3GPP TSG-RAN WG2 #112-e R2-20xxxxx

Electronic Meeting, 2 – 13 Nov 2020

Agenda Item: 7.4.2

Source: ZTE Corporation, Sanechips

Title: [AT112-e][214][NR][MOB] Avoiding DAPS with multi-TRP/CA/DC (ZTE)

Document for: Discussion, Decision

# 1 Introduction

This document is to collect companies comment in the following email discussion:

* [AT112-e][214][NR][MOB] Avoiding DAPS with multi-TRP/CA/DC (ZTE)

Scope:

* + - Discuss the CRs under AI 4.5, 7.1.X and 7.5 marked for this email discussion

Intended outcome:

* + - Agreeable Stage-2 CRs in [R2-2010748](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_112-e/Docs/R2-2010748.zip) (38.300, revision of [R2-2009384](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_112-e/Docs/R2-2009384.zip)) and [R2-2010747](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_112-e/Docs/R2-2010747.zip) (36.300, revision of [R2-2009382](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_112-e/Docs/R2-2009382.zip)),
    - Agreeable Stage-3 CRs in [R2-2010749](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_112-e/Docs/R2-2010749.zip) (36.331, revision of [R2-2009769](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_112-e/Docs/R2-2009769.zip)) and [R2-2010750](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_112-e/Docs/R2-2010750.zip) (38.331, revision of [R2-2009383](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_112-e/Docs/R2-2009383.zip))

Deadline for providing comments and for rapporteur inputs:

* + - Initial deadline (for companies' feedback): 2nd week Thu, UTC 1000
    - Deadline for CR finalization: 2nd week Thu, UTC 1700

# 2 Discussion

To make it easier to find the correct contact delegate in each company for potential follow-up questions, the rapporteur encourages the delegates who provide input to provide their contact information in this table:

|  |  |
| --- | --- |
| Company | Delegate contact |

|  |  |
| --- | --- |
| ZTE | zhang.mengjie@zte.com.cn |
| OPPO | lihaitao@oppo.com |
| Ericsson | Mattias.a.bergstrom@ericsson.com |
| Intel | Yi.guo@intel.com |
| Huawei, HiSilicon | tangxun@huawei.com |
| LG | geumsan.jo@lge.com |
| Sharp | ningjuan.chang@cn.sharp-world.com |
| Apple | fangli\_xu@apple.com |
| Qualcomm | oozturk@qti.qualcomm.com |
| Nokia | jedrzej.stanczak@nokia.com |
| CATT | chandrika@catt.cn |

At RAN2#112e meeting, it was discussed how to avoid simultaneous operation of CA, DC, or multi-TRP with DAPS and the followings were noted:

* Network ensures that SCG and/or SCells are not configured when UE receives DAPS HO. This will typically require network to do RRC reconfiguration before sending DAPS HO command.
* Network ensures that multi-TRP does not operate simultaneously with DAPS HO. This will typically require network to do RRC reconfiguration before sending DAPS HO command.
* FFS how to capture this in Stage-2 and Stage-3, handled in Offline 214

Based on agreements above, the rapporteur has updated Stage-2 and Stage-3 CRs and uploaded them in the draft.

Companies are requested to add their comments in the boxes below.

## 2.1 Stage-2 CRs

[R2-2010747](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_112-e/Docs/R2-2010747.zip) Clarification on no support of CA or DC with DAPS ZTE Corporation CR Rel-16 36.300 16.3.0 1320 1 F LTE\_feMob-Core [R2-2009382](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_112-e/Docs/R2-2009382.zip)

[R2-2010748](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_112-e/Docs/R2-2010748.zip) Clarification on no support of CA, DC or multi-TRP with DAPS ZTE Corporation CR Rel-16 38.300 16.3.0 0307 1 F NR\_Mob\_enh-Core [R2-2009384](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_112-e/Docs/R2-2009384.zip)

**NR:**

NOTE 3: Only PCell is kept during DAPS handover. All other serving cells and multi-DCI/single-DCI based multi-TRP are released by the network before the handover command is sent to the UE.

**LTE:**

During DAPS handover, UE maintains only PCell connection with both source and target cells and any other configured serving cells are released by network before the handover command is sent to the UE. When DAPS handover is configured, PDCP duplication is not allowed.

**Question 1: Do companies agree the changes proposed in the drafts R2-2010748 (NR) and R2-2010747(LTE)? And if any additional correction is needed for the CRs?**

|  |  |  |
| --- | --- | --- |
| Company | Yes/No | Comments |
| ZTE | Yes | The stage-2 CR captured that the NW should release CA, DC or multi-TRP before sending DAPS HO command. |
| OPPO | Yes |  |
| Ericsson | Yes |  |
| Intel | Yes | The changes are ok. But the coversheet should be improved.  „If the UE implements the CR and the network does not, the NW may configure DAPS HO with CA or DC simultaneously, and the UE behavior is unpredictable ~~which violates agreements on no support for simultaneous operation of DAPS with CA or DC.~~“.  „~~The UE can operate simultaneously with DAPS and CA or DC.~~ If the NW configures DAPS HO with CA or DC simultaneously, the UE behavior is unpredictable “  [Rapp comment] The coversheet has been updated as suggested. |
| Huawei, HiSilicon | Yes |  |
| LG | Yes |  |
| Sharp | Yes |  |
| Apple | Yes |  |
| Qualcomm | Yes but | This should be in normative text. Notes are not part of the specification. This is a very important condition for DAPS. Another issue is that multi-TRP is not defined in 38.300 or 38.331. They are mentioned in the capability descriptions of *defaultQCL-TwoTCI-r16* (single DCI) and *multiDCI-MultiTRP-r16* so it would be good to have at least refer to 38.306 for what they mean. |
| Nokia | Yes | Although we also think NOTEs should be avoided wherever possible. |
| CATT | yes |  |

## 2.2 Stage-3 CRs

[R2-2010750](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_112-e/Docs/R2-2010750.zip) Clarification on no support of CA, DC or multi-TRP with DAPS ZTE Corporation CR Rel-16 38.331 16.2.0 2061 1 F NR\_Mob\_enh-Core [R2-2009383](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_112-e/Docs/R2-2009383.zip)

[R2-201074](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_112-e/Docs/R2-2010750.zip)9 Clarification on no support of CA or DC with DAPS ZTE Corporation CR Rel-16 36.331 16.2.1 4486 1 F LTE\_feMob-Core [R2-2009769](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_112-e/Docs/R2-2009769.zip)

**NR:**

***daps-Config***

Indicates that the bearer is configured as DAPS bearer.This field is optional present, need N, in case *masterCellGroup* includes *ReconfigurationWithSync*, SCell(s) and SCG are not configured, multi-DCI/single-DCI based multi-TRP are not configured in any DL BWP and *ethernetHeaderCompression* is not configured for the DRB. Otherwise the field is absent.

**LTE:**

***daps-HO***

This field indicates that the handover, triggered in the same *RRCConnectionReconfiguration* message, shall be performed as a DAPS HO for the DRB. DAPS HO is not configured when the *rach-Skip* is included or if *uplinkDataCompression* or *ethernetHeaderCompression* is configured for the DRB. *Daps-HO* is not configured in the *RRCConnectionReconfiguration* message included in a *conditionalReconfiguration. Daps-HO* is not configured if SCell(s) or SCG is configured.

[Rapp comment] In order to better align with the chairman notes, the rapporteur changed “MR-DC and CA are not configured” to “Scell(s) and SCG are not configured” in NR RRC CR, and modified “if DC or CA is configured” to “if Scell(s) or SCG is configured”.

**Question 2: Do companies agree the changes proposed in the drafts R2-2010750 (NR) and R2-2010749(LTE)? And if any additional correction is needed for the CRs?**

|  |  |  |
| --- | --- | --- |
| Company | Yes/No | Comments |
| ZTE | Yes | The stage-3 CR captured that the NW should not configure CA, DC or multi-TRP in the DAPS HO command.  For the terminology of multi-TRP, although there is no clear definition of “multi-DCI/single\_DCI based multi-TRP” in the current spec, we found that the similar terminology has been used in TS 38.306 to describe muti-TRP related capabilities. So we assume the meaning of “multi-DCI/single\_DCI based multi-TRP” are clear to all companies. If this is not the case, we are also fine to add more details to elaborate the meaning of “multi-DCI/single-DCI based multi-TRP”, and we may also need to update the description in TS 38.306 accordingly.  Besides, there is a stage-2 CR (R2-2009170) on introducing stage-2 description of multi-TRP is discussed in the Emimo WI. And one email discussion is allocated for this issue (i.e. [AT112-e][107][Emimo] Stage 2 CRs (Nokia)). If the CR is agreed, we can add a stage-2 reference for multi-TRP in the stage-3 CR. |
| OPPO | See comments | For NR, we wonder for the multi-TRP part, we should say “configured in any DL BWP“ or only in the active DL BWP?  [Rapp comment] We think it should be “any” DL BWP since any configured BWP may be activated during DAPS HO and the CU may have no idea of which BWP shall be activated by the DU during DAPS HO. If we capture that “in the active DL BWP”, the DU may need to know which BWP (i.e. configured with multi-TRP) can not be activated during DAPS HO. It may cause some RAN3 impact.  For LTE, should DC be MR-DC?  [Rapp comment] The updates change “DC/MR-DC” to “SCG”. |
| Ericsson | Yes | Agree with ZTE that perhaps the simplest approach would be if we in Stage-2 add a description for Mtrp is added, and then we can use these terms freely in Stage-3.  Our interpretation of the current status is that there cannot be “any” DL BWP with Mtrp configured during DAPS. |
| Intel | Yes | Same comments as above on the coversheet. |
| Huawei, HiSilicon | Yes |  |
| LG | Yes |  |
| Sharp | Yes |  |
| Apple | Yes |  |
| Qualcomm | Yes | Refer to 38.306 for Mtrp definitions. |
| Nokia | Yes, but | In line with the online session agreements. However, we have similar suggestion as OPPO has shared, as this is actually the active BWP that shall matter, not any configured BWP. |
| CATT | Yes, but | As commented by OPPO, during the HO, the active BWP is configured by RRC via first active DL/UL BWP if the HO is not intra-cell HO. For CU/DU case it is the DU to generate the CellGroupConfig which including the BWP configuration and the first active DL/UL BWP ID. Hence, there should be no RAN3 impact if only the active BWP is involved. |

## 2.2 Clarification on “other configuration”, “SpCell Configuration” in DAPS handover command

[R2-2009272](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_112-e/Docs/R2-2009272.zip) Release SCells/SCG configuration during DAPS HO Intel Corporation discussion Rel-16 NR\_Mob\_enh-Core, LTE\_feMob-Core

*Proposal 2:To add the RRC specification, “other configuration”, “SpCell Configuration” in DAPS handover command is applied for target side;*

This contribution was also discussed during RAN2#112e meeting and the following was noted:

* Offline 214 to discuss if we add to the RRC specification that “other configuration”, “SpCell Configuration” in DAPS handover command is applied for target side

**Question 3: Do companies agree with proposal 2 above?**

|  |  |  |
| --- | --- | --- |
| Company | Yes/No | Comments |
| ZTE | Yes | It’s fine to clarify that “other configuration”, “SpCell Configuration” in DAPS handover command is applied for target side to keep the consistent description for reconfiguration handling. |
| OPPO | Yes |  |
| Ericsson | No? | We have not seen an explicit example TP so far. It may be OK to do the change if it does not become messy in the specification. We do not see that there is a big room for misinterpretation. |
| Intel | Yes | It would be good to align the handling across the spec. |
| Huawei, HiSilicon |  | We would like to suggest to implement this P2 in draft CRs, in this way we can see the spec impact clearly. |
| LG | Yes |  |
| Sharp | No strong opinion | We understand the intention of the proposal, but agree with Ericsson that there seems be not much misinterpretation here. |
| Apple | No strong view | The clarification is correct, but we think current spec is clear. |
| Qualcomm | Maybe | It is okay to clarify but obviously HO command is for target. |
| Nokia | Not needed | We do not see a strong need to clarify it. Is it really ambiguous it nothing is written explicitly in the specs? |
| CATT | No strong view | Agree with Qualcomm, the HO command is generated by target and applied for target. And agree with Ericsson and Huawei, maybe a TP or draft CR can reflect the impact clearly |

Many changes may be needed if we want to capture that “other configuration”, “SpCell Configuration” in DAPS handover command is only applied for target cell in the RRC spec. Then there are two simple ways can be considered:

Option 1: To capture RAN2 common understanding in the minutes, i.e. the configuration in DAPS handover command is only applied for target cell.

Option 2: add a NOTE in 5.3.5.1 General as

NOTE: If *daps-Config* is contained in *RRCReconfiguration*, the configurations included in *RRCReconfiguration* is only applied for target PCell.

**Question 4: Which option companies would like to choose to implement the proposal 2 above?**

|  |  |  |
| --- | --- | --- |
| Company | Option 1/2 | Comments |
| ZTE | Option 1 | Capture a common understanding in chairman notes seems enough to eliminate the ambiguity, if companies have some concern. |
| Nokia | None | As commented above. |
| Intel | Option 1 | Seems companies have common understanding that the configuration inside HO command is only applied for target, and then Option 1 should be ok. |
| CATT | Option 1 | As usual, common understanding can be captured in chairman’s note. |
|  |  |  |
|  |  |  |
|  |  |  |

# 3 Conclusion

In the previous sections we made the following observations:

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