**3GPP TSG-RAN WG2 Meeting #116 electronic R2-2111415**

**Online, 1 - 12 November 2021, 2021**

**Title: [Draft]** LS out on paging subgrouping and PEI

**Response to:**

**Release:** Rel-17

**Work Item:** NR\_UE\_pow\_sav\_enh-Core

**Source:** RAN2

**To:** SA2, CT1, RAN3, RAN1

**Cc:**

**Contact Person:**

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**Attachments:** None

**1. Overall Description:**

RAN2 discussed UE paging subgrouping as part of the Rel-17 work on UE power saving enhancement (see RP-200938). On paging subgrouping, the following provides the detailed agreements for the 2 approaches (CN-assigned subgrouping and UE ID-based subgrouping):

* Assume that one subgroup indication refers to either CN-assigned subgroups or UE ID-based subgroup (no overlapping)
* Both UE ID-based and CN-assigned subgrouping can be supported simultaneously in a cell, it is allowed to just support one of them.
* The total number of CN-assigned subgroups that is used is not fixed and can be configured up to 8 (e.g. by OAM). No impact on signalling is assumed.
* RAN introduces a new parameter Nsg-UEID to indicate its support of UE ID-based subgrouping.
* RAN does not support any type of subgrouping if its configuration for subgrouping is either absent or nullified (e.g. *subgroupsNumPerPO* is either absent or set to zero). FFS for the signalling details.
* We assume separate indications for UE capability of CN-assigned subgrouping and UE ID-based subgrouping.
* UE’s capability of supporting the UE ID-based subgrouping is reported to RAN by AS UE capability signalling while R2 assumes that UE’s capability of supporting the CN-assigned subgrouping is reported to CN by NAS signalling.

RAN2 also discussed the Paging Early Indication, and agreed to the following:

* RAN2 assumes that if PEI is detected, and the PEI indicates that the UE has to monitor the associated PO, then the UE monitors paging DCI in the associated PO, including scheduling information for paging PDSCH (if included) as in legacy. This assumption may be updated based on RAN1 agreements.
* As a baseline RAN2 has a preference to support PEI with both DRX and eDRX, but potential issues (e.g. PEI and PTW) are FFS.
* For UE ID-based subgroups the UE identity is UE\_ID = 5G-S-TMSI mod X, where X is 8192 (1024\*8).
* Introduce a *UERadioPagingInfo* IE in the *UECapabilityInformation* message in NR in Rel-17.
* If the UE was not able to monitor the PEI occasion corresponding to its PO, the UE shall monitor the PO.

**2. Actions:**

**To SA2 and CT1:**

RAN2 respectfully asks SA2 and CT1 to take the above information into account for their future work, and provide further information on the following issue once concluded:

* NAS signalling between AMF and UE to convey the related information to the UE, e.g., UE’s capability reporting by NAS.

**To RAN3:**

RAN2 respectfully asks RAN3 to take the above information into account for their future work, and provide further information on the following issue once concluded:

* Signalling between AMF and gNB(s) to inform gNB(s) about the related subgroup information for paging a UE in RRC\_IDLE/RRC\_INACTIVE, e.g., to convey Subgroup ID, UE capability, etc.

**To RAN1:**

RAN2 respectfully asks RAN1 to take the above information into account for their future work, and provide further information on the following issue once concluded:

* The configurations of PEI subgrouping for indicating RAN not supporting any type of paging subgrouping. Whether its configuration for subgrouping can be absent or nullified (e.g. *subgroupsNumPerPO* is either absent or set to zero)?

**3. Date of Next RAN2 Meetings:**

TSG RAN WG2 Meeting #116bis 17 January – 25 January, 2022 online meeting

TSG RAN WG2 Meeting #117 21 February – 3 March, 2022 online meeting