3GPP TSG-RAN3 Meeting #109-E R3-205993

E-meeting, 17 – 28 August 2020

Agenda Item: 9.3.5.1

Source: Ericsson

Title: SoD for MaxNofConnectedCells

Document for: Discussion, Decision

# Introduction

This is a summary of offline discussions for the topic of Cell Creation Rejection when max number of supported cells is exceeded at CU.

**CB: # 71\_MaxNofConnectedCells**

**- Acknowledge problem?**

**- Cause value agreeable?**

**- check details**

(E/// - moderator)

Summary of offline [R3-205593](Inbox%5CR3-205593.zip)

# For the Chairman’s Notes

Following agreements were proposed on the first round of offline discussion:

# Discussion

## Problem description

The problem raised in R3-204780 is described in the figure below:

 

The standard does not mandate that a gNB-DU needs to connect to the same gNB-CU every time it wants to setup an F1.

A simple and very plausible example where one cannot predict that a gNB-DU would connect to the same gNB-CU is when an ongoing connection between gNB-DU and gNB-CU fails, e.g. due to a failure at the gNB-CU.

In this case the gNB-DU is allowed to setup a connection to any other available gNB-CU. If this was not possible the system would be highly unreliable because at the failure of one gNB-CU, the cells of a gNB-DU would never be able to become operational.

**Observation 1: 3GPP specifications allow a gNB-DU to connect to any available gNB-CU. If this was not possible the system would be highly unreliable because at the failure of one gNB-CU, the cells of a gNB-DU would never be able to become operational.**

With the clarification above in mind, it is plausible that a gNB-DU would connect to a gNB-CU and in that case that the cells to be added at the gNB-CU would exceed the maximum number supported by the gNB-CU. It has to be noted that the limit in number of cells a gNB-CU has is implementation specific and could be below the current maximum of 16384 cells.

**Observation 2: Given that a gNB-DU can connect to any available gNB-CU, it is possible that the cells a gNB-DU wants to add at a gNB-CU causes that the maxium number of cells a gNB-CU can add is exceeded.**

The main problem R3-204780 wants to resolve is how to identify that a failure is due to the issue above and how to avoid that this problem occurs in the future.

**Problem Statement:** **3GPP specifications allow a gNB-DU to connect to any available gNB-CU. It is possible that the cells a gNB-DU wants to add at a gNB-CU causes that the maxium number of cells a gNB-CU can add is exceeded. The problem to solve is how to identify such failure and how to prevent that it would occur in the future.**

Companies are invited to consider the problem describe above and to state whether the problem is acknowledged or whether, if this problem is not recognised, how it can be solved.

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| --- | --- | --- |
| Company | Agree/Don’t Agree | Comments  |
|  |  |  |

## Possible Solutions

The solution proposed in R3-205523 to solve the problem above is made of two parts:

* **Solution part relative to problem detection**: this consist of adding a cause value in the F1 SETUP FAILURE message and in the GNB-DU CONFIGURATION UPDATE FAILURE message, which specifies that a failure occurred because the gNB-CU Cell Capacity was Exceeded. This element of the solution allows to have visibility over this type of failure and to determine any possible action to prevent a posteriori the failure in the future.
* **Solution part relative to problem prevention**: this consists of signalling in the GNB-DU CONFIGURATION UPDATE FAILURE message the maximum number of cells that are left to be added at the gNB-CU. This element of the solution allows to prevent the failure after it occurs. Namely, a gNB-DU that immediately re-attempts to connect to the gNB-CU would not generate a failure anymore, because it will be able to add a number of cells within the gNb-CU capacity.

Companies are invited to provide their comments to the solutions components above and to highlight how the problem would be solved if the solutions component described are not in place.

|  |  |  |
| --- | --- | --- |
| Company | Solution | Comments on solution |
|  |  |  |

# Conclusion, Recommendations [if needed]

If needed