3GPP TSG-RAN WG3 Meeting #115-e <TDoc#>

E-meeting, 21 Feb – 3 Mar 2022

Agenda Item: 22.2.4

Source: Huawei (moderator)

Title: Summary of discussion on xxxx

Document for: Approval

# 1. Introduction

**CB: # NBIoTMTC1\_CarrierSelect**

**- Check RAN2 progress and identify the impact on RAN3**

**- Capture the TP to TS 36.413, TS 38.413 if agreeable**

(HW - moderator)

Summary of offline disc [R3-222459](file:///C:\Users\ezlyamo\Downloads\Inbox\R3-222459.zip)

# 2. For the Chairman’s Notes

//to be added

# 3. Discussion

There are three papers submitted for this meeting.

In [1], a *Carrier Selection* IE ENUMERATED (true, …) is included in the *Paging Assistance Data for CE Capable UE* IE, which assumes to be used in case RAN2 not able to provide such information in the RRC containers.

In [2], considering that whether to include the paging carrier group index(*coverageBasedPCG*) in the *UEPagingCoverageInformation-NB* message and how to specify the configuration restriction for *coverageBasedPCG* in S1AP/NGAP wait for RAN2 agreement, it is proposed to including TPs for NGAP and S1AP as follows:

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| S1AP:  If the *Assistance Data for CE capable UEs* IE is included in the *Assistance Data for Paging* IE, it may be used for paging the indicated CE capable UE, together with the *Paging Attempt Information* IE according to TS 36.300 [14] and TS 36.304[20]. |
| NGAP:  If the *Paging Assistance Data for CE Capable UE* IE is included in the *Assistance Data for Paging* IE in the PAGING message, it may be used for paging the indicated CE capable UE, according to TS 23.502 [10], TS 36.300[17] and TS 36.304[29]. |

In [3], it is proposed that unless RAN2 feedback on the need of new S1AP/NGAP IE, there will be no need for RAN3 to introduce related new IEs, and RAN3 only add clarification in the procedural text in NGAP and S1AP specs. The corresponding TPs are provided as follows:

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| S1AP:  If the *Assistance Data for CE capable UEs* IE is included in the *Assistance Data for Paging* IE, it may be used for paging the indicated CE capable UE, together with the *Paging Attempt Information* IE according to TS 36.300 [14].  If the *Assistance Data for CE capable UEs* IE is included in the PAGING message, in case the cell supports CE based paging carrier selection, the eNB shall, if applicable, use the received information to determine the paging carrier as defined in TS 36.304 [20]. |
| NGAP:  If the *Paging Assistance Data for CE Capable UE* IE is included in the *Assistance Data for Paging* IE in the PAGING message, it may be used for paging the indicated CE capable UE, according to TS 23.502 [10].  If the *Paging Assistance Data for CE Capable UE* IE is included in the PAGING message, in case the cell supports CE based paging carrier selection, the NG-RAN node shall, if applicable, use the received information to determine the paging carrier as defined in TS36.304 [29]. |

Moderator also noticed that based on RAN2 Pre117-e email discussion [4], the following proposals can be found:

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| **Proposal 5a: It’s RAN2 assumption that the assigned information to UE in dedicated signaling also need to be delivered to core network and sent back to eNB in next paging.**  **Proposal 5b: *UEPagingCoverageInformation* RRC container is used to deliver the assigned information to UE in dedicated signaling to core network and sent back to eNB. A response LS to RAN3 would be sent as early as possible.** |

Based on all these inputs, moderator would like to propose as follows:

**Proposal 1: unless RAN2 feedback on the need of new S1AP/NGAP IE, there is no need for RAN3 to introduce related new IEs.**

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| **Company** | **Comments** |
| Huawei | Agree |
| Ericsson | Agree |
| Qualcomm | Agree |
| ZTE | Agree, and RAN2 has made the following agreement on 22nd Febreary:   |  | | --- | | * UEPagingCoverageInformation RRC container is used to deliver the assigned information to UE in dedicated signaling to core network and sent back to eNB. A response LS to RAN3 would be sent as early as possible. |   RAN3 can make the conclusion that there is no need for RAN3 to introduce related new IEs. |
| Nokia | Agree |

**Proposal 2: Update S1AP and NGAP specifications to update procedural texts.**

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| **Company** | **Comments** |
| Huawei | Agree |
| Ericsson | Disagree.  As mentioned by the moderator above, the eNB will use Paging Carrier Selection based on the present indication in the *UEPagingCoverageInformation* RRC container, which will indicate if it is R17 paging carrier or legacy carrier based on the presence of the new IE. Therefore, the current reference to TS 36.331 in the IE is fine and reflects the behaviour of the eNB,  On a side note, we remark that the proponents of [3] have been proposing inconsistent procedural texts over the last three e-meetings, changing each time the name of the affected IE and now replacing “UE” by “cell” in “supports CE based paging carrier selection” … |
| Qualcomm | Since the Assistance data for CE capable UEs is not NB-IOT specific, the text in [3] may even cause confusion (although understand it is mediated by the cell support). We see two options:   * Add some text in stage 2 to explain how this works (not sure if RAN2 is doing that?) * Work some more on stage 3 e.g. “If the Assistance Data for CE capable UEs IE is included in the PAGING message for a NB-IOT cell, the eNB shall, if supported, use the received information to determine the paging carrier as defined in TS 36.304 [20].”   Open to more discussion on this anyway. |
| ZTE | Agree.  RAN2 is discussing the condition to deliver the *coverageBasedPCG-r17* to MME/AMF, e.g. the *coverageBasedPCG-r17* shall be included in *UEPagingCoverageInformation* and delivered to MME/AMF if *coverageBasedPCG-r17* is sent to UE over radio interface, otherwise it is not includedin *UEPagingCoverageInformation*, which may be captured in TS36.300 or TS 36.331. Anyway, the parameter in *UEPagingCoverageInformation* RRC container is transparent to RAN3, how to configure *coverageBasedPCG-r17* in *UEPagingCoverageInformation* RRC container does not impacts on RAN3 specification.  However, the usage of coverageBasedPCG-r17 will only be described in RAN2 specification, e.g. TS 36.300 and TS36.304, it will not impact the SA2 specification(e.g. TS 23.502), it is not correct to describe that “..., *it may be used for paging the indicated CE capable UE, according to TS 23.502 [10]*”, and should be updated. |
| Nokia | Disagree.  Given that no S1AP/NGAP IE needs to be sent I assume that RAN2 will take care of any associated stage 2 text. The proposed added references also do not seem to be specific to the new added feature. |

**Proposal 3: If your answer to P2 is “Agree/Yes”, please provide comments on the provided TPs in [2] and [3].**

**Note: The companies of paper [2] and [3] can share the load to draft S1AP TP and NGAP TP based on the collected comments.**

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| **Company** | **Comments** |
| Huawei | We would like to use TPs provided in [3] as the starting point to finalize the CRs to be captured into specifications, e.g. updated as QCOM mentioned in P2. |
| Ericsson | we question if a CR adding only a reference can be considered as a category B Rel-17 CR for adding a new feature… |
| Qualcomm | Please see above |
| ZTE | Since the legacy *Paging Assistance Data for CE Capable UE* IE only includes enhanced coverage level related information and corresponding cell ID, and is only used for eMTC and NB-IoT, which is captured in TS 36.300 also:   |  | | --- | | The paging request from the MME or the AMF for a UE supporting enhanced coverage functionality may contain enhanced coverage level related information and corresponding cell ID. If neither the UE Radio Capability for Paging IE nor the Assistance Data for Paging IE is included in the paging request from the MME or the AMF, the (ng-)eNB may need to page the UE in both PDCCH and MPDCCH |   It has suitable to describe that “If the *Paging Assistance Data for CE Capable UE* IE is included in the *Assistance Data for Paging* IE in the PAGING message, it may be used for paging the indicated CE capable UE, according to TS 23.502 [10],and/or TS 36.300[17]”  Furthermore, in TS36.413, it is described that “ it may be used for paging ...according to TS 36.300 [14]” , and in TS38.413, it is described that “ it may be used for paging ...according to TS 23.502 [10]” . We think even for the leagcy IE, both SA2 and TS 36.300 should be refered.  So, we slightly prefer the provided TPs in [2], at least it is necessary for the TS38.413 TP.  And we are open to discuss the provided TPs in [3] with reference to TS 36.304. Since the *coverageBasedPCG-r17* may not be included in *UEPagingCoverageInformation* RRC container, or the cell sending paging may not be the “last used cell”, in which case coverage based paging carrier selection will not be used and the Assistance Data for CE capable UEs IE will not be used to determine the paging carrier. The text proposed by QCOM should be updated as follows:   * “If the Assistance Data for CE capable UEs IE is included in the PAGING message for a NB-IOT cell, the eNB may, if supported, use the received information to determine the paging carrier as defined in TS 36.304 [20].” |

# 4. Reference

1. R3-221811 Support of Carrier Selection based on coverage level (Nokia, Nokia Shanghai Bell) CR0753r, TS 38.413 v16.8.0, Rel-17, Cat. B
2. R3-221939 (TP to TS36.413 and TS38.413) Support CEL based paging carrier selection (ZTE) other
3. R3-222156 (TPs to TS 36.413, 38.413) CE based Carrier Selection for NB-IoT (Huawei) other
4. R2-2202739 Report of [Pre117-e][301][NBIOT/eMTC R17] NB-IoT carrier selection (ZTE)