

5G

Further Mobility Enhancement in Rel-19

Agenda Item: 8A.2.6

Source: Lenovo

Document for: Discussion

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+ Rel-19 Mobility Overview

❖ Mobility Enhancement

- ❖ Mobility evolution in 3GPP
- ❖ Inter-CU LTM
- ❖ LTM with DC
- ❖ Condition based LTM

+ Mobility evolution in 3GPP

R12 LTE

- RP-132069(DC)
 - Two eNBs involved in DC
 - MCG Bearer/SCG Bearer/Split Bearer
 - RRC located in MeNB
- LTE/WLAN interworking

R16 5G

- Conditional handover(CHO) for both LTE and NR
- SN initiated Intra-SN Conditional PSCell Change (CPC) for both NR MN and LTE MN

R13 LTE

- HeNB supported as seNB
- Support of SIPTO@LN and LIPA for DC
- Handover without SeNB change
- UL split bearer
- LWA

R17 5G

- CHO with one target SCG
- CPA
- Inter-SN CPC
- Deactivated/activated SCG

R14 LTE

- RACHless
- MBB(Make-before-break)
- eLWA

R18 5G

- Intra-DU LTM
- Intra-CU Inter-DU LTM
- SCG Selective Activation in NR-DC
- CHO with one or more candidate SCG

R15 5G

- MR-DC with the EPC
 - EN-DC
- MR-DC with the 5GC
 - NGEN-DC
 - NE-DC
 - NR-DC

R19 5G

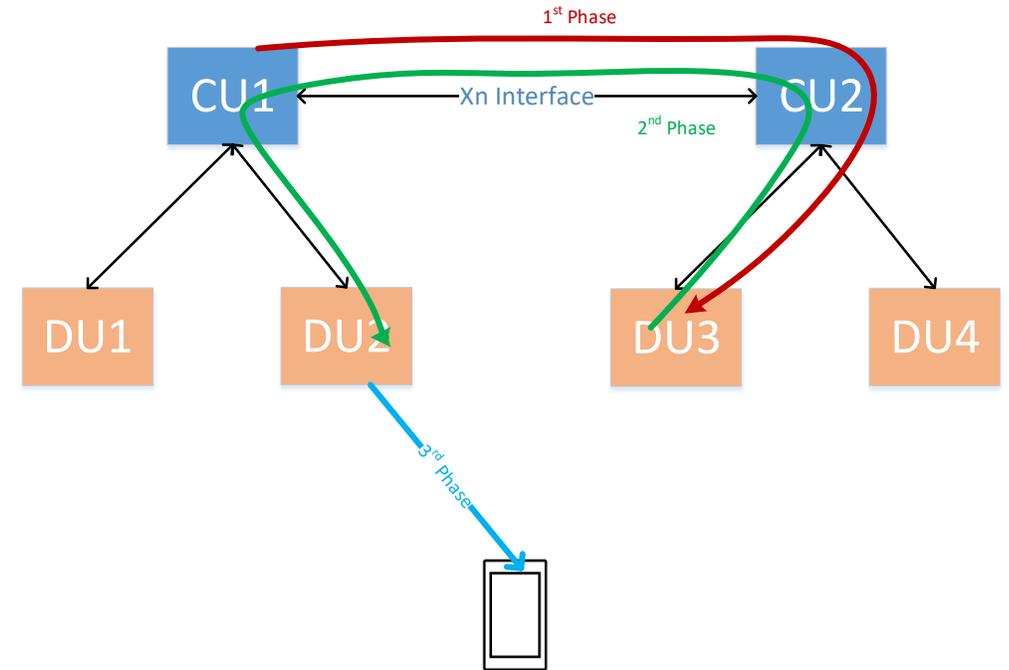
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+ Inter-CU LTM

- **Motivation:**

In Rel-18 LTM, only Intra-CU is supported for LTM. The feature of early TA is introduced to reduce interruption time during mobility. In addition, subsequent LTM is also supported to reduce signaling overhead. It is natural that we can extend to support Inter-CU LTM. The general procedure for Inter-CU is illustrated in the figure.

- **First Phase:** Source CU/gNB initiates LTM preparation.
- **Second Phase:** Target CU/gNB prepares LTM candidate cell configuration. RACH resource for Early TA may be included.
- **Third Phase:** UE executes LTM upon reception of LTM cell switching command. Subsequent LTM also can be supported.



- **Proposals:**

- **Inter-CU LTM including subsequent LTM can be supported in Rel-19.**

+ LTM with DC

• Motivation

In Rel-18 Intra-CU LTM, the case of PCell change by LTM, without SCG, is supported. Namely, if there is an SCG configuration it is released at LTM execution or before LTM execution.

- Use Case #A: UE is configured with MCG and SCG, and after performing the MCG LTM, it is still in NR-DC. More specifically, LTM candidate cell configuration may include both MCG and SCG configuration. The PSCell can be same or different.
- Use Case #B: UE is configured with MCG only. After performing the MCG LTM, it is in NR-DC. Namely, LTM candidate cell configuration may include both MCG and SCG configuration.

• Proposals:

- **MCG LTM execution maintaining or leading to NR-DC can be supported at least for Intra-CU case.**

+ Condition based LTM

• Motivation

- In traditional L3 handover, condition based handover is introduced to avoid missing the reception of handover command. Then, condition based HO can improve the robustness. The missing of reception of LTM cell switching command may also happen as traditional L3 handover. If condition based LTM can be supported, the condition could be L1 condition. DU may be responsible for condition configuration.
- In Rel-18 LTM, early TA acquisition is agreed. Regarding condition based LTM, TA value should be transmitted to UE in advance if RACH based early TA is applied. Or UE based TA acquisition is applied.

• Proposals:

- **Condition based LTM can be supported in Rel-19.**

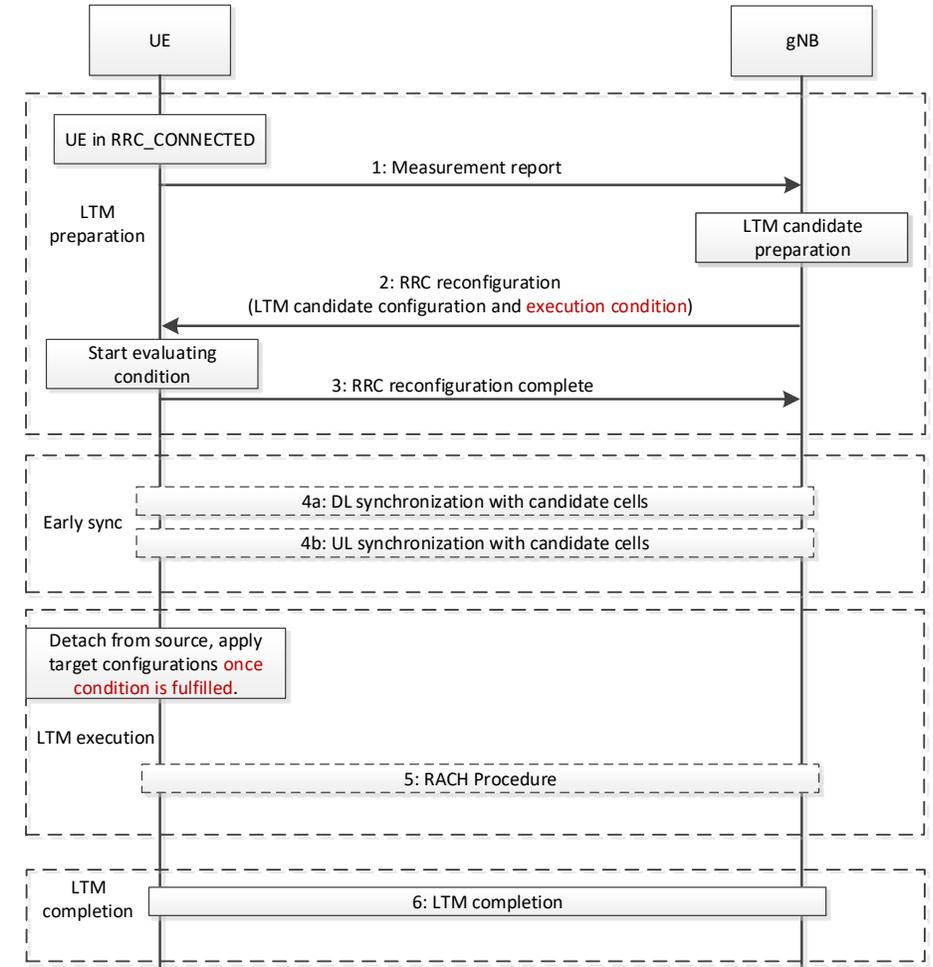


Fig. Condition based LTM (Intra-CU)

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thanks.