**3GPP TSG-RAN WG2 Meeting #125 R2-24xxxxx**

**Athens, Greece, 26th February – 1st March, 2024**

Agenda Item: 7.4.1.2

Source: ZTE Corporation, Sanechips

Title: Report of [Post125][513][feMob] 37340 (ZTE)

Document for: Discussion and Decision

# 1 Introduction

This contribution is to address the following email discussion:

* [Post125][513][feMob] 37340 (ZTE)

Scope: Treat and review R2-2400310, R2-2401140, R2-2401170. Include agreeable parts, include additional impact due to meeting progress (if any).

Intended outcome: Agreed 37340 CR

Deadline: Short

The participants are invited to provide their contact information in the following table.

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| **Company** | **Contact: Name (E-mail)** |
| Huawei, HiSilicon | david.lecompte@huawei.com |
| Ericsson | cecilia.eklof@ericsson.com |
| CMCC | tanjiayao@chinamobile.com |
| Xiaomi | xiongyi3@xiaomi.com |
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# 2 Discussion

[R2-2401140](file:///D:\3gpp\tsg_ran\WG2_RL2\C:\Users\mtk65284\Documents\3GPP\tsg_ran\WG2_RL2\RAN2\Docs\R2-2401140.zip) Discussion on S-CPAC and TP for TS 37.340 CMCC

This contribution discussed some corrections on subsequent CPAC:

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| **Proposal 1: Capture the autonomous release of subsequent CPAC configuration upon RRC Re-establishment or RRC release in clause 10.20 in TS 37.340.**  **Proposal 2: Capture the following principle in clause 10.20 in TS 37.340.**  **- Upon MCG failure when fast MCG link recovery is configured and the SCG is not deactivated, or upon SCG failure, the UE maintains the stored subsequent CPAC configuration unless the network indicates the UE to release it.** |

The corresponding text proposals for TS 37.340 are shown as follows:

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| 10.20 Subsequent Conditional PSCell Addition or Change A Subsequent Conditional PSCell Addition or Change (subsequent CPAC) is defined as a conditional PSCell addition or change procedure that is executed after a PSCell addition, a PSCell change, a PCell change or an SCG release based on pre-configured subsequent CPAC configuration of candidate PSCell(s) without reconfiguration and re-initiation of CPC/CPA. The UE keeps the configured subsequent CPAC configuration (unless the network indicates to release it or the UE autonomously releases it upon RRC re-establishment or RRC release) and evaluates the execution conditions of candidate PSCells after completion of a PSCell addition, a PSCell change, a PCell change or an SCG release. Intra-SN subsequent CPAC initiated by the SN, inter-SN subsequent CPAC initiated by either MN or SN are supported.  ...  - Upon MCG failure when fast MCG link recovery is configured and the SCG is not deactivated, or upon SCG failure, the UE maintains the stored subsequent CPAC configuration unless the network indicates the UE to release it. |

**Rapporteur’s comments:**

For the 1st change in the TP, if companies think the UE autonomous release behaviour should be captured (e.g. the UE shall autonomously remove the subsequent CPAC configuration in SCG *VarConditionalReconfig* upon SCG release), we can consider to capture some general description as below:

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| The UE keeps the configured subsequent CPAC configuration (unless the network indicates to release it or the UE autonomously releases it) and evaluates the execution conditions of candidate PSCells after completion of a PSCell addition, a PSCell change, a PCell change or an SCG release. |

For the 2nd change, we understand the motivation, however, the similar UE behaviour is also applicable to the legacy CPAC and it haven’t been captured in the TS 37.340, so, if we intend to add the paragraph for MCG failure for subsequent CPAC, then the similar paragraph should also be added to legacy CPAC section. Considering this is already clear in Stage-3 spec, rapporteur would suggest to not capture it in the stage-2 CR.

**Q1: Do companies agree the proposed changes in R2-2401140?**

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| Company | Agree/Disagree | Comments if any |
| Huawei, HiSilicon | May capture but TP is confusing | The sentence is “after completion of a PSCell addition, a PSCell change, a PCell change or an SCG release”, RRC re-establishment is not that case so it is confusing to add this in this sentence.  A separate sentence would be better, e.g. “The UE autonomously releases the subsequent CPAC configuration upon RRC re-establishment and upon RRC release”.  Note: it should be “and”, not “or”, because “or” would mean that the UE may do one behaviour but not the other. |
| Ericsson |  | Agree with the comment from Huawei. |
| MediaTek |  | Agree with Huawei |
| CMCC | Agree | We are fine with HW’s suggestion to capture a separate sentence. |
| Xiaomi |  | Agree with Huawei |

**Summary:**

All input companies agree Huawei’s comment.

We will capture “The UE autonomously releases the subsequent CPAC configuration upon RRC re-establishment and upon RRC release” in the 37.340 CR.

[R2-2401470](file:///D:\3gpp\tsg_ran\WG2_RL2\C:\Users\mtk65284\Documents\3GPP\tsg_ran\WG2_RL2\RAN2\Docs\R2-2401470.zip) Stage-2 corrections for SCPAC OPPO

The contribution discussed some corrections on subsequent CPAC:

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| [**Proposal 1 UE is not required to continue evaluating the execution condition of other candidate PSCell(s) or PCell(s) while executing subsequent CPAC.**](#_Toc158278721)  [**Proposal 2 UE is not required to continue evaluating the execution conditions of other SCPAC candidates when PSCell change/addition, PCell change is triggered.**](#_Toc158278722)  [**Proposal 3 Add NOTE in TS 37340 to declare NW will always guarantee a valid SCPAC config**](#_Toc158278723) |

The corresponding text proposals for TS 37.340 are shown as follows:

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| - While executing subsequent CPAC, the UE is not required to continue evaluating the execution condition of other candidate PSCell(s) or PCell(s).  - UE is not required to continue evaluating the execution conditions of other SCPAC candidates when PSCell change/addition, PCell change is triggered.  NOTE: If subsequent CPAC is configured, upon PCell change or PSCell change, the MN/SN may retain the subsequent CPAC configuration or cancel the subsequent CPAC configuration. If the MN/SN maintains the subsequent CPAC configuration, it should provide suitable execution conditions for the evaluation of the subsequent CPAC. |

**Rapporteur’s comments:**

For the 1st and 2nd change, rapporteur thinks it’s fine to capture such principles aligned with the legacy CPAC.

For the 3rd change, rapporteur agrees with the intention, and would suggest to capture it as a general principle in the normative text (covering PCell change, PSCell addition/change and SCG release), instead of a NOTE.

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| - If subsequent CPAC is configured, upon PSCell addition, PSCell change, PCell change or SCG release, the network should provide suitable execution conditions for the evaluation of the subsequent CPAC if the network decides to maintain the subsequent CPAC configuration. |

**Q2: Do companies agree the proposed changes in R2-2401470?**

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| Company | Agree/Disagree | Comments if any |
| Huawei, HiSilicon | No strong view | This is not so important, but TP could be ok |
| Ericsson |  | Regarding the third change, isn’t this always the network’s responsibility to provide suitable configurations? We don’t think the change is needed, but if it should be added then better to say “the network provides suitable ..” (“should” should be avoided in specifications). |
| MediaTek |  | Prefer to keep this as a NOTE, since this is not describing UE behavior. Also agree with Ericsson that we should avoid “should” here. |
| CMCC | Partially Agree | We are fine with the 1st and 2nd change.  For the 3rd change, we think that there is no need to restrict the behavior of network, and the following agreements in this meeting can solve the issue where no execution condition is not provided.   * UE stops evaluating cand cell for which execution condition is not provided (but configurations are kept) |
| Xiaomi |  | Ok for P1,2 and 3.  No strong view for the TPs. |

**Summary:**

All input companies are fine with the 1st and 2nd change, so we will capture them in the 37.340 CR.

For 3rd change, 2 companies are fine with the TP, 1 company has no strong view, but 2 companies think the change is not needed.

Considering there is a common understanding that the NW always ensures to provide the suitable configuration, we tend to agree with no need to add this change in the spec.

[R2-2400310](file:///D:\3gpp\tsg_ran\WG2_RL2\C:\Users\mtk65284\Documents\3GPP\tsg_ran\WG2_RL2\RAN2\Docs\R2-2400310.zip) Miscellaneous corrections for NR further mobility enhancements in TS 37.340 ZTE Corporation, Sanechips

This CR is to address some miscellaneous clarification and editorial changes in the current TS 37.340:

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| ***Reason for change:*** | To address some miscellaneous clarification/editorial changes:   1. The current definition of subsequent CPAC may cause the ambiguity that the subsequent CPAC includes only the following/subsequent CPC/CPA execution after a PSCell addition/change, PCell change or SCG release, but not including the initial CPA/CPC execution after receiving the subsequent CPAC configuration. 2. The description of intra-SN subsequent CPAC without MN involvement execution completion is missing in the section 10.10.2 for RRC Transfer procedure. 3. Some editorial clarification/changes are required in Figure 10.20-1 and 10.20-2, to align with the procedural text. 4. The current text on MN initiated SN modification procedure during subsequent CPAC procedure in section 10.20 is unclear and may cause some ambiguity. 5. Remove “and when RRC full configuration is not used” in section 10.20, to avoid the ambiguity that RRC full configuration may be used for subsequent CPAC. 6. Some editorial changes needs to be fixed. |
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| ***Summary of change:*** | 1. Update the definition of subsequent CPAC in section 3.1 and 10.20. 2. Add the description of intra-SN subsequent CPAC without MN involvement execution completion in the section 10.10.2. 3. Fix some editorial changes in Figure 10.20-1 and 10.20-2. 4. Improve the procedural text on MN initiated SN modification procedure during subsequent CPAC procedure in section 10.20. 5. Remove “and when RRC full configuration is not used” in section 10.20. 6. Fix some editorial changes in section 10.20.   **Impact Analysis**  Impacted 5G architecture options:  NR-DC  Impacted functionality:  Subsequent CPAC  Inter-operability:  1. If the network is implemented according to the CR and the UE is not, there is no inter-operability issue.  2. If the UE is implemented according to the CR and the network is not, there is no inter-operability issue. |

**Rapporteur’s comments:**

This CR is taken as a baseline for the 37.340 CR review. The first change was withdrawn in the draft CR based on the comment received offline. Companies are invited to provide comments in the following table or insert your comments via bubble comment in the draft CR in the ftp folder, if any.

**Q3: Do companies agree the proposed changes in R2-2400310?**

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| Company | Agree/Disagree | Comments if any |
| Huawei, HiSilicon | Partially agree | The revised definition has exactly the problem that it is supposed to solve, so it does not improve anything.  This is a serious problem because it can lead to misunderstandings, e.g. in the capability discussion, some companies claim that the agreement that “subsequent CPAC is only in MN format or in SN format” allows “initial CPAC” to be in MN format and “subsequent CPAC” in SN format.  [Rapp] According to this principle “For one UE, the subsequent CPAC configuration for all candidate PSCells (including inter-SN and/or intra-SN) is provided in the same format, i.e., either MN format, or SN format.”, it’s not possible to configure “initial S-CPAC” in MN format and “subsequent S-CPAC” in SN format unless the NW firstly release the MN format configuration and then re-configure candidate to SN-format.  Moreover, this misunderstanding is reinforced by the "subsquent" on the sequence chart in 10.10.2. Why are the execution steps duplicated and why no note on multiple executions like in 10.20?  [Rapp] We will update the evaluation & execution box to distinguish the initial and following execution (aligned with the procedural text). A note for the multiple executions has been added in the latest CR.  Besides, "subsequent CPAC configuration" is not defined, so how can it be used in a definition?  [Rapp] the procedural text has clearly specified the information in the subsequent CPAC configuration.  In general, the current definition of CPC does not talk about preparation, so it seems to be perfectly applicable to SCPAC. Then trying to define SCAPC in a similar way looks like a dead end. |
| MediaTek | (see comment) | If the definition of “subsequent CPAC” causes confusion, we may remove it from 3.1. The all “subsequent CPAC” should be modified as “subsequent CPA/CPC” since we don’t have definition for “CPAC”. |
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**Summary:**

Two companies have some concerns on the definition of subsequent CPAC.

We have withdrawn the change on the definition of subsequent CPAC in the CR. We can try to refine the definition and solve the confusion in the next meeting, if needed.

The draft CR for reviewing in the ftp folder also includes the following changes to reflect the conclusion in the RAN3 LS and agreement in this meeting.

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| ***Reason for change:*** | To reflect the following conclusion/agreement:   * In Rel18 for the same UE, coexistence of subsequent CPAC and legacy CPAC is supported in different candidate SNs, however, coexistence of SCPAC and legacy CPAC in the same candidate SN is not supported. * UE stops evaluating cand cell for which execution condition is not provided (but configurations are kept). |
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| ***Summary of change:*** | 1. Add “Coexistence of CPAC and subsequent CPAC for the same candidate SN is not supported” in section 10.1. 2. Add “(if provided for the following execution of subsequent CPAC)” to clarify the evaluation of execution condition after completion of a PSCell addition, a PSCell change, a PCell change or an SCG release in section 10.20. |

If companies have any comments on the new changes or companies identify any other changes missing in the current draft CR, please provide your comments in the following table or insert your comments via bubble comment in the draft CR.

**Q4: Any other comments?**

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| Company | Comments if any |
| Huawei, HiSilicon | Why is is not captured that the UE cannot be configured with subsequent CPAC both in MN and in SN format? This looks equally important.  [Rapp] We have captured “For one UE, the subsequent CPAC configuration for all candidate PSCells (including inter-SN and/or intra-SN) is provided in the same format, i.e., either MN format, or SN format.” in section 10.20. Based on this text, I guess it’s clear that UE cannot be configured with subsequent CPAC both in MN and in SN format. |
| Ericsson | We think the latest agreements regarding updates of execution conditions should be added, that conditions for CPC are actually being added and not replacing the CPA conditions. That could be added in the execution step.  [Rapp] We will try to update the execution step to make the evaluation on execution conditions clearer. But not sure if there is a need to capture the add/replace operation considering the detailed handling on execution condition after subsequent CPAC execution is clear in the latest RRC spec. |
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# 3 Conclusion

Based on the discussion in the previous sections we propose the following:

# 4 References

[R2-2400310](file:///D:\3gpp\tsg_ran\WG2_RL2\C:\Users\mtk65284\Documents\3GPP\tsg_ran\WG2_RL2\RAN2\Docs\R2-2400310.zip) Miscellaneous corrections for NR further mobility enhancements in TS 37.340 ZTE Corporation, Sanechips CR Rel-18 37.340 18.0.0 0381 - F NR\_Mob\_enh2-Core

[R2-2401140](file:///D:\3gpp\tsg_ran\WG2_RL2\C:\Users\mtk65284\Documents\3GPP\tsg_ran\WG2_RL2\RAN2\Docs\R2-2401140.zip) Discussion on S-CPAC and TP for TS 37.340 CMCC discussion Rel-18 NR\_Mob\_enh2-Core

[R2-2401470](file:///D:\3gpp\tsg_ran\WG2_RL2\C:\Users\mtk65284\Documents\3GPP\tsg_ran\WG2_RL2\RAN2\Docs\R2-2401470.zip) Stage-2 corrections for SCPAC OPPO discussion Rel-18 NR\_Mob\_enh2-Core Late