

[98e-22-R18-SLRelay] - Version 0.0.6

RAN

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3GPP TSG RAN#98e RP-223462

Electronic Meeting, December 12 - 16, 2022

Agenda Item: 9.3.2.4

Source: LG Electronics

Title: Moderator's summary for discussion [98e-22-R18-SLRelay]

Document for: Report

1 Initial round

This email discussion is to discuss how to handle the objective on the multi-path relay in the approved WID RP-213585:

Table 1: WI objective #3 on the multi-path relay

3. Study the benefit and potential solutions for multi-path support to enhance reliability and throughput (e.g., by switching among or utilizing the multiple paths simultaneously) in the following scenarios [RAN2, RAN3]:

A. A UE is connected to the same gNB using one direct path and one indirect path via 1) Layer-2 UE-to-Network relay, or 2) via another UE (where the UE-UE inter-connection is assumed to be ideal), where the solutions for 1) are to be reused for 2) without precluding the possibility of excluding a part of the solutions which is unnecessary for the operation for 2).

Note 3A: Study on the benefit and potential solutions are to be completed in RAN#98 which will decide whether/how to start the normative work.

Note 3B: UE-to-Network relay in scenario 1 reuses the Rel-17 solution as the baseline.

Note 3C: Support of Layer-3 UE-to-Network relay in multi-path scenario is assumed to have no RAN impact and the work and solutions are subject to SA2 to progress.

RAN2 and RAN3 reached conclusions for the study of this objective as follows:

RAN2: Multi-path relay study phase is complete and can proceed to normative work from RAN2 perspective, for both scenarios 1 and 2.

RAN3: From RAN3 point of view, the Multi-path study phase is completed, and the Multi-path can move to normative work phase.

Contributions related to this discussion are RP-222934, 2996, 3050, 3051, 3107, 3108, 3266. Some of these

contributions made proposals to update the above-mentioned objective, and they can be summarized as follows:

- Update with a generic statement that the normative work is based on the study phase outcome: 2934
- Update with a list of normative work aspects common to both scenario 1 and 2: 2996, 3266
- Separate sub-objective for scenario 1 and 2: 3050, 3051, 3107, 3108

1.1 Discussion

The moderator observed that all the submitted contributions proposed to start the normative work for multi-path relay.

Q1: Do you agree to update the WID to start the normative work for multi-path relay?

Feedback Form 1: Company input on starting the normative work for multi-path relay

1 – Apple Yes, per RAN2 conclusion.
2 – LG Electronics France Yes.
3 – Guangdong OPPO Mobile Telecom. Yes
4 – vivo Mobile Communication Co. Yes
5 – CTSI [China Telecom]: Yes
6 – ZTE Corporation Yes
7 – Ericsson LM Yes
8 – Samsung R&D Institute UK Yes
9 – Beijing Xiaomi Mobile Software Yes

10 – QUALCOMM JAPAN LLC. Yes
11 – HuaWei Technologies Co. Yes
12 – Nokia Denmark We agree on the WID update made by rapporteur which is update according to completion of study phase. Based on this we are fine to start the normative work for multi-path relay.
13 – MediaTek Inc. Yes
14 – InterDigital Finland Oy yes
15 – Intel Corporation (UK) Ltd Yes
16 – Philips International B.V. Yes
17 – Futurewei Yes.
18 – Spreadtrum Communications Yes
19 – Kyocera Corporation Yes
20 – NEC Corporation Yes
21 – CATT yes
22 – Sony Europe B.V. Yes

Q2: If RAN decides to start the normative work, the group needs to discuss how to update the objective. What is your view on the possible options listed below?

- Option 1: Update with a generic statement that the normative work is based on the study phase outcome as in 2934
- Option 2: Update with a list of normative work aspects common to both scenario 1 and 2, as in 2996, 3266
- Option 3: Update with separated sub-objectives for scenario 1 and 2 as in 3050, 3051, 3107, 3108
- Option 4: Another option (please specify it)

Feedback Form 2: Company input on the options to update the multi-path objective

<p>1 – Apple</p> <p>Option 1. We should not mandate details in the WID. The SI conclusion is sufficient to update WID.</p>
<p>2 – LG Electronics France</p> <p>We prefer Option 1. The change in RP-222934 with generic statement is enough. What RAN WGs should do for multi-path is clear based on what RAN2/3 agreed. We would not need to spend some time on listing up all detailed work aspects.</p>
<p>3 – Guangdong OPPO Mobile Telecom.</p> <p>Option-1. Same view as Apple and LG above.</p>
<p>4 – vivo Mobile Communication Co.</p> <p>Opt 3. Opt 1 is basically following SI phase wordings, this may be good for easy approval. But, we think the WID description should be clear enough to avoid unnecessary discussion on WI scope in WG. Actually, the SI phase agreements still open the door on what should be discussed in normative work. This may require some time to be settled in WG, We prefer to have avoid such discussion in WG.</p>
<p>5 – CTSI</p> <p>[China Telecom]: We prefer Option 1. We can take the agreements reached in SI phase as baseline, and we see no need to add details in the WID.</p>
<p>6 – ZTE Corporation</p> <p>We prefer Option 2 or Option 3. For normative work, it would be better to have clear objectives instead of generic description of two scenarios.</p>
<p>7 – Ericsson LM</p> <p>Option 1. We do not need to add any specific details to the WID regarding this objective.</p>

<p>8 – Samsung R&D Institute UK</p> <p>Option 1. We do not have to specify the details of study phase outcome in the objective.</p>
<p>9 – Beijing Xiaomi Mobile Software</p> <p>We can accept option 1</p>
<p>10 – QUALCOMM JAPAN LLC.</p> <p>Option 1. We have a good set of agreements in RAN2. WID is not a design document.</p>
<p>11 – Nokia Denmark</p> <p>Option 1. We should not mandate details in the WID. The SI conclusion is sufficient to update WID.</p>
<p>12 – MediaTek Inc.</p> <p>We prefer option 1. Options 2 and 3 seem over-detailed, and in any case discussions at WG level will take decisions from the SI phase into account as usual, so it seems not necessary to write design details into the WID.</p>
<p>13 – InterDigital Finland Oy</p> <p>Option 1, if the choice was not option 1 then we would choose option 2</p>
<p>14 – Intel Corporation (UK) Ltd</p> <p>We are ok with Option 1.</p>
<p>15 – Philips International B.V.</p> <p>We prefer Option 1.</p>
<p>16 – Spreadtrum Communications</p> <p>We prefer Option 1.</p>
<p>17 – Futurewei</p> <p>Option 1. We agree that the SI conclusion provides sufficient details for updating the WID.</p>
<p>18 – HuaWei Technologies Co.</p> <p>No strong view, can go with the majority.</p>
<p>19 – Kyocera Corporation</p> <p>We prefer option 1. We think further details can be handled in the WG level.</p>
<p>20 – NEC Corporation</p> <p>Option1</p>

21 – CATT we prefer option 3 as it give good guidance to the future work in the WG.
22 – Sony Europe B.V. We support option 1

Q3: If you have any other aspects relevant to this email discussion, please specify them.

Feedback Form 3: Other input during the initial round

1 – LG Electronics France None
2 – vivo Mobile Communication Co. No strong view. But we think maybe capturing the SI phase agreements in an ANNEX in the WID, for reference, may be useful to follow SI phase agreements during normative work using the WI approved Tdoc. Otherwise, we will have to continuously refer to many WGs meeting agreements, this may not be very efficient.
3 – Philips International B.V. None. We like vivo’s idea to capture the SI agreements in an Annex in the WID.

1.2 Summary and moderator’s proposal

For Q1, all the responded companies agreed to start the normative work for multi-path relay.

For Q2, company input can be summarized as follows:

- Option 1 (18): Apple, LGE, OPPO, China Telecom, Ericsson, Samsung, Xiaomi, Qualcomm, Nokia, MediaTek, InterDigital, Intel, Philips, Spreadtrum, Futurewei, Kyocera, NEC, Sony
- Option 2 (2): ZTE, InterDigital (2nd preference),
- Option 3 (3): vivo, ZTE, CATT

Considering the majority view, the moderator proposes to take Option 1 (Update with a generic statement that the normative work is based on the study phase outcome as in 2934) and check during the intermediate round if the objective update in 2934 is agreeable.

For Q3, two companies proposed to capture the study phase agreements in the annex of the revised WID. The moderator proposes to check during the intermediate round if the group thinks this is necessary.

2 Intermediate round

2.1 Discussion

Based on the input during the initial round, the moderator asks if the following objective update from 2934 is agreeable.

Q1: Is the following update agreeable for the multi-path relaying objective?

Table 2: Moderator proposal to update the multi-path relay objective

<p>3. Specify mechanisms to support Study the benefit and potential solutions for multi-path support to enhance reliability and throughput (e.g., by switching among or utilizing the multiple paths simultaneously) in the following multi-path scenarios [RAN2, RAN3]:</p> <p>A. A UE is connected to the same gNB using one direct path and one indirect path via 1) Layer-2 UE-to-Network relay, or 2) via another UE (where the UE-UE inter-connection is assumed to be ideal), where the solutions for 1) are to be reused for 2) without precluding the possibility of excluding a part of the solutions which is unnecessary for the operation for 2).</p> <p>Note 3A: The mechanisms to support scenario 1 and scenario 2 are specified based on the assumptions and restrictions agreed in study phase. Study on the benefit and potential solutions are to be completed in RAN#98 which will decide whether/how to start the normative work.</p> <p>Note 3B: UE-to-Network relay in scenario 1 reuses the Rel-17 solution as the baseline.</p> <p>Note 3C: Support of Layer-3 UE-to-Network relay in multi-path scenario is assumed to have no RAN impact and the work and solutions are subject to SA2 to progress.</p>

Feedback Form 4: Company input on the proposed objective update

<p>1 – Ericsson LM</p> <p>Thanks for the proposal. It looks fine in principle, however for the Note 3A we prefer more general wording such as <i>”The mechanism to support scenario 1 and scenario 2 are specified based on the outcome agreed during the study phase”</i>.</p> <p>With the current version, we think it is not so clear e.g. which restrictions are referred to.</p>
<p>2 – Futurewei</p> <p>We agree with the moderator’s proposal.</p>
<p>3 – Samsung R&D Institute UK</p> <p>Agree with the moderator proposal.</p>
<p>4 – Guangdong OPPO Mobile Telecom.</p> <p>Moderator proposal and Ericsson proposal are both fine for us.</p>

<p>5 – LG Electronics France</p> <p>We agree with the moderator’s proposal.</p> <p>Regarding the suggestion from Ericsson, the restrictions agreed in RAN2 are mostly applied to scenario 2, but a few restrictions among them (e.g. PCell on direct path only) are applied to scenario 1 as well as scenario 2. Thus, the moderator’s proposal is fine to us.</p>
<p>6 – QUALCOMM JAPAN LLC.</p> <p>Agree with the moderator proposal.</p>
<p>7 – MediaTek Inc.</p> <p>Agree with the moderator proposal. No strong view on Ericsson’s proposed wording change; both versions seem to indicate that WGs should follow the study phase decisions as usual.</p>
<p>8 – Intel Corporation (UK) Ltd</p> <p>Support the moderator’s proposal.</p>
<p>9 – CTSI</p> <p>[China Telecom]: Agree with the moderator’s proposal.</p>
<p>10 – vivo Mobile Communication Co.</p> <p>Fine with both moderator and Ericsson proposals.</p>
<p>11 – Spreadtrum Communications</p> <p>We agree with the moderator proposal.</p>
<p>12 – ZTE Corporation</p> <p>we are fine to accept the majority view.</p>
<p>13 – Kyocera Corporation</p> <p>We are fine with the moderator’s proposal.</p>
<p>14 – NEC Corporation</p> <p>We agree with the moderator’s proposal.</p>
<p>15 – HuaWei Technologies Co.</p> <p>Agree</p>
<p>16 – HuaWei Technologies Co.</p> <p>Agree</p>

17 – Nokia Denmark We are fine with this proposal. (seems like the proposal in RP-222934).
18 – Nokia Denmark We are fine with this proposal. (seems like the proposal in RP-222934).
19 – III We agree with moderator’s proposal.
20 – III We agree with moderator’s proposal.
21 – CATT given the discussions so far, we are ok to go with the majority’s view.
22 – CATT given the discussions so far, we are ok to go with the majority’s view.
23 – InterDigital Finland Oy we agree with the moderator’s proposal
24 – Philips International B.V. We support the moderator’s proposal.

Q2: Do you agree with the proposal to capture the study phase outcome in the annex of the revised WID?

Feedback Form 5: Company input on capturing the study phase outcome

1 – Ericsson LM We don’t see the need to capture anything additional in the WID, besides the above modification. Nothing more needs to be added.
2 – Futurewei We think that would be unnecessary.
3 – Samsung R&D Institute UK We do not see a need to capture the study phase outcome in the WID.

<p>4 – Guangdong OPPO Mobile Telecom.</p> <p>Do not see a need as commented above.</p>
<p>5 – LG Electronics France</p> <p>We think that it is unnecessary to capture the study outcome in the WID. It seems unusual to capture them in the WID. The study outcome has been captured in the status reports, so that we won't lose the outcome.</p>
<p>6 – QUALCOMM JAPAN LLC.</p> <p>We do not see the need. We would rather keep the WID concise.</p>
<p>7 – MediaTek Inc.</p> <p>We think this is unnecessary. As mentioned by LG above, the status reports capture the agreements.</p>
<p>8 – Intel Corporation (UK) Ltd</p> <p>We agree that it is not necessary.</p>
<p>9 – CTSI</p> <p>[China Telecom]: We think it is unnecessary.</p>
<p>10 – Spreadtrum Communications</p> <p>Agree that it is unnecessary to capture the study phase outcome in the annex of the revised WID.</p>
<p>11 – ZTE Corporation</p> <p>We also think it is not necessary.</p>
<p>12 – Kyocera Corporation</p> <p>We don't think it's necessary to include it.</p>
<p>13 – NEC Corporation</p> <p>We do not think it is necessary.</p>
<p>14 – Nokia Denmark</p> <p>Yes, this is ok</p>
<p>15 – Nokia Denmark</p> <p>Yes, this is ok</p>
<p>16 – InterDigital Finland Oy</p> <p>we don't think that it is really necessary</p>

Q3: If you think any other update is necessary to the WID, please specify it.

Feedback Form 6: Company input on any other WID update

1 – Nokia Denmark

No further update needed.

2.2 Summary and moderator's proposal

For Q1, company input can be summarized as follows:

- Moderator's proposal is okay
 - Futurewei, Samsung, OPPO, LGE, Qualcomm, MediaTek, Intel, China Telecom, vivo, Spreadtrum, Kyocera, NEC, Huawei, Nokia, III, InterDigital, Philips

Ericsson proposed to replace “the assumptions and restrictions” with “the outcome” in Note 3A, but the moderator thinks that it has the same as also commented by several companies. ZTE and CATT replied that they can accept the majority view.

For Q2, company input can be summarized as follows:

- Capturing the study outcome is unnecessary
 - Ericsson, Futurewei, Samsung, OPPO, LGE, Qualcomm, MediaTek, Intel, China Telecom, Spreadtrum, ZTE, Kyocera, NEC, InterDigital
- Okay to capture the study outcome
 - Nokia

For Q3, no companies responded that further update is necessary.

Based on the collected input, the moderator proposes to update the WID with the changes asked in Q1 and close the email thread.

3 Final round

3.1 Discussion

The final proposal from the moderator is as follows:

Proposal: Approve the WID revision in RP-223501 and close the email thread.

The moderator asks that only the companies disagreeing with this proposal leave their comments in the following feedback form:

Feedback Form 7: Input from companies disagreeing with the final proposal.

1 – Nokia Denmark OK
2 – Guangdong OPPO Mobile Telecom. OK
3 – China Mobile Com. Corporation OK, we can accept the WID with generic description, with the indication that normative work will be based on the assumptions and restrictions agreed in study phase.

4 Final summary

No concern was raised on the moderator's proposal during the final round, so the moderator thinks that the revised WID in RP-223051 is agreeable.

Final proposal: Approve the WID revision in RP-223501.

This proposal is agreed in RAN#98e.