

3GPP SA2 #124

Reno, NV, USA, 27 November- 1 December 2017

Agenda item: 7.1

S2-178499

eMBMS evolution for 5G

Source: Qualcomm Inc.



A premise on eMBMS

- “eMBMS” for LTE/EPS refers to **two variants** of the technology that are worth spelling out clearly
- (1) eMBMS as a **“radio-centric” multicast mechanism** for a more efficient delivery of data over the radio interface, i.e. enabler for a mixed mode between multicast & unicast
 - From technical point of view, it does NOT require usage of the BMSC-based system architecture, nor of any specific service layer
 - Primary use case is constituted by “unicast operators” that also want to be able to do multicast
- (2) eMBMS as a **“standalone” cellular-based broadcasting solution**
 - This one may or may NOT require a specific broadcasting-based / BMSC-based system architecture & it may benefit (but does not require) the usage of specific service layer
 - Primary use case is constituted by operators mainly focused on broadcasting

A premise on eMBMS (cont.)

- We propose to distinguish those two use cases with the correct terminology from now on
- “Mixed mode” → radio-based multicast, to be designed in a way such that it can efficiently share resources with unicast
- “Standalone MBMS” → cellular-based broadcasting solution, to be designed keeping in mind the end-to-end system architecture

Our proposal on the evolution of MBMS in 5G era

- The evolution of MBMS needs to take into account this fundamental distinction
- Thus, we propose the following
- **“Mixed mode”** → eventually, this should be studied as part of NR/5GS evolution
 - It does not necessarily need to be called “eMBMS” as it really is efficient about having an efficient RAN multicast to coexist with unicast
- **“Standalone MBMS”** → the starting point for this should be the Release 14 LTE EnTV work
 - Are there 5G RAN or system requirements for broadcasting that are not met by LTE EnTV?
 - If so, which ones?
 - Maybe this will result in an evolution of LTE EnTV to be called “5G”. Note that this approach is the same one we are following for NB-IoT/eMTC with respect to 5G mMTC

Conclusions

- We propose to consider **separate** evolution path for standalone and mixed mode
- **5G standalone MBMS** should be based on Rel-14 EnTV in RAN
 - The starting point is a careful gap analysis to identify enhancements necessary
 - When do we need to evolve the MBMS architecture in CN to 5GC? E.g. enable CP-UP split, evolve BM-SC? Consider 5G subscription model for MBMS?
- **5G NR mixed mode multicast/unicast** should be based on NR and 5GS
 - E.g. should remove inefficiencies of eMBMS resource allocation & should provide a unified framework for “low latency” industrial applications, V2X etc
 - System architecture needs to be studied in SA2 but 5G System “unicast” architecture can be considered the basis