

Electronic Meeting, June 28 - July 2, 2021

Agenda Item: 4.2

Source: AT&T

Title: Email discussion summary for [RAN-R18-WS-non-eMBB-ATT]

Document for: Discussion

1 Introduction

This document is meant to facilitate the email discussion [RAN-R18-WS-non-eMBB-ATT] between June 14 and June 24 according to the Chairman's guidance in [1]. To help companies better understand AT&T's proposals, the main purpose of email discussion [RAN-R18-WS-non-eMBB-ATT] is to ask questions that AT&T can then answer. To this end, to allow for follow-up questions, there will be two rounds.

Round 1: Questions: June 14 08:00 UTC – June 17 8:00 UTC; Answers: June 17 8:00 UTC – June 18 23:59 UTC

Round 2: Questions: June 21 08:00 UTC – June 23 8:00 UTC; Answers: June 23 8:00 UTC – June 24 18:00 UTC

A summary will be provided by the moderator before June 25, 18:00 UTC.

AT&T submitted four contributions to the Rel. 18 workshop in [2][3][4][5]. The scope of this email discussion is the third contribution in [4] focusing on the non-eMBB-driven functional evolution for Rel. 18. The summaries for all contributions can be found in [6][7][8].

2 Round 1 comments, questions, and answers

2.1 Comments regarding AT&T's views on the non-eMBB-driven functional evolution for Rel. 18

Companies are invited to comment on AT&T's views on the non-eMBB-driven functional evolution for Rel. 18 in the table below. The moderator of email discussion [RAN-R18-WS-non-eMBB-ATT] will provide answers, as applicable, in Section 4 to these comments.

Feedback Form 1:

1 – Huawei Tech.(UK) Co.. Ltd

Thank you for the contribution. On XR deployment scenarios on Page 7, we share the same view that multi-connectivity is important to improve capacity for UL-heavy traffic and XR. Especially, more spectrum (e.g. more than 2 bands) is important to meet the high UL data rate requirements. For a practical UE to be configured more UL spectrum, it should support dynamic UL Tx switching among carriers with a limited number of Tx chains. This is also important for meeting the UL latency requirements when a UE has a limited number of Tx chains.

2.2 Questions regarding AT&T's views on the non-eMBB-driven functional evolution for Rel. 18

Companies are invited to ask questions for clarification regarding AT&T's views on the non-eMBB-driven functional evolution for Rel. 18 in the table below. The moderator of email discussion [RAN-R18-WS-non-eMBB-ATT] will provide answers, as applicable, in Section 4 to these comments.

Feedback Form 2:

1 – Guangdong OPPO Mobile Telecom.

- Q1) Why it is benefit for inter-node coordination?
- Q2) Whether both L2 or L3 relay is applicable?

2 – Qualcomm Incorporated

What is AT&T's view of applying network coding to other applications such as V2X?

3 – Samsung Research America

P(5): Could you please elaborate more on beam indication/measurement enhancements and beam failure recovery/power control enhancements you envision for Rel-18?

2.3 Answers provided by the moderator of email discussion [RAN-R18-WS-non-eMBB-ATT]

In response to the question by OPPO, AT&T's response is:

Q: Why it is benefit for inter-node coordination?

A: In cases where nodes do not have wired backhaul, direct communication links can reduce the latency required for inter-node signaling and also reduces the overhead by only involving the required nodes to exchange direct messages.

Q: Whether both L2 or L3 relay is applicable?

A: The focus is on L2 relays since that more easily integrates with existing RAN architecture and functionality.

In response to the question by Qualcomm, AT&T's response is:

Q: What is AT&T's view of applying network coding to other applications such as V2X?

A: We are open to considering the application of network coding to other applications, such as V2X. Specifically related to V2X, this may possibly require additional sidelink enhancements, such as support for carrier aggregation and/or dual-connectivity, to leverage packet duplication capability.

In response to the question by Samsung, AT&T's response is:

Q: Could you please elaborate more on beam indication/measurement enhancements and beam failure recovery/power control enhancements you envision for Rel-18?

A: We think BM enhancements are needed for various use cases, including and going beyond eMBB. There are enhancements needed that we didn't have time for in Rel. 17 related to latency and overhead reduction, beam refinement, and beam management in initial access. There are also enhancements on beam measurement and reporting and beam indication that need to be considered taking into account potential multiple transmit/multiple receive applications, with beam measurement/selection, considering sources of interference such as self-interference and cross-link interference. Enhancements on beam failure recovery that were not considered in Rel. 17, including partial beam failure recovery, especially for latency critical applications.

3 Round 2 comments, questions, and answers

3.1 Follow-up comments regarding any aspects of Round 1

Companies are invited to comment on any aspects of round 1 and AT&T's answers in Section 2.3 specifically.

Feedback Form 3:

1 – Samsung Electronics Polska

[RWS-210214] for use cases 1-2, what is AT&T's thinking about potential RAN1 enhancement and also schedule?

3.2 Follow-up questions regarding any aspects of Round 1

Companies are invited to ask follow-up questions on any aspects of round 1 and AT&T's answers in Section 2.3 specifically.

Feedback Form 4:

3.3 Answers provided by the moderator of email discussion [RAN-R18-WS-non-eMBB-ATT]

In response to the question by Samsung, AT&T's response is:

Q: [RWS-210214] for use cases 1-2, what is AT&T's thinking about potential RAN1 enhancement and also schedule?

A: For the AI/ML in RAN use cases highlighted in RWS-210214, there could be different specification impacts in RAN1 for the proposed ML agents, and these enhancements to the air interface are use case specific. Such specification enhancements can include physical layer measurements, recommended configurations exchange between the RAN nodes and the UEs, enhanced scheduling metrics, etc. There could also be an impact on the scheduling and pairing of UEs following the ML agent application.

4 Conclusion

This contribution summarized email discussion [RAN-R18-WS-non-eMBB-ATT] between June 14 and June 24 in preparation of the 3GPP TSG RAN Rel-18 workshop. Specifically, Section 2 summarizes all comments and questions with the corresponding answers received in round 1 between June 14 – June 17 and Section 3 those of round 2 between June 21 – June 23. The corresponding contribution for email discussion [RAN-R18-WS-non-eMBB-ATT] can be found in [4]. [2][3][5] reference the other AT&T contributions to the 3GPP TSG RAN Rel-18 workshop and the corresponding email discussion summaries can be found in [6][8].

5 References

- [1] RWS-210002, Some details for RAN Rel-18 Workshop, RAN Chair
- [2] RWS-210211, Views on 5G Enhancements for Release 18 and Beyond, AT&T
- [3] RWS-210212, Views on eMBB-driven Functional Evolution for Rel-18, AT&T
- [4] RWS-210213, Views on Non-eMBB-driven Functional Evolution for Rel-18, AT&T
- [5] RWS-210214, Views on Machine Learning & Artificial Intelligence in RAN, AT&T
- [6] RWS-210513, Email discussion summary for [RAN-R18-WS-eMBB-ATT], AT&T
- [7] RWS-210553, Email discussion summary for [RAN-R18-WS-non-eMBB-ATT], AT&T
- [8] RWS-210607, Email discussion summary for [RAN-R18-WS-crossFunc-ATT], AT&T