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3GPP TSG RAN Meeting#102 **RP-232981**
Edinburgh, Scotland, December 11-15, 2023

Agenda Item: 9.1.2.1

Source: Spreadtrum Communications

Title: Mobility enhancements for Rel-19

Document for: Discussion and decision

Background

- **Mobility guidance for RAN WGs**
  - In Chair's summary for RAN Rel-19 Package (RP-232745), the following potential objectives are provided:

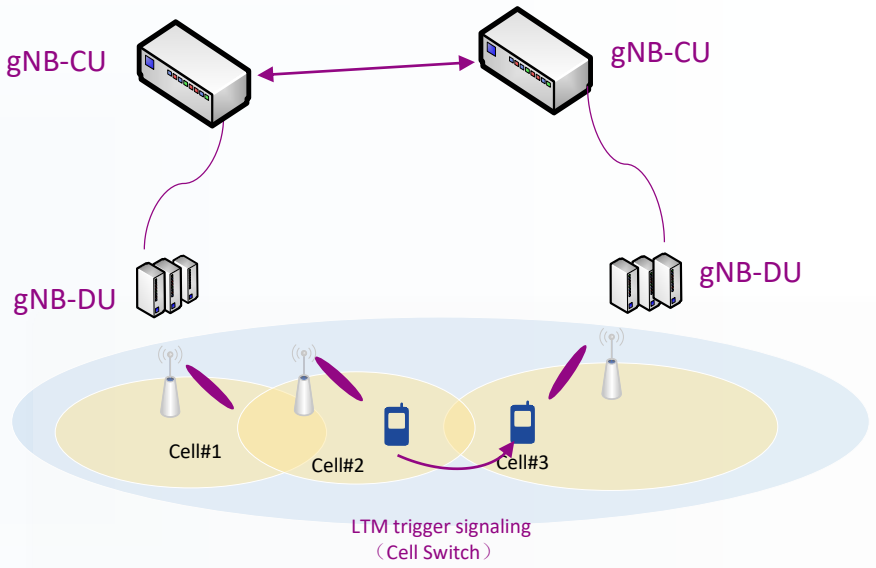
Potential objectives:

- Specify support for inter-CU Layer 2 Mobility (LTM)
  - Prioritize the case when CU is acting as MN when DC is not configured
  - Whether to additionally support e.g. when CU is acting SN? (focus on practical deployments)
    - In this case, ~~whether~~ it is supported for ~~EN-DC and/or~~ NR-DC only~~?~~
- Measurements related enhancements for purpose of supporting LTM:
  - Specify event triggered L1 measurement reporting for triggering LTM → depending on the detailed discussion in RAN#102, resolve how to avoid overlapping with similar objective in MIMO WI
  - Specify support for CSI-RS measurements for LTM procedures and enable CSI-RS based beam management and/or other physical layer operations on candidate cells before LTM
- Support of conditional mobility (including set of candidate cells, UE evaluated mobility conditions, ability for UE to perform subsequent mobility procedures without need for RRC configuration) along with short mobility interruption time (similar to that achievable with LTM).
  - Next Step question to consider the most appropriate approach to achieve this aim. For example, by specifying conditional triggering of LTM, or specifying support of Early TA or RACHless (as defined for LTM) to be used as part of layer 3 CHO, or possibly other approaches. If this questions cannot be concluded during the Rel-19 scoping discussion then it may be possible to start with a RAN2 study phase.
- Anything else (e.g., RAN4 related)?

- In the contribution, we will provide our views on mobility enhancements for Rel-19.

LTM operation in inter-CU case

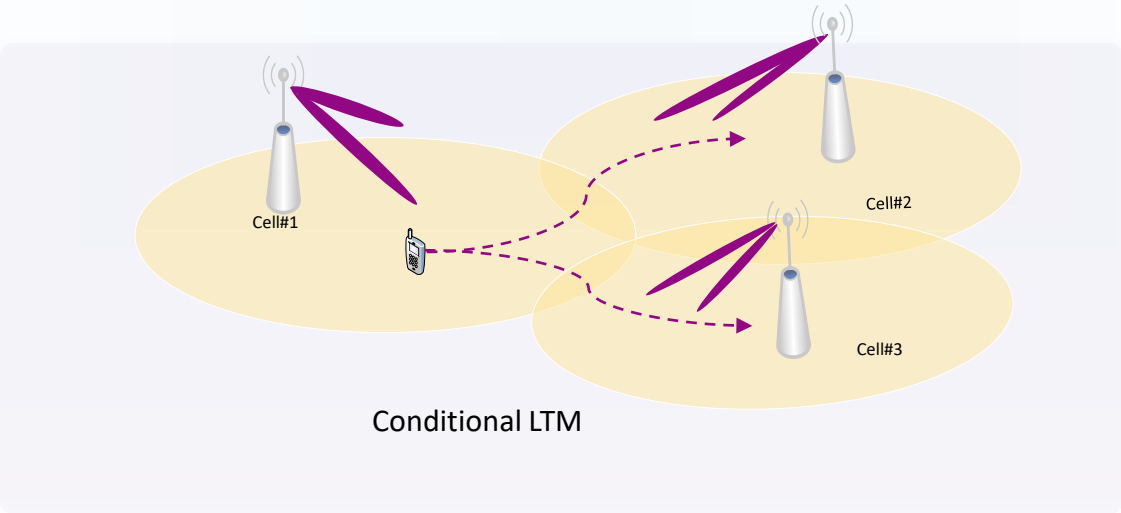
- **Motivation**
  - Intra-DU case and intra-CU inter-DU case are supported in Rel-18 LTM. Naturally, Inter-CU case can also be extended in Rel-19 LTM to achieve mobility latency reduction.
- **Objective**
  - Specify inter-CU case for LTM
    - Configuration of candidate cells(e.g., candidate cells determination) [RAN2, RAN3]
    - Timing advance management [RAN1, RAN2]
    - CU-CU/CU-DU interface signaling to support LTM, if needed [RAN3]
    - Note1： Key update should be considered in inter-CU LTM scenario.
    - Note2: Inter-CU LTM including inter-CU MCG LTM and inter-CU SCG LTM



LTM operation in inter-CU

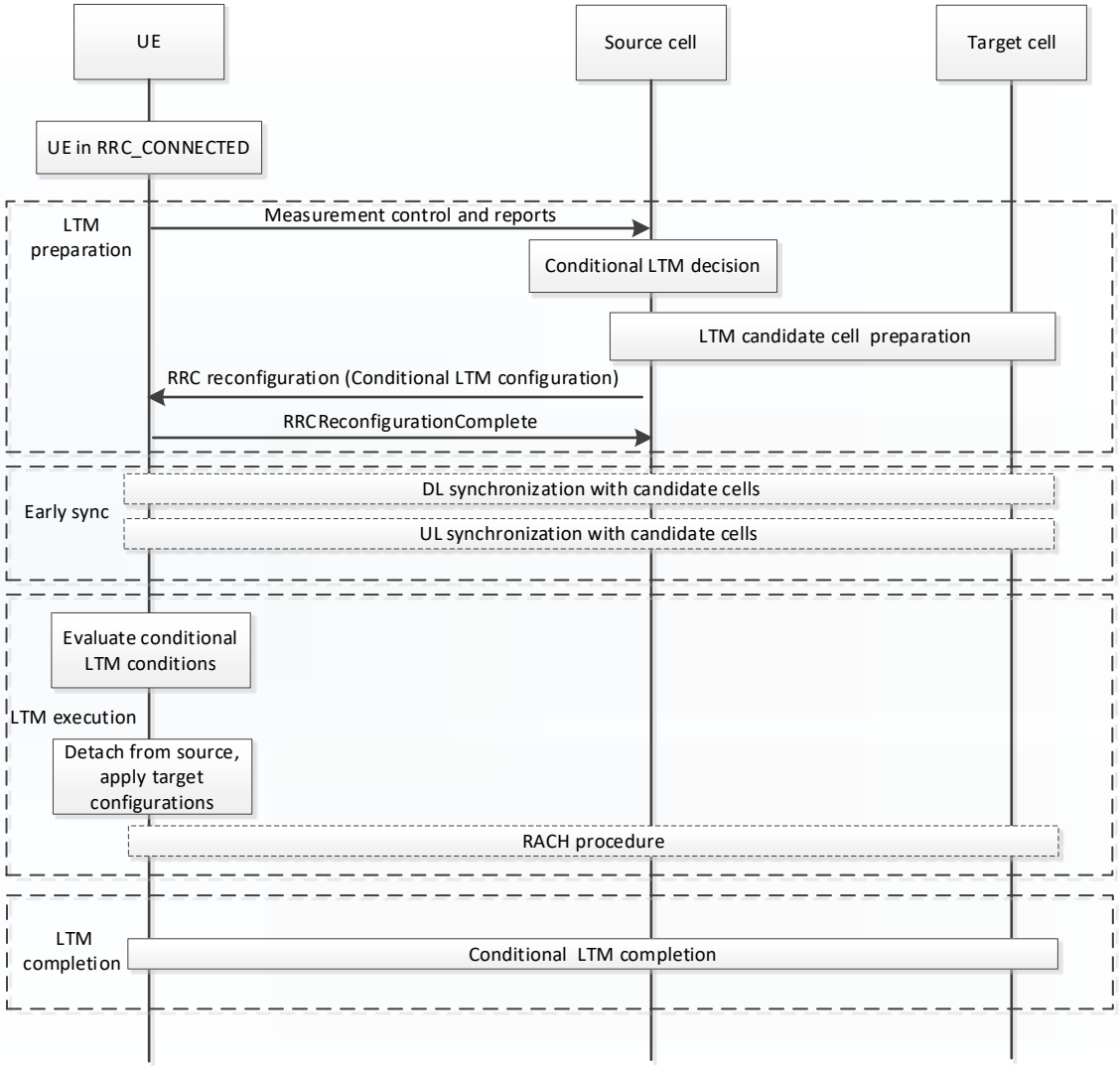
Conditional LTM (1)

- **Motivation**
  - In network triggered LTM, the cell switch command might not be transmitted successfully due to the radio link deterioration, especially for FR2 scenario, as the UE may usually suffer from fast deterioration. A handover procedure can be executed actively by UE in conditional LTM handover mechanism when execution condition(s) are met, which is beneficial to improve the successful handover probability.



Conditional LTM (2)

- **Objective**
  - To specify mechanism and procedures of conditional LTM in intra-CU and inter-CU
    - Configuration of the execution/trigger condition(s), including new trigger condition [RAN2, RAN3]
    - Evaluation of the conditions of conditional LTM based on L1 measurement result [RAN2]
    - Support of early TA and RACHless for conditional LTM [RAN1, RAN2, RAN3]
    - Support of subsequent conditional LTM, at least for intra-CU conditional LTM [RAN2]
  - To specify RRM core requirements as necessary, including handover delay for conditional LTM [RAN4]



Procedures of conditional LTM

Thanks

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