3GPP TSG RAN Meeting #92-e
Electronic Meeting, June 14 - 18, 2021

RP-211416

Views on RAN4 RRM 'TEI' Topics

Agenda Item: 9.11
Source: Intel Corporation
Document for: Discussion/Decision

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Background

- In the previous RAN4 meetings, several RRM-relevant 'TEI16' topics were raised by companies, which received echo in the group that they should be addressed in the future
  - NeedForGap RRM requirements [1]
  - Intra-band non-contiguous CA/EN-DC MRTD requirements [2]
  - FR1+FR1 NR-DC RRM requirements [3]
  - Per-FR gap UE capability enhancement [4]

  Note: References are for information. Not all WF-s above are approved.
- However, there is no proper WI for the raised topics and those issues are not qualified to become TEI objectives according to RP-210826 due to potentially larger scope, which would require > 1 meeting cycle to complete
- The topics were proposed as TEI16, but due to a late stage of Rel-16 any further extension of the scope should be minimized.
- RAN discussion and decision on how to handle the above mentioned 'TEI' topics is recommended to be made
- Release independent aspects of the raised topics were mentioned in RAN4 discussions and should be addressed as well

Candidate RRM 'TEI' objectives (1)

FR1 + FR1 NR-DC RRM requirements

Background

- FR1 + FR1 NR-DC BCs were introduced in R16, however a very limited set of RRM requirements was defined in R16 (MRTD/MTTD).
- Many companies see FR1-FR1 NR-DC RRM requirements as the pre-requisite for feRRM WI objective on HO with PSCell

Candidate objectives

- Specify RRM requirements for FR1 + FR1 NR-DC
  - Number of serving carriers requirement
  - PSCell addition and release delay requirement
  - PSCell change and conditional PSCell change delay requirements
  - Scheduling availability of UE during RLM and BFD
  - CSSF for NR-DC
- Study possibility of release independence from R16

Expected workload: ~2-3 quarters

NeedForGap RRM requirements

Background

- RAN2 introduced NeedForGapInfoNR capability in TEI16
- RAN4 impact is non-trivial for UE capable of no-gap measurements
- RAN4 consensus is that measurement requirements need to be updated [1], however it is FFS whether the topic can fit Rel-17 scope

Candidate objectives

- Specify interruption due to retuning the vacant chain
- Impacts on RRM measurement requirements with gaps
  - CSSF
  - Measurement period
  - Scheduling restrictions
- Study possibility of release independence from R16

Expected workload: 2~3 quarters

Candidate RRM 'TEI' objectives (2)

Per-FR gap indication enhancement

Background

- RAN4 discussed potential constraints of per-FR gap capabilities.
- RAN4 consensus that further studies on enhancements in indicating UE per-FR gap capabilities can be helpful
- Per-BC indication of per-FR gap capabilities was proposed by several companies

Candidate objectives

- Enhance indication of UE per-FR gap capabilities
- Study Per-BC indication of per-FR gap capabilities impacts
  - All DL interruptions involving FR1+FR2 BC
  - Delay at activation of multiple DL Scells
  - Delay at all kinds of BWP switch on multiple CCs
  - Additional delay of measurement reporting upon SRS carrier switch
  - Autonomous gaps
- Other indication is not precluded

Expected workload: ~2 quarters

Intra-band non-contiguous CA/EN-DC MRTD

Background

- The intention is to introduce UE support of intra-band non-contiguous CA or EN-DC with non-collocated network deployments
- A WF in [2] was agreeable in RAN4 and provided a set of candidate objectives

Candidate objectives

- At least the following aspects are studied
  - Baseline on UE RF architecture
  - Baseline on BS RF architecture
  - Power imbalance between 2 CCs in the same band
  - MRTD and MTTD requirements
  - Others

Expected workload: ~2 quarters

Views on Handling of RAN4 RRM 'TEI' objectives

Intel's views

- The proposed candidate RRM objectives reflect urgent technology requests. We see the significance behind them from both technical and business perspectives.
- The topics cannot be qualified as pure TEI topics based on RP-210826 and will require ~2-3 meeting cycles to complete
- The capacity of RAN4 is quite full and further extension of existing WI(s) or creation of a new WI should be handled with care to consider the balance between scope and workload of the group
- Further prioritization and down-scoping of the candidate objectives is required if the topics will be considered in Rel-17
- RAN#92e should guide RAN4 on how to handle the proposed objectives in RAN4 and whether the topics can be treated in Rel-17 or shall be considered for Rel-18

Proposals

- Further discuss and decide on how to handle each of the candidate RRM 'TEI' topics
  - Option 1: Allow a limited NR Rel-17 scope extension to fit additional RRM objectives
    - Option 1A: Schedule work to start in Q4'2021 and aim to complete by March'2022.
    - Further discuss whether to extend the scope of the existing Rel-17 FeRRM WI, Rel-17 MG Enh WI or create a separate WI
  - Option 2: Consider the objectives as candidate objectives for Rel-18

Note: Details of candidate objectives are provided in the companion draft WID [5] to facilitate discussion in case a further Rel-17 scope extension is considered.

References

[1] R4-2108039, WF on NeedForGap measurements, Ericsson

[2] R4-2108221, WF on MRTD requirements for FR1 intra-band non-contiguous NR-CA/NR-DC, Huawei

[3] R4-2108045, WF on further RRM enhancement for NR and MR-DC – HO with PSCell, vivo

[4] R4-2108332, WF on per-BC indication of per-FR measurement gap UE capabilities, Qualcomm

[5] RP-211417, New WID: RRM TEI requirements, Intel Corporation

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