3GPP TSG RAN#98-e
Electronic Meeting, Dec. 12-16, 2022
Agenda Item: 9.3.2.8

RP-223015

Qualcomm

RedCap CFR for MBS broadcast

Qualcomm, Verizon, Ericsson, FirstNet

Background

- Rel-17 introduced Multicast and Broadcast Services (MBS) for NR.

- RAN received LS from SA2 (RP-221041) where one of the questions for MBS broadcast was:

  "Question 1: Whether, similarly to eMBMS case for eMTC/NB-IoT, would it be useful for NG-RAN to receive from 5GC information on NR UE capabilities (e.g. RedCap) of the target recipients of MBS data in MBS broadcast mode."

- Support of MBS by RedCap UEs was discussed in RAN#96, where following was proposed (see RP-221335):
  - confirm that a RedCap UE supporting FG33-1 supports MBS broadcast
  - revise the Rel-18 MBS WI to enable separate CFR configuration for RedCap UEs

- In the offline discussion during RAN#96, it was proposed to postpone the discussion of potential Rel-18 enhancements until RAN#97 (see offline report in RP-221782).

Background

- No conclusion was made on whether/how to update the WID, however a reply LS to SA2 was approved (see RP-221861) indicating

  "RAN#96 has concluded that Rel-17 specifications do not prevent any UE, including RedCap UEs, to support MBS."

- Proposals related to up-scoping/down-scoping of any/all Rel-18 WIs were not entertained in RAN#97-e.

- In the meantime, SA2 has concluded the KI#5 on "Coexistence with existing power saving mechanisms for capability-limited devices" and captured the following (see TR 23.700-47 section 8.5)

  "How to support NR capability-limited (RedCap) UEs in MBS will be decided in normative phase considering possible related decisions of RAN WGs"

- Sourcing companies propose this outstanding item should be addressed by RAN#98-e.

Problem description

- R2-2212271 explained the potential issues for network to efficiently support both RedCap and normal UEs, and made following observations

  Observation 1: A RedCap UE cannot receive MBS broadcast when the bandwidth of the configured CFR in SIB20 exceeds the UE's capability.

  Observation 2: The gNB does not have an accurate view of the interest of RedCap UEs in MBS services, and it may not be desirable to lower the bandwidth for all UEs and all MBS broadcast services to support some RedCap UEs.

- Following was proposed in RAN2; however, it was not discussed because there was no directly mapped objective in the WID.

  "Introduce a separate RedCap CFR which can be used when the configured bandwidth for the default CFR in SIB20 exceeds the RedCap capability."

Proposal to RAN#98

- Sourcing companies believe that the amount of work to enable the network to configure separate RedCap CFR when needed is minimal, specification impact is limited to RAN2, and benefits to the network to enable the MBS services to both RedCap and normal UE efficiently are substantial. The proposed changes only impact RedCap UEs supporting MBS broadcast.

- Therefore, following is proposed to RAN#98-e:

  Proposal: Add an objective to Rel-18 NR MBS WI: “Introduce signaling for a separate RedCap CFR for MBS broadcast which can be used when the configured bandwidth for the default CFR in SIB20 exceeds the RedCap capability [RAN2]”.

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