3GPP TSG-RAN WG3 Meeting #125 R3-243868

**Maastricht, Netherlands, 19th - 23rdAug, 2024**

**Agenda Item: 17**

**Source: Ericsson (Moderator)**

**Title: Summary of offline discussions: Rel-19 Network Energy Saving**

**Document for: Discussion and Approval**

# Introduction

**CB: # NES\_OnDemandSIB1**

* **- Try to find the conclusion in RAN3 to report to RAN on on-Demand SIB1 for R19 NES checkpoint**

(moderator - E///)

Summary of offline disc [R3-244708](Inbox\R3-244708.zip)

# For the Chairman’s Notes

**It is proposed to capture the following in the chairman’s notes.**

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Start \*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**For “Support on-demand SSB SCell operation”, RAN3 has agreed that**

**For “Support on-demand SIB1 for UEs”, RAN3 has agreed that:**

**Case 2 can be supported with the below details:**

* *NES gNB-CU sends WUS configuration to Cell A gNB-CU over XnAP before entering on-demand SIB1 mode in the NES Cell or when the UL WUS configuration is changed.*

*(Note: this is the agreement from RAN3#123bis.)*

* *UL WUS configuration is decided by NES Cell DU and transfers to NES Cell CU.*
* *UL WUS configuration transmission from NES Cell DU to NES Cell CU and to Cell A.*

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* **The End!** \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

# 3 Discussion

#### 3.1 Support on-demand SSB SCell operation

No Xn impact is foreseen for on-demand SSB SCell operation.

gNB-DU triggers on-demand SSB SCell operation.

gNB-CU determines to trigger on-demand SSB, transmits a command to DU who transmits the triggered message to UE and transmits SSB based on the command.

gNB-CU can provide suggested SSB operation parameters to gNB-DU to assist the on-demand SSB SCell operation, e.g. OD-SSB rates, durations.

gNB-CU indicate the list of cells allowed to be on-demand SSB activated to gNB-DU.

**Moderator summary:**

#### 3.2 Support on-demand SIB1 for UEs

##### 3.2.1 **Signalling aspect:**

**Other Xn Interface Aspect:**

Enable NES gNB, provided a WUS configuration to Cell A, to be aware of whether the WUS configuration is broadcasted via Cell A or Cell A does not feedback result for WUS configuration transmission to NES cell.

The NES cell can indicate the WUS configuration broadcast indication to the Cell A over the Xn interface, e.g., to stop/begin the UL WUS configuration broadcast, but it is semi static updates.

Any subsequent changes in the WUS configuration shall be shared over F1 and Xn.

A new procedure(s) to enable inter-node coordination for WUS configuration provision: including support for requesting starting (or stopping) WUS configuration provision in certain cell(s) and receiving WUS configuration provision status updates.

Reuse the Xn interface setup and the NG-RAN node configuration update procedure to send/update UL WUS configurations from the NES cell to Cell A over Xn. This configuration is included in the Server Cell Information IE.

A new procedure where the gNB serving the NES cell sends a UL WUS provision request message to neighbour gNBs, including a list of NES cells to activate OD-SIB1, and for each cell, a list of Cell A for provision. The receiving gNB shall respond with the provision status. The gNB can trigger this procedure upon receiving the response to the UL WUS provision request or when any cell switches from OD-SIB1 activation to deactivation.

The gNB provides the ‘UL WUS provision support/not support indication’ to neighbour gNBs via the Xn setup and the NG-RAN node configuration update procedure. Consequently, the NES cell would not request assistance for UL WUS provision from those gNBs (cells) lacking this capability,

Another alternative is via OAM,

NES cell does not transmit On-demand SIB1 operation activation/deactivation indication from the RAN node of NES cell to RAN node of the Cell A via Xn.

The Xn/F1 signalling could be based on activation/deactivation indication.

**NES gNB-CU Role:**

The gNB-CU of the NES Cell can provide the allowed cell list to the DU, indicating to the gNB-DU whether a cell operation can be changed to on-demand SIB1 transmission mode.

The gNB-CU determines which cells to use on-demand SIB1 and transmits the command to DU to enable the on-demand SIB1 function.

gNB-CU of NES cell transmits On-demand SIB1 operation activation command to DU of NES cell based on receiving accept response of UL WUS config from Cell A.

The gNB-CU of the NES cell communicates the activation and deactivation of the OD-SIB1 mode with the gNB-CU of Cell A over Xn and its own gNB-DUs over F1.

**“Cell A” side gNB-CU Role:**

gNB-CU of cell A separates UL WUS config(s) per Cell A and transmits the UL WUS config(s) and the corresponding NES cell(s) per Cell A to DU, e.g., via gNB-CU Configuration Update procedure.

For the gNB serving Cell A, reusing the CU configuration update procedure to send/update the UL WUS configuration of the neighbour NES cells to the gNB-DU, after its CU receives the UL WUS configuration from other gNBs.

The Cell A could request the NES Cell to deactivate the on-demand SIB1 operation mode.

**NES gNB-DU Role:**

The gNB-DU to decide the WUS configuration of its cell and send it to its gNB-CU if the gNB-DU intends to operate the cell in on-demand SIB1 transmission mode.

The gNB-DU of a NES cell determines UL WUS config for the NES cell **based on the request from CU**, and transmits the UL WUS config to CU for further providing it to Cell A.

The gNB-DU can indicate to its gNB-CU that the gNB-DU has stopped operating a certain cell in on-demand SIB1 transmission mode vs NES gNB-DU does not indicate the change to NES gNB-CU when the on-demand SIB1 mode is deactivated.

The NES node DU can stop broadcast its SIB1 after knowing that the Cell A has broadcast the WUS configuration of NES Cell.

##### 3.2.2 **OD-SIB1 activation aspect:**

Dynamic On-Demand SIB1 activation/deactivation is needed.

Cell A can provide guidance to NES cell about On demand SIB1 activation/deactivation over Xn.

gNB-CU decides or guides gNB-DU on the on-demand SIB1 activation or deactivation of a NES cell, and sends the request to gNB-DU.

NES cell can inform Cell A the change of on-demand SIB1 mode over Xn. Dynamic? Semi static?

3.2.3 **Two Step approach signalling aspect:**

WUS configuration provision and on-demand SIB1 mode are transmitted independently.

3.2.4 **Other aspect:**

RAN3 discuss the granularity of on-demand SIB1 mode.

The gNB-DU broadcast SIB1 upon receiving MSG1 based on-demand SIB1 request, there’s no RAN3 impact foreseen.

For the gNB serving NES cells, after it decides to start OD-SIB1 in some NES cells, it needs to determine the list of CELL A for each NES cell.

**Moderator summary:**

# 4 References

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