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Mobility Enhancements in Rel-19

AGENDA ITEM: 8A.2.6 MOBILITY ENHANCEMENTS

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Introduction

- The following mobility functions have been supported in NR：
  - Rel-18：
    - Intra-DU LTM and Intra-CU Inter-DU LTM
    - Subsequent CPAC
    - CHO including candidate SCGs for CPAC
  - Rel-17：
    - Inter-SN CPC and CPA
  - Rel-16：
    - CHO and Intra-SN CPC
    - DAPS

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LTM enhancements

Motivation

- LTM has been supported to achieve fast inter-cell mobility with low interruption. And the sequential L1/L2 cell change between candidates without RRC reconfiguration has been supported in Rel-18 LTM
- In Rel-18, only Intra-DU LTM and Intra-CU Inter-DU LTM are supported.
  - Legacy Inter-CU mobility including CHO and L3 handover can not be triggered by L1/L2 signalling.
- In Rel-18, the following cases for LTM are supported and other MCG/SCG cases are not supported.
  - The case of PCell change (MCG) by LTM without SCG (If there is an SCG configuration it is released at LTM execution)
  - The case of SCG LTM without MN involvement
- Rel-18 LTM can only be triggered by network command and conditional LTM can be considered to improve robustness.

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LTM enhancements

Potential working scope

- To specify mechanism and procedures of LTM enhancements:
  - Inter-CU LTM
    - To allow sequential L1/L2 cell change between Inter-CU candidate cells without RRC reconfiguration
    - CU-CU interface signalling to support LTM
    - To avoid Key reuse for subsequent Inter-CU LTM
    - Rel-18 Intra-CU LTM is used as the baseline
  - LTM in NR-DC
    - SCG LTM with MN involvement to support SCG addition and inter-SN SCG change by LTM
    - MCG LTM with/without SCG change
  - Conditional LTM
    - Execution condition based on L1/L3 measurement
    - Early TA acquisition

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Subsequent CHO

Motivation

- In Rel-16 and Rel-17, CHO and CPAC have been introduced to improve the robustness and UE should release stored all conditional configurations after successful completion of SpCell change procedure.
- In Rel-18, to reduce signalling overhead and interrupting time, the selective activation of the cell groups has been discussed. In selective activation of the cell groups, UE should keep conditional configurations after SpCell change for subsequent mobility without RRC reconfiguration.
- In Rel-18, the selective activation of the cell groups focuses on SCG and there's no time for MCG. And the terminology of the selective activation of SCG is “subsequent CPAC”

Potential working scope

- To specify mechanism and procedures of subsequent CHO:
  - To allow subsequent MCG change after changing MCG without reconfiguration and re-initiation of CHO
  - Subsequent CHO in NR-DC
    - Subsequent CHO with/without SCG change
    - Subsequent CHO with candidate SCGs for subsequent CPAC

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Coexistence of LTM and CHO/CPAC

Motivation

- In Rel-16 and Rel-17, CHO and CPAC has been supported.
- In Rel-18, LTM has been introduced.
- The LTM candidate configuration is not able to be used for CHO/CPAC, and the CHO/CPAC candidate configuration is not able to be used for LTM. However, both the CHO/CPAC candidate configuration and the LTM candidate configuration can be described by *RRCReconfiguration* message

Potential working scope

- To specify mechanism and procedures of the coexistence of LTM and CHO/CPAC.

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Conclusion

Motivation

- Extend the applicable scenarios of LTM to support Inter-CU LTM and LTM in NR-DC achieving mobility with low latency and interruption and Consider conditional LTM to improve robustness.
- Support subsequent CHO after MCG change, without reconfiguration and re-initialization on the CHO preparation from the network to reduce the signalling overhead and interrupting time for MCG change.
- The LTM candidate configuration is not able to be used for CHO/CPAC, and the CHO/CPAC candidate configuration is not able to be used for LTM.

Proposal: The following objectives can be considered for Mobility Enhancements in Rel-19

- To specify mechanism and procedures of LTM enhancements:
  - Inter-CU LTM
  - LTM in NR-DC: SCG LTM with MN involvement and MCG LTM with/without SCG change
  - Conditional LTM
- To specify mechanism and procedures of subsequent CHO.
- To specify mechanism and procedures of the coexistence of LTM and CHO/CPAC.

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Thanks

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