SA WG2 Meeting #140E (e-meeting) S2-2007672r04

Elbonia, October 12 – 23, 2020 (was S2-200xxxx)

**Source: Qualcomm Incorporated, CATT**

**Title: Conclusions for Key Issue #1 on Multicast session model**

**Document for: Discussion/Approval**

**Agenda Item: 8.9**

**Work Item / Release: FS\_5MBS**

*Abstract of the contribution: This contribution conclusions to Key issue #1.*

# Background

This contribution provides a way forward for multiple aspects of Key issue #1. It’s merging of the following papers:

[S2-2007264](https://www.3gpp.org/ftp/tsg_sa/WG2_Arch/TSGS2_141e_Electronic/Docs/S2-2007264.zip), [S2-2007265](https://www.3gpp.org/ftp/tsg_sa/WG2_Arch/TSGS2_141e_Electronic/Docs/S2-2007265.zip), S2-2006987, S2-2006896, S2-2006972, S2-2006991, S2-2007513, S2-2007515 and S2-2007566

Note that as a result of merging process, the title of this paper does not match the content anymore.

It focuses on a key disagreement regarding the MBS session model on how the MBS session is identified, with some proposals to use TMGI and some other proposals providing a new scalar or using the IP multicast address.

This document provides a compromise to allow for all options for identification.

# Proposal

It is proposed to document the interim conclusions for Key Issue #1.

**>>>>Start Changes<<<<**

## 8.1 Conclusions for Key Issue #1: MBS session management

### 8.1.1 Interim requirements for conclusions

Conclusions will take into account the following agreed system requirements:

- For multicast solutions, signalling from the UE to the network to join a multicast session shall be supported by UE and network. Join/leave operation via CP (NAS) signalling shall be supported.

Editor's note: It is FFS if the network and UE shall support multicast session join/leave operation via UP e.g. IGMP Join/Leave.

- For N3 transport of the shared delivery method, GTP-U tunnelling using a transport layer IP multicast method and shared N3 (GTP-U) Point-to-Point tunnel shall be supported with support for QoS.

- Both 5GC Shared MBS traffic delivery method and 5GC Individual MBS traffic delivery method shall be standardized for multicast data delivery.

- The network shall be able to prepare and start the multicast traffic transmission for a MBS session after MBS service is started.

- The network shall support selection of MB-SMF or SMF (depending on solution) at session join.

- For N3 transport of the 5GC shared MBS delivery method, for unicast transport there shall be 1-1 mapping between MBS Session and GTP-U tunnel towards a RAN node, and for multicast transport there shall be 1-1 mapping between MBS Session and the GTP-U tunnel.

Editor's note: It is FFS whether or not the evaluation criteria should include the requirement that the application should be not aware of 5GS specific or internal information.

### 8.1.2 Conclusions

Editor's note: Further conclusion continues.

* For MBS session management the following conclusions are reached as baseline for normative work:The MBS session is identified throughout the 5G system transport.on external interface towards AF and between AF and UE, and towards the UEwith an MBS Session ID.

- MBS Session ID can have the following types: TMGI, source specific IP multicast address.

- Source specific IP multicast address can be assigned by 5GC or external network.

Editor's note: It is FFS whether or not to use the Native MBS Transport ID in addition. The Native MBS Transport ID (Similar as PDU session ID) could be assigned by the NEF when neither TMGI nor IP multicast address are used. It is ffs whether the TMGI is only used on external interfaces and mapped towards a source specific IP multicast address for communication within the 5GC.

- The Multicast session model is depicted in Figure 8.1.2-1, with the following conclusions:

- The Multicast Service Context applies when the MBSF is used.

Editor's note: This depends on solution.

- For support of 5GC Shared MBS traffic delivery method and 5GC Individual MBS traffic delivery method:

- Both 5GC Shared MBS traffic delivery method and 5GC Individual MBS traffic delivery method shall be standardized for multicast data delivery. 5GC Shared MBS traffic delivery method is always mandatory, and 5GC Individual MBS traffic delivery is required to support UE mobility to/from non MBS-capable NG-RAN nodes, but otherwise optional .

- The network shall be able to support selection of 5GC Shared MBS traffic delivery method or 5GC Individual MBS traffic delivery method based on criteria of whether RAN node supports 5MBS or not.

Editor's note: It is FFS whether other criteria is needed, e.g. handling of legacy UEs

- MB-UPF acts as the MBS session anchor when 5GC shared MBS traffic delivery method is used, and UPF acts as the unicast session anchor when 5GC individual MBS traffic delivery method is used.

Editor's note: UPF can receive MBS data from MB-UPF or MBSF-U, it is FFS whether UPF can receive MBS data via N6.

- Establishment of the associated PDU Session for 5GC Individual MBS traffic delivery method is based on service requirements, networking configuration, local policy, etc.

- It shall be possible to establish an Associated PDU session for cases where mobility to non-5GMBS-supporting cells happens.

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Figure 8.1.2-1: Merged MBMS session model

- For multicast session establishment/join/leave/release:

- UE shall support multicast session join/leave operation via CP (NAS signalling for SM procedure)

Editor’s note: UP Join is FFS.

- The network shall support selection of MB-SMF or SMF at session join.

- For N3 transport of the shared delivery method, GTP-U tunnelling using a transport layer IP multicast method and shared N3 (GTP-U) Point-to-Point tunnel shall be supported with support for QoS.

- For N3 transport of the 5GC shared MBS delivery method, for unicast transport there shall be 1-1 mapping between MBS Session and GTP-U tunnel towards a RAN node, and for multicast transport there shall be 1-1 mapping between MBS Session and the GTP-U tunnel.

- For N9 transport of the 5GC Individual MBS traffic delivery method, GTP-U tunnelling using a transport layer IP multicast method and shared N9 (GTP-U) Point-to-Point tunnel shall be supported.

- For N9 transport of the 5GC Individual MBS traffic delivery method, for unicast transport there shall be 1-1 mapping between MBS Session and GTP-U tunnel towards a UPF, and for multicast transport there shall be 1-1 mapping between MBS Session and the GTP-U tunnel.

- The network may support indicating of N6 tunnel information for receiving traffic of a MBS session to the AF.

- For multicast service parameters storage, the UDR shall be able to store the AF provisioned or preconfigured service parameters per MBS session, the PCF shall be able to provide policy and QoS requirement per MBS session to the MB-SMF.

- For UE receiving MBS traffic moving from one RAN node to another in CM-CONNECTED and RRC-CONNECTED state, handover procedure with MB context shall be supported by UE and network.

- When MBS session is released, the N3 transport of the 5GC shared MBS delivery method is released and the radio resource associated with the MBS QoS Flows are released, or the N3/N9 transport of the 5GC Individual MBS traffic delivery method is released and the radio resource associated with the QoS Flows are released.

Editor’s note: Whether an MBS session deactivation and activated is supported relies on RAN WG feedback.

Editor’s note: This list of conclusions is non-exhaustive.

Editor's Note: Coordination with RAN WGs are needed.

**>>>>End Changes<<<<**