**3GPP TSG RAN WG2 Meeting #131bis R2-250xxxx  
Prague, Czech Republic, 13th – 17th October 2025**

Agenda Item: 8.5.1

Source: ZTE (Rapporteur)

Title: Open issues for Rel-19 NES UE capability

Document for: Discussion, Decision

# Introduction

This document is to collect open issues according to

* [POST131][112][NES] (ZTE)

**Scope:** Update NES UE capability CRs (including this meeting agreements also).

**Intended outcome:** 38.331 CR in R2-2506223 and 38.306 CR in R2-2506224 to be endorsed.

**Deadline:**

1. Initial list of open issues by rapporteur, proposed resolutions for easy open issues or resolution options for other issues: sept. 19th
2. Input from other companies and final set of proposals and resolutions for identified issues that don’t require contribution input: Oct. 1st

NOTE: no contributions from other companies expected

## Contact information:

|  |  |  |
| --- | --- | --- |
| **Name** | **Company** | **Email** |
| Gao Yuan (Rapporteur) | ZTE | gao.yuan66@zte.com.cn |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

# Open issues

## Remaining Open issues identified by the rapporteur

The rapporteur has included one open issue raised during the CR review, companies are invited to provide feedback on the resolution options before Oct. 1st.

**Issue 1: paging adaption capability for (e)RedCap UE**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ***Definitions for parameters*** | Per | M | FDD-TDD DIFF | FR1-FR2  DIFF | |
| Unrelated part omitted | | | | | |
| ***pagingAdaptation-r19***  Indicates whether the UE supports paging adaption, in which the value range for parameter N and Ns as defined in TS 38.331[9] are extended to make it possible to have increased interval between Paging Frames and compensate the decrease in the number of Paging Frames. | UE | No | No | No |

The issue was raised by OPPO-Qianxi during the CR review:

-----------------------------------------------

**[OPPO001]** Due to the support of this feature for Redcap as well, we understand there are two types of UE implementation

1. Implementation-1 supports paging adaptation in initialDownlinkBWP-RedCap-r17
2. Implementation-2 supports paging adaptation configured for initialDownlinkBWP via PCCH-Config

It is more straightforward for us to use separate capability bits to differentiate implementation-1/2. Or if not, it would be helpful to clarify how for network to understand which implementation UE supports by reporting a single capability bit.

**[Nokia]** We don’t fully understand OPPO issue – So NW knows UE is redcap capable – wouldn’t that indicate nw which paging adaptation to use? Or is OPPO meaning that redcap UE may choose which way to implement paging adaptation?

**[Apple]** On OPPO 001, we think there are two way-forward:

* WF-1: introduce a separate capability for paging in initialDownlinkBWP-RedCap-r17 for (e)redcap UE (as OPPO suggested)
* WF-2: integrate the capability of paging in initialDownlinkBWP-RedCap-r17 for redcap UE into ***pagingAdaptation-r19***

Either way is fine to us. We slightly prefer WF-1. If WF-2 is adopted, we can provide a wording:

***pagingAdaptation-r19***

Indicates whether the UE supports paging adaption in *initialDownlinkBWP* and paging adaptation in*initialDownlinkBWP-RedCap-r17* for (e)redcap UE, in which the value range for parameter N and Ns as defined in TS 38.331[9] are extended to make it possible to have increased interval between Paging Frames andcompensate the decrease in the number of Paging Frames. If (e)redcap UE reports its supporting for paging adaptation, it shall support paging adaptation in *initialDownlinkBWP-RedCap-r17*.

**[VIVO]** For OPPO001, we understand it is not an issue. According to TS 38.331, the RedCap UE use *initialDownlinkBWP-RedCap-r17* if it is configured, and it’s straightforward that the RedCap UE use the paging adaptation configuration if present in *initialDownlinkBWP-RedCap-r17.* We think the paging adaptation configuration in PCCH is for *initialDownlinkBWP.*

|  |
| --- |
| ***initialDownlinkBWP-RedCap***  If present, (e)RedCap UEs use this DL BWP instead of *initialDownlinkBWP*.  If absent, (e)RedCap UEs use *initialDownlinkBWP* provided that it does not exceed the (e)RedCap UE maximum bandwidth (see also clause 5.2.2.4.2). |

If one wants to clarify the UE has the chance to implement choosing either *firstPDCCH-MonitoringOccasionOfPO* in PCCH or *MonitoringOccasionOfPO* in *initialDownlinkBWP-RedCap-r17* to determine its PO, then this should be raised in TEI, as this issue may also happens in R17.

---------------------------------------------------

With the above comments received during CR review phase, the rapporteur understands there has been different understanding on the paging adaption capability reported by (e)RedCap UE:

* Understanding 1: If (e)RedCap UE indicate support for paging adaption, NW can configure paging adaption in initialDownlinkBWP-RedCap-r17 and/or initialDownlinkBWP and (e)RedCap UE will follow the configuration in the DL BWP it uses.
* Understanding 2: Introduce separate capability for (e)RedCap UE to indicate support for paging adaption, NW can configure paging adaption in initialDownlinkBWP-RedCap-r17 if (e)RedCap UE indicate support for this capability.

**Q1: Which one is more aligned with companies’ understanding, 1, 2 or other? If the answer is “other”, please explain the detailed understanding.**

|  |  |  |
| --- | --- | --- |
| **Company** | **Understanding 1/2/other** | **Comments** |
| OPPO | Both are fine for us, but prefer option-1 | The key is to avoid mandating all UEs (including non-(e)Redcap UE) reporting this capability to support paging over Redcap-specific BWP.  But we would like to highlight that: for (e)Redcap UE, the support of paging bundling for initialDownlinkBWP is under the condition that the normal initial DL BWP is within the BW limitation of (e)Redcap UE.  ***initialDownlinkBWP-RedCap***  If present, (e)RedCap UEs use this DL BWP instead of *initialDownlinkBWP*.  If absent, (e)RedCap UEs use *initialDownlinkBWP* provided that it does not exceed the (e)RedCap UE maximum bandwidth (see also clause 5.2.2.4.2).  And also this issue is the same for PO and PEI-O.  E.g., if we go with understanding-1, the change could be  ***pagingAdaptation-r19***  Indicates whether the UE supports paging adaption, in which the value range for parameter N and Ns as defined in TS 38.331[9] are extended to make it possible to have increased interval between Paging Frames and compensate the decrease in the number of Paging Frames. UE supports *pagingAdaptFirstPDCCH-MonitoringOccasionOfPO-r19* configured in *initialDownlinkBWP-RedCap* if it supports *supportOfRedCap* or *supportOfERedCap-r18*.  ***pagingAdaptionPEI-SupportBandList-r19***  Indicates whether the UE supports receiving paging early indication in DCI format 2\_7 as specified in TS 38.304 [21] for a list of frequency band for paging adaption. The UE shall support UEID based subgrouping for a frequency band if it indicates supporting of paging early indication reception for the frequency band. The set of OFDM symbols within a slot where UE can monitor the PEI PDCCH in Type 2A CSS is the same as the requirement for paging PDCCH in Type 2 CSS for IDLE and INACTIVE mode UEs. UE supports *pagingAdaptFirstPDCCH-MonitoringOccasionOfPEI-O-r19* configured in *initialDownlinkBWP-RedCap* if it supports *supportOfRedCap* or *supportOfERedCap-r18*.  A UE supporting this feature shall also indicate support of *pagingAdaptation-r19*. |
| Ericsson | 1 in principle | We do not think there is a need to introduce separate capability bits for this scenario. In fact, similar to the comments from Nokia and Vivo above, we do not think that there is an issue here.  A RedCap UE is supposed to use the RedCap-specific *initialDownlinkBWP* if configured and monitor the adapted POs if configured as part of the RedCap-specific *initialDownlinkBWP* and if it supports this Rel-19 NES feature. Otherwise, it uses the *initialDownlinkBWP* and monitors the adapted POs if provided and if it supports this Rel-19 NES feature. |
| ZTE | 1 | We share same view with Ericsson and vivo that there is no issue that require further clarification in spec. We can have an agreement to confirm the understanding without spec change. |
|  |  |  |
|  |  |  |

**Q2: For those prefer understanding 2, do we also introduce separate pagingAdaptionPEI-SupportBandList for (e)RedCap UE?**

|  |  |  |
| --- | --- | --- |
| **Company** | **Yes/No** | **Comments** |
| OPPO | Yes | No matter understanding 1 or 2 is selected, it should be selected for both PO location and PEI-O location capability. |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

**Rapporteur’s summary:**

Based on the comments received, most companies understand that

* From network perspective, if (e)RedCap UE indicate support for paging adaption, NW can configure paging adaption in initialDownlinkBWP-RedCap-r17 and/or initialDownlinkBWP and (e)RedCap UE will follow the configuration in the DL BWP it uses.
* From UE perspective, A (e)RedCap UE is supposed to use the RedCap-specific *initialDownlinkBWP* if configured and monitor the adapted POs if configured as part of the RedCap-specific *initialDownlinkBWP* and if it supports this Rel-19 paging adaption. Otherwise, it uses the *initialDownlinkBWP* and monitors the adapted POs if provided and if it supports this Rel-19 paging adaption.

The following proposal is generated based on majority views to clarify the understanding of paging adaption capability reporting for (e)RedCap UE at both network and UE side:

**Proposal 1: Confirm the following understanding on (e)RedCap UE paging capability reporting at both UE and network side and no spec change is needed:**

* **From network perspective, if (e)RedCap UE indicate support for paging adaption, NW can configure paging adaption in initialDownlinkBWP-RedCap-r17 and/or initialDownlinkBWP and (e)RedCap UE will follow the configuration in the DL BWP it uses.**
* **From UE perspective, A (e)RedCap UE is supposed to use the RedCap-specific *initialDownlinkBWP* if configured and monitor the adapted POs if configured as part of the RedCap-specific *initialDownlinkBWP* and if it supports this Rel-19 paging adaption. Otherwise, it uses the *initialDownlinkBWP* and monitors the adapted POs if provided and if it supports this Rel-19 paging adaption.**

## New Open issues raised by companies

Companies are invited to raise new open issues and/or provide feedback on the raised ones the before Oct. 1st.

|  |  |  |
| --- | --- | --- |
| **Company and comment ID (e.g. ZTE01)** | **Description of possible open issue** | **Company views**  **(e.g. [ZTE]: …….)** |
| Ericsson01 | In 38.306, regarding the description of the parameter below:  *pagingAdaptation-r19*  Indicates whether the UE supports paging adaption, in which the value range for parameter N and Ns as defined in TS 38.331[9] are extended to make it possible to have increased interval between Paging Frames and compensate the decrease in the number of Paging Frames  Do we need to provide a detailed description of the feature here rather than providing a reference to 38.331? e.g., “Indicates whether the UE supports paging adaption.” Besides, the current description above is not entirely correct since increased intervals do not necessarily come with a compensation. It may be, but the description suggests as if it is a must. We suggest leaving those details out of the parameter description above.  [Rapporteur comment]  The intention was to align with the stage 2 description but it is fine to simplify and only mention paging adaption in the capability description. |  |
|  |
|  |
|  |
|  |
|  |
|  |
| Ericsson02 | In 38.306, regarding the description of the parameter below:  *pagingAdaptionPEI-SupportBandList-r19*  It would be better if we clarify that the UE shall support PEI in the band that it supports paging adaptation with PEI.  [Rapporteur comment]  Ok to highlight this in the description. |  |
|  |
|  |
|  |
|  |
|  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

**Rapporteur’s summary:**

The proposed changes by Ericsson01 and Ericsson02 are acceptable to the rapporteur and no further comments have been received.

The following proposal is generated based on the discussion above:

**Proposal 2: Agree the following changes in paging adaption capability description and paging adaption PEI capability description:**

**Change 1 [Ericsson001]:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ***pagingAdaptation-r19***  Indicates whether the UE supports paging adaption as defined in TS 38.331[9]. | UE | No | No | No |

**Change 2 [Ericsson002]:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ***pagingAdaptionPEI-SupportBandList-r19***  Indicates whether the UE supports receiving paging early indication in DCI format 2\_7 as specified in TS 38.304 [21] for a list of frequency band for paging adaption. The UE shall support UEID based subgrouping for a frequency band if it indicates supporting of paging early indication reception for the frequency band. The set of OFDM symbols within a slot where UE can monitor the PEI PDCCH in Type 2A CSS is the same as the requirement for paging PDCCH in Type 2 CSS for IDLE and INACTIVE mode UEs.  A UE supporting this feature shall also indicate support of *pagingAdaptation-r19*.  A UE supporting this feature shall also indicate support of *pei-SubgroupingSupportBandList-r17*in the same band. | UE | No | No | No |

# Conclusions

The following proposals have been provided based on feedback to the above document:

[Proposals for easy agreement]

**Proposal 1: Confirm the following understanding on (e)RedCap UE paging capability reporting at both UE and network side and no spec change is needed:**

* **From network perspective, if (e)RedCap UE indicate support for paging adaption, NW can configure paging adaption in initialDownlinkBWP-RedCap-r17 and/or initialDownlinkBWP and (e)RedCap UE will follow the configuration in the DL BWP it uses.**
* **From UE perspective, A (e)RedCap UE is supposed to use the RedCap-specific *initialDownlinkBWP* if configured and monitor the adapted POs if configured as part of the RedCap-specific *initialDownlinkBWP* and if it supports this Rel-19 paging adaption. Otherwise, it uses the *initialDownlinkBWP* and monitors the adapted POs if provided and if it supports this Rel-19 paging adaption.**

**Proposal 2: Agree the following changes in paging adaption capability description and paging adaption PEI capability description:**

**Change 1 [Ericsson001]:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ***pagingAdaptation-r19***  Indicates whether the UE supports paging adaption as defined in TS 38.331[9]. | UE | No | No | No |

**Change 2 [Ericsson002]:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ***pagingAdaptionPEI-SupportBandList-r19***  Indicates whether the UE supports receiving paging early indication in DCI format 2\_7 as specified in TS 38.304 [21] for a list of frequency band for paging adaption. The UE shall support UEID based subgrouping for a frequency band if it indicates supporting of paging early indication reception for the frequency band. The set of OFDM symbols within a slot where UE can monitor the PEI PDCCH in Type 2A CSS is the same as the requirement for paging PDCCH in Type 2 CSS for IDLE and INACTIVE mode UEs.  A UE supporting this feature shall also indicate support of *pagingAdaptation-r19*.  A UE supporting this feature shall also indicate support of *pei-SubgroupingSupportBandList-r17*in the same band. | UE | No | No | No |