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Views on Rel-18 MUSIM enhancements

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Document for: Discussion

Outline

- Discussion on conclusions from NWM
- Topics we like to discuss further
- Recommendation for the WI

Moderator Conclusions from NWM

- The Moderator put “MUSIM Enhancements” in the list of “Less Contentious Items” since there was wide support and relatively little disagreement.
- The Moderator captured the following the Areas/Scope for MUSIM Enhancements:
  - Enhancements for staying in RRC_CONNECTED state simultaneously on two NWs (main target is dual RX dual TX UEs). Support of dual connectivity during network switching scenarios.
    - UE capability coordination/update with NW A when it turns partial TX or RX chains to NW B.
    - Enhancements to UE request for SCell / SCG deactivation, release etc.
- The Moderator also had the following notes in the conclusion:
  - A MUSIM enhancements WI with the scope below seems acceptable. There were some comments on UE capability update misuse, but no concrete arguments were provided. (Possibly this need to be further discussed).

Comments on Moderator Conclusions

Scope and Areas

- There was almost consensus that UE capability coordination or update is necessary to support dual active connections.
- The Moderator conclusion has the phrase “when it turns partial TX or RX chains to NW B”:
  - This is unnecessary text. When the UE decides to perform capability update will not be specified as it is UE internal implementation and not testable.
    - Just like Rel-17 MUSIM will not specify when a UE can request “gaps” for activity on the other NW or decide to leave one NW or send a busy indication.
- Similarly, the text “main target is dual RX and dual TX UEs” has no impact on the actual specification work:
  - For example, Rel-17 MUSIM enhancements can be used by any type of UE.
  - It can be put in the Justification of the Work Item if needed.

Topics we like to discuss further

TDM

- Rel-17 MUSIM will introduce a basic TDM structure (called “gaps”) so that the UE can perform Idle/Inactive mode tasks (e.g. paging monitoring) on NW B while staying connected in NW A.
- TDM will also be beneficial for dual-active operation, even with dual tx/rx:
  - Due to the limited UE power, transmitting on both links simultaneously can be less efficient than using TDM and full power on each link.
- We suggest that “Enhancements for Rel-17 MUSIM gaps” should be included in the WI scope:
  - This can be limited to the uplink transmissions only.

Topics we like to discuss further

Intra-PLMN optimizations

- In many countries, the users have multiple subscriptions with the same operator.
- When the MUSIM UE is connected to the same network, many optimizations are possible.
- Some of these optimization can be done as UE implementation, e.g. selecting the same cell for camping.
- However, mobility and RRM are NW controlled and thus a gNB implementation can do a lot more if it is aware that the MUSIM UE is connected to the same gNB:
  - An operator may be more motivated to support/optimize MUSIM operation within its own network.
- A basic mechanism for this can be introduced very easily and should be added to the objectives as follows:
  - The UE informing the gNB that the dual-active connections are with the same gNB.

Recommendation for the WI

Scope and objectives

- The objectives listed by the Moderator are well known and understood:
  - UE capability coordination/restriction was even captured in the NR Study Item TR.
  - A basic mechanism of UE request for SCell/SCG deactivation/release is also supported in Rel-17.
- Based on above, we do not see a need for a Study Item phase.
- As discussed in the previous slides, we suggest adding these two objectives to the WI:
  - Enhancements to Rel-17 MUSIM TDM (“gaps”) operation, at least for uplink, to support dual-active connections.
  - The UE informing the gNB that the dual-active connections are with the same gNB.
- The Moderator Note on “UE capability update misuse” is not warranted and should not be in the WI scope discussion :
  - Rel-17 MUSIM WI is already introducing enhancements for MUSIM UEs. However, there won’t be any requirements/tests to verify the “MUSIM” condition.
  - A UE has no motivation to reduce its capability for any other reason.

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