3GPP TSG-RAN WG3 Meeting #107-e R3-201133

E-meeting, 24 February – 6 March, 2020

**Agenda item: 10.2.3.2**

**Source: Nokia, Nokia Shanghai Bell**

**Title: Summary of offline discussion for CB: # 30\_Email030-Config\_conflicts\_RACHopt**

**Document for: Discussion**

# 1 Introduction

This document lists proposals relative to configuration conflict detection and resolution submitted to RAN3#107-e. The proposals are submitted mainly under AI 10.2.3.2 and some under AI 10.2.3.1. This document captures outcome of associated discussions.

**CB: # 30\_Email030-Config\_conflicts\_RACHopt**

**- should focus on a) UE RACH report between two neighbor nodes and b) related/assistant information transfer between CU and DU; may consider proposals from papers in 10.2.3.1**

**- note LS (0080); take into account RAN1 agreements**

**- RACH failure rate is calculated at gNB-DU, based on UE RACH Reports sent from the gNB-CU to the gNB-DU? (Nok)**

**- Procedure to use to exchange PRACH parameters over Xn? Xn setup req/resp. / NG-RAN node config update? Further details? (HW, CMCC)**

**- Procedure to use to exchange PRACH parameters over F1? F1 setup resp. / gNB-CU config update? (CU->DU)? Further details? (HW, CMCC)**

**- perform RACH configuration conflict resolution at gNB-DU, by providing a limited and filtered set of assistance information from gNB-CU, if required, and allowing the gNB-DU to request for further assistance information, if needed? (E///)**

**- common subset of proposals**

**- split work; revise/merge if needed; check details**

(Nok)

Hopefully the outcome would be to find an agreeable working solution. TPs (stage 2, stage 3) to be determined during the discussion.

For reference agreements from RAN3#106:

1. **RACH configuration conflict detection and resolution function is located at the gNB-DU; details on assistance info exchanged between CU and DU are FFS**
2. **gNB-DU needs to know the PRACH configuration of some or all cells neighbors to a cell subject to RACH configuration conflict, in order to effectively chose a new PRACH configuration for the cell in conflict**
3. **Signaling of UE RACH Reports to the gNB-DU is needed**

# 2 Transfer of UE RACH report between two neighbour nodes

**- Procedure to use to exchange PRACH parameters over Xn? Xn setup req/resp. / NG-RAN node config update? Further details? (HW, CMCC)**

**Comments / preferences:**

Company 1

Company 2

**- Procedure to use to exchange PRACH parameters over F1? F1 setup resp. / gNB-CU config update? (CU->DU)? Further details? (HW, CMCC)**

**Comments / preferences:**

# 3 Assistance information for conflict detection

Proposal to handle assistance information discussion here, copying from #29 and #30:

**- how to detect the conflict; may consider proposals from papers in 10.2.3.2**

**- RACH failure rate is calculated at gNB-DU, based on UE RACH Reports sent from the gNB-CU to the gNB-DU? (Nok)**

**- perform RACH configuration conflict resolution at gNB-DU, by providing a limited and filtered set of assistance information from gNB-CU, if required, and allowing the gNB-DU to request for further assistance information, if needed? (E///)**

***Proposals/observations copied from tdocs:***

**0492 (HW):** Proposal 6: It is proposed RAN3 to discuss whether a RACH event notification from DU to CU is needed to trigger the UE RACH report acquisition procedure over Uu interface.

**Comments:**

**0385 (Nokia):** Observation 1: Even though RACH report information at the gNB-DU is useful, mere forwarding of RACH reports from gNB-CU to gNB-DU may not always contain useful information unless they involve cells hosted by the receiving gNB-DU. Observation 2: RACH failure rate information involving neighboring gNB-DUs, sent from gNB-CU to gNB-DU provides statistical information on the outcome of RACH accesses on cells not managed by the receiving gNB-DU. + proposals 1-6 + F1AP TP in 0386 + XnAP TP in 0387.

**Comments:**

**0960 (E///):** Observation 1: RACH Configuration conflict detection at gNB-CU by comparing cell’s RACH configuration and by determining cell’s neighbourhood, is subject to errors due to UL/DL coverage imbalance and lack of beams overlap from a time/space point of view. This may result in unnecessary conflict detections. Observation 2: If the gNB-CU has to decide independently about the PRACH configurations of neighbour cells to send to a gNB-DU, it is very likely that a high number of such configurations would be signalled to the gNB-DU. Observation 3: Assistance information from gNB-CU including PRACH configuration information needs to be filtered and limited due to the need to reduce amount of data signaled towards a gNB-DU. Proposal: It is proposed to perform RACH configuration conflict resolution at gNB-DU, by providing a limited and filtered set of assistance information from gNB-CU, if required, and allowing the gNB-DU to request for further assistance information, if needed. + TP in 0961.

**Comments:**

**0591 (CMCC, Huawei):** TP to TS 38.300 on RACH optimization.

**Comments:**

**0590 (CMCC, Huawei):** TP to TS 38.401 on RACH optimization for split gNB: “In case of split gNB architecture, RACH configuration conflict detection and resolution function is located at the gNB-DU. To perform RACH optimisation at gNB-DU, gNB-CU sends the RACH report reported by the UE to gNB-DU via F1AP signalling. The gNB-DU signals the PRACH configuration per-cell to gNB-CU. The gNB-CU may forward the neighbour cell’s PRACH configurations receiving from neighbour gNB-CU to the gNB-DU to resolve the configuration conflict.”

**Comments:**

# 4 Conclusion

Conclusion