**SA WG2 Meeting #S2-143E S2-200xxxx**

**February 24 – March 9 2021, Elbonia**

**Source: Qualcomm, vivo?**

**Title: Architecture proposal for 5G MBS**

**Document for: Approval**

**Agenda Item: 8.9**

**Work Item / Release: FS\_5MBS / Rel-17**

*Abstract of the contribution: Propose architecture for 5G MBS.*

# 1 Introduction

This paper proposes the architecture for 5G MBS.

# 3 Proposal

**FIRST CHANGE (NEW TEXT)**

## 5.1 General architecture

Figure 5.1-1 depicts the 5G MBS reference architecture. Service-based interfaces are used within the Control Plane.



**Figure 5.1-1: 5G MBS system architecture**

NOTE 1: The MB-SMF is an enhanced SMF and the MB-UPF is an enhanced UPF. The MBSF is optional and is embedded in NEF, the MBTF is an optional network function.

NOTE 2: The existing service based interfaces of Nudm and Nsmf are enhanced to support 5G MBS. The existing service based interfaces of Nudsf, Npcf, and Nnef are enhanced to support 5G MBS depends on deployment.

Editor’s note: Which NF is used to store service parameters, including serving MB-SMF information, is FFS.

Figure 5.1-2 depicts the 5G MBS system architecture using the reference point representation showing how various network functions interact with each other.



**Figure 5.1-2: 5G MBS system architecture in reference point representation**

NOTE 3: The existing reference points of N1, N2, N10, N11, and N16 are enhanced to support 5G MBS. The existing reference points of N7, N18, N29 and N33 are enhanced to support 5G MBS depends on deployment. The N4 reference point between NEF (MBSF) and MBSTF is enhanced to support 5G MBS service level management required by AF/Application Server.

**Next Change**

## A.x Annex X (Normative): Configuration options at Service and/or Application for MBS

Figure A.x-1 provides the reference architecture with all configuration variants for Application Function interaction with 5G Core Network, usage of NEF or MBSF-C in the control plane, and usage of N6, MB2-C or xMB-U in user plane.



Figure A.x-1: Configuration options at Service and/or Application

The following characteristics describe each of the Configuration options:

- Configuration Option 1: No MBSF:

- This configuration may be used for Transport Only Mode, when the Multicast service or Broadcast service does not require service layer interworking with LTE MBMS.

- The control plane entry point from the Application Function to request establishment of an MBS session is the NEF via N33.

- The user plane entry point for the Application Function is the MB-UPF via N6.

- Configuration Option 2: MBSF, N33 towards AF:

- This configuration may be used for Service Mode, or when interworking with LTE MBMS is required.

- The control plane entry point from the Application Function to request establishment of an MBS session is the NEF via N33.

- The user plane entry point for the Application Function is the MBSTF via MB2-U or xMB-U.

- The NEF and MBSF may be collocated.

- If the MBSF is not collocated with the NEF, the reference point between the NEF and MBSF is MB2-C or xMB-C.

- Configuration Option 3: MBSF, MB2-C/xMB-C towards AF:

- This configuration may be used for Service Mode, or when interworking with LTE MBMS is required.

- The control plane entry point from the Application Function to request establishment of an MBS session is the MBSF via MB2-C or xMB-C.

- The user plane entry point for the Application Function is the MBSF via MB2-U or xMB-U.

For service mode, MBSF shall be used, i.e. either Configuration 2 or Configuration 3 shall be used.

For Transport Only mode:

- If interworking with LTE MBMS is required for the service, MBSF shall be used, i.e. either Configuration 2 or Configuration 3 shall be used.

- If interworking with LTE MBMS is not required for the service, MBSF is optional.

MBSF-U shall be used when MBSF is used.

Any particular deployment may support any combination of these configurations.

**End Changes**