**SA WG2 Meeting #S2-142E S2-2008802**

**November 16 ~ 20, 2020, Elbonia**

**Source: vivo**

**Title: Functional entities**

**Document for: Approval**

**Agenda Item: 8.9**

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

*Abstract of the contribution: Functional entities.*

# 1 Introduction

This paper proposes Functional entities.

# 2 Discussion

The current example call flow indicates that the discovery of MB-SMF is from NRF, which does not impact NRF if NF type for MB-SMF is different from the NF type for SMF or inputs of the discovery indicates the NF service names provided by MB-SMF instead of SMF.

The current example call flow also indicates that NRF is able to discover MB-SMF for an MBS Session and BSF is able to discovery PCF for an MBS Session, which impacts NRF and BSF. The NEF (MBSF) or UDSF are more suitable for those purposes considering that anyway they are enhanced to support 5MBS.

**Proposal 1: For the sake of less impact on 5GC, BSF are not impact and NEF (MBSF)/UDSF stores the session parameters including serving MB-SMF and PCF.**

# 3 Proposal

It is proposed to approve following changes:

\* \* \* \* First change \* \* \* \*

5.3.2 Functional entities

#### 5.3.2.1 PCF

The PCF performs the following functions to support 5MBS if dynamic PCC for 5MBS is needed:

- Support QoS handling for MBS Session.

- Provide policy information regarding the MBS Session to MB-SMF for authorizing the related QoS profiles.

- May interact with UDSF or NEF (MBSF) for QoS information retrieval.

#### 5.3.2.2 MB-SMF

The MB-SMF performs the following functions to support 5MBS:

- Supports following functions general for multicast and broadcast sessions:

- Supports MBS session management (including QoS control).

- Configuring the MB-UPF and RAN (via AMF) for multicast and broadcast flows transport based on the policy rules for multicast and broadcast services from PCF or local policy.

- Interacts with NG-RAN (via AMF) for multicast and broadcast data transmission using 5GC Shared MBS traffic delivery method.

- Supports following functions specific for multicast sessions:

- Interacts with SMF to modifying PDU Session associated with 5MBS.

- Controls multicast data transport using 5GC Individual MBS traffic delivery method

#### 5.3.2.3 SMF

The SMF performs the following functions to support 5MBS:

- Selects MB-SMF for multicast session.

- Interacts with MB-SMF to obtain multicast data for individual delivery.

NOTE 1: SMF and MB-SMF may be co-located or deployed separately.

#### 5.3.2.4 MB-UPF

The MB-UPF performs the following functions to support 5MBS:

- Supports following functions general for multicast and broadcast sessions:

- Packet filtering of incoming downlink packets for multicast and broadcast flows.

- QoS enforcement (MFBR) and counting/reporting based on existing means.

- Interaction with MB-SMF for receiving multicast and broadcast data.

- Delivery of multicast and broadcast data to RAN nodes via N3 for 5GC Shared MBS traffic delivery method.

- Supports following functions specific for multicast sessions:

- Delivery of multicast data to another UPF for 5GC Individual MBS traffic delivery method.

#### 5.3.2.5 UPF

The UPF performs the following functions to support 5MBS:

- Interacts with SMF for receiving multicast data from MB-UPF for individual delivery.

- Delivers multicast data to UEs via PDU Session for 5GC Individual MBS traffic delivery method.

- Reports IGMP/MLD data to SMF.

NOTE 1: UPF and MB-UPF may be co-located or deployed separately.

Editor’s note: Whether UP based join/leave needs to be standardised is FFS.

#### 5.3.2.6 AMF

The AMF performs the following functions to support 5MBS:

- Selection of MB-SMF that support 5MBS for MBS Session.

- Selection of PDU Session associated with 5MBS for UE.

- Signalling with NG-RAN and MB-SMF for PDU Session management with MBS Session information.

- Forwarding signalling related to MBS Session resource management between NG-RAN and MB-SMF.

#### 5.3.2.7 NG-RAN

The NG-RAN performs the following functions to support 5MBS:

- Management of MBS QoS flows via N2.

- Delivery of MBS data packets shared for multiple UEs from N3 over radio using PTM or PTP.

- Configuration of UE for MBS QoS flow reception at AS layer.

- Control switching between PTM and PTP delivery per UE.

- Support for multicast sessions continuity during Xn Handover and N2 Handover.

- Support notification of session start over radio.

#### 5.3.2.8 UE

The UE may perform the following functions to support 5MBS:

- Reception of multicast data using PTM/PTP.

- Reception of multicast and broadcast data using PTM.

- Handling of incoming MBS QoS flows.

- Support of signalling for joining and leaving multicast session.

- 5MBS resource management support at AS layer.

- IGMP/MLD data delivery over PDU Session.

Editor’s note: Whether UP based join/leave needs to be standardised is FFS.

#### 5.3.2.9 AF

The AF performs the following functions to support 5MBS:

- Requesting multicast or broadcast service from the 5GC by providing service information to NEF (MBSF).

- Negotiating with NEF (MBSF) for MBS related service exposure.

- Instructing MBS session operation towards 5GC if needed.

#### A.3.2.10 NEF (MBSF)

The NEF (MBSF) performs the following functions to support 5MBS:

- Providing an interface to AFs for 5MBS procedures including service provisioning and MBS session and QoS management.

- Interacting with AF and MB-SMF for MBS session operations, determination of transport parameters, and session transport.

- Selection of serving MB-SMF for an MBS Session.

- Management of session parameters, which includes QoS requirements, and may include serving PCF and serving MB-SMFs.

- Performing the following functions provided by MBSF:

- Service level functionality to support 5MBS, and interworking with LTE MBMS

- Controlling MBTF if the MBTF is used.

- Determination of sender IP multicast address for the MBS session if IP multicast address is sourced by MBTF.

NOTE 1: MBSF functionality related to service and MBS data handling (e.g. encoding) is to be determined with SA4.

#### 5.3.2.11 MBTF

The MBTF performs the following functions to support 5MBS if deployed:

- Media anchor for MBS data traffic if needed.

- Sourcing of IP Multicast if needed.

- Generic packet transport functionalities available to any IP multicast enabled application such as framing, multiple flows, packet FEC (encoding).

- Multicast/broadcast delivery of input files as objects or object flows.

#### 5.3.2.12 NRF

The NRF performs the following functions to support 5MBS:

- Support discovery of MB-SMF.

#### 5.3.2.13 UDM

The UDM performs the following functions to support 5MBS:

- Support management of subscription for feature level authorization.

#### 5.3.2.14 UDSF (UDR or NEF (MBSF)?)

The UDSF (UDR or NEF (MBSF)?) performs the following functions to support 5MBS if deployed:

- Support management of service parameters, which includes QoS requirement, and may include information of serving PCF and serving MB-SMFs.

- Support management of UE authorization information for multicast session.

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

\* \* \* \* End of changes \* \* \* \*