**Source: Qualcomm Incorporated, others**

**Title: Updates to WID for 5G Media Streaming Protocols Phase 2**

**Document for: Approval**

**Agenda Item: 6.2**

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: 5G Media Streaming Protocols Phase 2

Acronym: 5GMS\_Pro\_Ph2

Unique identifier: 1000018

Potential target Release: Rel-18

1 Impacts

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

2 Classification of the Work Item and linked work items

2.1 Primary classification

This work item is a …

|  |  |
| --- | --- |
| X | **Feature** |
|  | **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)** |
| 5GMS\_Ph2 | SA4 | 960047 | 5G Media Streaming Architecture Phase 2 |

2.3 Other related Work Items and dependencies

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| **Other related Work Items (if any)** |
| **Unique ID** | **Title** | **Nature of relationship** |
| 840001 | 5GMS3 5G Media Streaming stage 3 | Addressed stage-3 in 5G Media Streaming by updating TS 26.247 as well as new specs in TS 26.511, TS 26.512, and TS 26.117. |
| 900029 | Study on 5G media streaming extensions | Studied the current limitation of 5G Media Streaming architecture and documented possible extensions in TR 26.804. |
| 870014 | Feasibility Study on Multicast Architecture Enhancements for 5G Media Streaming | Identified and evaluated potential enhancements to the 5G Media Streaming Architecture to provide multicast-broadcast media streaming services in TR 26.802. |
| 950014 | Immersive Real-time Communication for WebRTC (iRTCw) | Addresses real-time communication and provides the stage-3 what is defined in TS 26.506 using common functionalities and interfaces for media session handling. |

3 Justification

TS 26.501 defines the 5GMS architecture, call flows, and procedures. TS 26.512 defines the 5G Media Streaming protocols. In the 5GMS\_Ph2 work item, extensions to 5G Media Streaming architecture are provided. In addition, the FS\_5GMS-EXT study has explored several of these topics which are documented in TR 26.804. Similarly, the FS\_5GMS\_Multicast study has identified and evaluated potential enhancements to the 5GMS architecture to provide multicast-broadcast streaming services, documented in TR 26.802.

TS 26.501 has been updated with the following functionalities in the 5GMS\_Ph2 work item

1. Uplink streaming:

- Updated the procedures for uplink streaming to be on par with downlink streaming.

- Included collaboration scenarios and their associated call flows.

- Added informative call flows for connected uplink-downlink media streaming sessions.

2. End-to-end low latency live streaming:

- Inclusion of the collaboration scenarios and call flows for end-to-end low latency live streaming.

- Updating the reference point to support low latency live streaming services.

3. 5GMS over 5MBS and 5GMS hybrid services (5MBS and 5GMS):

- Added call flows and procedures to support carriage of 5GMS streaming sessions over 5MBS.

4. Support for multiple media service entry points

- Updated existing call flows and procedures to support hybrid DASH/HLS delivery in 5GMS architecture.

5. Improved interoperability for deployment of the 5GMS AS in the Trusted DN, including:

- Relevant call flows and procedures to support configuration of 5GMS AS instances by the 5GMS AF.

6. Improved data collection and reporting for the Network Assistance feature including:

- Extension of data collection and reporting architecture instantiation to support the ANBR-based Network Assistance method, including.

- The usage of the appropriate Aggregation Functions for both Network Assistance methods.

In addition, some of the TR 26.804 recommendations are to provide relevant extensions to 5G Media Streaming protocols and formats based on the conclusions in clause 6. Candidates for these extensions are:

1) Stage-3 follow-up work from 5G Media Streaming architecture extensions referred to above based on conclusions in clauses 6.2, 6.5, and 6.11 – this is aligned with the above extensions

2) Extensions to 5GMS protocols to support traffic identification based on the conclusions in clause 6.3

3) Addition of HTTP/3 to the 5GMS protocols as an optional alternative based on the conclusions in clause 6.4.

4) Addition of necessary parameter extensions to the M1, M5, and M6 reference points to provide access to Background Data Transfer based on the conclusions in clause 6.6.

5) Specification of the usage of Oauth 2.0 (according to the SA3 guidelines) for 5GMS protocols based on the conclusions in clause 6.9.

6) Specifications for the 3GPP Service Handler and URL including the necessary functions on UE and device to support automatic launch of 5G System services in the context of 5G Media Streaming based on the conclusions in clause 6.13.

In addition, several small enhancements of existing functionalities have been identified through communication with 5G-MAG based on their work on the reference tools. Small extensions are justified.

In course of the work leading to TS 26.506, commonalities between streaming and real-time delivery were identified. Streaming points to the fact that the media is predominantly sent only in a single direction and consumed as it is received. Real-time communication refers more to bi-directional traffic for which media is delivered in both directions. However, many of the features developed primarily for "5G Media Streaming"-based Session Handling are applicable to different service scenarios.

Based this progress and recommendations, it is well justified to initiate a work item to extend 5G Media Streaming protocols to support the advanced features.

4 Objective

The work item addresses stage-3 support for 5GMS protocol extensions for provisioning, ingest, user plane, control plane and device APIs for the following functionalities:

1. Stage 3 support for uplink streaming as defined in TS 26.501 and based on the conclusions in clause 6.5 of TR 26.804.

NOTE 1: expected efforts medium

1. Stage 3 support for end-to-end low latency live streaming as defined in TS 26.501 and based on the conclusions in clause 6.11 of TR 26.804.

NOTE 2: expected efforts medium

1. Stage 3 support for 5GMS over MBS and 5GMS hybrid services as defined in TS 26.501 and based on the conclusions in TR 26.804 and TR 26.802

NOTE 3: expected efforts medium

1. Stage 3 support for multiple media service entry points as defined in TS 26.501 and based on the conclusions in TR 26.804.

NOTE 4: expected efforts medium

1. Extensions to 5GMS protocols to support traffic identification based on the conclusions in TR 26.804, clause 6.3.

NOTE 5: expected efforts low

1. Addition of HTTP/3 to the 5GMS protocols as an optional alternative based on the conclusions in clause 6.4 of TR 26.804.

NOTE 6: expected efforts low

1. Addition of necessary parameter extensions to the M1, M5, and M6 reference points to provide access to Background Data Transfer based on the conclusions in clause 6.6 of TR 26.804.

NOTE 7: expected efforts medium

1. Specification of the usage of Oauth 2.0 (according to the SA3 guidelines) for 5GMS protocols based on the conclusions in clause 6.9 of TR 26.804.

NOTE 8: expected efforts medium

1. Specifications for the 3GPP Service Handler and URL including the necessary functions on UE and device to support automatic launch of 5G System services in the context of 5G Media Streaming based on the conclusions in clause 6.13 of TR 26.804.

NOTE 9: expected efforts medium

1. Additional minor enhancements based on feedback from 5G-MAG Reference tool developments.

NOTE 10: expected efforts low

1. Specification of a RESTful API at reference point M3 for the configuration of 5GMS AS instances by 5GMS AF based on the conclusions in TR 26.804.

NOTE 11: expected efforts low

1. Specification of data types for data reporting of ANBR-based Network Assistance invocations and (in liaison with CT3) specification of data types for exposure of events relating to invocation of AF-based and ANBR-based Network Assistance.

NOTE 12: expected efforts medium

1. Support a generalized media delivery framework with protocols and APIs for media session handling consolidating the stage-3 specification for reference points M1/RTC-1, M5/RTC-5 and M6/RTC-6

It is encouraged that the work is aligned with 5G-MAG Reference Tools development and proposals are verified through implementation considerations.

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# | Remarks |
| TS | 26.51x | Media delivery; procedures and APIs for provisioning and media session handling | SA#102(Dec 23) | SA#103(Mar 24) | *Rapporteur: Richard Bradbury (BBC)**Specification is also requested as part of the iRTCw work item and not to be duplicated* |

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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 |
| 26.512 | 5G Media Streaming Protocols Phase 2 | SA#103(Mar 24) | Individual CRs for each of the objectives may be provided. |
| 26.247 | DASH extensions for 5G Media Streaming Phase 2 | SA#103(Mar 24) |  |
| 26.517 | Extensions to MBS User Services to support 5GMS | SA#103(Mar 24) |  |
| 26.532 | Extensions to Event Exposure to support Network Assistance | SA#103(Mar 24) | Data reporting via R2 of ANBR-based Network Assistance invocations. |

6 Work item Rapporteur(s)

Thomas Stockhammer, Qualcomm Incorporated, tsto@qti.qualcomm.com, General & for topics 2, 3, 4, 5, 7, 8, 9, 10, 13

Iraj Sodagar, Tencent, irajs@live.com, for topics 1, 6, 11, 12

7 Work item leadership

SA4

8 Aspects that involve other WGs

For objective 12, CT3 on northbound interfaces for Event Exposure.

|  |  |  |  |
| --- | --- | --- | --- |
| 29.517 | Application Function Event Exposure Service; Stage 3 | (CT3 timeline) | Complete specification of event types for Network Assistance data exposure. |

For objective 3, CT3 and CT4 on northbound interfaces for MBS.

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| 29.532 | 5G System; 5G Multicast-Broadcast Session Management Services; Stage 3 | (CT3/4 timeline) | Complete specification for support of 5GMS via MBS in Nmb2, Nmb8 and Nmb10. |

9 Supporting Individual Members

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| **Supporting IM name** |
| Qualcomm Incorporated |
| Tencent |
| BBC |
| Sony Europe B.V. |
| Orange |
| Dolby Laboratories Inc. |
| AT&T |
| Ericsson |
| HuaWei Technologies Co., Ltd |