the outcome of the discussions on the problem statements or the set of solutions that have been identified so far. We agree to de-prioritize.

8 – LG Electronics Inc.

Yes as addressed in our paper (RP-211775)

9 – Samsung Electronics Nordic AB

We are not ready for deprioritization at this RAN plenary meeting.

We understand that no consensus has been reached for several topics, e.g., bearer related information, Packet delay budget, etc. However, these solutions are proposed based on several issues identified in RAN2#113e. “No consensus” does not mean those identified issues are resolved autonomously. Thus, before deprioritizing, we need to evaluate whether we can live with those identified issues, or some solutions are needed.

Accordingly, we prefer to hold on the deprioritization and may decide it in next RAN plenary.

10 – ZTE Corporation

Yes, RAN2 had spent lots of time discussing issues on topology-wide fairness/latency/congestion and few agreements have been achieved so far except LCG range extension, RLF indication and local rerouting. On the other hand, limited time has been spent on other issues which have solid justification, e.g., inter-donor migration, service interruption reduction, RLF indication. It is suggested that issues on topology-wide fairness/latency/congestion are de-prioritized except LCG range extension, RLF indication and local rerouting.

11 – Ericsson LM

Yes

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| <p>12 – Lenovo Mobile Com. Technology</p> <p>Yes. We agree to deprioritize the enhancements for topology-wide fairness and multihop latency.</p> |
| <p>13 – Nokia Italy</p> <p>Agree.</p> |
| <p>14 – Guangdong OPPO Mobile Telecom.</p> <p>yes</p> |
| <p>15 – HUAWEI TECHNOLOGIES Co. Ltd.</p> <p>Huawei, HiSilicon Yes, but...this should not impact on the agreed features (e.g. LCG range extension). It costed lots of TU with no consensus in R17. We don't think this discussion should be continued in R18, i.e. the objective should also be excluded from R18 scope.</p> |

Seven out of eight contributions propose to deprioritize the WID objective related to the enhancements to improve congestion mitigation. One contribution [4] emphasizes that RAN3 has made progress on this objective related to CP-based congestion mitigation, which they believe should be finished. RAN3 has already deprioritized UP-based congestion mitigation.

Feedback Form 2: Q2: Do you agree that enhancements to improve UP-based congestion mitigation should be deprioritized?

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| <p>1 – vivo Mobile Communication Co.</p> <p>Yes</p> |
| <p>2 – Futurewei Technologies</p> <p>Yes</p> |
| <p>3 – Intel Corporation (UK) Ltd</p> <p>Yes, we are ok to deprioritize UP-based congestion mitigation.</p> |
| <p>4 – Verizon UK Ltd</p> <p>Yes</p> |
| <p>5 – Apple Poland Sp. z.o.o.</p> <p>Agree</p> |
| <p>6 – LG Electronics Inc.</p> <p>Yes</p> |
| <p>7 – Samsung Electronics Nordic AB</p> <p>If UP-based congestion mitigation here is referring to UL hop-by-hop congestion mitigation, we agree since UL congestion issue can be resolved by the UL scheduling at the parent node.</p> |

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| <p>8 – CATT</p> <p>Yes.</p> |
| <p>9 – ZTE Corporation</p> <p>It has been agreed in RAN3#112 meeting that the “do nothing” option, i.e. use current DDDS as it is, is selected for IAB DL end-to-end UP-based flow control. So nothing need to be done for user plane congestion mitigation. It is also not necessary to further de-prioritize it.</p> |
| <p>10 – Ericsson LM</p> <p>Yes</p> |
| <p>11 – Lenovo Mobile Com. Technology</p> <p>RAN3 has already agreed to reuse the legacy DDDS for UP based E2E congestion mitigation, then we agree not to introduce additional enhancements for UP based E2E congestion mitigation.</p> <p>While based on the result of show-of-hand in last RAN2 meeting, UL HbH flow control needs to be discussed in R17 eIAB which supported by most of the companies.</p> |
| <p>12 – Guangdong OPPO Mobile Telecom.</p> <p>yes</p> |
| <p>13 – Nokia Italy</p> <p>Agree</p> |
| <p>14 – HUAWEI TECHNOLOGIES Co. Ltd.</p> <p>Huawei, HiSilicon Yes. It seems that RAN3 already deprioritized this discussion.</p> |

Feedback Form 3: Q3: Do you agree that enhancements to improve CP-based congestion mitigation should be deprioritized?

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| <p>1 – vivo Mobile Communication Co.</p> <p>Yes</p> |
| <p>2 – Futurewei Technologies</p> <p>Yes</p> |
| <p>3 – Intel Corporation (UK) Ltd</p> <p>We are ok to deprioritize CP-based congestion mitigation, expect agreements and solutions progressed in RAN3.</p> |
| <p>4 – Verizon UK Ltd</p> <p>Yes</p> |

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| <p>5 – CATT</p> <p>Yes</p> |
| <p>6 – Apple Poland Sp. z.o.o.</p> <p>Agree</p> |
| <p>7 – LG Electronics Inc.</p> <p>No. RAN3 already made quite good progress on CP-based congestion mitigation and only trivial issues are remained. In our view, this can be completed within Rel-17 time line and no need to deprioritize it at this moment.</p> |
| <p>8 – Samsung Electronics Nordic AB</p> <p>It is unclear to us what does “CP-based congestion mitigation” mean here?</p> <p>In RAN3, CP-based congestion mitigation is already agreed and the specification work has some progress. So, there is no need to deprioritize it.</p> <p>However, in RAN2, the CP-based congestion mitigation is based on RAN3 solution or a new solution? Thus, it is better to clarify it before providing feedback.</p> |
| <p>9 – ZTE Corporation</p> <p>For the CP-based congestion mitigation, the remaining issue in RAN3 is to turn the two working assumptions into agreements, i.e., 1) WA: per-BAP routing ID congestion indication will not be pursued in this release; 2) WA: the presence of Child Node Identifier IE is Mandatory, the value of the maxnoofIABCongInd is 1024. Except that, other potential issues on CP-based congestion mitigation can be de-prioritized if any.</p> |
| <p>10 – Ericsson LM</p> <p>Yes</p> |
| <p>11 – Lenovo Mobile Com. Technology</p> <p>Yes</p> |
| <p>12 – Guangdong OPPO Mobile Telecom.</p> <p>yes</p> |
| <p>13 – Nokia Italy</p> <p>Agree.</p> |
| <p>14 – HUAWEI TECHNOLOGIES Co. Ltd.</p> <p>Huawei, HiSilicon Not sure. It seems that RAN3 already agreed the enhanced solution: “The following two types of congestion indication are supported in CP-based congestion mitigation: 1) per child link; 2) per BH RLC CH ID”.</p> |

Several contributions ([1] - [3] and [5] - [7]) emphasize that the work related to LCG-range extension, RLF indications and local rerouting should be continued.

Feedback Form 4: Q4: Do you agree that efforts on LCG-range extension, RLF indications and local rerouting should be continued?

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| <p>1 – vivo Mobile Communication Co.</p> <p>Yes</p> |
| <p>2 – InterDigital Germany GmbH</p> <p>yes</p> |
| <p>3 – Futurewei Technologies</p> <p>Yes</p> |
| <p>4 – AT&T</p> <p>Yes</p> |
| <p>5 – Intel Corporation (UK) Ltd</p> <p>Yes</p> |
| <p>6 – Verizon UK Ltd</p> <p>Yes</p> |
| <p>7 – CATT</p> <p>Yes</p> |
| <p>8 – Apple Poland Sp. z.o.o.</p> <p>Agree. However, we think too much time should not now be spent on solution space identification and restarting the discussions all over again.</p> |
| <p>9 – LG Electronics Inc.</p> <p>Yes. Those topics had been already agreed in RAN2 and the related discussion/efforts should be continued.</p> |
| <p>10 – Samsung Electronics Nordic AB</p> <p>Yes, we agree to continue those works in RAN2</p> |
| <p>11 – ZTE Corporation</p> <p>Yes</p> |
| <p>12 – Ericsson LM</p> <p>Yes</p> |
| <p>13 – Lenovo Mobile Com. Technology</p> <p>Yes</p> |

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| 14 – Nokia Italy Agree. |
| 15 – HUAWEI TECHNOLOGIES Co. Ltd. Huawei, HiSilicon Yes |

Feedback Form 5: Q5: Should RAN#93 consider deprioritization of other WID objectives (please specify)?

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| 1 – vivo Mobile Communication Co. No |
| 2 – InterDigital Germany GmbH no |
| 3 – AT&T No |
| 4 – Intel Corporation (UK) Ltd <input type="checkbox"/> <input type="checkbox"/> |
| 5 – Intel Corporation (UK) Ltd No. My apologies for the above typo. |
| 6 – Verizon UK Ltd No |
| 7 – CATT No |
| 8 – LG Electronics Inc. No |
| 9 – Samsung Electronics Nordic AB So far, we didn't find any necessity to deprioritize any other objectives. |
| 10 – ZTE Corporation No |
| 11 – Ericsson LM No |

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| <p>12 – Lenovo Mobile Com. Technology</p> <p>No</p> |
| <p>13 – Nokia Italy</p> <p>No.</p> |
| <p>14 – HUAWEI TECHNOLOGIES Co. Ltd.</p> <p>Huawei, HiSilicon We are not sure whether the full migration in RAN3 discussion is really essential in R17 and because it has no progress yet in RAN3, it can be a candidate to be deprioritized, if the TUs are considered as not enough.</p> |

One contribution [3] proposes that RAN#93 give guidance to RAN2&3 to prioritize full migration support, Alternative 1.

Feedback Form 6: Q5: Should RAN#93 give guidance to RAN2&3 to prioritize full migration, Alternative 1?

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| <p>1 – vivo Mobile Communication Co.</p> <p>Yes</p> |
| <p>2 – AT&T</p> <p>No, we don't see the need for RAN Plenary to give guidance on this aspect at this time. While Alternative 1 may be simpler, it comes with potentially significant restrictions on network resource utilization. As a result, the WGs should continue looking at the alternatives and discuss benefits and tradeoffs of the potential solutions.</p> |
| <p>3 – Intel Corporation (UK) Ltd</p> <p>No. RAN2 concluded that both Alternative 1 and Alternative 2 need further technical analysis on the specification impact in RAN2. We suggest to continue discuss in WG-level and come back to the next RAN meeting to decide the priority of full migration.</p> |
| <p>4 – Verizon UK Ltd</p> <p>Yes, alternative 1 is simpler</p> |
| <p>5 – CATT</p> <p>We think this belongs to WG discussions. Perhaps no need to conclude anything here in RP.</p> |
| <p>6 – Apple Poland Sp. z.o.o.</p> <p>Maybe holding back for one more meeting until RAN#94e is not a bad option.</p> |
| <p>7 – LG Electronics Inc.</p> <p>We are not sure whether this guidance should be made in this meeting. Considering the discussion/progress of full migration, it would be ok to have one more WG level technical discussion before giving the RAN</p> |

plenary guidance. So, if the guidance is really needed, RAN#94 is more proper meeting to make the guidance.

8 – Samsung Electronics Nordic AB

Yes, we agree that Alternative 1 is a good starting point for full migration in Rel-17.

9 – ZTE Corporation

Yes. Full migration with alternative 1 is relatively simple to implement. Since both RAN1 and RAN2 have not identified technical issues for Alt1, it is suggested prioritize the discussion of full migration support with alternative 1. The guidance from RAN plenary on this may help RAN2/3 to quickly converge.

10 – Ericsson LM

No. Full migration might require quite extensive standardization work both in RAN3 and in RAN2. RAN3 should instead aim at consolidating configuration and signalling aspects for partial migration for which still quite some work is left both in RAN3 and RAN2. RAN3 can keep discussing full migration if there is time left.

11 – Lenovo Mobile Com. Technology

No. It is too early to give guidance in this RAN#93 and further discussions are still needed in RAN1-4.

12 – HUAWEI TECHNOLOGIES Co. Ltd.

Huawei, HiSilicon Maybe, but...a better choice could be to ask RAN3 to deprioritize the whole full migration design. Or, at least, exclude alt.2 for the full migration.

One contribution [8] proposes that in case the Rel-17 IAB WID objective on enhancements to fairness, latency reduction and congestion is deprioritized, some TUs of IAB WI should be moved to NTN WI.

Feedback Form 7: Q7: Do you agree that in case Rel-17 IAB WID objectives related to enhancements to fairness, latency reduction and congestion are deprioritized, some TUs of IAB WI will be moved to NTN WI? (Why? Why Not?)

1 – vivo Mobile Communication Co.

No. there is still a lot of work to do on topology adaptation and local rerouting

2 – Futurewei Technologies

No, there are still enough works for IAB in RAN2/3.

3 – AT&T

No, there is sufficient work for RAN2-led items to justify the TUs, as well as the need for time to address RAN1-led and RAN3-led objectives which have some RAN2 impact.

4 – Intel Corporation (UK) Ltd

No. It is expected RAN2 to use the remaining TUs of Rel-17 eIAB to continue discuss the objective of topology adaptation rather than move to NTN, as there are still a lot of open issues need to be discussed in

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| RAN2. |
| <p>5 – Verizon UK Ltd</p> <p>No, still enough work in RAN2/3</p> |
| <p>6 – CATT</p> <p>Our understanding is that for a WI the scope is adjusted so that the reserved TU allows on time completion. If in some cases the R2 or R3 TU requires adjustments across different WIs that is another discussion. Not sure if anything needs to be concluded from here. So it seems better we focus on IAB scoping here.</p> |
| <p>7 – Apple Poland Sp. z.o.o.</p> <p>Yes. What we feel is that the reduction would allow RAN2 to work more efficiently on the remaining items rather than just get back to discussions aimlessly. Regarding NTN as the proponents, we understand that the 0.5 “potential” TUs might not add much in the overall progress. But, that WI definitely needs additional TUs due to its dependance on other WGs and considering the slower progress in this aspects can use this for better closure on some topics.</p> |
| <p>8 – LG Electronics Inc.</p> <p>No. Although RAN2-led objective is deprioritized, there are still lots of work to do in RAN2 and RAN2 TU relocation to NTN is not needed.</p> |
| <p>9 – Samsung Electronics Nordic AB</p> <p>We disagree to cut TUs of Rel-17 IAB WI.</p> <p>Currently, the progress in both RAN2 and RAN3 are slow. We have several fundamental issues being still open, e.g., inter-donor migration baseline procedure, inter-donor topology redundancy baseline procedure, BAP header rewriting baseline operation, etc. Moreover, to achieve consensus, the cross-WG interactions are clearly desirable between RAN2 and RAN3, which are very much time-consuming.</p> <p>Thus, even we finally decide the deprioritization, those fundamental issues still need enough time for discussion.</p> <p>So, we prefer to keep the TU allocation for Rel-17 IAB WI regardless of decision on deprioritization.</p> |
| <p>10 – ZTE Corporation</p> <p>No. There are still a lot of work for RAN2 IAB to support the topology adaptation, topology redundancy, service continuity, local re-routing and RLF indications.</p> |
| <p>11 – Lenovo Mobile Com. Technology</p> <p>No, there are still enough works in RAN2/3.</p> |
| <p>12 – Nokia Italy</p> <p>No. From both RAN 2 and RAN 3 perspective time is still needed to complete remaining IAB work.</p> |
| <p>13 – HUAWEI TECHNOLOGIES Co. Ltd.</p> <p>Huawei, HiSilicon No strong view</p> |

14 – Beijing Xiaomi Mobile Software

It is not up to the proponents of any particular work item to determine where any unused TUs are reallocated, the need of other work items is a matter for RAN and any identified WI. This discussion should focus on whether all the TUs currently reserved are still required. Seems a majority consensus on this is clear above.

3 Intermediate Email Discussion

3.1 Outcome of initial discussion

On Q1: Do you agree that the objectives related to enhancements to improve topology-wide fairness and multi-hop latency should be deprioritized?

14 (15) companies agree that topology-wide fairness and multi-hop latency should be deprioritized in Rel-17.

1 (15) company admit that no consensus was reached on these topics. However, they emphasize that lack of consensus does not automatically mean deprioritization. They would like to see the discussion on these topics to be continued and potentially revisited in RP#94.

The mediator believes that if there is no consensus to move forward with a topic it should be deprioritized. The replies to Q1 only shows a minority in favor of moving forward with the work on fairness and multi-hop latency but overwhelming support to stop. Based on this outcome, the moderator proposes to deprioritize these topics and revise the WID accordingly.

On Q2: Do you agree that enhancements to improve UP-based congestion mitigation should be deprioritized?

For clarification, UP-based congestion mitigation has been discussed in both, RAN2 and RAN3. RAN3 discussed and deprioritized enhancements to DDDS. For RAN2 has discussed UL hop-by-hop flow control and not reached consensus.

13 (14) companies agree that UP-based congestion mitigation should be deprioritized.

1 (14) company believes that RAN2 should continue the discussion on UL hop-by-hop flow control since a show of hand was conducted which had more than majority view in favor of the feature.

The mediator agrees that the show-of-hands for UL hop-by-hop flow control in RAN2 had a majority in favor. The RAN2 chairman, however, emphasized that there was not consensus to move forward with the matter. As for Q1, also Q2 did only show a minority in favor of moving forward with the work on UP congestion but overwhelming support to stop. For these reasons, the moderator proposes to move forward with a WID revision that deprioritizes this enhancement.

On Q3: Do you agree that enhancements to improve CP-based congestion mitigation should be deprioritized?

For clarification, CP-based congestion mitigation has made progress in RAN3. There hasn't been a major discussion on CP-based congestion mitigation in RAN2, yet.

9 (14) companies are in favor of deprioritizing this effort. The answers do not indicate if they refer to RAN2-

or RAN3-related effort.

5 (14) companies believe that RAN3 work on CP-based congestion mitigation should continue.

The moderator believes that based on this outcome, RAN3-led work on CP-based congestion mitigation should continue and RAN2-led work on CP-based congestion mitigation should be deprioritized.

On Q4: Do you agree that efforts on LCG-range extension, RLF indications and local rerouting should be continued?

14 (14) companies do agree.

The moderator believes that based on this outcome, the WID objectives should include these topics.

On Q5: Should RAN#93 consider deprioritization of other WID objectives (please specify)?

12 (13) companies believe that deprioritization of other WID does not have to be considered at the moment.

1 (13) company believes that full migration might be considered for deprioritization in case RAN WGs run out of TUs.

Full migration is discussed on under Q6. The moderator believes that based on this outcome, no other WID objectives need to be considered for deprioritization in RP#93e.

On Q6 (incorrectly referred to as Q5 in the initial discussion): Should RAN#93 give guidance to RAN2&3 to prioritize full migration, Alternative 1?

4 (11) companies agree with Q6.

7 (11) companies do not agree with Q6, or believe that the matter should not be handled in RP#93e, but in RAN WGs or in RP#94e. T

he moderator does see consensus here. This issue will not be further pursued in this discussion.

Q7: Do you agree that in case Rel-17 IAB WID objectives related to enhancements to fairness, latency reduction and congestion are deprioritized, some TUs of IAB WI will be moved to NTN WI? (Why? Why Not?)

12 (14) companies do not agree.

1 (14) company agrees.

1 (14) company does not have a specific view.

The moderator does see any support for this motion. This issue will not be further pursued in this discussion.

3.2 Proposals for intermediate discussion

There is strong support to deprioritize enhancements to improve topology-wide fairness and multi-hop latency.

Proposal 1: Enhancements to improve topology-wide fairness and multi-hop latency to be deprioritized.

Feedback Form 8: Q101: Do you agree with Proposal 1? If not, please propose a rewording.

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| 1 – vivo Mobile Communication Co. Yes |
| 2 – Intel Corporation (UK) Ltd Yes |
| 3 – CATT Yes |
| 4 – Apple Poland Sp. z.o.o. Yes |
| 5 – Ericsson LM Yes |
| 6 – Samsung Electronics Nordic AB Disagree. We believe that this is not a technically reasonable way-forward. The issues targeted by topology-wide fairness and multi-hop latency have been clearly identified during Rel-17. Such deprioritization seems to indicate that “no consensus” can make those issues disappear. However, we failed to get the solutions on how to resolve the identified issues after deprioritization. Please note that, those issues have been existed since Rel-16. We think ‘no consensus’ on this topic in RAN2 does not mean that the issues are not important, so it is illogical to us to deprioritize the issues in RAN level. Thus, we have concerns on technical feasibility of the deprioritization w.r.t. the identified issues. we prefer to have further evaluation to see if deprioritization is feasible or new solution is needed. Accordingly, we propose the following revision to the proposal: The feasibility of deprioritizing enhancements to improve topology-wide fairness and multi-hop latency needs further evaluation and the decision can be made in next RAN plenary meeting. |
| 7 – ZTE Corporation Yes |
| 8 – LG Electronics Inc. Yes |

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| <p>9 – Lenovo Mobile Com. Technology</p> <p>Yes</p> |
| <p>10 – Nokia Italy</p> <p>Agree.</p> |
| <p>11 – HUAWEI TECHNOLOGIES Co. Ltd.</p> <p>Huawei, HiSilicon Yes</p> |
| <p>12 – Qualcomm Incorporated</p> <p>Yes. These topics have been discussed for a long time without progress. There is only little time left and that time is needed to handle the other topics, i.e., those agreed by RAN2 (LCG range extension, local rerouting, RLF indication) and RAN3-related issues (inter-donor transport).</p> |

There is strong support to deprioritize RAN2-led efforts on congestion mitigation. However, RAN3-led efforts on CP-based congestion mitigation should continue.

Proposal 2: RAN2-led efforts on enhancements to congestion mitigation to be deprioritized. Ongoing RAN3-led efforts on CP-based congestion mitigation to continue.

Feedback Form 9: Q102: Do you agree with Proposal 2? If not, please propose a rewording.

| |
|---|
| <p>1 – vivo Mobile Communication Co.</p> <p>Yes</p> |
| <p>2 – Intel Corporation (UK) Ltd</p> <p>Yes</p> |
| <p>3 – CATT</p> <p>Yes</p> |
| <p>4 – Apple Poland Sp. z.o.o.</p> <p>yes</p> |
| <p>5 – Verizon UK Ltd</p> <p>Yes</p> |
| <p>6 – Samsung Electronics Nordic AB</p> <p>According to the discussion, the main focus is the UL hop-by-hop congestion mitigation. So, it is better to clearly mention it, i.e.,</p> <p>Proposal 2: RAN2-led efforts on enhancements to UL hop-by-hop congestion mitigation to be deprioritized. Ongoing RAN3-led efforts on CP-based congestion mitigation to continue.</p> |

| |
|--|
| <p>7 – ZTE Corporation</p> <p>Yes</p> |
| <p>8 – Ericsson LM</p> <p>Yes</p> |
| <p>9 – LG Electronics Inc.</p> <p>Yes</p> |
| <p>10 – Lenovo Mobile Com. Technology</p> <p>Since Q2 in the initial round was asked only for RAN3 UP-based solution. For RAN2-led UL HbH flow control, we prefer to discuss it in this release. and we can also compromise to deprioritize it in this release if most companies agree.</p> |
| <p>11 – Nokia Italy</p> <p>Agree.</p> |
| <p>12 – HUAWEI TECHNOLOGIES Co. Ltd.</p> <p>Huawei, HiSilicon Yes, but it is important to clarify in the proposal whether UL hop-by-hop flow control is also deprioritized or not.</p> |
| <p>13 – Qualcomm Incorporated</p> <p>Yes</p> |

There is strong support to continue efforts on LCG-range extension, RLF indications and local rerouting.

Proposal 3: RAN2-led efforts on enhancements to LCG-range extension, RLF indications and local rerouting to continue.

Feedback Form 10: Q103: Do you agree with Proposal 3? If not, please propose a rewording.

| |
|--|
| <p>1 – vivo Mobile Communication Co.</p> <p>Yes</p> |
| <p>2 – Intel Corporation (UK) Ltd</p> <p>Yes</p> |
| <p>3 – CATT</p> <p>Yes</p> |
| <p>4 – Apple Poland Sp. z.o.o.</p> <p>yes</p> |

| | |
|---|-----------------------|
| 5 – Ericsson LM | Yes |
| 6 – Verizon UK Ltd | Yes |
| 7 – Samsung Electronics Nordic AB | Yes |
| 8 – ZTE Corporation | Yes |
| 9 – LG Electronics Inc. | Yes |
| 10 – Lenovo Mobile Com. Technology | Yes |
| 11 – Nokia Italy | Agree. |
| 12 – HUAWEI TECHNOLOGIES Co. Ltd. | Huawei, HiSilicon Yes |
| 13 – Qualcomm Incorporated | Yes |

The moderator proposes to start discussion on a WID revision. Since the potential changes are rather minor, the moderator believes that the discussion can be conducted in the NWM tool. The moderator proposes the following WID rewording of the WID objective in question:

Topology, routing and transport enhancements [RAN2-led, RAN3]:

- Specifications of enhancements to **LCG range, RLF indication and local rerouting** [RAN2-led, RAN3].~~improve topology-wide fairness, multi-hop latency and congestion mitigation.~~*
- Specification of enhancements to **CP-based congestion mitigation** [RAN3-led, RAN2].*

Feedback Form 11: Q104: Do you agree with the proposed WID change? If not, please propose a rewording.

| |
|--|
| 1 – vivo Mobile Communication Co. |
| Yes |
| 2 – Intel Corporation (UK) Ltd |
| Yes |
| 3 – CATT |
| Yes |
| 4 – Apple Poland Sp. z.o.o. |
| yes |
| 5 – Samsung Electronics Nordic AB |
| This depends on discussion results of Q101. |
| 6 – ZTE Corporation |
| Yes |
| 7 – Ericsson LM |
| Yes |
| 8 – LG Electronics Inc. |
| Yes |
| 9 – Lenovo Mobile Com. Technology |
| This depends on discussion results of Q102. |
| 10 – Nokia Italy |
| Agree. |
| 11 – HUAWEI TECHNOLOGIES Co. Ltd. |
| Huawei, HiSilicon Yes, but it is important to clarify whether UL hop-by-hop flow control is still in the scope or not. |
| 12 – Qualcomm Incorporated |
| Yes |

4 Final Email Discussion

4.1 Proposal 1

Proposal 1: Enhancements to improve topology-wide fairness and multi-hop latency to be deprioritized.

11 (12) companies agree on the proposal.

1 (12) company disagrees. They believe that these issues have been identified in Rel-17 and that deprioritization would not make these issues go away. They propose the following rewording:

“The feasibility of deprioritizing enhancements to improve topology-wide fairness and multi-hop latency needs further evaluation and the decision can be made in the next RAN plenary meeting.”

The moderator’s view:

On the opponent’s point: The moderator agrees that the issues of topology-wide fairness and multi-hop latency were identified during Rel-17, and they will not go away by deprioritization. However, it seems that the proposal for deprioritization is not based on the claim that there are no issues, or that deprioritization would make issues go away, but that (1) companies are not able to achieve consensus on any solution discussed, and (2) the remaining time is better used to handle topics, where progress can actually be made.

In summary, TSG RAN has three options:

Option 1: deprioritize (11 of 12 in favor)

Option 2: allow further discussion in RAN2 (1 of 12 in favor)

Option 3: do nothing. This implies option 2, which is supported by only 1 company and opposed by 11 companies.

As a result, we keep proposal 1.

Feedback Form 12: Q201: Please provide feedback. If you are unhappy, please propose a WF that would be acceptable to ALL companies.

| |
|---|
| 1 – vivo Mobile Communication Co. Fine |
| 2 – Intel Corporation (UK) Ltd We support to keep option 1. |
| 3 – ZTE Corporation We are fine to keep option 1. |

4 – CATT

Fine with Option 1.

5 – Samsung Electronics Nordic AB

We can understand the intention to make progress in Rel-17. However, this is not a right way to move forward, especially for the issues we already identify, and exist since Rel-16. How can we use a technology with obvious issues on the table?

For the above options, we prefer to start from option 2 to allow us another round of discussion. Such discussion has the following purpose:

- To check whether RAN2 can achieve the consensus on the solutions for the identified issues
- If consensus cannot be achieved, how to deal with those issues (e.g., by implementation, or consider it as left-over for Rel-18, etc) in case of deprioritization?

With the above consideration, we have the following way-forward:

RAN2 spends one more meeting to check the enhancement to improve topology-wide fairness and multi-hop latency with the following purpose:

- **Whether consensus on solutions can be achieved or not**
- **If consensus cannot be achieved, how to deal with the identified issues (e.g., by implementation, or consider it as left-over for Rel-18 IAB)**

The next RAN plenary can make final decision on deprioritization.

6 – LG Electronics Inc.

Support to keep option 1.

As addressed in our paper, one more WG level discussion for deprioritization is not helpful to achieve complete quality of Rel-17 IAB feature and the decision for deprioritization should be made in this plenary meeting.

7 – Ericsson LM

Support option 1.

8 – HUAWEI TECHNOLOGIES Co. Ltd.

Huawei, HiSilicon We think another RAN2 meeting will not help. About solving it by implementation, or consider it as left-over for Rel-18 IAB is a Rel-18 discussion, should be done in that context. Therefore we support the moderator proposal.

9 – Nokia Italy

Support option 1.

4.2 Proposal 2

Proposal 2: RAN2-led efforts on enhancements to congestion mitigation to be deprioritized. Ongoing RAN3-led efforts on CP-based congestion mitigation to continue.

12 (13) agree. Two of these 12 companies would like to explicitly emphasize that UL hop-by-hop flow control is deprioritized.

1 (13) company would like to discuss UL hop-by-hop flow control but is willing to compromise in case all other companies are opposed to it. They further claim that Q2 only addressed RAN3-related congestion mitigation and not RAN2-related congestion mitigation.

The moderator's view:

On the deprioritization of UL hop-by-hop flow control: The moderator believes that UL hop-by-hop flow control is part of RAN2-led efforts on enhancements to congestion mitigation. The moderator does not agree that Q2 only referred to RAN3-related efforts. However, to remove any doubt, we can explicitly include UL hop-by-hop flow control into the proposal. If there is not enough support for this revision, we can revert back to the prior version of the proposal.

Proposal 2': RAN2-led efforts on enhancements to congestion mitigation and UL hop-by-hop flow control to be deprioritized. Ongoing RAN3-led efforts on CP-based congestion mitigation to continue.

Feedback Form 13: Q202: Please provide feedback on proposal 2'. If you are unhappy, please propose a WF that would be acceptable to ALL companies.

| |
|---|
| 1 – vivo Mobile Communication Co. Fine |
| 2 – Intel Corporation (UK) Ltd We are ok with proposal 2'. |
| 3 – ZTE Corporation We are fine with proposal 2. |
| 4 – Samsung Electronics Nordic AB We understand the “RAN2-led efforts on enhancements to congestion mitigation” is referring to “UL hop-by-hop flow control”. So, we propose to have the following proposal: RAN2-led efforts on enhancements to UL hop-by-hop congestion mitigation to be deprioritized. Ongoing RAN3-led efforts on CP-based congestion mitigation to continue. Please note that, RAN2 already made some agreements related to DL hop-by-hop congestion mitigation, e.g., “A configured threshold of available buffer size based on flow control feedback is used to determine the congestion, for the purpose of local re-routing.” |

| |
|---|
| <p>5 – LG Electronics Inc.</p> <p>We are fine with Proposal 2’.</p> |
| <p>6 – CATT</p> <p>fine with P2.</p> |
| <p>7 – Ericsson LM</p> <p>P2 is fine</p> |
| <p>8 – HUAWEI TECHNOLOGIES Co. Ltd.</p> <p>Huawei, HiSilicon we can accept P2 from the moderator</p> |
| <p>9 – Nokia Italy</p> <p>Support proposal 2 on the condition that proposal 1 is also agreed.</p> |

4.3 Proposal 3

Proposal 3: RAN2-led efforts on enhancements to LCG-range extension, RLF indications and local rerouting to continue.

12 (12) companies are happy with the proposal.

The moderator believes that no further discussion is necessary on P3.

4.4 WID revision

Proposed WID revision:

Topology, routing and transport enhancements [~~RAN2-led, RAN3~~]:

- *Specifications of enhancements to **LCG range, RLF indication and local rerouting** [~~RAN2-led, RAN3~~].~~improve topology-wide fairness, multi-hop latency and congestion mitigation.~~*
- *Specification of enhancements to **CP-based congestion mitigation** [~~RAN3-led, RAN2~~].*

10 (12) companies support this WID revision

1 (10) company believes that the revision depends on the outcome of Q101 intermediate round.

1 (10) company believes that the revision depends on the outcome of Q102 intermediate round, i.e., the explicit support of UL hop-by-hop flow control.

The moderator’s view:

The moderator believes that the WID revision above is in compliance with the outcome of Q101. For Q102, the moderator has updated the proposal to include explicit deprioritisation of UL hop-by-hop flow control. If there is agreement on such deprioritisation, it does not have to be explicitly included into the WID revision, since the WID capture what RAN WGs should do and not what they shouldn't do.

For these reasons we keep the WID revision AS IS in the final round.

Feedback Form 14: Q204: Please provide feedback on this WID revision. If you are unhappy, please propose a WF that would be acceptable to ALL companies and consistent with the outcome of the intermediate round discussion.

| |
|--|
| <p>1 – vivo Mobile Communication Co.</p> <p>Ok</p> |
| <p>2 – Intel Corporation (UK) Ltd</p> <p>We support the proposed WID revision.</p> |
| <p>3 – ZTE Corporation</p> <p>We are fine with the revision.</p> |
| <p>4 – CATT</p> <p>OK.</p> |
| <p>5 – Samsung Electronics Nordic AB</p> <p>The WID is not ready for revision before our concerns to Q201 are resolved. We can make decision in next RAN plenary meeting.</p> |
| <p>6 – LG Electronics Inc.</p> <p>We support the proposed WID revision.</p> |
| <p>7 – Ericsson LM</p> <p>It is fine</p> |
| <p>8 – HUAWEI TECHNOLOGIES Co. Ltd.</p> <p>Huawei, HiSilicon the WID should be updated as proposed by the moderator</p> |
| <p>9 – Nokia Italy</p> <p>Support the proposal.</p> |

5 Final Summary

The email discussion established 3 proposals entailing recommendations for RAN2 and RAN3 and a 4th proposal for a WID revision.

5.1 Proposal 1

Proposal 1 relates to the downscoping of the RAN2-led WID objective on topology-wide fairness and multi-hop latency. The contributions to RP#93 claim that such downscoping was justified since RAN2 had discussed this topic extensively, established multiple solutions, but that companies could not achieve consensus on any of these solutions. The initial round produced strong support for such deprioritization. Based on this outcome, the intermediate round discussed P1:

Proposal 1: Enhancements to improve topology-wide fairness and multi-hop latency to be deprioritized.

11 (12) companies **agreed** on the proposal in the intermediate round.

1 (12) company **disagrees** on the proposal in the intermediate round.

The **promoters** of this proposal believe that RAN2 should spend its remaining TUs on the other WID objectives, where progress has been made or which have interdependences with other RAN WGs.

The **opponent** argues that these issues have been identified in Rel-17 and that deprioritization would not make these issues go away. The company proposes to continue for one more quarter and revisit the topic in RP#94.

The final round of the discussion did not change these positions.

5.2 Proposal 2

The second proposal relates to the downscoping of the WID objective on enhancements to congestion mitigation. Some contributions to #93 propose that RAN2-led efforts should be deprioritized for the same reasons as discussed for proposal 1. In the initial round, there was strong support to deprioritize RAN2-led efforts on congestion mitigation but several companies felt that RAN3-led efforts on CP-based congestion mitigation had made progress and should continue. Based on this, the intermediate round discussed proposal 2:

Proposal 2: RAN2-led efforts on enhancements to congestion mitigation. Ongoing RAN3-led efforts on CP-based congestion mitigation to continue.

11 (13) agreed on this proposal. Two of these companies proposed to explicitly deprioritize UL hop-by-hop flow control.

1 (13) company proposed to only deprioritize hop-by-hop flow control.

1 (13) company preferred to continue discussion on UL hop-by-hop flow control but was willing to compromise in case all other companies wanted to deprioritize.

The final round discussion included deprioritization of UL hop-by-hop flow control into P2:

Proposal 2': RAN2-led efforts on enhancements to congestion mitigation and UL hop-by-hop flow control to be deprioritized. Ongoing RAN3-led efforts on CP-based congestion mitigation to continue.

7 (8) companies **agree** on this proposal. One of these companies makes the agreement conditional on agreement of proposal 1.

1 (8) company **disagrees** with the proposal.

The opponent of P2' emphasizes that RAN2 actually has made some progress on DL hop-by-hop flow control and that this effort should continue. The moderator believes that this aspect might have been overseen by the other companies. For that reason, the moderator proposes to either discuss an update to P2' in the extended email discussion of RP#93, or to move discussion on deprioritization of congestion mitigation to RP#94.

In case there is an extended email discussion, the updated proposal to be discussed would be:

Proposal 2'': RAN2-led efforts on UL hop-by-hop flow control to be deprioritized.

5.3 Proposal 3

Proposal captures the topics where RAN2 has made progress and should still be working on.

Proposal 3: RAN2-led efforts on enhancements to LCG-range extension, RLF indications and local rerouting to continue.

12 (12) companies agree with this proposal, i.e., consensus was achieved.

5.4 Proposal on WID revision:

This proposal entails the following WID revision. It only relates to the objective on Topology, routing and transport enhancements.

Proposal on WID revision from intermediate round:

Topology, routing and transport enhancements [RAN2-led, RAN3]:

- Specifications of enhancements to LCG range, RLF indication and local rerouting [RAN2-led, RAN3].improve-topology-wide-fairness, multi-hop-latency-and-congestion-mitigation.*
- Specification of enhancements to CP-based congestion mitigation [RAN3-led, RAN2].*

In the intermediate round:

10 (12) companies supported this WID revision

1 (10) company believed that the revision was pending the agreement of proposal 1.

1 (10) company believed that the revision was pending the agreement of proposal 2'.

In the final round discussion:

5 (6) companies support this WID revision

1 (6) companies does not support this WID revision, but prefers to revisit the WI objectives in RP#94.

As pointed out by two companies, the WID revision should reflect the proposals agreed. Since there is presently an outstanding issue on P2, the WID revision would have discussed together with the discussion of P2 either in an extended discussion or in RP#94.

6 Extended Email Discussion

6.1 Proposal 1

The proposal on the table is:

Proposal 1: Enhancements to improve topology-wide fairness and multi-hop latency to be deprioritized.

Only Samsung is opposing P1. Samsung proposes to have these topics discussed again in November RAN2 meeting with the hope that progress will be made.

All other companies (12) agree with P1, i.e., deprioritization of these topics. There is concern that more discussion on these topics in RAN2 would use up valuable RAN2 time, and that this time should be used to make progress on other topics.

The moderator is wondering:

In last RAN2 meeting, RAN2 chairman emphasized that RAN2 could not move forward with solution candidates that received opposition by at least a few companies. This happened to be the case for all solution candidates related to topology-wide fairness and multi-hop latency. In the present RP#93 discussion, there are already 12 companies in favor of deprioritization of these topics; many of these companies also participate in RAN2 discussions on eIAB.

With such overwhelming opposition, how should TSG RAN expect that RAN2 achieves progress on these topics in the November RAN2 meeting?

Feedback Form 15: Q301: Please provide feedback on this question.

1 – Ericsson LM

Looking at the status in the WGs, it is not realistic that there will be any progress on the topic. It has become even clearer now during the discussions here at RAN#93 that consensus on this topic is very unlikely.

We hope that plenary, as the group in charge of planning the WG's work, can remove the objective from the WID to allow the WGs to focus on the more important objectives where there is actually a chance to reach some consensus.

2 – Futurewei Technologies

We don't think it'd be a good use of WG time to further discuss this, given the large majority view of deprioritizing this aspect in Rel-17. A decision should be taken in RAN#93e to downscope it.

3 – Apple Poland Sp. z.o.o.

Though we sympathize with Samsung that the problem statements remain, we agree with the moderator's views that there has been simply no consensus on any of the solutions discussed. We do not think that some new agreements will be reached with such a majority of companies agreeing to deprioritization of this objective of WID. We think RAN#93e should take a decision to downscope.

4 – LG Electronics Inc.

We don't think that having one more WG meeting for this objective is a good approach. Now, clear majority in this plenary meeting is to deprioritize these topics. With this observation, we are skeptical whether consensus on these topics can be made in the next WG meeting and all precious discussion time may be consumed without any results as already done in last RAN2 meeting. In addition, as functional freeze of Rel-17 IAB is approaching, WG should spend their discussion time to increase quality of already agreed features for Rel-17 IAB, rather than starting new topics. So, a decision for deprioritization should be made in this plenary meeting and we support the proposal 1.

5 – Intel Corporation (UK) Ltd

Based on the previous RAN2 discussions and RAN plenary discussion this week, it is clear that it is hard to reach consensus to a certain solution among the proposed solutions. We really need to move forward and hence we still support the proposal 1.

6 – vivo Mobile Communication Co.

We are proponent to have this feature for IAB, but from RAN2 discussion on this topic and companies strong preference to de-prioritize it at this RAN#93-e, we do not see how RAN2 can make any progress at next meeting. So we prefer not continue discussing how we can progress, but rather just de-prioritize.

7 – Samsung Electronics Nordic AB

We understand that companies emphasize that it is difficult to have agreeable solutions with specification impact for the identified issues, and such situation may be continued in next RAN2 meeting. However, no company indicates how to tackle with the issues we identified, and no company indicate how to make IAB/eIAB work well without solutions for topology-wide fairness and multi-hop latency. So, **we are concerning that such deprioritization is at the cost of sacrificing the efficiency of the IAB/eIAB network, or even make IAB/eIAB unsuccessful.**

In this sense, we feel that RAN2 needs spend one more meeting to **conclude** how to deal with the identified issues before deprioritization. During the final round, we actually propose a potential way-forward for this topic. Here, we list some options for discussion:

- Option 1: agreeable solutions with specification impact (consensus on this option may be difficult)
- Option 2: agreeable solutions without specification impact (e.g., by implementation)
- Option 3: consider it as Rel-17 left-over for Rel-18 IAB (if any)

So, we are trying to give the following proposal:

Proposal 1': RAN2 spends one more meeting to conclude the identified issues w.r.t. topology-wide fairness and multi-hop latency based on the following options:

- **Option 1: agreeable solutions with specification impact**
- **Option 2: agreeable solutions without specification impact (e.g., by implementation)**
- **Option 3: consider the identified issues as Rel-17 left-over for Rel-18 IAB (if any)**

The deprioritization in Rel-17 can be decided in next plenary meeting.

8 – MediaTek Inc.

R2 Chair: This RP situation confirms the situation in RAN2. The WID objectives are non-specific, and RAN2 had difficulty from the start and could not agree to focus on limited number of specific focus issues. The list of issues was very long and no agreement which issues were most important. The issues and solutions are of the performance enhancing kind and not straightforward to objectively evaluate. It is not entirely surprising that it is has been difficult to converge on solutions, which was anyway attempted as a) several solutions address multiple issues, b) in the previous release lots of IAB issues could be resolved offline. As it has not yet happened I think the likelihood is low of a late great converging offline effort to align companies. We made a serious attempt online at last RAN2 meeting, using much more than allocated TU time, to seriously test the possibility to agree the solutions on the table, and in order to make possible offline efforts etc I had pre-announced that we would do such effort. The result was discouraging. In order to converge on anything online I think we would need +1 TU per meeting for this objective alone, and we would need some common willingness to continue, and I see only one company that is still optimistic. Given this situation, I suggest we simply drop this now for Rel17. Regardless RP decision I dont see that can spend any significant time on this in R2.

9 – MediaTek Inc.

R2 chair: The only possible scope that seems simple enough to potentially still be considered could be to add some semi-static configuration information, but also this will have difficulty to converge, and I dont really see how it could converge without a major offline effort ..

10 – HUAWEI TECHNOLOGIES Co. Ltd.

Huawei, HiSilicon We should down-scope at this RAN#93. We should not waste RAN2 time on this any more.

11 – Nokia Italy

We agree that it is unlikely that progress will be made on this topic given the current state of companies' view. We also have concern that if we continue to discuss this topic in the next WG meeting without reaching an acceptable conclusion, we will have wasted available time that could've been used to make more achievable progress. Our view is that topology-wide fairness and multi-hop latency should be down-prioritized in RAN#93.

12 – ZTE Corporation

It is suggested to deprioritize this. Otherwise, it is a waste of time to discuss this in next RAN2 meeting and very likely no consensus one more time.

6.2 Proposal 2

As was pointed out, RAN2 has already achieved some progress on enhancements to DL hop-by-hop flow control. The moderator believes that this is a good reason to have RAN2 continue this effort. However, there was strong support for the deprioritization of UL hop-by-hop flow control. The moderator therefore proposes

a much narrower P2”:

Proposal 2”: TSG RAN recommends that UL hop-by-hop flow control be deprioritized.

Feedback Form 16: Q302: Do you agree with P2”?

| |
|---|
| 1 – Ericsson LM Yes |
| 2 – Futurewei Technologies We’d be fine to go with majority on this. Our understanding is that there is already good support of this in RAN2, and the specs works seem manageable. |
| 3 – Apple Poland Sp. z.o.o. We agree with the majority view from previous rounds of discussion to deprioritize. |
| 4 – LG Electronics Inc. Agree |
| 5 – Intel Corporation (UK) Ltd Agree |
| 6 – vivo Mobile Communication Co. Agree |
| 7 – Samsung Electronics Nordic AB Agree P2” |
| 8 – MediaTek Inc. The situation for UL hhh flow control is not exactly as for P1. Proponents seems converged on how to use it (to trigger rerouting), and the actual stage3 impact seems managable. It is just that there is opposition and limited support (no possibility to agree at previous meeting). R2 would not spend much online time on this in any case. |
| 9 – HUAWEI TECHNOLOGIES Co. Ltd. Huawei, HiSilicon on this point we will follow the majority |
| 10 – Nokia Italy Agree with the proposal. |
| 11 – ZTE Corporation Agree with the proposal. |

6.3 WID revision

As was pointed out, the WID revision should be pending approval of P1 and P2”. P3 has already been agreed. Assuming P1 and P2” are approved, the WID could be revised as follows:

Proposal 4: Revise WID objective as follows:

Topology, routing and transport enhancements [RAN2-led, RAN3]:

- *Specifications of enhancements to LCG range, RLF indication, local rerouting and DL hop-by-hop flow control [RAN2-led, RAN3].~~improve topology-wide fairness, multi-hop latency and congestion mitigation.~~*
- *Specification of enhancements to CP-based congestion mitigation [RAN3-led, RAN2].*

Feedback Form 17: Q304: Do you agree with P4?

| |
|---|
| <p>1 – Ericsson LM</p> <p>Looks fine.</p> |
| <p>2 – Apple Poland Sp. z.o.o.</p> <p>Agree.</p> |
| <p>3 – LG Electronics Inc.</p> <p>Agree</p> |
| <p>4 – Intel Corporation (UK) Ltd</p> <p>Agree</p> |
| <p>5 – vivo Mobile Communication Co.</p> <p>Agree</p> |
| <p>6 – Samsung Electronics Nordic AB</p> <p>We agree to add “<i>LCG range, RLF indication, local rerouting and DL hop-by-hop flow control [RAN2-led, RAN3]</i>”. However, due to our concern in Q301, we are not ready to remove “<i>improve topology-wide fairness, multi-hop latency and congestion mitigation</i>”.</p> |
| <p>7 – HUAWEI TECHNOLOGIES Co. Ltd.</p> <p>Huawei, HiSilicon If P2” is assumed as agreeable, the RP agreement as P2” should be sufficient for the flow control aspect. There is no need to mention the “DL flow control” in WID, therefore we think we should not add it to the WID.</p> |
| <p>8 – Nokia Italy</p> <p>Agree with proposal.</p> |

7 Summary of Extended Email Discussion

7.1 Proposal 1

In prior rounds, all companies (12) but one supported P1:

Proposal 1: Enhancements to improve topology-wide fairness and multi-hop latency to be deprioritized.

The extended discussion tried to converge based on the following question:

Q: With such overwhelming opposition [to further discuss topology-wide fairness and multi-hop latency], how should TSG RAN expect that RAN2 achieves progress on these topics in the November RAN2 meeting?

9 (10) companies believe that RAN2 won't be able to make any further progress on these topics and that for that reason, no more RAN2 time should be spent on them, and they should be deprioritized.

1 (10) company believes that RAN2 should use at least one more RAN2 meeting to wrap up the discussion, i.e., identify agreeable solutions and left-overs for Rel-18 IAB.

RAN2 chairman agrees with the majority view. He further emphasizes that 1TU would be necessary in each RAN2 meeting to continue this discussion.

The moderator proposes that TSG RAN follow the views of the RAN2 chairman and all-minus-one companies, and approve Proposal 1:

Proposal 1: Enhancements to improve topology-wide fairness and multi-hop latency to be deprioritized.

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7.2 Proposal 2

In the prior rounds, proposal 2 had circulated around the deprioritization of enhancements to congestion mitigations. There was consensus that RAN3 should continue efforts on CP-based congestion mitigation where progress had been made. Further, RAN2 should continue efforts on DL hop-by-hop congestion mitigation where progress had been made.

There was strong support to deprioritize UL hop-by-hop flow control leading to P2”:

Proposal 2”: TSG RAN recommends that UL hop-by-hop flow control be deprioritized.

The following question was asked:

Q: Do you agree with P2”?

8 (10) companies support this proposal

2 (10) companies would like to go with the “majority view”. The moderator assumes the term “majority view” refers to the majority view in RAN2, which was in favor of UL hop-by-hop flow control.

The RAN2 chairman believes that the proponents of UL hop-by-hop flow control have converged and that RAN2 would not spend much time on this.

The moderator takes from this discussion that there is not enough support for deprioritization for UL hop-by-hop flow control in RAN#93, and that RAN2 can try to make progress in the next meeting.

7.3 WID revision

The moderator had proposed the following WID revision pending on approval of P1 and P2”.

Proposal 4: Revise WID objective as follows:

Topology, routing and transport enhancements [RAN2-led, RAN3]:

- Specifications of enhancements to **LCG range, RLF indication, local rerouting and DL hop-by-hop flow control [RAN2-led, RAN3].improve topology-wide fairness, multi-hop latency and congestion mitigation.***
- Specification of enhancements to **CP-based congestion mitigation [RAN3-led, RAN2].***

The following question was asked:

Q: Do you agree with P4?

6 (9) companies are fine with this WID revision

1 (9) company believes that even if P2” was agreeable, there would not be any need to mention DL flow control.

1 (9) company believes that topology-wide fairness and multi-hop latency and congestion mitigation should not be removed.

The mediator believes that the proposed WID revision was pending on approval of P1 and P2”. However, with P2” not agreeable, the proposed WID revision would have to be adapted. Since this is the last round of discussion, there is no time for further iteration. The WID revision can therefore wait until next meeting.

8 Conclusion

After the extended email discussion, the following proposal is made:

Proposal 1: Enhancements to improve topology-wide fairness and multi-hop latency to be deprioritized.

The following proposal was approved after the final email discussion:

Proposal 3: RAN2-led efforts on enhancements to LCG-range extension, RLF indications and local rerouting to continue.

8 References

- [1] RP-211769, Potential reduction of the scope of Rel-17 IAB, Qualcomm
- [2] RP-211768, Update to New WID on Enhancements to Integrated Access and Backhaul, Qualcomm
- [3] RP-211775, Potential down-scoping for Rel-17 IAB enhancements, LG Electronics
- [4] RP-212025, Discussion on the scope of Rel-17 IAB enhancements, vivo
- [5] RP-212203, Enhancements to Integrated Access and Backhaul (IAB) for NR, Ericsson
- [6] RP-212236, Progress and scope of Rel-17 IAB for NR, CATT
- [7] RP-212417, Consideration on the working scope of R17 IAB, ZTE, Sanechips
- [8] RP-212359, Reallocation of RAN2 TUs from IAB to NTN, Apple