**3GPP TSG RAN WG1 #103-e R1-20xxxxx**

**e-Meeting, October 26th – November 13th, 2020**

**Agenda Item:** **7.2.3**

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

**Title: Feature Lead Summary of [103-e-NR-IAB-02] Issue with IAB-DU “serving” cell terminology**

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

# Introduction

This contribution provides a summary of the following email discussion:

[103-e-NR-IAB-02] Issue with IAB-DU “serving” cell terminology – Thomas (AT&T)

-       Determine whether the term “serving cells” should be removed for IAB-DUs in 38.213

-       Discussion and decision by 10/27, TPs (if needed) by 10/29

# Issue with IAB-DU “serving” cell terminology

**Source**: R1-2008742

**Background:** In 38.213 Section 14, multiple references to a “serving cell” in relation to an IAB-DU are made, which are consistent with the terminology used for UEs and IAB-MTs. However, this is inconsistent with other specifications where gNB-DUs do not use the term “serving” for associated cells, including for IAB-DUs (see 38.331 and 38.401 for examples from RAN2 and RAN3 respectively). Unless a clear motivation is made for keeping the term “serving cells,” since the IAB-DU hosts gNB-DU functionality, it seems more appropriate to remove the instances of “IAB-DU serving cell(s)” or “serving cell(s) of an IAB-DU.” Since there does not appear to be any functional impact, an editorial correction of the specification could be used to make the update instead of a CR.

**FL Proposal 2.1:** Remove all references to “serving” in relation of IAB-DU cell(s) in TS 38.213 Section 14.

 Note: This will be done via editorial update of the alignment CR

**Discussion:**

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| **Company**  | **Do you agree with FL Proposal 2.1?** | **Comments**  |
| Ericsson | Yes | A serving cell is a cell from a UE or IAB-MT perspective. It has no bearing on the IAB-DU side. |
| Qualcomm | Yes | None. |
| LG | Yes | None |
| Huawei | Yes | This was agreed before. |
| Samsung | Yes | None |
| Nokia | Yes | None |
| ZTE, Sanechips |  | After checking 38.331, the term “serving” is also used for a IAB DU related cell in the following text:---------------------------------------------------- - *AvailabilityCombinationsPerCell*The IE AvailabiltyCombinationsPerCell is used to configure the AvailabiltyCombinations applicable for a serving cell of the IAB-node DU (see TS 38.213 [13], clause 14).-----------------------------------------------------The inconsistent issue may still there if just RAN1 chooses to remove all references to “serving” in relation of IAB-DU cell(s) in TS 38.213. Given both RAN1 and RAN2 spec have used term “serving” for IAB DU, the following either way is OK for us:**Option 1:**  Remove all references to “serving” in relation of IAB-DU cell(s) in TS 38.213 Section 14, also inform RAN2 to update its spec accordingly. **Option 2:** Do nothing, since current text does not cause any misunderstanding. |
| Vivo | Yes | As commented by ZTE, RAN1 and RAN2 should align the name. |
| Intel |  | Agree with ZTE’s comments. Either Option 1 or Option 2 is Ok.  |
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**FL Proposal 2.2:** **Adopt the following TP to remove all references to “serving” in relation of IAB-DU cell(s) in TS 38.213 Section 14:**

**Note 1: This will be done via editorial update of the alignment CR**

**Note 2: It is RAN1’s understanding that the description of *AvailabilityCombinationsPerCell* in 38.331 should also remove a reference to a “serving” cell of the IAB-node DU and recommends the following update:**

**“The IE AvailabiltyCombinationsPerCell is used to configure the AvailabiltyCombinations applicable for a ~~serving~~ cell of the IAB-~~node~~ DU (see TS 38.213 [13], clause 14).”**

**TP for 38.213 Section 14**

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| **14 Integrated access-backhaul operation**<text omitted>If an IAB-node is provided an index $T\_{delta}$ in a Timing Delta MAC CE [11, TS 38.321] from a serving cell, the IAB-node may assume that $\left(N\_{TA}/2+N\_{delta}+T\_{delta}⋅G\_{step}\right)⋅T\_{c}$ is a time difference between a DU transmission of a signal from the serving cell and a reception of the signal by the IAB-MT when $N\_{TA}/2+N\_{delta}+T\_{delta}⋅G\_{step}>0$, where $N\_{TA}$ is obtained as for a "UE" in Clause 4.2 for the TAG containing the serving cell and $N\_{delta}$ and $G\_{step}$ are determined as- $N\_{delta}=-70528$ and $G\_{step}=64$, if the serving cell providing the Timing Delta MAC CE operates in FR1, - $N\_{delta}=-17664$ and $G\_{step}=32$, if the serving cell providing the Timing Delta MAC CE operates in FR2The IAB-node may use the time difference to determine a DU transmission time.A slot format for an IAB-DU or an IAB-MT includes downlink symbols, uplink symbols, and flexible symbols. For each ~~serving~~ cell of an IAB-DU, the IAB-DU can be provided an indication for a slot format over a number of slots by *IAB-DU-Resource-Configuration*. <text omitted>With reference to slots of an IAB-DU ~~serving~~ cell, a symbol in a slot of an IAB-DU ~~serving~~ cell can be configured to be of hard, soft, or unavailable type. When a downlink, uplink, or flexible symbol is configured as hard, the IAB-DU ~~serving~~ cell can respectively transmit, receive, or either transmit or receive in the symbol. When a downlink, uplink, or flexible symbol is configured as soft, the IAB-DU can respectively transmit, receive or either transmit or receive in the symbol only if- the IAB-MT does not transmit or receive in the symbol, or- the IAB-MT would transmit or receive in the symbol, and the transmission or reception in the symbol is not changed due to a use of the symbol by the IAB-DU, or- the IAB-MT detects a DCI format 2\_5 with an AI index field value indicating the soft symbol as availableWhen a symbol is configured as unavailable, the IAB-DU neither transmits nor receives in the symbol. A symbol of a slot is equivalent to being configured as hard if an IAB-DU would transmit a SS/PBCH block, PDCCH for Type0-PDCCH CSS sets configured by *pdcchConfigSIB1*, or a periodic CSI-RS in the symbol of the slot, or would receive a PRACH or a SR in the symbol of the slot.If an IAB-node is provided an *AvailabilityIndicator*, the IAB-node is provided an AI-RNTI by *ai-RNTI* and a payload size of a DCI format 2\_5 by *dci-PayloadSize-AI*. The IAB-node is also provided a search space set configuration, by *SearchSpace*, for monitoring PDCCH.For each ~~serving~~ cell of an IAB-DU in a set of ~~serving~~ cells of the IAB-DU, the IAB-DU can be provided: - an identity of the IAB-DU ~~serving~~ cell by *iabDuCellId-AI*- a location of an availability indicator (AI) index field in DCI format 2\_5 by *positionInDCI-AI*- a set of availability combinations by *availabilityCombinations*, where each availability combination in the set of availability combinations includes- *resourceAvailability* indicating availability of soft symbols in one or more slots for the IAB-DU ~~serving~~ cell, and - a mapping for the soft symbol availability combinations provided by *resourceAvailability* to a corresponding AI index field value in DCI format 2\_5 provided by *availabilityCombinationId*The IAB-DU can assume a same SCS configuration for *availabilityCombinations* for a ~~serving~~ cell as an SCS configuration provided by *IAB-DU-Resource-Configuration-TDD-Config* for the ~~serving~~ cell.An AI index field value in a DCI format 2\_5 indicates to an IAB-DU a soft symbol availability in each slot for a number of slots starting from the earliest slot of the IAB-DU which overlaps in time with the slot of the IAB-MT where the IAB-MT detects the DCI format 2\_5. The number of slots is equal to or larger than a PDCCH monitoring periodicity for DCI format 2\_5 as provided by *SearchSpace*. The AI index field includes  bits where maxAIindex is the maximum of the values provided by corresponding *availabilityCombinationId*. An availability for a soft symbol in a slot is identified by a corresponding value *resourceAvailability* as provided in Table 14-3. <text omitted> |

# Summary

TBD