3GPP TSG RAN Rel-19 workshop
Taipei, June 15 - 16, 2023

RWS-230296

Source: ZTE, Sanechips

Agenda: 5

Views on Mobility enhancement in Rel-19

R17 Mobility enhancement

❖ Background -- NR mobility enhancements in R18

- Both LTM and NR-DC with selective activation of cell groups have been supported in Rel-18 with similar framework
  - Configuration of candidate cells will be provided to UE as RRC container, and similar method for signaling overhead reduction (reference + delta signaling) is expected to be used in both approaches.
  - One of the pre-configured container will be applied/activated once mobility/SCG change is required, back and forth cell/cell group switch among pre-configured RRC containers is allowed.
- Limitation or drawbacks of Rel-18 mobility
  - For L1/L2-triggered mobility (LTM)
    - Limited scenario: Inter-CU is not supported
    - Restricted demodulation perf. and user-perceived-throughput (UPT) experience: CSI-RS based measurement (e.g., CSI meas./acq., and T/F-fine-sync by using TRS) is not supported
    - Imbalance between report latency and overhead: event-based measurement reporting is not supported
    - Pingpong risk: L1 measurement filtering is not supported
  - Only NR-DC with selective activation of SCG (i.e. subsequent CPAC) is supported.
- Multiple mobility mechanisms with pre-configured containers (e.g. CHO/CPAC/subsequent CPAC, LTM) are introduced, but with different signaling structures.

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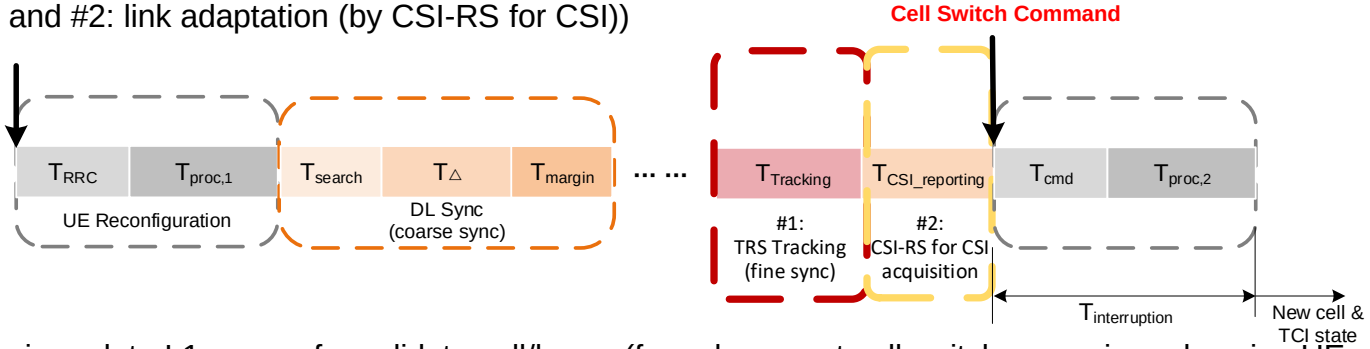
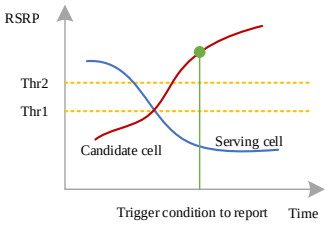
R18 Mobility - LTM enhancement

❖ Enhancements for LTM measurement

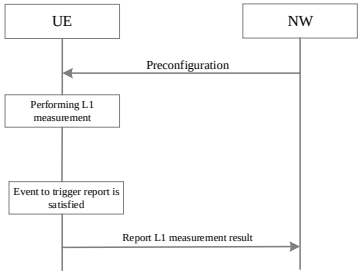
- CSI-RS for inter-cell measurement and corresponding L1 measurement report (to faciliate #1: DL fine-sync (by TRS) and #2: link adaptation (by CSI-RS for CSI))



- Dynamic update L1 meas of candidate cell/beam (for subsequent cell switch scenario and saving UE energy consumption) if not supported in Rel-18 LTM
- Event triggered L1 measurement report (to achieve good balance between report latency and report overhead compared to CSI-based report)
- Measurement filtering operation (to mitigate ping-pong issue)
- Other leftovers from R18



E.g., Event: serving cell becomes worse than Thr1 and candidate cell becomes better than Thr2



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R18 Mobility - Inter-CU mobility enhancement

❖ Consideration on inter-CU mobility

- Issue 1: LTM over UU without early data forwarding may lead to even longer interruption time
  - Since no DL data can be transmitted before the reception of forwarding data， data forwarding delay (including data transmission delay over Xn and corresponding signaling delay for triggering data forwarding) may be even longer than handover processing time over UU.
- Issue 2: Pingpong inter-CU handover will lead to frequent path switching (CN is involved) and data forwarding.

❖ Proposal for Inter-CU mobility enhancement

- A Harmonized solution for LTM and selective SCG activation shall be considered
  - Multiple RRC containers for MCG (or MCG+SCG) can be configured.
  - Back and forth cell/cell group switch shall be supported among the pre-configured containers (SA3 will be involved).
  - Both UE/event triggered (for robustness improvement) and NW triggered (LTM similar procedure for interruption time reduction) shall be supported.
  - L1 measurement framework (with enhancement to avoid pingpong HO) and early TA acquisition can be applied.
  - Support early data forwarding before cell/cell group switch over UU interface

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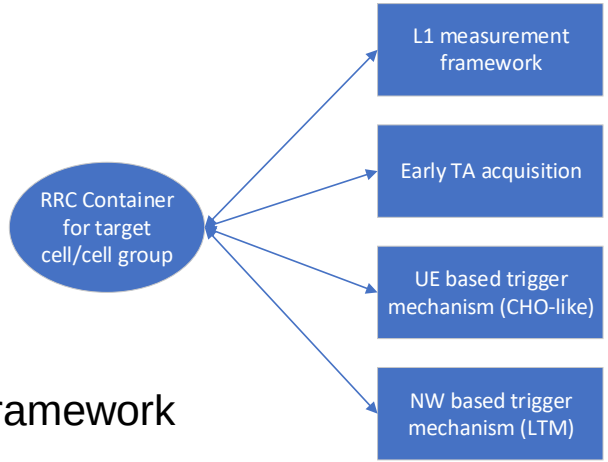
R18 Mobility - Harmonization of signaling framework

❖ Harmonization of LTM and Selective SCG activation (if not supported in Rel-18)

- Harmonized signaling framework
  - Common RRC container and RRC level procedure for different types of mobility, e.g. LTM, CHO, Selective MCG/SCG activation.
  - Flexible association between RRC container and different/multiple triggering mechanism (e.g. UE triggered mechanism and NW triggered mechanism).



- Support the following mobility cases with harmonized framework
  - LTM based SCG change (candidate SCG RRC container + LTM)
  - Selective MCG change (candidate RRC container with MCG + UE based trigger condition)
  - Leverage the early TA acquisition and RACH-less HO to UE based trigger mechanism
  - Support simultaneously configuration of UE based trigger condition (e.g. timer based CHO for NES cell) and NW based trigger mobility (e.g. LTM)

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Thanks

Tomorrow never waits