**3GPP** **TSG-RAN WG3 Meeting #125 R3-24XXXX**

**Maastricht, Netherland, 19 – 23 August 2024**

**Title: [DRAFT] LS on Early TA acquisition for the inter-DU scenario**

**Response to:**

**Release: Rel-18**

**Work Item: NR\_Mob\_enh2-Core**

**Source: Google [To Be RAN WG3]**

**To:** **RAN WG2**

**Cc:**

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**Attachments: None**

1 Overall description

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| RAN2#121bis-e (R2-2304553)   * From RAN2 perspective, to enable shared preamble resource among multiple UEs, it is beneficial that the information that identifies the allocated CFRA resource (i.e., SS/PBCH index, RACH occasion, and Random Access Preamble index) can be indicated in the PDCCH order (as legacy intra-cell PDCCH order).   RAN2#123-bis (R2-2311332)   * RAN2 understands that the source DU needs to know the early RACH configuration for each candidate cell, so that the source cell can know how to set the PDCCH order information for early RACH; * The candidate DU provides the TA value and its associated information to the source DU via the CU, e.g. preamble index, RO information (i.e. RA-RNTI) and candidate cell identity, so that the source DU can identify the UE. RAN3 can design the necessary network signalling. |

Based on the previous RAN2 agreements, RAN3 had discussed the necessary parameters required for early TA acquisition for the inter-DU scenario for LTM. RAN3 designed an Early UL Sync Configuration IE including a RACH configuration (containing the *EarlyUL-SyncConfig* IE) and a preamble index list for a source gNB-DU. Additionally, RAN3 designed the TA Information including a candidate cell ID, TA value, preamble index, and RA-RNTI for the source gNB-DU. However, RAN3 lacks clarity on whether this design sufficiently supports early TA acquisition for inter-DU LTM compared to intra-DU LTM.

Therefore, RAN3 seeks to understand the following two questions for early TA acquisition in inter-DU LTM:

Question 1: Are shared preamble resources from the RAN2 agreement, consisting of the combination of SSB index, PRACH mask index, and preamble index, necessary, or is the preamble index list sufficient?

Question 2: Is RA-RNTI necessary for TA value association, and if so, is SSB Positions In Burst a necessary parameter for the source gNB-DU to associate the TA value with the specific UE using the received RA-RNTI from the candidate gNB-DU?

2 Actions

**To RAN2**

**ACTION:** RAN3 kindly asks RAN2 to provide answers to the questions above.

3 Dates of next RAN WG 3 meetings

RAN3#125bis 14 - 18 October 2024 Hefei, China

RAN3#126 18 – 22 November 2024 Orlando, USA