**3GPP TSG- Meeting #**

**, , - revision of S4-241885**

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| *CR-Form-v12.3* |
| **CHANGE REQUEST** |
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|  |  | **CR** |  | **rev** |  | **Current version:** |  |  |
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| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* |
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| ***Proposed change affects:*** | UICC apps |  | ME | **X** | Radio Access Network |  | Core Network | **X** |

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| ***Title:***  |  |
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| ***Source to WG:*** |  |
| ***Source to TSG:*** |  |
|  |  |
| ***Work item code:*** |  |  | ***Date:*** |  |
|  |  |  |  |  |
| ***Category:*** |  |  | ***Release:*** |  |
|  | *Use one of the following categories:****F*** *(correction)****A*** *(mirror corresponding to a change in an earlier release)****B*** *(addition of feature),* ***C*** *(functional modification of feature)****D*** *(editorial modification)*Detailed explanations of the above categories canbe found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | *Use one of the following releases:Rel-8 (Release 8)Rel-9 (Release 9)Rel-10 (Release 10)Rel-11 (Release 11)…Rel-17 (Release 17)Rel-18 (Release 18)Rel-19 (Release 19) Rel-20 (Release 20)* |
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| ***Reason for change:*** | One of the open issues identified in the Rel-18 feasibility study 5GMS\_Pro\_Ph2 is the need for a specification that addresses interoperability considerations around content delivery protocol features and general technologies for segmented media streaming and the IP/PDU 5G System Layer. This points to the further study media plane issues to support additional functionalities, but also identifies what needs to be ported from legacy TS 26.512 to a generalised media plane technical specification. The relation to media session handling (as specified in TS 26.510) is identified in TR 26.804, but enhancements to media session handling are not the primary focus of this study. |
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| ***Summary of change:*** | Adds discussion and conclusions on a Media Delivery specification |
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| ***Consequences if not approved:*** | Study item objectives are not complete |
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| ***Clauses affected:*** |  |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **X** |  Other core specifications  | TS/TR ... CR ...  |
| ***affected:*** |  | **X** |  Test specifications | TS/TR ... CR ...  |
| ***(show related CRs)*** |  | **X** |  O&M Specifications | TS/TR ... CR ...  |
|  |  |
| ***Other comments:*** | 1, 4, 5.15 (new), 6.15 (new) |
|  |  |
| ***This CR's revision history:*** |  |

## ===== CHANGE =====

# 1 Scope

This Technical Report identifies and evaluates a set of potential improvements and extensions, referred to as key topics. The initial set of key topics were:

- Content Preparation

- Traffic Identification

- Additional / New transport protocols

- Uplink media streaming

- Background traffic

- Content Aware Streaming

- Network Event usage

- Per-application-authorization

- Support for encrypted and high-value content

- Scalable distribution of unicast Live Services

- Network Slicing Extensions for 5G Media Streaming

- 3GPP Service Handler and URLs

- 5GMS Application Server configuration and management.

In an extension, a second set of key topics were collected as follows:

- Media Delivery Specification.

- Common Client Metadata.

- Common Server-and Network-Assisted Streaming.

- Multi-CDN and Multi-Access Media Delivery.

- Multi-Access with ATSSS.

- Modem Usage Optimized Media Streaming.

- DASH/HLS Interoperability.

- Further harmonization of RTC and Streaming for Advanced Media Delivery.

- Improved QoS support.For each of the above key topics, the following objectives are identified:

1. Document the above key topics in more detail, in particular how they relate to the 5GMS Architecture and protocols.

2. Study collaboration scenarios between the 5G System and Application Provider for each of the key topics.

3. Based on the 5GMS Architecture, develop one or more deployment architectures that address the key topics and the collaboration models.

4. Map the key topics to basic functions and develop high-level call flows.

5. Identify the issues that need to be solved.

6. Provide candidate solutions (including call flows) for each of the identified issues.

7. Coordinate work with other 3GPP groups e.g. SA2, SA3, SA5, and others as needed.

8. Coordinate work with external organizations such as DASH-IF, CTA WAVE, ISO/IEC JTC29 WG3 (MPEG Systems), or IETF, as needed.

9. Identify gaps and recommend potential normative work for stage-2 call flows and possibly stage-3.

## ===== CHANGE =====

# 4 5G Media Streaming

The 5G Media Streaming architecture is defined in TS 26.501 [15].

Protocols and APIs are specified in TS 26.512 [16], with reference to the generalized Media Session Handling to TS 26.510 [108].

Profiles, codecs and formats are provided in TS 26.511 [96].

## ===== CHANGE =====

## 5.15 Media Delivery specification

### 5.15.1 Description

The primary focus of the update to TS 26.512 [16] is addressing the delivery of segmented media objects in the media plane, i.e. at reference points M2, M3, M4, M7, M11 and M12 of the Media Delivery architecture as shown in Figure 5.15.1-1.



Figure 5.15.1-1 Media Delivery Architecture as defined in TS 26.501 [15] with emphasis for protocol specification (M2, M3, M4, M7, M11 and M12) to be developed.

The specification is expected to address interoperability considerations around content delivery protocol features and general technologies for segmented media streaming and the IP/PDU 5G System Layer. It was discussed whether a new specification is needed or updates to TS 26.512 [16] are sufficient.

M12 is not in scope for this Technical Report and the expected new specification, the focus is on Media AS from/to UE.

Key aspects of such a specification should include common protocols on M2 and M4, as well as common APIs and reference points on M3, M7 and M11. In addition, consistent extensions to such protocols need to be reviewed, for example custom HTTP headers, query parameters, etc.

### 5.15.2 Considered content in updated specification

The following outline is considered for a new specification addressing the media plane.

1 Overview and Assumptions

1.1 General Assumptions and Protocol Stack for M2 and M4: IPv4 or IPv6 and HTTP according to RFC 9110

- HTTP/1.1, TLS (optional), TCP, IP – parallel requests, RFC 9112

- HTTP/2, TLS, TCP, IP – one TCP connection, RFC 9113

- HTTP/3, QUIC (+TLS), UDP, IP – one QUIC connection, RFC 9114

- HTTP Methods

- HTTP Headers

1.2 General Assumptions for M7 and M11

- Existence of a reference API in Media Access function

1.3 General Assumptions for M3

- Existence of a reference API in Media AS

1.4 Features

- What are features?

- Configurable UE and Media AS functionalities.

- Features may be mandatory or optional, but are typically optional

- Features are fully specified and normative

- How can the features be configured?

- What are the requirements for each feature?

- Overview of features and mapping to reference points

2 Media Delivery Features

- For each feature

- Overview

- Procedures (if not in stage-2, possibly referenced)

- Requirements for each function and reference point

- Configuration on AS through M3, Impact on M2 and M4, client APIs M7 and M11.

- Implementation Guidelines

### 5.15.3 Conclusions

Based on the discussion in this clause, it is recommended to

- update TS 26.512 for addressing extensions to media segment-based delivery

- adopt a documentation following the substance in clause 5.15.2.

## ===== CHANGE =====

## 6.15 Media Delivery specification

The primary focus of the update to TS 26.512 [16] is addressing the delivery of segmented media objects in the media plane, i.e. at reference points M2, M3, M4, M7, M11 and M12 of the Media Delivery architecture as shown in Figure 5.15.1-1.

Based on the discussion in clause 5.15 and the conclusion in 5.15.3, it is recommended to

- update TS 26.512 for addressing extensions to media segment-based delivery

- adopt a documentation following the substance in clause 5.15.2.