**3GPP TSG-CT WG1 Meeting #130-eC1-213abc**

**E-meeting, 20-28 May 2021**

**Source: Huawei, HiSilicon**

**Title: New WID on CT aspects of the architectural enhancements for 5G multicast-broadcast services**

**Document for: Endorsement**

**Agenda Item: 17.1.1**

3GPP™ Work Item Description

Information on Work Items can be found at <http://www.3gpp.org/Work-Items>
See also the [3GPP Working Procedures](http://www.3gpp.org/specifications-groups/working-procedures), article 39 and the TSG Working Methods in [3GPP TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm)

# Title: CT aspects of the architectural enhancements for 5G multicast-broadcast services

## Acronym: 5MBS

## Unique identifier: *{A number to be provided by MCC at the plenary}*

Potential target Release: Rel-17

Note that this field above indicates the proposed Release at the time of submission of the WID to TSG approval. It can later be changed without a need to revise the WID. The updated target Release is indicated in the Work Plan.

## 1 Impacts

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Affects:** | UICC apps | ME | AN | CN | Others (specify) |
| **Yes** |  | X |  | X |  |
| **No** |  |  | X |  |  |
| **Don't know** | X |  |  |  | X |

## 2 Classification of the Work Item and linked work items

### 2.1 Primary classification

This work item is a

|  |  |
| --- | --- |
|  | Feature |
| X | Building Block |
|  | *Work Task* |
|  | Study Item |

### 2.2 Parent Work Item

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| Parent Work / Study Items  |
| Acronym | Working Group | Unique ID | Title (as in 3GPP Work Plan) |
| 5MBS | SA2 | 900038 | Architectural enhancements for 5G multicast-broadcast services (5MBS) |

### 2.3 Other related Work Items and dependencies

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| --- |
| Other related Work Items (if any) |
| Unique ID | Title | Nature of relationship |
|  |  | *{optional free text}*  |

**Dependency on non-3GPP (draft) specification**: none.

## 3 Justification

3GPP TS 23.247 "Architectural enhancements for 5G multicast-broadcast services" specifies stage 2 requirements for the SA2 5MBS WID (900038). 5MBS work will likely impact foundation of the stage 2 specifications – 3GPP TS 23.501, 3GPP TS 23.502 and 3GPP TS 23.503.

5MBS need to support interworking with EPC/eMBMS for Public Safety.

Implications on stage 3 interfaces and also protocol enhancements need to be developed by CT WGs.

## 4 Objective

The objective of this work item is to specify protocol enhancements and related APIs for 5G multicast-broadcast services based on the normative stage 2 technical specifications developed by SA2 WG, e.g. 3GPP TS 23.247.

Editor's note 1: SA4 will define stage 2 for Nmb2 interface between MBSF and MBSTF. It is FFS if SA4 will also define stage 3 in coordination with CT3, CT4 and CT6, or if SA4 will delegate stage 3 work to a CT WG.

Editor's note 2: SA2 is discussing further changes to TS 23.247, which may include changes to the interface names, etc. This WID is based on the latest version of the TS 23.247 v0.2.0 (2021-04). Future changes to stage 2 will trigger the WID revision, where the implications on stage 3 will be captured.

**CT1**

- Adding new, 5MBS specific features to the existing 3GPP TS 24.501. The existing reference points of N1 needs to be enhanced to support 5MBS (e.g., establishing a PDU Session associated with multicast sessions, responding to paging with MBS session ID). Support of signalling for joining and leaving multicast session needs to be added.

**CT3**

- Impacts to the PCC framework to support 5G MB session and QoS management.

- Supporting QoS handling for MBS Session.

Editor's Note: Whether the PCF receives MB service information from AF, NEF or MBSF is FFS.

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

- Potential enhancements to the BSF services to support 5G MB session binding.

- Impacts to the UDR services for QoS information retrieval to support 5G MB Session configuration and management procedures.

- Impacts to the northbound interfaces to support 5G MB Session configuration and management by an AF (e.g. service provisioning, MB session and QoS management, etc.).

- Potential impacts to the NEF services or definition of a new NEF service.

- Enhancements to the NEF or definition of a new NEF service to support MB session management procedures (e.g. MBS session start/stop).

- Enhancements to the NEF event exposure to support MBS Session Delivery Status Indication for Broadcast.

- Impacts to support the management of UE authorization information for 5G MB sessions.

- Potential new 5MBS specific interfaces, as follows:

- N7mb between PCF and MB-SMF: Potential new PCF service to support MB Policy Association management and MBS QoS control procedures.

- N6mb between MB-UPF and AF/AS: Potential impacts to the N6 interface defined in 3GPP TS 29.561.

- Nmb5 between NEF and MBSF: Support TMGI allocation and MBS session configuration and management procedures (e.g. MB session start).

- Nmb8 between AF/AS and MBSTF.

- Nmb9 between MB-UPF and MBSTF.

- Nmb10 between PCF and MBSF.

- Nmb12 between MBSF and PCF.

- Nmb13 between MBSF and AF.

- N29mb between MB-SMF and NEF: Potential enhancements to the SMF event exposure service or definition of a new MB-SMF event exposure service to support MBS Session Delivery Status Indication for Broadcast.

- N30 interface: Potential new PCF service to support MB Session management.

- N5 interface: Potential enhancement to support 5G MB services.

- N33 interface: Potential enhancement to support 5G MB services.

**CT4**

- New 3GPP TS for MB-SMF provided services for the new 5BMS features required across the following interfaces:

- Nmb1 between MB-SMF and MBSF/AF.

- N11mb between MB-SMF and AMF.

- N16mb between MB-SMF and SMF.

- N29mb between MB-SMF and NEF (MB-SMF Event Exposure service however is addressed by CT3).

- Adding new, 5MBS specific features to the existing 3GPP TSes (for anticipated impacts see table "Impacted existing TS" in clause 5):

- Enhancements to 3GPP TS 23.003, 3GPP TS 29.502, 3GPP TS 29.503, 3GPP TS 29.510, 3GPP TS 29.518, 3GPP TS 29.571.

- Enhancements to 3GPP TS 29.244 to support N4mb interface between MB-SMF and MB-UPF.

- Enhancements to 3GPP TS 29.281 to support N3mb interface between MB-UPF and NG-RAN and N19mb interface between MB-UPF and UPF.

## 5 Expected Output and Time scale

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| **New specifications** *{One line per specification. Create/delete lines as needed}* |
| Type  | TS/TR number | Title | For info at TSG#  | For approval at TSG# | Rapporteur |
| TS | 29.xxx | 5G System; 5G Multicast-Broadcast Session Management Services; Stage 3 | TSG#94 (2021-12) | TSG#95 (2022-03) | CT4 responsibilityGulbani, Giorgi, Huawei, giorgi.gulbani@huawei.com |

NOTE: New CT3 TSs (indicated in clause 4) will be determined in the next meeting based on the progress of stage 2 requirements.

|  |
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| **Impacted existing TS/TR** *{One line per specification. Create/delete lines as needed}* |
| TS/TR No. | Description of change  | Target completion plenary# | Remarks |
| TS 24.501 | Impacted. For example, UE sends NAS message to the AMF that indicates establishing a PDU Session associated with multicast session(s); to join the multicast group, the UE sends the PDU Session Modification Request (MBS Session ID), etc. | TSG#95 (2022-03) | CT1 |
| TS 23.003 | Impacted, e.g. to define MBS Session ID, TMGI, MBS Service Areas for 5GS. | TSG#95 (2022-03) | CT4 |
| TS 29.244 | Impacted. Implications of N4mb interface between MB-SMF and MB-UPF. Also, e.g. SMF configures the UPF to start/stop receiving multicast data from the MB-UPF, etc. | TSG#95 (2022-03) | CT4 |
| TS 29.281 | Impacted. Implications of N3mb (MB-UPF and NG-RAN) and N19mb (MB-UPF and UPF) interfaces. | TSG#95 (2022-03) | CT4 |
|  |  |  |  |
| TS 29.502  | Impacted. For example, AMF invokes Nsmf\_PDUSession\_UpdateSMContext to SMF with the MBS session leaving information (i.e. leave indication, MBS session ID), etc. | TSG#95 (2022-03) | CT4 |
| TS 29.503  | Impacted. For example, MBS subscription data is provided by the UDM to the SMF during PDU session establishment to give user permission to use multicast services, etc. | TSG#95 (2022-03) | CT4 |
| TS 29.508 | Possible impacts to SMF event exposure to support MBS Session Delivery Status Indication for Broadcast. | TSG#95 (2022-03) | CT3 |
| TS 29.510 | Impacted. For example, to enable exchanging 5MBS specific information, e.g. MBS Session ID, to support registration, discovery and selections of MB-SMF, MB-UPF, etc. | TSG#95 (2022-03) | CT4 |
| TS 29.512 | Possible impacts to support 5G MBS session and QoS management. | TSG#95 (2022-03) | CT3 |
| TS 29.513 | Possible impacts to support 5G MBS session and QoS management procedures. | TSG#95 (2022-03) | CT3 |
| TS 29.514 | Possible impacts to support 5G MBS Session configuration and management by an AF/NEF/MBSF. | TSG#95 (2022-03) | CT3 |
| TS 29.518 | Impacted. For example, enhancements to Namf service over N11 to support transfer of SM PDUs from MB-SMF for broadcast services; inter-AMF mobility of UEs with multicast sessions, etc. | TSG#95 (2022-03) | CT4 |
| TS 29.519 | Possible impacts to support 5G MBS (e.g. management of UE authorization information for multicast session). | TSG#95 (2022-03) | CT3 |
| TS 29.520 | Possible impacts to support 5G MBS. | TSG#95 (2022-03) | CT3 |
| TS 29.521 | Possible impacts to support 5G MB session binding. | TSG#95 (2022-03) | CT3 |
| TS 29.522 | Possible impacts to support 5G MBS Session configuration and management by an AF (e.g. service provisioning, MBS session and QoS management, etc.). | TSG#95 (2022-03) | CT3 |
| TS 29.525 | Possible impacts to UE policy management to support 5MBS. | TSG#95 (2022-03) | CT3 |
| TS 29.561 | Possible impacts to support 5G MBS. | TSG#95 (2022-03) | CT3 |
| TS 29.571 | Impacted. New, 5MBS specific data types need to be defined. For example, MBS Session ID, etc. | TSG#95 (2022-03) | CT4 |

## 6 Work item Rapporteur(s)

Gulbani, Giorgi, Huawei, giorgi.gulbani@huawei.com

## 7 Work item leadership

CT4.

## 8 Aspects that involve other WGs

SA3 (security), SA5 (charging), SA4 (stage 2 for Nmb2).

## 9 Supporting Individual Members

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| Supporting IM name |
| Huawei |
| HiSilicon |
| one2many |
| Nokia |
| Nokia Shanghai Bell |
| Vodafone |
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