

3GPP TSG-RAN Meeting #93 RP-212561

eMeeting, 13-17 Sep, 2021

Agenda item: 9.3.2.7

Title: [93e-21-SDT-WI]

Source: ZTE Corporation (Moderator)

Document for: Discussion and Decision

1 Introduction

This offline NWM thread will be used to discuss the SDT Rel-17 WI scope mentioned in the following Tdocs:

[1] RP-211860, Revised WID on NR small data transmissions in INACTIVE state, ZTE Corporation, Sanechips

[2] RP-212085, Handling of RRC-less SDT, Xiaomi Communications

[3] RP-212416, Rel-17 scope for SDT WI, ZTE, Sanechips

2 Initial round

2.1 RRC-less SDT

In [2], it was observed that:

- RRC-less SDT brings extra benefits on latency reduction, signalling reduction and power/processing saving
- RRC-less is to be supported only for CG-SDT
- The extra standardisation effort on RRC-less SDT is small

Based on the above, it was proposed to include RRC-less SDT as part of the Rel-17

On the other hand, in [3], the following observation was made:

- RRC-less solution would be an optimisation for the same cell case and is not essential for the feature to work

And it was proposed to remove RRC-less from the scope of Rel-17 SDT WI

Given the time left for the release 17, the rapporteur would like to check if companies can accept removing RRC-less from the scope of Rel-17:

Feedback Form 1: Do companies accept that RRC-less can be removed from Rel-17 SDT scope? (Yes/No) - please explain

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| <p>1 – Samsung Electronics Co.</p> <p>Yes, we agree that RRC-less can be removed from Rel-17 SDT scope, considering workload in RAN2.</p> |
| <p>2 – vivo Mobile Communication Co.</p> <p>Yes, we also agree to rule out RRC-less optimization in Rel-17 SDT scope since it might require a lot of time to re-discuss the corresponding RRC/MAC modeling and potential security issue.</p> |
| <p>3 – InterDigital</p> <p>We also think this can be removed for R17 due to work load. It can be part of the discussion for next release.</p> |
| <p>4 – Ericsson LM</p> <p>Yes, we agree to remove RRC-less SDT from the Rel-17 SDT. It starts to be late in the release and we agree with [3] this is optimisation and not essential, and would require considerable amount of time to discuss, including cross-WG issues.</p> |
| <p>5 – Intel Corporation (UK) Ltd</p> <p>Yes, we can accept to remove RRC-less from Rel-17 considering the limited time in RAN2. We prefer to support it in REL-18 given that we see the benefit of RRC-less solution in SDT operation.</p> |
| <p>6 – T-Mobile USA Inc.</p> <p>T-Mobile Agrees that this can be removed</p> |
| <p>7 – Asia Pacific Telecom co. Ltd</p> <p>Yes, as there are still lots of pending issues with higher priority in RAN2, we tend to remove RRC-less SDT discussion from Rel-17. If SDT is in the scope of Rel-18, we can re-consider it.</p> |
| <p>8 – QUALCOMM JAPAN LLC.</p> <p>Yes</p> |
| <p>9 – CATT</p> <p>Yes</p> |
| <p>10 – Panasonic Corporation</p> <p>We are ok to remove RRC-less for the work load reason.</p> |

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| <p>11 – LG Electronics Inc.</p> <p>Yes, RRC-less can be removed from Rel-17 SDT scope.</p> |
| <p>12 – Motorola Mobility France S.A.S</p> <p>Lenovo/Motorola Mobility</p> <p>We are also OK to remove RRC-less SDT from Rel-17 scope</p> |
| <p>13 – ZTE Corporation</p> <p>RRC-less SDT would require more time as highlighted by Vivo and other companies (e.g. to discuss the RRC/MAC modelling and security issues etc). There is no time in Rel-17 for this.</p> |
| <p>14 – Nokia Corporation</p> <p>Yes, we agree that RRC-less SDT can be removed from the Rel-17 SDT scope to enable timely and solid WI completion. Though we are not sure if this actually requires any WID update as it is not explicitly mentioned in the WID. Thus, in our view it would be sufficient to conclude in RAN#93 that RRC-less SDT is not part of the Rel-17 SDT scope. However, it is ok for us to update the WID as well.</p> |
| <p>15 – HUAWEI TECHNOLOGIES Co. Ltd.</p> <p>Huawei, HiSilicon We agree that RRC-less SDT can be explicitly removed from SDT scope in Rel-17. The benefits and feasibility (e.g. from security perspective) were not proven and it would require coordination with other WGs, for which there is no sufficient time in Rel-17.</p> |
| <p>16 – Apple Computer Trading Co. Ltd</p> <p>We are fine to consider the RRC-less SDT in R18 and remove it from R17 scope.</p> |
| <p>17 – Beijing OPPO Com. corp.</p> <p>Yes, we agree to remove the RRC-less solution from R17 scope.</p> |

Observation 1: All companies agree to remove RRC-less from Rel-17 scope

2.2 Late anchor relocation

SDT supports both cases of anchor relocation and no-anchor relocation. In [3], it was proposed to also remove any optimisations for late anchor relocation from the scope of RAN2 WID. There is already a RAN2 agreement on this, however, this has not yet been discussed in RAN3. So, to avoid any unnecessary discussions on this, it was proposed in [3] to update the WID to also remove optimisations for late anchor relocation. Companies are asked to check whether we should also capture this explicitly in the WID.

Feedback Form 2: Do companies agree to capture in the updated Rel-17 WID that no optimisations for late anchor relocation are pursued? (Yes, No) - please explain

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| <p>1 – Samsung Electronics Co.</p> <p>Yes, we are fine to capture in the WID that no optimisations for late anchor relocation are pursued.</p> |
| <p>2 – vivo Mobile Communication Co.</p> <p>Yes, we think no optimization should be introduced for context relocation during the middle of SDT phase in Rel-17 SDT.</p> |
| <p>3 – InterDigital</p> <p>Yes, we agree with the proposal. We think there is limited time for optimizations at this stage.</p> |
| <p>4 – Ericsson LM</p> <p>Yes we agree with the intention of the proposal, and we think we should not pursue this optimisation. However, we think expression "late anchor relocation" is unclear and understand the case is about anchor relocation once SDT procedure has already been started during the possible subsequent data transfer phase. However, as there is already agreement on this in RAN2, we don't think updating the WID is necessary.</p> |
| <p>5 – Intel Corporation (UK) Ltd</p> <p>We think that it is aligned with the following RAN2 agreement "No new solution is defined to prevent data loss or duplication for the scenario where the anchor relocation is required in the middle of an SDT session, i.e. network can release UE back into RRC_INACTIVE". We agree in principle but we are not sure if the WID needs to be updated as this objective is not captured explicitly in the original WID.</p> |
| <p>6 – Asia Pacific Telecom co. Ltd</p> <p>Yes, we can follow the current RAN2 agreement to revise the WID. If SDT is in the scope of Rel-18, we can re-consider this optimization.</p> |
| <p>7 – QUALCOMM JAPAN LLC.</p> <p>Yes</p> |
| <p>8 – CATT</p> <p>we agree to follow the R2 agreement that no optimization is introduced for this.</p> |
| <p>9 – Panasonic Corporation</p> <p>We agree not to have the optimization here.</p> |
| <p>10 – LG Electronics Inc.</p> <p>Yes, we agree with proposal.</p> |
| <p>11 – Motorola Mobility France S.A.S</p> <p>Lenovo/ Motorola Mobility</p> <p>We also agree with this proposal.</p> |

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| <p>12 – ZTE Corporation</p> <p>Yes, and in general any such optimisations can be removed from Rel-17 now given the timeline.</p> |
| <p>13 – Nokia Corporation</p> <p>Yes, we agree that no optimisations for late anchor relocation are considered under the Rel-17 SDT WID to enable timely and solid WI completion. Though we are not sure if this actually requires any WID update as it is not explicitly mentioned in the WID. Thus, in our view it would be sufficient to decide it in RAN#93 and capture the decision in the RAN#93 documentation.</p> |
| <p>14 – HUAWEI TECHNOLOGIES Co. Ltd.</p> <p>Huawei, HiSilicon We agree that it could be helpful to clarify this in the WID. We could use either the text proposed in WID revision in RP-211860 (“Late anchor relocation during SDT phase is not supported (i.e., UE will be sent back to RRCINACTIVE state if anchor relocation is required during SDT)” or directly the agreement made by RAN2, which we think is better, i.e.: “No new solution is defined to prevent data loss or duplication for the scenario where the anchor relocation is required in the middle of an SDT session, i.e. network can release UE back into RRCINACTIVE”.</p> |
| <p>15 – Apple Computer Trading Co. Ltd</p> <p>Yes, we agree with the proposal</p> |
| <p>16 – Beijing OPPO Com. corp.</p> <p>Yes, we agree that no optimisation is needed for late anchor relocation case since we do not have enough time to further study the potential issues as observed in previous SDT email discussion. But we think it may not be necessary to update the WI.</p> |
| <p>17 – Xiaomi Communications</p> <p>Yes</p> |

Observation 2: All companies agree that optimisations for late anchor relocation are not within the scope of Rel-17. Some companies point out that this is already clear from RAN2 agreements.

2.3 Other comments

An updated WID is provided in [1]. Companies can provide any preliminary comments to this WID in this section.

Feedback Form 3: Are there any further comments to the revised SDT WID in [1]? - Please provide any detailed comments here.

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| <p>1 – Ericsson LM</p> <p>We don't think either of the discussion points need to result in a WID update, as all of the WI objectives can be completed by continuing the existing work in the relevant WGs. WID update to exclude RRC-less solution can be OK to us but it could also be decided just not to be pursued in Rel-17 and captured in the minutes (cf. current status as down-prioritized). Excluding "late anchor relocation" does not need to be</p> |
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explicitly captured in the WID in our opinion, and it has already been agreed in RAN2 this optimisation is not pursued.

2 – QUALCOMM JAPAN LLC.

WID updated on RRC-less may be justified because currently the only agreement in WG level is to deprioritize the work. For late anchor relocation, confirmation by RAN on the RAN2 agreement (e.g. in RAN meeting notes) looks sufficient to provide guidance to RAN3/2 for their further work.

3 – ZTE Corporation

It is okay to update the WID only for the removal of RRC-less with the understanding that for late anchor relocation the agreement in RAN2 is sufficient as mentioned by companies above.

4 – Nokia Corporation

We have the same understanding as Ericsson that the WID update is not necessary on these two topics but it would be sufficient to make the decisions in RAN#93 and capture the decisions e.g. in WF document or the email discussion summary with clear conclusions, which can be approved in RAN#93.

5 – Xiaomi Communications

We would suggest to remove the support for the unlicensed band, as lots of work would be needed to support the unlicensed band.

Observation 3: WID update for late anchor relocation is seen as not necessary by some companies since RAN2 agreement is clear on this aspect (whilst some rewording is suggested by 1 company)

Observation 4: WID update for RRC-less is also seen as not necessary by a few companies, but others pointed out that the RAN2 agreement here is less clear (i.e. it is only deprioritised)

Observation 5: One company also proposed to remove unlicensed band operation from the WI

2.4 Summary Initial round

Based on the observations from the initial round the following way forward is proposed:

- RRC-less SDT is removed from the scope (rapporteur believes that a WID update for this is useful since RAN2 agreement doesn't clarify this and this area seems to attract contributions both in plenary and RAN2 as a result)
- No WID update is need for capturing that *there is no optimisation for late anchor relocation* (RAN2 and RAN3 can simply note the RAN2 agreement for this and it is assumed that this is sufficient)
- No update is made to remove unlicensed operation (there was insufficient discussion on this and it is not entirely clear if unlicensed operation results in any significant extra work)

Based on the above, an updated WID (just to remove RRC-less SDT) is saved in the drafts folder:

https://www.3gpp.org/ftp/tsg_ran/TSG_RAN/TSGR_93e/Inbox/Drafts/%5B93e-21-SDT-WI%5D

It is proposed to quickly review this and approve this in intermediate round.

3 Intermediate round

Is the updated WID document (removing RRC-less from the Rel-17 scope) in the drafts folder (link below) agreeable?

https://www.3gpp.org/ftp/tsg_ran/TSG_RAN/TSGR_93e/Inbox/Drafts/%5B93e-21-SDT-WI%5D

Feedback Form 4: Do companies think that the updated WID document can be agreed? (Yes/No). Provide other comments if any.

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| 1 – QUALCOMM JAPAN LLC. Yes |
| 2 – Intel Corporation (UK) Ltd Yes, we are ok with the updated WID. |
| 3 – Asia Pacific Telecom co. Ltd Agree with the rapporteur. |
| 4 – Samsung Electronics Co. Yes, we are fine with the updated WID from the rapporteur. |
| 5 – vivo Mobile Communication Co. Yes, we are OK with the updated WID. |
| 6 – CATT Yes, agree to the proposed changes. |
| 7 – Beijing OPPO Com. corp. Yes, we are fine with the updated WID. |
| 8 – Motorola Mobility France S.A.S Lenovo/Motorola We are also fine with the updated WID |
| 9 – RadiSys Agree |
| 10 – Nokia Corporation Yes |

11 – Ericsson LM

We don't think WID update is needed, as RRC-less is not listed as an explicit objective in the WID, but can be captured and approved as conclusion of the email discussion during RAN#93e.

12 – HUAWEI TECHNOLOGIES Co. Ltd.

Huawei, HiSlicon Yes, but we suggest a wording improvement, i.e. the addition of "by" in the two sentences below:

General procedure to enable transmission of small data packets from INACTIVE state (e.g. using MSGA or MSG3) by including a CCCH message in the first UL message [RAN2].

General procedure for small data transmission over configured grant type 1 resources from INACTIVE state by including a CCCH message in the first UL message [RAN2]

13 – Panasonic Corporation

We agree.

3.1 Intermediate round summary

- It is common view that RRC-less SDT can be removed from the scope of SDT WI
- Apart from one company all others are fine with the WID update (the minor editorial proposed seems fine - i.e. to include "by").

Based on the above, it is proposed to approve the updated WID in: RP-212594

Proposal: RAN#93e is requested to agree the updated WID in RP-212594

4 Final conclusion

Proposal: RAN#93e is requested to agree the updated WID in RP-212594