3GPP TSG-RAN WG1 Meeting #101-e R1-200xxxx

e-Meeting, May 25th – June 5th, 2020

**Agenda Item:** **7.2.3.3**

**Source: Moderator (AT&T)**

**Title: Summary of [101-e-NR-IAB-02]: Response to RAN3 LS on Cell-specific signals/channels configurations in IAB**

**Document for:** **Discussion/Approval**

# Introduction

This contribution provides a summary of [101-e-NR-IAB-02]: Response to RAN3 LS on Cell-specific signals/channels configurations in IAB.

# Response to RAN3 LS on Cell-specific signals/channels configurations in IAB

**Source**: R1-2003543, R1-2004449, R1-2004620, R1-2004621, R1-2004685

**Background:** RAN3 sent to RAN1 an LS on cell-specific signals/channels configurations in IAB, concerning the F1-AP signaling storm issue due to UE/MT-specific configuration of CSI-RS/SR resources. The requested action for RAN1 is given below:

ACTION: RAN3 kindly asks RAN1 to provide feedback whether the following approaches are feasible from RAN1 perspective and whether any additional alternatives should be considered.

* Explicitly configure these resources used for CSI-RS and SR as Hard at the child node or Not Available at the parent node. Meanwhile, exclude CSI-RS and SR configurations from the list of cell-specific signals/channels configurations.
* Make the CSI-RS and SR configurations as optional in the cell-specific signals/channels configurations so that they do not have to be configured if signaling storm becomes a concern.

FL Observation: The RAN1 agreement leading to the signaling in question is the following:

**RAN1 #99 Agreements:**

A parent IAB node/donor can be provided with cell-specific signals/channels configurations of each child IAB-DU. How/whether to use the information to handle any potential conflict at the parent IAB node/donor is left to network implementation

The list of cell-specific signals/channels includes:

- resources for SSB transmission at DU, including both CD-SSB and non-CD-SSB;

- configured RACH occasions for receiving at the DU

- periodic CSI-RS transmission at the DU

- scheduled resource for receiving SR at DU

The first solution presented by RAN3 effectively reverts the above RAN1 agreement by not enabling the indication of the CSI-RS and SR configurations:

* Solution 1: Explicitly configure these resources used for CSI-RS and SR as Hard at the child node or Not Available at the parent node. Meanwhile, exclude CSI-RS and SR configurations from the list of cell-specific signals/channels configurations.

The second solution presented by RAN3 is aligned with the existing RAN1 agreements since it is stated that the configurations “can” be provided and not “must be” provided:

* Solution 2: Make the CSI-RS and SR configurations as optional in the cell-specific signals/channels configurations so that they do not have to be configured if signaling storm becomes a concern.

Depending on the desired network operation there may be a need to use soft resources aligned with CSI-RS and SR configurations. Alternatively, if the signaling overhead this would entail is too large, it is reasonable to exclude those configurations. This is also in the spirit of the agreements that usage of the information exchanged is not mandatory, but left to network implementation. Contributions on this topic have so far indicated a split of views on preferences for supporting Solution 1, Solution 2, or support for both.

A potential compromise is that RAN1 should reply that Solution 1 is not preferred compared to Solution 2:

FL Proposal 2.2.2:

Inform RAN3 of the following:

The following is solution is feasible from a RAN1 perspective:

* Making the CSI-RS and SR configurations as optional in the cell-specific signals/channels configurations so that they do not have to be configured if a signalling storm becomes a concern.

The following solution is not preferred from a RAN1 perspective:

* Explicitly configure the resources used for CSI-RS and SR as Hard at the child node or Not Available at the parent node. Meanwhile, exclude CSI-RS and SR configurations from the list of cell-specific signals/channels configurations.

The latter solution does not enable the ability for the configuration of soft resources at a child node which overlap with CSI-RS and SR configurations, which was agreed to be supported in RAN1. If this solution is adopted by RAN3 instead of the former solution, RAN1 should be informed in order to update its specifications accordingly.

During the preparation phase, companies expressed different views about the potential RAN1 impact of supporting Solution 1 and replying to RAN3 that it is feasible in additional to Solution 2, as a result, the following is proposed to clarify the impacts of Solution 1 on RAN1:

FL Conclusion 2.2.3:

The following are the impacts to RAN1 if Solution 1 from RAN3 is supported:

Explicitly configure the resources used for CSI-RS and SR as Hard at the child node or Not Available at the parent node. Meanwhile, exclude CSI-RS and SR configurations from the list of cell-specific signals/channels configurations.

1. The following RAN1 agreement needs to be reverted as follows:

**RAN1 #99 Agreements:**

A parent IAB node/donor can be provided with cell-specific signals/channels configurations of each child IAB-DU. How/whether to use the information to handle any potential conflict at the parent IAB node/donor is left to network implementation

The list of cell-specific signals/channels includes:

- resources for SSB transmission at DU, including both CD-SSB and non-CD-SSB;

- configured RACH occasions for receiving at the DU

- ~~periodic CSI-RS transmission at the DU~~

~~- scheduled resource for receiving SR at DU~~

1. The following text in 38.213 should be updated:

“*A symbol of a slot is equivalent to being configured as hard if an IAB-node DU would transmit a SS/PBCH block, PDCCH for Type0-PDCCH CSS sets configured by pdcchConfigSIB1. A symbol of a slot must be configured as hard at the child node or as not available at the parent node if an IAB-node DU would transmit a periodic CSI-RS in the symbol of the slot, or would receive a PRACH or a SR in the symbol of the slot.*”

**Discussion:**

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| **Company**  | **Do you agree with FL Conclusion 2.2.3? Any additional RAN1 impact? If you do not support FL Proposal 2.2.2, what would be the suggested alternative?** | **Comments**  |

# Summary

TBD