3GPP TSG-RAN WG3 #115-e R3-222421

**E-meeting, 21st February – 3rd March 2022**

Source: CATT (moderator)

Title: CB: # SONMDT5\_RACHOpt

Agenda Item: 10.2.1.7

Document for: Approval

# Introduction

**CB: # SONMDT5\_RACHOpt**

**- DU shall/or may store received PRACH configurations? Whether any enhancements are needed?**

**- Capture agreements, clean up and provide TPs if agreeable**

(CATT - moderator)

The deadline for the first phase is 00:00 UTC on 25nd February (Friday).

# For the Chairman’s Notes

TBD.

# Discussion (first phase)

## Whether the gNB-DU “shall” or “may” store

Two companies expressed two contradicting view on this topic:

One company said that the gNB-DU “shall” store the neighbour PRACH configuration [4].

Another company said that the gNB-DU may not store the neighbour PRACH configuration, and F1AP should be enhanced so that the gNB-DU can indicate whether it stores or not and the gNB-CU can determine whether to send a full neighbour list or a delta neighbour list upon the next time it sends neighbour PRACH configuration [3]:

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| In that case, we believe that a better solution would be that the gNB-DU can indicate to the gNB-CU whether the latest received PRACH neighbour information has been stored. In this way the gNB-CU would know which neighbour PRACH information to signal to the gNB-DU in the future. |

**Questions 1-1**: What is your preference between the two options?  
- Specifying that the gNB-DU shall store;  
- Allowing that the gNB-DU does not store, and enhancing the F1AP so that the gNB-DU can indicate whether it stores or not.

| Company | Comment |
| --- | --- |
| CATT | No strong opinion. |
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## Requesting for more neighbour PRACH Info

One company proposed an enhancement on F1AP so that the gNB-DU could request for more neighbour PRACH configuration, in addition to the “PRACH configurations for the neighbour cells in closest proximity”. The motivation was as following [3]:

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| However, some of the unselected cells e.g., the one which is not in the closest proximity, may also cause PRACH confilicts. A good example are scenario of massive narrow beamforming from a far away cell, where the narrow beams can cause interference to far away cells. Therefore, there might still be unresolved PRACH configuration conflict in gNB-DU even after the gNB-CU has signalled neighour PRACH configuration information to the gNB-DU. In addition, there might be scenarios where the selection of a new PRACH configuration by the gNB-DU may trigger a new conflict with a neighbour not signalled by the gNB-CU. |

On the other hand, one company expressed their opposing [4]:

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| Also, regarding the need by a gNB-DU to request more neighbour PRACH Configurations to resolve possible PRACH Conflicts it seems to us that having received PRACH Configurations from 32 neighbours is sufficient under most scenarios of interest. Therefore, we think that a trigger from gNB-DU to gNB-CU is not needed. |

**Questions 1-2**: What is your opinion on whether some enhancement are needed so that the gNB-DU can request for more neighbour PRACH Info?

| Company | Comment |
| --- | --- |
| CATT | Not needed.  The motivation provided in [3] is not justified.  PRACH is an uplink channel. Ordinarily we don’t expect UEs to use massive narrow beamforming. Thus PRACH interference between far away cells is very unlikely.  As the result, delivering only the closest neighbours is sufficient enough.  Nevertheless, we are open to slightly widening the value “32”. |
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## Indication of change on beam sweeping pattern

One company proposed an enhancement on F1AP so that the gNB-DU could indicate a change on beam sweeping pattern. The motivation was that the change on beam sweeping pattern will impact what beams used a given random access occasion (RO), thus turned the direction of the antenna for receiving PRACH preambles on that given RO away from the interference source.

On the other hand, one company expressed their opposing [4]:

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| --- |
| Regarding the possible scenario that a gNB-DU changes its beam sweeping pattern so that a PRACH Configuration conflict is created, it seems to us that the probability of such event happening diminishes when beam forming is introduced. So this does not seem like a probable scenario. |

**Questions 1-2**: What is your opinion on whether some enhancement are needed so that the gNB-DU can indicate a change on beam sweeping pattern of its served cell?

| Company | Comment |
| --- | --- |
| CATT | Not needed.  There is enough space to adjust the PRACH configuration directly (e.g. to change the root sequence index). No need to support such indirect approach. |
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## IE name

One company observed that [1]:

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| Due to the limit of time, the finally agreed TP was as following: the outer list was named as “RACH Cell List”, whereas the inner list was named as “Neighbour NR Cells for SON List”.  Although such naming does not affect the actual behaviour of RAN nodes, making the outer list covering a smaller scope while the inner list covering a larger scope is obviously no one’s intention. |

Thus it was proposed to align the list names. The original TP in [1] proposed aligning them toward “Cells for SON List”, but it was also claimed that other methods were acceptable to them.

NOTE: The text description in Section 8 was also proposed to be changed for consistence.

**Questions 1-4**: What is your opinion on the names of lists?

| Company | Comment |
| --- | --- |
| CATT | We are open on this topic.  Nevertheless, we slightly prefer the option shown in [1]. |
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## Stage 2 description of PRACH coordination for en-gNB cells

One company proposed a TP to capture the stage 2 description of PRACH coordination for en-gNB cells in [2].

**Questions 1-5**: Any comment on the TP in [2]?

| Company | Comment |
| --- | --- |
| CATT | We agree with this TP. |
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# Conclusion, recommendations [if needed]

# Reference

[1] R3-222015; (TP on SON for 38.473) On naming issue for PRACH coordination; CATT.

[2] R3-222016; (TP on SON for 36.300) Description for RACH optimisation in EN-DC; CATT.

[3] R3-222070; (TP for SON BL CR for TS 38.473) RACH conflict resolution; Ericsson.

[4] R3-222119; (TP for TS 38.473) Addressing a few remaining aspects in RACH Optimization; Nokia, Nokia Shanghai Bell.