3GPP RAN #77
September 11 - 14, 2017
Sapporo, Japan
Agenda Item 10.1.1

RP-171602

Motivation for WID on dedicated 5G MBMS for LTE

Qualcomm Incorporated

Background

Discussion in RAN#75

- WF on multicast/broadcast specifications (RP-170774)
  - Supported by Qualcomm, BBC, BT Group, Cellnex Telecom, Dish Network, EBU – European Broadcasting Union, ETRI, Fraunhofer IIS, IRT - Institut für Rundfunktechnik, Nomor Research GmbH, one2many, Rhode & Schwarz, Samsung, Telefonica, Telstra Corporation, Thales, UPV/EHU - Universidad del País Vasco/Euskal Herriko Unibertsitatea

- Proposals:
  - NR should be forward compatible to support MBMS services
  - <u>Perform gap analysis for dedicated eMBMS in the LTE track</u>
  - Agree Study Item in the NR track to adopt mixed unicast / multicast service in an NR carrier

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Requirements in TR 38.913

9 Supplementary-Service related requirements

9.1 Multimedia Broadcast/Multicast Service

1. The new RAT shall support existing Multicast/Broadcast services (e.g. download, streaming, group communication, TV, etc.) and new services (e.g. V2X, etc).
2. The new RAT shall support dynamic adjustment of the Multicast/Broadcast area based on e.g. the user distribution or service requirements.
3. The new RAT shall support concurrent delivery of both unicast and Multicast/Broadcast services to the users.
4. The new RAT shall support efficient multiplexing with unicast transmissions in at least frequency domain and time domain.
5. The new RAT shall support static and dynamic resource allocation between Multicast/Broadcast and unicast; the new RAT shall in particular allow support of up to 100% of DL resources for Multicast/Broadcast (100% meaning a dedicated MBMS carrier).
6. The new RAT shall support Multicast/Broadcast network sharing between multiple participating MNOs, including the case of a dedicated MBMS network.
7. The new RAT shall make it possible to cover large geographical areas up to the size of an entire country in SFN mode with network synchronization and shall allow cell radii of up to 100 km if required to facilitate that objective. It shall also support local, regional and national broadcast areas.
8. The new RAT shall support Multicast/Broadcast services for fixed, portable and mobile UEs. Mobility up to 250 km/h shall be supported.
9. The new RAT shall leverage usage of RAN equipment (hard- and software) including e.g. multi-antenna capabilities (e.g. MIMO) to improve Multicast/Broadcast capacity and reliability.
10. The new RAT shall support Multicast/Broadcast services for mMTC devices.

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New WID – Meeting dedicated 5G broadcast requirements

- We propose to start a new WID in the LTE track to perform a *gap analysis* and possible necessary enhancements to meet the 5G broadcast requirements.

- From a preliminary inspection of the objectives, most of the requirements may be already met.

- The main gap may be given by the support of larger cell radius (5th requirement in the previous slide)

Objectives of WID

- Select which 5G requirements from TR38.913 are relevant for dedicated networks.
- Assess which 5G requirements are met by Rel-14.
- For those requirements that are not met, study possible enhancements. Example of requirements that may need improvement:
  - 100km cell radius (including improvements to sync and/or new numerologies),
  - Support of different mobility scenarios (e.g. introducing new numerologies and/or RS patterns)
  - Support of multi-antenna capabilities
- Other objectives: Study/specify support for power-efficient statistical multiplexing.

Thank you

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