**3GPP TSG RAN WG1 #119**

**Melbourne, Australia, September 9th – 12th, 2024**

**Title: Moderator Summary on Rel-19 NES**

# Introduction

The Rel-19 WID on network energy savings has following checkpoint in RAN#105 (Sept ’24):



This document summarizes company contributions submitted to RAN#105 regarding the checkpoint as well as comments made during the first round of online discussions in RAN#105.

# Status of discussions on On-Demand SIB1

## Cases discussed by WGs

* Case 1: UE obtains UL WUS configuration from NES Cell, UE transmits UL WUS on NES Cell, UE receives on-demand SIB1 from NES Cell
* Case 2: UE obtains UL WUS configuration from Cell A, UE transmits UL WUS on NES Cell, UE receives on-demand SIB1 from NES Cell
* Case 3: UE obtains UL WUS configuration from Cell A, UE transmits UL WUS on Cell A, UE receives on-demand SIB1 from Cell A



## WG conclusions/agreements on Case 1, Case 2, and Case 3

RAN1 recommends to specify Case 2 only:

***Agreement***

*RAN1 recommends specifying on-demand SIB1 only for Case 2 (Option 1+B+X) in Rel-19.*

* *Note: RAN1 strive to minimize impact to legacy UE.*
* *Note: RAN1 specification impact to support this feature should be minimized.*

RAN1 concluded on Case 1 and Case 3 as follows:

***Conclusion***

*For on-demand SIB1 in idle/inactive mode, RAN1 was not able to achieve consensus to support Case 1 (Option 1+A+X) in Rel-19, while Case 1 is technically possible from RAN1’s perspective.*

**Agreement**

For on-demand SIB1 in idle/inactive mode, Case 3 (Option 2+B+Y) is feasible from RAN1 perspective for some scenarios. Case 3 (Option 2+B+Y) is lower priority compared to Case 2 from RAN1 perspective.

RAN1 is inconclusive on whether the required specification support is justified by the observed NES gain for Case 3

RAN2 recommends to specify Case 2:

***Agreement on OD-SIB1***

*OD-SIB1 SI conclusion:*

*8. RAN2 conclude that on-demand SIB1 is feasible from RAN2 perspective and recommend normative work of case 2 for on-demand SIB1.*

RAN2 concluded on Case 3 as follows (no conclusion on Case 1):

**Conclusion:**

No consensus for RAN1 case 3 in RAN2.

RAN3 concluded on Case 2 as follows (no conclusion on Case 1 or 3):

*RAN3#124:*

*Focus on case2 in RAN3 first.*

*RAN3#125:*

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

* ***UL WUS configuration is decided by NES Cell DU.***
* ***UL WUS configuration transmission from NES Cell DU to NES Cell CU. NES gNB-CU sends UL WUS configuration to Cell A gNB-CU over Xn Interface.***
* ***Upon the reception of the UL WUS configuration, Cell A can provide feedback to NES Cell on whether the WUS configuration Transmission for NES Cell is accepted in Cell A (e.g., confirm, reject).*** *FFS if Cell A broadcasts it right away or not.*

## Summary of first round of online discussions in RAN#105

Following views were shared by companies:

* Majority of companies were supportive of normative work for Case 2
* A number of companies were supportive of normative work for Case 1 in addition to Case 2 (e.g. RP-242141 – co-sourced by 8 companies including 3 operators)
* A number of companies were supportive of normative work for Case 3 in addition to Case 2 (e.g. RP-242038)
* At least two companies (Intel and Samsung) indicated that while they are okay with normative work to support Case 2, the observed gains are small and not proceeding with normative work was also acceptable
* Qualcomm proposed to have the following in addition to Case 2
	+ *NES cell provides WUS configuration for other NES cells to the UEs camping on the NES cell*

# Proposal for Rel-19 NES normative phase

Considering the WG conclusions/agreements and first round discussions in RAN1#105, the moderator proposes the following:

|  |
| --- |
| * Support Case-2 as part of normative work on on-demand SIB1 for Rel-19 NES
	+ Case 2: UE obtains UL WUS configuration from Cell A, UE transmits UL WUS on NES Cell, UE receives on-demand SIB1 from NES Cell
* Above does not preclude discussion on the following in RAN2
	+ *NES cell provides WUS configuration for other NES cells to the UEs camping on the NES cell*
 |

Companies are invited to share their views on the above proposal in the table below:

| **Company** | **Comment** |
| --- | --- |
| Qualcomm | We are ok with the proposal. As an additional note, it has been discussed before that in general NES features may be allowed to have some negative impact to legacy UEs, if the energy savings provided by them are substantial. In our view on-demand SIB1 does not provide energy savings high enough to justify any impact to legacy UEs. That means that legacy UEs should see the NES Cell’s SSB as NCD, or the cell being barred. It may be worthwhile to capture this also in the WID to streamline the discussions. But even if RAN decides not to capture it, it would be our assumption going forward.  |
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# WF on the support of on-demand SIB in Rel-19 NES

TBD

# APPENDIX: Summary of contributions on Rel-19 NES

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| --- | --- |
| **Company** | **Proposals** |
| Spreadtrum | ***Proposal 1: Specify at least Case 2 to support on-demand SIB1 in Rel-19.*** |
| vivo | **Proposal 1: Convert on-demand SIB1 to normative work and follow RAN WG recommendation to specify case 2 only in Rel-19 NES.** |
| Beijing Xiaomi Mobile Software |  |
| Nokia | **Proposal: Proceed with normative work on Case 2 only for on-demand SIB1 for UEs in RRC idle/inactive mode in Rel-19.** |
| ZTE Corporation, Sanechips  | With the above consideration, we suggest to specify on demand SIB1 only for Case 2 in the normative phase.**Proposal: Specify Case 2, i.e. UE obtains the UL WUS configuration from Cell A, transmits UL WUS to NES Cell and receives on-demand SIB1 from NES Cell, in the normative phase of on-demand SIB1** **for UEs in idle/inactive mode.** |
| CATT | **Proposal: For RAN#105 on-demand SIB1 checkpoint,** •**Start normative work for on-demand SIB1 for UEs in idle/inactive mode in Rel-19 NES only for Case 2 (Option 1+B+X)** •**Option 1: UE transmits UL WUS to NES Cell** •**Option B: UE obtains the UL WUS configuration from Cell A** •**Option X: UE receives on-demand SIB1 from NES Cell**  |
| Samsung  | **Proposal**•Update WID to specify case 2 (Option 1+B+X) only. |
| Ericsson | For the normative work on on-demand SIB1 for Rel-19 NES, the following WID update (no track changes) is proposed i.e. to specify on-demand SIB1 for only Case 2. Revised WID is in RP-241868. |
| Huawei, HiSilicon | **Proposal: Support normative work for on-demand SIB1 for UEs in idle/inactive mode based on Case 2 in Rel-19.** * + **Case 3 can also be included, striving for minimized additional specification impact.**
 |
| Qualcomm Incorporated | • If there is consensus to support, specify support of on-demand SIB1 for idle/inactive UEs (RAN2, RAN1, RAN3)• UE sends an WUS for requesting SIB1 to a NES cell and receives the requested SIB1 from theNES cell• Cell A provides WUS configuration for NES cells• NES cell provides WUS configuration for other NES cells to the UEs camping on the NES cell• Only non-cell defining SSB is transmitted in a NES cellModerator’s note: First two sub-bullets of the above proposal correspond to Case 2  |
| OPPO  | **Proposal 1: Support on-demand SIB1 normative work in R19 with the focus on Case 2****Proposal 2: Both RRC\_IDLE/RRC\_INACTIVE UE and RRC\_CONNECTED UE are considered for this normative work.****Proposal 3: The enhancement should avoid impact to on-demand SIB1 non-capable UE in both RRC\_IDLE/RRC\_INACTIVE and RRC\_CONNECTED state.**  |
| Intel Corporation | While RAN1 and RAN2 recommended to specify Case 2 (UE transmits UL WUS to NES Cell, UE obtains the UL WUS configuration from Cell A, UE receives on-demand SIB1 from NES Cell), the NES gains for the most promising use case is rather marginal.Approving normative work for on-demand SIB1 should be considered only if there are sufficient TU in RAN1 and RAN2. |
| CMCC | **Proposal 1: Case 1 for on-demand SIB1 is not supported in Rel-19 due to the marginal NES gain.****Proposal 2: Support convert Case 2 for on-demand SIB1 into normative work.****Proposal 3: Case 3 for on-demand SIB1 is not supported in Rel-19 due to there is no consensus in both RAN1 and RAN2.** |
| Futurewei  | **Proposal 1: Specify on-demand SIB1 for Case 2 (Option 1+B+X) in Rel-19.****Proposal 2: Consider starting the normative work for Case 3 in R19 if time permits.****Proposal 3: Consider starting the normative work for Case 1 in R19 if time permits.** |
| NEC  | **Proposal 1:** Support specification of on-demand SIB1 in Rel-19**Proposal 2:** Support specification of on-demand SIB1 using Case 2nUE obtains the UL WUS configuration from Cell A nUE transmits UL WUS to NES CellnUE receives on-demand SIB1 from NES Cell  |
| InterDigital, Inc. | * Study Specify procedures and signaling method(s) to support on-demand SIB1 for UEs in idle/inactive mode only for Case 2, including: [RAN1/2/3]
 |
| Apple  | 2. Study Specify procedures and signaling method(s) to support Case 2 only for on-demand SIB1 for UEs in idle/inactive mode, including: [RAN1/2/3] |
| MediaTek Inc.  | * 1. Proceed to normative work for On-demand SIB1 addressing Case 2 only, with the following preconditions:
		1. - Impact to legacy UE shall be minimized
		2. - RAN1 spec impact shall be minimized
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| Vodafone, Deutsche Telekom, Orange, Lenovo, Google, Fraunhofer IIS and Fraunhofer HHI, ETRI, CEWiT  | **Proposal 1: The co-signing companies recommend supporting Case 1 in Rel 19 in addition to case 2.** |