**3GPP TSG-RAN WG3 #111-e R3-210971**

**25 January – 4 February 2021**

**Online**

Agenda Item: 20.2.2

Source: Nokia (moderator)

Title: Summary of email Discussion on Registration Update and Paging Handling

Document for: Approval

# Introduction

**CB: # 26\_NTN\_RegUpdate\_Paging**

**QC**

**WA (pending further work on ULI aspects): the cells in the Recommended Cells for Paging IE correspond to earth fixed cells (as in ULI).**

**Assuming that cells in the Recommended Cells for Paging IE are based on the mapping required for ULI, further enhancement of paging optimization functionality is not required in rel-17.**

**CATT**

**similar paging optimization mechanism as LTE and NR Rël-15 could be reused, by using of the UE location info (GNSS info) as the assistance info**

**Nok**

**no need for RAN3 to discuss the enhancement to registration procedure, unless requested by SA2/CT1/RAN2**

**ZTE**

**If the AMF is able to get the UE location from LMF, UE location based paging could be considered for NTN**

**- Anything needed in addition to current registration and paging? If no consensus, leave status quo**

**- WA needed to align assumptions with ULI? (as per 0364)**

(Nok - moderator)

Summary of offline disc [R3-210971](Inbox\R3-210971.zip)

The discussion has two phases:

Phase 1: Enhancements for NTN Registration Update and Paging

Phase 2: TBD

The deadline for Phase 1 is Wednesday, Jan 27th, 24:00 UTC. This allows us to have some further discussion based on the 1st round feedback and discuss intermediate stage in Thursday online session. We might be able to already achieve some agreements at this stage.

The deadline for Phase 2 is the same as for all email discussions, i.e., Tuesday, Feb 2nd, 12:00 UTC.

# For the Chairman’s Notes

Propose the following:

**Agree following proposals:**

…

**Continue discussion on following:**

# Discussion

## High-level aspects for Reducing Interruption Time for Intra-donor Topology Adaptation

Contribution ([1][3]) propose to reuse current Paging (including Paging optimization), considering RAN3 already agreed the cell ID reported to CN corresponds to a fixed geographical area. For example, if the cells in the *Recommended Cells for Paging* IE correspond to fixed geographical area (as in ULI), the gNB can use this information to decide which radio cells shall page the UE.

Contribution ([2]) propose to consider the UE location information (UE GNSS info) to page the UE. gNB provide the UE location info to CN in Step 3 of below figure. When AMF send the PAGING to gNB, the PAGING message includes the UE location information (UE GNSS info) in Step 5. The gNB consider the received UE location information to determine the cells to page the UE.



**Figure 1. UE location based paging in NTN**

Contribution ([4]) also propose to use UE location information for Paging, but prefer AMF gets the UE location information from LMF by the location services, and the detailed procedure for getting the UE location information from LMF is FFS.

So two solutions are proposed:

* Solution 1: reuse current Paging mechanism without enhancement in Rel-17, based on the working assumption (pending further work on ULI aspects) that the cells in the *Recommended Cells for Paging* IE correspond to fixed geographical area (as in ULI).
* Solution 2: enhance the PAGING message to include the UE location information (UE GNSS info). FFS on how AMF know the UE location information.

**Q1: Please share your view on the two solutions above, e.g. the preferred solution.**

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| --- | --- |
| **Company** | **Comment** |
| Nokia | Solution 1  Solution 2 is to page the UE in a specific geographical area, but this can already be supported by Solution 1 by using the cell ID corresponds to fixed geographical area. There is no clear benefit for Solution 2. |
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**Summary:**



**Potential Proposal:**

**...**

## Other issues/enhancements

**Q2: Please list other issues/enhancements that should be considered? Please include assessment of expected benefit, impact on specification, implementation, other WGs.**

# Part II…[if needed]

If needed

# References

1. R3-210364, Paging optimization in NTN (Qualcomm Incorporated)
2. R3-210471, (TP for BL CR for TS 38.300) Support of location based paging for NTN (CATT)
3. R3-210493, Discussion on Registration Update and Page Handling (Nokia, Nokia Shanghai Bell)
4. R3-210805, Further Discussion on Paging Enhancement for NTN (ZTE)