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# 1 Introduction

It was decided to run permanent document on the side of the above referred work item to investigate the commonality and differences between TS 26.501 and TS 26.506 especially for the functionalities, interfaces, procedures, and resources associated and document them in TS 26.506 using the progress and findings on a common stage-3 specification.

# 2 Background

Commonalities across different work items are summarized in the following. For Media Delivery, extensions to the 5G System architecture were developed to address media delivery. This includes different delivery systems including download, streaming, real-time communication, etc. Key in the media delivery is that the media is time-continuous. 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.

Generalized Media Support within the 5G System is shown in Figure 1 and Figure 2 below.



Figure – Generalized Media Support within the 5G System



Figure Generalized 5G Media Delivery Architecture

Functional definitions may be generalized as follows:

- **Media AF:** An Application Function similar to that defined in TS 23.501, clause 6.2.10, dedicated to 5G Media Delivery.

- **Media AS:** An Application Server dedicated to 5G Media Delivery.

- **Media Client:** A UE internal function dedicated to 5G Media Delivery.

- **Media Session Handler:** A function on the UE that communicates with the Media AF in order to establish, control and support the delivery of a media session.

- **Media Access Function:** A UE internal function A function on the UE that communicates with the Media AS in order to access and deliver media content. The media access function for example may be further sub-divided into content delivery protocols, codecs, media types and metadata representation.

The following interfaces and APIs may be defined for 5G Media Delivery:

- M1 (Provisioning API): External API, exposed by the Media AF which enables the Media Application Provider to provision the usage of the 5G Media Delivery and to obtain feedback.

- M2 (User Plane interface): External interface provided by the Media AS and used when the Media AS in the trusted DN to exchange data media data with the application service provider.

- M3: (Server Configuration API): API used to exchange information between Media AF and Media AS for configuration purposes.

- M4 (Media Delivery Interface): Interface and reference point between media access function and Media AS in order to exchange media content.

- M5 (Session Handling API): APIs exposed by a Media AF to the Media Session Handler for media session handling, control, reporting and assistance that also include appropriate security mechanisms, e.g. authorization and authentication.

- M6 (Client Configuration APIs): APIs exposed by a Media Session Handler to the Application and media access function for client-internal communication.

- M7 (Media Access APIs): APIs exposed by a Media Access function to configure and communicate with the Media access function.

- M8 (Application reference point): application interface used for information exchange between the Media Application and the Media Application Provider.

While on architecture and interface level, commonalities are pretty obvious, questions may arise what is common on the next level. For this, the core functions are further divided into

 - Media Delivery Functions including codecs, content delivery protocol, encapsulation

- Media Session Handling functions

What has been of lower priority until now, but is getting more importance and never found a real home, are aspects around HTTP versions, HTTP headers in use, the usage and configuration for HTTP and QUIC for media user plane services, secure media delivery, and so on. While some of those aspects may be dealt specifically for a stack, some layering is needed, and also components, extensions and profiling of these stacks is needed.

A summary what may be useful for either of the frameworks is provided in Table 1.

Table Overview of media and media handling functions in different service scenarios

|  |  |  |  |
| --- | --- | --- | --- |
| Feature | Downlink media streaming | Uplink media streaming | Real-time communication |
| Media Delivery Functions and Protocols |
| **CMAF** | Yes | yes | No |
| **DASH/HLS** | Yes | No | No |
| **MP4** | Yes | No | No |
| **RTP/AVP** | Not until now | Not until now | No |
| **webRTC** | Not until now | Not until now | yes |
| **HTTP/1.1 and TCP/IP** | Yes | Yes | No |
| **HTTP/2** | Yes | Yes | No |
| **HTTP/3 and QUIC** | Yes | Yes | No |
| **UDP/IP** | Yes | Yes | yes |
| Media Handling Functions |
| Service Access | Yes | Yes | YesIn form of configuration information |
| Content hosting | Yes | No | ??? |
| Content publishing | No | Yes | ??? |
| Content preparation | Yes | No | ??? |
| Network assistance | Yes | Yes | Yes |
| Dynamic policies | Yes | Yes | Yes |
| Remote control | No | Yes | ??? |
| Consumption reporting | Yes | No | Yes |
| QoE metrics reporting | Yes | ??? | ??? |
| Service URL Handling | Yes | Yes | Yes |
| Edge Computing | Yes | Yes | Yes |
| eMBMS delivery | Yes | No | ??? |
| Data Collection | Yes | ??? | ??? |
| MBS delivery | Yes | No | ??? |
| Event exposure | Yes | Yes | ??? |

At the end, many of the features collected above may be considered a toolbox which are applicable to different service scenarios. Differences for the different service scenarios in the content delivery protocols as well as in the applicable tools.

# 3 Common Features

Editor’s Note: collects the common features on stage 2, and identifies the commonalities and differences.