3GPP TSG-RAN WG2 Meeting #113-e R2-210xxxx

**Online, January 25th – February 5th 2021**

**Agenda item: 6.16**

**Source: Apple**

**Title: Summary of [028][TEI16] Miscellaneous I (Apple)**

**Document for: Discussion and Decision**

# 1 Introduction

This document contains the summary of documents from agenda item 6.16 (“Overheating Stop Behaviour”, “Overheating Other”, “Processing time of DL Segmentation”, and “Release with Redirect”) as per below excerpt from the session chair minutes:

* [AT113-e][028][TEI16] Miscellaneous I (Apple)

Scope: R2-2101434, R2-2101346, R2-2101170, R2-2101656, R2-2100872, R2-2101356, R2-2101357, R2-2101358, R2-2101359, R2-2100979, R2-2101289, R2-2101290, R2-2101291, R2-2101292, R2-2101657,

Phase 1, determine agreeable parts, Phase 2, for agreeable parts Work on CRs.

Intended outcome: Report and Agreed CRs if any is agreeable.

Deadline: Schedule A (can come back Thu Feb 4 is needed)

# 2 Contact Points

Respondents to the email discussion are kindly asked to fill in the following table.

|  |  |  |
| --- | --- | --- |
| Company | Name | Email Address |
| Huawei, HiSilicon | Yiru Kuang | kuangyiru@huawei.com |
| Samsung | Himke van der Velde | Himke.vandervelde@samsung.com |
| Ericsson (Tony) | Antonino Orsino | antonino.orsino@ericsson.com |
| Ericsson (Lian) | Lian Araujo | lian.araujo@ericsson.com |
| MediaTek | Felix Tsai | chun-fan.tsai@mediatek.com |
| Qualcomm | Mouaffac | [mambriss@qti.qualcomm.com](mailto:mambriss@qti.qualcomm.com) |
| Xiaomi | Gordon Young | gordonpetery@xiaomi.com |
| CATT | Jing Liang | liangjing@catt.cn |
| Intel | Yujian Zhang | yujian.zhang@intel.com |
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# 2 Company comments to the contributions

## Topic 1: Overheating Stop Behaviour

**R2-2101434** is the email summary of the [Post112-e][067][NR TEI16] UE indication when it no longer experiences overheating.

Following three solutions are under the email discussion.

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| --- |
|  |

The e-mail discussion resulted in the following proposals:

[Proposal 1 RAN2 to decide between solution 1 or 2 to address overheating for SCG in EN-DC.](#_Toc61018122)

[Proposal 2 RAN2 to confirm that for overheating in NR-DC, the field *allowedReducedConfigForOverheating* should work in the same way as any other restrictions signaled within *CG-ConfigInfo*>*configRestrictInfo*.](#_Toc61018123)

**In R2-2101346,** Solution1 with no spec change is proposed.

**In** **R2-2101170**, Solution 2 is proposed and following inter-node procedure for EN-DC is proposed to be confirmed.

Proposal 2: RAN2 confirms the that in EN-DC when the MN should sends the CG-ConfigInfo not containing the overheatingAssistanceForSCG to the SN that the SN understands that no change in the last signalled UE preference in regards to the detected overheating condition has occurred.

#### **Q1: Which solution is your preference, i.e. Solution 1 or Solution 2?**

|  |  |  |
| --- | --- | --- |
| **Company** | **Solution?** | **Comments** |
| Huawei, HiSilicon | Solution-2 (slightly) | We understand and agree the comments from Samsung([R2-2101346](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_113-e\Docs\R2-2101346.zip)) that it is just one overheating feature and there is no delta reporting for LTE UAI, Solution-1 better satisfies this principle. But more changes on the Uu interface for overheating reporting seems to be needes if Solution-1 is selected, based on the current procedural text, the UE need to include *overheatingAssistanceForSCG* if configured. So we slightly prefer Solution 2 as only inter-node message needs clarification, but still open to hear other companies views.  3> if configured to provide overheating assistance indication for NR SCG:  4> include *overheatingAssistanceForSCG* in the *OverheatingAssistance* IE;  4> set *overheatingAssistanceForSCG* in accordance with clause 5.7.4.3a as specified in TS 38.331 [82]; |
| Samsung | Solution 1 | The general principle is that UE includes all fields of a feature and that absence means previous value is cleared i.e. there is no delta signalling. This means that whenever UE triggers reporting of overheating (i.e. initially and when preferences change), the UE will provide the full picture. I.e. according to current principles, delta signalling only applies when making this an independent subfeature, with its own prohibit, ..  We think there is no problem with existing specifications i.e. solution 2 is merely a minor enhancement. We think we should really avoid introducing a new kind of UE assistance i.e. with different characteristics than apply for the two known cases of a)‘one feature’ and b) ‘independent sub-features |
| Ericsson (Lian) | Solution 2, but | We understand that Solution 1 is already possible with the current signalling, as raised in R2-2101346, and which can also be done without any specification impact – but in that case we think we should at least clarify in the meeting notes the understanding for both EN-DC and NR-DC case.  The point with Solution 2 is that it seems companies did not have the same understanding that Solution 1 was already possible, while solution 2 would also keep the overheating procedures more aligned. But if there is any concern with solution 2 we are also fine with solution 1. |
| Nokia | Solution 2 | We share the understanding that allowedReducedConfigForOverheating should work in the same way as any other restrictions signaled within CG-ConfigInfo>configRestrictInfo, as well as with the interpretation on absence of the SCG overheating (that no change in the last signalled UE preference in regards to the detected overheating condition has occurred.  We also support to confirm the interpretation in the Chair minutes. |
| LG | Solution 1 | We echo Samsung’s comment that there is no delta for this feature, i.e. each reporting is self-explanatory. Along this, we think existing specification is already working properly. No need to enhance further at this late stage, just for minor optimization for network. |
| MediaTek | Solution 2 | We understand the solution 2 is more aligned with the original usage of IE *OverheatingAssistance* and prefer to use same principle as for IE *OverheatingAssistanceForSCG*. Otherwise, it may just confusing. |
| QCOM | Solution-2 (slightly) | We prefer solution-2 as it is more aligned with NR spec.  But willing to adopt solution-1 if this solution would move this feature forward. |
| Xiaomi | Solution 2 | We think solution 1 has more issues than answers, solution 2 provides clarity at the cost of acceptable NBC changes.  It has previously been confirmed that the *overheatingAssistanceForSCG* IE can be sent without any fields, and as such case A (R2-2101434) is valid. Solution 1 per se would not preclude this.  Solution 1 effectively means two signalling conditions may exist in the MN for the case where the UE does not prefer a restricted configuration for the SCG. Namely an empty *overheatingAssistanceForSCG* IE and the omitted *overheatingAssistanceForSCG* IE configuration (n.b. although currently supported in procedural part of 36.331, as Huawei pointed out in R2-2101434 the asn.1 does not support this option).  For solution 1 in both these cases (restricted and not restricted) the UE transmits the OverheatingAssistance IE to the MN for onwards processing, this may be with or without the *overheatingAssistanceForSCG* IE. The SN on receiving the *overheatingAssistanceForSCG,* which may or may not have any content, will process the message to know whether to apply a restricted configuration or not, on every occasion of receiving the CG-ConfigInfo.  In reference to the UE always sending current values (R2-2101346), it is not clear whether this applies in the case of removing the restricted configuration. If it does then it is not clear that the SN validates the values from the UE to confirm that they represent the removal of restrictions i.e. “legacy and SCG parameters that are the same as before” and therefore enables further unrestricted reconfiguration going forward. |
| CATT | Solution 2, but | We agree solution 1 is supported with current procedure without changing UE behaviour. But it is not quite clear. Slightly prefer solution 2. |
| Apple | Solution 2 | We share MediaTek’s view that the solution 2 follows the same principle as *OverheatingAssistance*. |
| ZTE | Solution 2 | With Solution 2, the procedure over Uu and X2 interface can be aligned, and it can avoid signalling overhead between MN and SN. |
| vivo | Solution 2 | Option 2 is more aligned with the design principle of overheating reporting and it makes the principle consistent for both Uu and X2 interfaces. |
| Spreadtrum | Solution 2 | Slightly prefer solution 2, the principle for Uu and X2 interface should be aligned. |
| OPPO | Solution 2 | We share majorities view, and think option 2 is more aligned with what Uu does. |

**<Summary>**

12/14 companies support Solution 2. 2/14 companies support Solution 1.

Solution 2 is supported by clear majority.

**Proposal 1-1: Adopt Solution 2 to address overheating for SCG in EN-DC.**

#### **Q2: Do you agree with the proposal 2 in email summary (R2-2101434)?**

Proposal 2 RAN2 to confirm that for overheating in NR-DC, the field *allowedReducedConfigForOverheating* should work in the same way as any other restrictions signaled within *CG-ConfigInfo*>*configRestrictInfo*.

|  |  |  |
| --- | --- | --- |
| **Company** | **Agree or not?** | **Comments** |
| Huawei, HiSilicon | Agree |  |
| Samsung | Agree | We note that in general overheating solutions for EN-DC and NR-DC are quite different, so we think this is not really relevant to decide what to do for EN-DC |
| Ericsson | Agree |  |
| Nokia | Agree |  |
| LG | Agree |  |
| MediaTek | No strong view |  |
| QCOM | Agree |  |
| Xiaomi | Agree |  |
| CATT | Agree |  |
| Apple | Agree |  |
| ZTE | Agree |  |
| vivo | Agree |  |
| Spreadtrum | Agree |  |
| OPPO | Agree |  |

**<Summary>**

All companies agree proposal 2 in email summary.

**Proposal 1-2: RAN2 to confirm that for overheating in NR-DC, the field allowedReducedConfigForOverheating should work in the same way as any other restrictions signaled within CG-ConfigInfo>configRestrictInfo.**

#### **Q3: Do you agree with the proposal 2 in R2-2101170 for EN-DC case?**

Proposal 2: RAN2 confirms the that when the MN should sends the CG-ConfigInfo not containing the overheatingAssistanceForSCG to the SN that the SN understands that no change in the last signalled UE preference in regards to the detected overheating condition has occurred.

|  |  |  |
| --- | --- | --- |
| **Company** | **Agree or not?** | **Comments** |
| Huawei, HiSilicon | Agree (depend on Q1?) | It is related to the Q1, we understand it is aligned with Solution 2 in Q1. |
| Samsung | Disagree | See Q1. We think this is a minor optimisation of network signalling (see below) i.e. there seems insufficient motivation to change UE behaviour and introduce a new type of UE assistance.  (We think that when UE indicates preferences regarding SCG overheating, SCG reconfiguration would be rather infrequent. Moreover, this is not the most size critical field for which we currently use full signaling. |
| Ericsson | Depends on Q1 | If solution 2 is selected, then we think this proposal is correct. |
| Nokia | Agree | With the assumption Solution 2 is the baseline |
| LG | Disagree | See Q1. We also think this is a minor optimisation of network signalling |
| MediaTek |  | It is related to Q1. Maybe could be discussed later. |
| QCOM | Check note | This would be only possible if Solutoin-2 was adopted, otherwise this not a good approach if solution-1 is adopted |
| Xiaomi | Agree | Proponent. Based on solution 2 yes.  Based on the understanding that the *overheatingAssistanceForSCG* IE can be sent without any fields, we don’t see this as a new type of UE assistance (Samsung), what is proposed aligns with a minimal form of case B (R2-2101434). |
| CATT | Depend on Q1 | If solution 2 in Q1 is adopted, the understanding is correct. |
| Apple | Depend on Q1 | The understanding is correct for solution 2. |
| ZTE | Agree | With the assumption solution 2 is the baseline. |
| vivo | Depend on Q1 | We agree with the proposal if solution 2 is adopted. |
| Spreadtrum | Depend on Q1 |  |
| OPPO | Yes | As we commented in Q1 in which solution 2 is preferred |

**<Summary>**

All companies supporting solution 2 agree the proposal 2 in R2-2101170.

**Proposal 1-3: RAN2 confirms the that when the MN should send the CG-ConfigInfo not containing the overheatingAssistanceForSCG to the SN that the SN understands that no change in the last signalled UE preference in regards to the detected overheating condition has occurred.**

#### **Conclusions (Overheating Stop Behaviour):**

**Proposal 1-1: Adopt Solution 2 to address overheating for SCG in EN-DC.**

**Proposal 1-2: RAN2 to confirm that for overheating in NR-DC, the field *allowedReducedConfigForOverheating* should work in the same way as any other restrictions signaled within CG-ConfigInfo>configRestrictInfo.**

**Proposal 1-3: RAN2 confirms the that when the MN should send the CG-ConfigInfo not containing the overheatingAssistanceForSCG to the SN that the SN understands that no change in the last signalled UE preference in regards to the detected overheating condition has occurred.**

**Proposal 1-4: Discuss and agree the 38.331 and 36.331 CRs in phase 2, based on the TP in R2-2101434 (email summary).**

## Topic 2: Overheating Other

### R2-2101656

R2-2101656 Correction on handling of overheatingAssistanceConfigForSCG when SCG is released Huawei, HiSilicon CR Rel-16 36.331 16.3.0 4584 - F TEI16

**Summary of change:** Clarify that the overheatingAssistanceConfigForSCG-r16 is released when the SCG is released in (NG)EN-DC.

|  |
| --- |
| 5.3.3.4a Reception of the *RRCConnectionResume* by the UE  The UE shall:  1>…  1> else:  2> if resuming an RRC connection from a suspended RRC connection in EPC; or  2> for NB-IoT, if resuming an RRC connection from a suspended RRC connection in 5GC and *fullConfig* is not present in the *RRCConnectionResume* message:  3>…  3> else if the UE was configured with EN-DC:  4> perform MR-DC release, as specified in TS 38.331 [82], clause 5.3.5.10;  4> release *tdm-PatternConfig* or *tdm-PatternConfig2*, if configured;  4> if *overheatingAssistanceConfigForSCG* is configured:  5> release *overheatingAssistanceConfigForSCG* and stop timer T345, if running;  3> ..  2> else if the *RRCConnectionResume* message includes the *fullConfig* (i.e., for resuming an RRC connection from RRC\_INACTIVE or for resuming a suspended RRC connection in 5GC):  3> perform the radio configuration procedure as specified in 5.3.5.8;  2> else if resuming an RRC connection from RRC\_INACTIVE:  3> …  3> else if the UE was configured with NGEN-DC:  4> perform MR-DC release, as specified in TS 38.331 [82], clause 5.3.5.10;  4> release *tdm-PatternConfig* or *tdm-PatternConfig2*, if configured;  4> if *overheatingAssistanceConfigForSCG* is configured:  5> release *overheatingAssistanceConfigForSCG* and stop timer T345, if running; |
| 5.3.5.3 Reception of an *RRCConnectionReconfiguration* not including the *mobilityControlInfo* by the UE  …  1> if the received *RRCConnectionReconfiguration* includes *endc-ReleaseAndAdd* and it is set to *TRUE*:  2> perform MR-DC release as specified in TS 38.331 [82], clause 5.3.5.10;  2> if *overheatingAssistanceConfigForSCG* is configured:  3> release *overheatingAssistanceConfigForSCG* and stop timer T345, if running;  … |
| 5.3.5.4 Reception of an *RRCConnectionReconfiguration* including the *mobilityControlInfo* by the UE (handover) ….  1> if the received *RRCConnectionReconfiguration* includes *endc-ReleaseAndAdd* and it is set to *TRUE*:  2> perform MR-DC release as specified in TS 38.331 [82], clause 5.3.5.10;  2> if *overheatingAssistanceConfigForSCG* is configured:  3> release *overheatingAssistanceConfigForSCG* and stop timer T345, if running;  …. |

#### **Q4: Do you agree with the change in R2-2101656?**

|  |  |  |
| --- | --- | --- |
| **Company** | **Agree or not?** | **Comments** |
| Huawei, HiSilicon | Agree | Proponent.  [HW (Proponent)]: Regarding the last two changes, we would like to raise attention that the current change applies to *endc-ReleaseAndAdd* case which means the *overheatingAssistanceConfigForSCG* should be released when SN changed, it is not the case that SN is release. So we think the following changes would be more appropriate to only focus on the case of SN release. We would like to hear companies view.  1>  if the received *RRCConnectionReconfiguration* includes the *nr-Config* and it is set to *release*: or  1>  if the received *RRCConnectionReconfiguration* includes *endc-ReleaseAndAdd* and it is set to *TRUE*:  2>  perform MR-DC release as specified in TS 38.331 [82], clause 5.3.5.10;  1>  if the received *RRCConnectionReconfiguration* includes the *nr-Config* and it is set to *release*:  2>  if *overheatingAssistanceConfigForSCG* is configured:  3> release *overheatingAssistanceConfigForSCG* and stop timer T345, if running; |
| Samsung |  | Not sure this is really needed, but no strong view |
| Ericsson | Agree |  |
| Nokia | Agree | It should be clear from referred 38.331 that entire SCG config is released- so the CR is not that essential but make sense (for clarity) |
| MediaTek | Not sure | Could proponent clarify why NW could not release the *overheatingAssistanceConfigForSCG* by explicit signalling? Is it because that the UE is resuming to legacy gNB? If yes, should the NW just use the full configuration?  [HW (Proponent)]: we agree that it can be NW implementation, e.g. the NW release *overheatingAssistanceConfigForSCG* explicitly. But in our view it is not 100% reliable and introduces additional complexity to the NW, the NW should always remember to do it if SCG is released. As *overheatingAssistanceConfigForSCG* should be released once SCG is released, we understand the most straightforward way to add this behaviour in the procedural text. |
| QCOM | Agree | Expected behaviour, not needed |
| Xiaomi | Agree |  |
| CATT | Agree |  |
| Apple | Agree |  |
| ZTE | Agree |  |
| vivo | Agree |  |
| Spreadtrum | Agree |  |
| OPPO | Agree |  |

#### **Conclusions (R2-2101656): TBA**

11/13 companies agree the change in R2-2101656, and 2/11 companies are not sure but have no strong view. The rapporteur think the CR can be agreed according to majority view.

**Proposal 2-1: The CR R2-2101656 is agreed.**

### R2-2100872

R2-2100872 Cleanup on Overheating UAI reporting procedure Apple CR Rel-16 38.331 16.3.1 2361 - F TEI16

**Summary of change:** To make it clear that the UAI reporting procedures defined for EN-DC and NR-DC are not applicable to overheating indication.

|  |
| --- |
| 5.7.4.3 Actions related to transmission of *UEAssistanceInformation* message  …  1> else if the UE is in (NG)EN-DC:  2> if SRB3 is configured:  3> submit the *UEAssistanceInformation* message via SRB3 to lower layers for transmission, except overheating assistance information indication;  2> else:  3> submit the *UEAssistanceInformation* message via the E-UTRA MCG embedded in E-UTRA RRC message *ULInformationTransferMRDC* as specified in TS 36.331 [10], except overheating assistance information indication.  1> else if the UE is in NR-DC:  2> if the UE assistance configuration that triggered this UE assistance information (except overheating assistance information) is associated with the SCG:  3> if SRB3 is configured:  4> submit the *UEAssistanceInformation* message via SRB3 to lower layers for transmission;  3> else:  4> submit the *UEAssistanceInformation* message via the NR MCG embedded in NR RRC message *ULInformationTransferMRDC* as specified in5.7.2a.3;  2> else:  3> submit the *UEAssistanceInformation* message via SRB1 to lower layers for transmission; |

#### **Q5: Do you agree with the change in R2-2100872?**

|  |  |  |
| --- | --- | --- |
| **Company** | **Agree or not?** | **Comments** |
| Huawei, HiSilicon |  | In our understanding, in 38.331 5.7.4.3, it describe how to set the contents of the **NR UAI message** and the information associated with SCG only includes the power saving UAI in DC case. The overheating assistance information associated with SCG is included in the **LTE UAI message** described in 36.331. Thus, we understand the intention but not sure if any clarification is really needed. |
| Samsung |  | Alike expressed by Huawei, we assume a UE in (NG)EN-DC will not trigger 38.331 5.7.4.3 (at least not for providing overheating assistance) |
| Ericsson | Agree | We think the use case is valid for NR-DC. |
| Nokia |  | The motivation is correct, but in fact the section of 38.331 does not concern providing UAI for ENDC over SRB3 |
| MediaTek | No | The modified part of 38.331 5.7.4.3 has nothing to do with the overheating for EN-DC. Instead, we only use 5.7.4.3a to setup an IE (container). So the change is not needed. |
| QCOM | Disagree | Carry similar understanding as Huawei |
| Xiaomi |  | Agree with Huawei that this section relates to the setting of the NR UAI message, and UE will not trigger 38.331 5.7.4.3 for EN-DC case for overheating |
| CATT | No | According to 38.331, the SCG UEAssistanceInformation for overheating is captured in another subclause, i.e. 5.7.4.3a. And the SCG UEAssistanceInformation for overheating is included in LTE UEAssistanceInformation message. We think no further clarification is needed. |
| Apple | Agree | It’s not clear in current spec on the difference of overheating assistance information and other information. Without the clarification, the UE will mistakenly regard all UAI processing in the same way. |
| ZTE | / | We understand the use case is valid for NR-DC but the change does not seem to be correct. |
| vivo |  | Agree with HW |
| Spreadtrum |  | Agree with Huawei. |
| OPPO | No | We also think no further clarification is needed as commented by CATT |

#### **Conclusions (R2-2100872): TBA**

3/13 companies think the clarification for NR-DC is needed;

6/13 companies understand the intention and would like to check further.

Based on company’s input, majority (9/13) is fine to check further on the necessity on the clarification for NR-DC, e.g. whether it’s clear on the differentiation on the overheating UAI and power saving UAI for SCG.

**Proposal 2-2: Continue the discussion on the clarification for the overheating UAI reporting in NR-DC.**

## Topic 3: Processing time of DL Segmentation

R2-2102261 is the summary of Email Report of [Post112-e][063][NR TEI16] RRC processing time with segmentation.

The e-mail discussion resulted in the following proposals:

Proposal 1: Adopt option 2 (i.e. 16ms + (Nseg-1)\*X) to define the NR RRC processing time requirement for DL RRC message with segmentation.

Proposal 2: Assume the X value is [2ms~16ms] in option 2, and final decision is made by RAN2.

Proposal 3: Send LS to RAN5 to inform the RRC processing time extension for the RRC message with segmentation.

Proposal 4: Adopt option 2 (i.e. 20ms + (Nseg-1)\*X) to define the LTE RRC processing time requirement for DL RRC message with segmentation.

#### **Q6: Do you agree with the proposal 1,3,4?**

*Proposal 1: Adopt option 2 (i.e. 16ms + (Nseg-1)\*X) to define the NR RRC processing time requirement for DL RRC message with segmentation.*

*Proposal 3: Send LS to RAN5 to inform the RRC processing time extension for the RRC message with segmentation.*

*Proposal 4: Adopt option 2 (i.e. 20ms + (Nseg-1)\*X) to define the LTE RRC processing time requirement for DL RRC message with segmentation.*

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| --- | --- | --- |
| **Company** | **Agree or not?** | **Comments** |
| Huawei, HiSilicon | Yes | This seems also the “obvious” conclusion of the email discussion [063] |
| Ericsson (Tony) | Yes |  |
| Nokia | Yes |  |
| MediaTek | Yes |  |
| QCOM | Yes |  |
| Xiaomi | Yes |  |
| CATT | Yes |  |
| Intel | Yes |  |
| Apple | Yes |  |
| Samsung | Yes |  |
| ZTE | Yes |  |
| vivo | Yes |  |
| Spreadtrum | Yes |  |
| OPPO | Yes |  |

**<Summary>**

All companies agree the proposal 1,3,4 in the email summary.

**Proposal 3-1: Adopt option 2 (i.e. 16ms + (Nseg-1)\*X) to define the NR RRC processing time requirement for DL RRC message with segmentation.**

**Proposal 3-2: Send LS to RAN5 to inform the RRC processing time extension for the RRC message with segmentation.**

**Proposal 3-3: Adopt option 2 (i.e. 20ms + (Nseg-1)\*X) to define the LTE RRC processing time requirement for DL RRC message with segmentation.**

About the proposal 2 on the X value, there is not a clear consensus on a specific value. To allow the different UE implementation, in [R2-2100979](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_113-e\Docs\R2-2100979.zip), it is proposed to introduce a UE capability for it.

#### **Q7: Do you agree to introduce the UE capability for the X value as suggested in** [**R2-2100979**](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_113-e\Docs\R2-2100979.zip) **?**

[*Proposal 1 The value of “X” for the processing delay requirement of DL RRC segmentation is signalled as a UE capability.*](#_Toc61538347)

[*Proposal 2 The range of “X” (to be signalled as UE capability) is 2m, 7ms, 12ms.*](#_Toc61538348)

|  |  |  |
| --- | --- | --- |
| **Company** | **Agree or not?** | **Comments** |
| Huawei, HiSilicon | Maybe | The report via UE capability seems an overkill. Nevertheless, if it is really difficult to converge on a value for X, the UE capability could be a compromise to consider. In that case for example 4 values like [4,8,12,16] could be considered. |
| Ericsson | Yes | We believe that the processing delay should be a reasonable value that does not delay the RRC reconfiguration procedure too much. Given that UEs may have different performance in processing all the segments, we want to avoid that those UEs hold on their actions before getting an UL grant from the network. This is because the network may consider the worst RRC processing delay time for the design of its implementation.  Given this situation, having the value of “X” as a UE capability seems a reasonable compromise. |
| Nokia | No to UE capability and set of values | Indeed, this looks like overkill to introduce new capability. A value for X can be agreed and added to the spec as what is allowed for Rel-16 for example. Similar as L2 buffer size calculation discussion. |
| MediaTek | Maybe | Capability for this would be acceptable to us but we also feel it is a little bit overkill. |
| QCOM | Inefficient approach | * 1st preference, is converging on a common value for X. * If no consensus on X, due to large discrepancy among companies, we can use the capability approach to provide different value for X   Need to select a more practical range for X (e.g. x=2 seems too aggressive) |
| Xiaomi | maybe | Would prefer to converge on reasonable value of X |
| CATT | No | We prefer to specify one fixed value for X, the X value depends on UE capability will introduce complexity |
| Intel | No | UE capability is only introduced when specific value cannot be agreed after extensive discussion. So we should aim to agree on a value first, and only consider UE capability as last resort. |
| Apple | Yes | If the final X value cannot cover the worse case, the capability for X value is a good compromise. |
| Samsung | Maybe | We prefer to avoid introduction of a UE capability. If this is the only way to conclude, we are open to consider |
| ZTE | Acceptable solution | If it is hard to converge on a fix value for X, then using UE capability could be a compromise solution. |
| vivo | No | Similar with the setting of RRC processing time, we prefer to specify a fixed value of X regardless of UE capability. |
| Spreadtrum | Maybe | Agree with Apple. |
| OPPO | No strong view | Either fixed a X value or set a capability is ok for us. |

**<Summary>**

11/14 companies are acceptable to the capability approach if it is difficult to converge on a fix value for X.

**Proposal 3-4a: If there is no consensus on the X value, the value of “X” for the processing delay requirement of DL RRC segmentation is signalled as a UE capability.**

#### **Q8: If UE capability for the X value is not agreed, what is your preferred value of X (i.e. 2ms, 12ms, 16ms)?**

|  |  |  |
| --- | --- | --- |
| **Company** | **Value?** | **Comments** |
| Huawei, HiSilicon | Any value between 12 and 16 ms is fine for us | A value for X in the range [12-16] should be able to accommodate all the UEs implementations. We believe that values = or > 12 ms are not a problem on the network side. The network will wait for the UE to finish its operations and as long as this value is known to the network (either hardcoded or UE capability), there is no problem even for value X=16 ms. Companies that believe this is a problem for the network side should be able to explain why. |
| Ericsson | Between 2 ms and 9 ms | Having a large value of X will increase the overall delay of the RRC reconfiguration procedure. On top of this, UEs that are able to process all the segment in reasonable short time will have to wait long time before getting an UL grant from the network. |
| Nokia |  | Of course, a lower value is better as explained earlier. We would be open to discuss as we don’t have a reference range. |
| MediaTek | 10ms? | We originally think 2ms is enough but it may be too optimistic after further analysis. The large RRC message could imply large number of SCell(s) is added or released at this reconfiguration, which is indeed a time consuming process. We therefore suggest a large value here. Note that this does not really increase the overall processing time compared to the case if NW send the RRC message one by one with delta configuration. |
| QCOM | Between 4 ms to 12 ms |  |
| CATT | 2ms | Prefer to lower value |
| Intel | 7 ms | 7 ms can be considered as a compromised value from proposed values. But we don’t have strong view. |
| Apple | 12ms, 16ms | The X value is to define the minimum requirement and should based on the worst case.  We propose the large X value because the max message size of DL RRC with segmentation that needs to be processed in RRC layer (**including ASN.1 decoding, configuration validation and applying the configuration internally**) can be increased N times of that in R15. And in the worst case one RRC message may include the configuration of 32 serving cells release/addition/reconfiguration, 4 BWPs per serving cell, 192 CSI-RS resources per BWP, etc. All the load of pre- and post-processing RRC segments are time consuming process.  About NW vendors’ concern about the impact on overall delay of the RRC reconfiguration procedure. We donot think it’s the issue. Because it’s the minimum requirement, and if the UE can provide the compete message earlier than X, UE will send SR to request UL grant for Complete message transmission. |
| Samsung | 10ms | As stated before, we think a larger value seems more reasonable. We think segmentation was not really introduced for latency reduction. For lower values a capability may be required |
| ZTE |  | Same view as Nokia, lower value should be pursued, and we don’t have a preference range for now. |
| vivo | No strong view | No strong view, we are open to discuss. |
| vivo | No strong view | No strong view, we are open to discuss. |
| Spreadtrum | Between 12ms and 16ms | We prefer a large value because the large RRC message requires longer processing time. However, this does not means increasing the overall processing time as this is only a minimum requirement. If UE completes the RRC message processing, it will send RRC complete message as soon as possible. |

**<Summary>**

3/14 companies indicate X=12ms, 16ms;

1/14 companies indicate X=12ms;

2/14 companies indicate X=10ms, and also indicate that a larger value seems more reasonable;

5/14 companies have no strong view;

1/14 company indicates X=9ms;

1/14 company indicates X=2ms, and not provide the reason for it.

Based on company’s input, X=12ms is acceptable by majority (11/14).

**Proposal 3-4: Agree X value is 12ms in option 2 (i.e. 16ms + (Nseg-1)\*X).**

#### **Conclusions (Processing time with DL segmentation):**

**Proposal 3-1: Agree option 2 (i.e. 16ms + (Nseg-1)\*X) to define the NR RRC processing time requirement for DL RRC message with segmentation.**

**Proposal 3-2: Send LS to RAN5 to inform the RRC processing time extension for the RRC message with segmentation.**

**Proposal 3-3: Agree option 2 (i.e. 20ms + (Nseg-1)\*X) to define the LTE RRC processing time requirement for DL RRC message with segmentation.**

**Proposal 3-4: Agree X value is 12ms in option 2 (i.e. 16ms + (Nseg-1)\*X).**

**(Alternative) Proposal 3-4a: If proposal 3-4 is not agreed, the value of “X” for the processing delay requirement of DL RRC segmentation is signalled as a UE capability.**

**Proposal 3-5: Discuss and agree the LTE CRs, NR CRs and the draft LS to reflect the above agreements.**

## Topic 4: Release with Redirect

R2-2101289 Release with Redirect in 2 steps Ericsson discussion Rel-16 TEI16

[R2-2101290](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_113-e\Docs\R2-2101290.zip) Release with Redirect in 2 steps Ericsson CR Rel-16 38.331 16.3.1 2402 - F TEI16

[R2-2101291](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_113-e\Docs\R2-2101291.zip) Release with Redirect in 2 steps Ericsson CR Rel-16 38.306 16.3.0 0503 - F TEI16

[R2-2101292](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_113-e\Docs\R2-2101292.zip) Release with Redirect in 2 steps Ericsson CR Rel-16 38.300 16.4.0 0338 - F TEI16

[R2-2101657](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_113-e\Docs\R2-2101657.zip) Release with redirection in 2 steps release Huawei, HiSilicon discussion Rel-16 TEI16

In RAN2#112e this was discussed in [R2-2009849](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_112-e/Docs/R2-2009849.zip) and [AT112-e][029][NR TEI16] Misc Corrections II ([R2-2011176](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_112-e/Docs/R2-2011176.zip)), and the following has been agreed:

* [029] will support release with redirection in response to a ResumeRequest for both with/without anchor change cases.
* [029] For anchor change scenario, the current gNB is responsible for determining the redirection.
* [029] Discussion on detail mechanism and CRs is postponed to next meeting.

About the case without UE context relocation, R2-2101289 propose not to support it in R16, but R2-2101657 propose to support it and provide the detailed mechanism.

|  |  |
| --- | --- |
| TDoc | Proposals |
| R2-2101289 | [Proposal 1: Agree on the Text Proposals to TS 38.300.](#_Toc61504334)  [Proposal 2 : Confirm that the case without UE context relocation is not supported in Rel-16.](#_Toc61504335)  Proposal 3: Agree CRs to 38.300, 38.331 and 38.306. |
| R2-2101657 | Proposal 1: Add new cause in *RETREEVE UE CONTEXT REQUESET* message to indicate anchor gNB that the new serving gNB intends to redirect this UE and the anchor gNB is responsible for determining whether to perform anchor switch.  Proposal 2: In non-anchor-change scenario, the new serving gNB determines redirect configuration and sends it to the anchor gNB along with RETRIEVE UE CONTEXT REQUSET message.  Proposal 3: If Proposal 1 and Proposal 2 are agreed, send LS to RAN3 to inform them.  Proposal 4: Agree the Text Proposals to TS 38.300. |

#### **Q9: Do you support case without UE context relocation?**

|  |  |  |
| --- | --- | --- |
| **Company** | **Support?** | **Comments** |
| Huawei, HiSilicon | Support | Proponent of R2-2101657.  After receiving the *RRCResumeRequest* message from UE, if the load of the new serving gNB is too heavy or it couldn’t support this resume cause, the new serving gNB could decide release and redirect this UE. Then, it requests UE context from the last serving gNB. After UE context is moved to the last serving gNB and Path switch is made, the new serving gNB2 will be anchor gNB. RRC release message including redirection information could be created by gNB2 and be send to UE. After receiving release message with redirect information, UE will perform cell selection and camp on a new cell, and then UE’s NAS will trigger RRC resume procedure again. In this case, anchor gNB switch has to be performed twice to finish the NAS trigger RRC resume and it is not optimal from signalling point of view. |
| Ericsson | Can accept | Our view was to not impact other groups with a late TEI16 issue. But if other companies are fine, we are also fine to support R2-2101657. |
| Nokia | No, this is RAN3 area | In our view this is RAN3 discussion. We would rather keep the mandate to what we discussed in last meeting and not add additional content at late stage. |
| MediaTek | No strong view | Can I first clarify that whether there is UE behavior change on supporting of UE context relocation or not? Assuming no. |
| QCOM | Support | Support context relocation and **let RAN3 to decide** whether they can do the necessary work. |
| CATT | See comments | It should depends on RAN3 discussion due to it will impact the inter-node message |
| Intel | Check with RAN3 | Without context relocation impacts RAN3 and should be checked with RAN3. |
| Apple | No strong view | It should be discussed in RAN3. |
| Samsung | Can accept | We agree this option has RAN3 impacts and would be more for RAN3 to conclude (but it seems they already accepted) |
| ZTE | 1. Support case without UE context relocation 2. Do not support the proposals in R2-2101657 | It is not clear why the case without UE context relocation can not be supported. We understand it can be left to NW implementation, and it can be transparent to UE.   * [029] will support release with redirection in response to a ResumeRequest for both with/without anchor change cases. * [029] For anchor change scenario, the current gNB is responsible for determining the redirection. * [029] Discussion on detail mechanism and CRs is postponed to next meeting.   At the last meeting the agreement was only that in case of anchor relocation, the redirection decision is done by the new serving gNB. So, in case of no anchor relocation, if we leave this decision to the anchor gNB, then there will be no RAN3 impact. |
| vivo | No strong view | No strong view, but we think it is in the scope of RAN3. |
| Spreadtrum | No strong view | It should be discussed in RAN3. |
| OPPO |  | Same view as majorities that it’s in the RAN3 scope |

#### **Conclusions (with/without UE context relocation):**

All companies think the case without UE context relocation is transparent to UE, and should be discussed in RAN3 or up to NW implementation.

The rapporteur think we can have the RAN2 CRs to reflect the agreements made in last RAN2 meeting, i.e. support release with redirection in response to a ResumeRequest for both with/without anchor change cases. About the inter-node signalling and procedure impact, it could leave RAN3 to discuss and decide whether to standardize it or not.

**Proposal 4-1: Confirm to support the release with redirection in response to a ResumeRequest for both with/without anchor change cases.**

**Proposal 4-2: Discuss the 38.331, 38.306, 38.300 CRs based on R2-2101290, R2-2101291, R2-2101292 in phase 2.**

# Conclusions

#### **Topic 1: Overheating Stop Behaviour**

**Proposal 1-1:** Adopt Solution 2 to address overheating for SCG in EN-DC.

**Proposal 1-2:** RAN2 to confirm that for overheating in NR-DC, the field *allowedReducedConfigForOverheating* should work in the same way as any other restrictions signaled within CG-ConfigInfo>configRestrictInfo.

**Proposal 1-3:** RAN2 confirms the that when the MN sends the CG-ConfigInfo not containing the overheatingAssistanceForSCG to the SN that the SN understands that no change in the last signalled UE preference in regards to the detected overheating condition has occurred.

**Proposal 1-4 (For PHASE 2):** Discuss and agree the 38.331 and 36.331 CRs in phase 2, based on the TP in R2-2101434 (email summary).

#### **Topic 2: Overheating Other**

Proposal 2-1: The CR R2-2101656 is agreed.

**Proposal 2-2 (For PHASE 2):** Continue the discussion on the clarification for the overheating UAI reporting in NR-DC in phase 2.

#### **Topic 3: Processing time of DL Segmentation**

**Proposal 3-1:** Agree option 2 (i.e. 16ms + (Nseg-1)\*X) to define the NR RRC processing time requirement for DL RRC message with segmentation.

**Proposal 3-2:** Send LS to RAN5 to inform the RRC processing time extension for the RRC message with segmentation.

**Proposal 3-3:** Agree option 2 (i.e. 20ms + (Nseg-1)\*X) to define the LTE RRC processing time requirement for DL RRC message with segmentation.

**Proposal 3-4:** Agree X value is 12ms in option 2 (i.e. 16ms + (Nseg-1)\*X).

**Proposal 3-5 (For PHASE 2):** Discuss and agree the LTE CRs, NR CRs and the draft LS to reflect the above P3-1, P3-2, P3-3, P3-4.

#### **Topic 4: Release with Redirect**

**Proposal 4-1:** Confirm to support the release with redirection in response to a ResumeRequest for both with/without anchor change cases.

**Proposal 4-2 (For PHASE 2):** Discuss the 38.331, 38.306, 38.300 CRs based on R2-2101290, R2-2101291, R2-2101292.

# 4 Discussion contribution List

*Overheating Stop Behaviour*

[R2-2101434](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_113-e\Docs\R2-2101434.zip) Summary of e-mail discussion on UE indication when it no longer experiences overheating Ericsson discussion

[R2-2101346](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_113-e\Docs\R2-2101346.zip) Impacting UE to optimise inter-node transfer of SCG overheating info Samsung Telecommunications, LG Electronics Inc. discussion TEI16

[R2-2101170](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_113-e\Docs\R2-2101170.zip) OverheatingAssistance Restriction Release Signalling in EN-DC Beijing Xiaomi Mobile Software discussion Rel-16

*Overheating Other*

[R2-2101656](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_113-e\Docs\R2-2101656.zip) Correction on handling of overheatingAssistanceConfigForSCG when SCG is released Huawei, HiSilicon CR Rel-16 36.331 16.3.0 4584 - F TEI16

[R2-2100872](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_113-e\Docs\R2-2100872.zip) Cleanup on Overheating UAI reporting procedure Apple CR Rel-16 38.331 16.3.1 2361 - F TEI16

*Processing time of DL Segmentation*

[R2-2101356](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_113-e\Docs\R2-2101356.zip) Summary of Email Report of [Post112-e][063][NR TEI16] RRC processing time with segmentation Apple discussion Rel-16 NR\_newRAT-Core, TEI16

Revisedin=> Revised in R2-2102261

R2-2102261 Summary of Email Report of [Post112-e][063][NR TEI16] RRC processing time with segmentation Apple discussion Rel-16 NR\_newRAT-Core, TEI16

[R2-2101357](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_113-e\Docs\R2-2101357.zip) NR RRC processing time with segmentation Apple CR Rel-16 38.331 16.3.1 2405 - F NR\_newRAT-Core, TEI16

[R2-2101358](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_113-e\Docs\R2-2101358.zip) LTE RRC processing time with segmentation Apple CR Rel-16 36.331 16.3.0 4572 - F NR\_newRAT-Core, TEI16

[R2-2101359](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_113-e\Docs\R2-2101359.zip) Draft LS to RAN5 on RRC processing time with segmentation Apple LS out Rel-16 NR\_newRAT-Core, TEI16 To:RAN5

[R2-2100979](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_113-e\Docs\R2-2100979.zip) RRC processing delay for DL RRC segmentation Ericsson discussion Rel-16 TEI16

*Release with Redirect – Continue from last meeting*

[R2-2101289](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_113-e\Docs\R2-2101289.zip) Release with Redirect in 2 steps Ericsson discussion Rel-16 TEI16

[R2-2101290](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_113-e\Docs\R2-2101290.zip) Release with Redirect in 2 steps Ericsson CR Rel-16 38.331 16.3.1 2402 - F TEI16

[R2-2101291](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_113-e\Docs\R2-2101291.zip) Release with Redirect in 2 steps Ericsson CR Rel-16 38.306 16.3.0 0503 - F TEI16

[R2-2101292](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_113-e\Docs\R2-2101292.zip) Release with Redirect in 2 steps Ericsson CR Rel-16 38.300 16.4.0 0338 - F TEI16

[R2-2101657](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_113-e\Docs\R2-2101657.zip) Release with redirection in 2 steps release Huawei, HiSilicon discussion Rel-16 TEI16