**3GPP TSG SA WG4#120e S4-220953**

**E-meeting, 17th – 26th August 2022**

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| *CR-Form-v12.0* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **26**.**501** | **CR** | **draft** | **rev** | **01** | **Current version:** | **17.2.0** |  |
|  | | | | | | | | |
| *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:*** | **[5GMSA\_Ph2] Downlink Streaming to Media Players with Different Manifests** | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Qualcomm Incorporated | | | | | | | | | |
| ***Source to TSG:*** |  | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | **5GMSA\_Ph2** | | | | |  | ***Date:*** | | | 11/08/2022 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **B** |  | | | | | ***Release:*** | | | 18 |
|  | *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 can be 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-12 (Release 12)* *Rel-13 (Release 13) Rel-14 (Release 14) Rel-15 (Release 15) Rel-16 (Release 16)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | The work item in SP-220614 asks among others for the following:  Hybrid DASH/HLS operation  - Updating existing call flows and procedures to support hybrid DASH/HLS delivery in 5GMS architecture. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | The CR addresses the above objectives by adding | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Work Item objectives not complete | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 2 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

**===== CHANGE =====**

# 2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non‑specific.

- For a specific reference, subsequent revisions do not apply.

- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[X] CTA-5005: "Web Application Video Ecosystem – DASH-HLS Interoperability Specification"

**===== CHANGE =====**

### 4.2.3 Service Access Information for Downlink Media Streaming

The Service Access Information is the set of parameters and addresses which are needed by the 5GMSd Client to activate and control the reception of a downlink streaming session, and to report service/content consumption and/or QoE metrics.

The Service Access Information may be provided together with other service announcement information using M8d. Alternatively, the 5GMSd Client fetches the Service Access Information from the 5GMSd AF. Regardless of how it is provided, the Service Access Information contains different information, depending on the collaboration model between the 5GMS System and the 5GMSd Application Provider, and also depending on offered features. Baseline parameters are listed in Table 4.2.3‑1 below:

Table 4.2.3-1: Parameters of baseline service access information

|  |  |
| --- | --- |
| Parameters | Description |
| Provisioning Session identifier | Unique identification of the M1d Provisioning Session. |

When the content hosting feature is activated for a downlink streaming session, the parameters from Table 4.2.3-1a below can additionally be present.

Table 4.2.3-1a: Streaming Access parameters

|  |  |
| --- | --- |
| Parameters | Description |
| Media Player Entries | A set of documents or a set of pointers to a document that each defines an equivalent media presentation e.g. MPD for DASH content or URL to a video clip file. |

When the consumption reporting feature is activated for a downlink streaming session, the parameters from Table 4.2.3‑2 below are additionally present.

Table 4.2.3-2: Parameters for consumption reporting configuration

|  |  |
| --- | --- |
| Parameters | Description |
| Reporting interval | Identifies the interval between consumption reports being sent by the Media Session Handler. |
| Server address | A list of 5GMSd AF addresses where the consumption reports are sent by the Media Session Handler. |
| Sample percentage | The proportion of clients that shall report media consumption.  If not specified, all clients shall send reports. |
| Location reporting | Identify whether the Media Session Handler provides location data to the 5GMSd AF (in case of MNO or trusted third parties) |

When the dynamic policy invocation feature is activated for a downlink streaming session the parameters from Table 4.2.3‑3 below are additionally present.

Table 4.2.3-3: Parameters for dynamic policy invocation configuration

|  |  |
| --- | --- |
| Parameters | Description |
| Server address | A list of 5GMSd AF addresses (in the form of opaque URLs) which offer the APIs for dynamic policy invocation sent by the 5GMS Media Session Handler. |
| Valid Policy Template Ids | A list of Policy Template identifiers which the 5GMSd Client is authorized to use. |
| Service Data Flow Methods | A list of recommended Service Data Flow description methods (descriptors), e.g. 5-Tuple, ToS, 2-Tuple, etc, which should be used by the Media Session Handler to describe the Service Data Flows for the traffic to be policed. |
| External reference | Additional identifier for this Policy Template, unique within the scope of its Provisioning Session, that can be cross-referenced with external metadata about the streaming session. |

When the metrics collection and reporting feature is activated for a downlink streaming session, one or more parameter sets for metrics configuration, according to Table 4.2.3‑4, are additionally present. Each metrics configuration set contains specific settings valid for that configuration, which is typically metric scheme dependent, and collection and reporting shall be done separately for each set.

Table 4.2.3-4: Parameters for each metrics configuration set

|  |  |
| --- | --- |
| Parameters | Description |
| Scheme | The scheme associated with this metrics configuration set. A scheme may be associated with 3GPP or with a non-3GPP entity. If not specified, a default 3GPP metrics scheme shall apply.  Metrics schemes shall be uniquely identified by URIs. |
| Server address | A list of 5GMSd AF addresses to which metric reports shall be sent for this metrics configuration set. |
| DNN | The Data Network Name (DNN) which shall be used when sending metrics report for this metrics configuration set.  If not specified, the default DNN shall be used. |
| Reporting interval | The sending interval between metrics reports for this metrics configuration set.  If not specified, a single final report shall be sent after the streaming session has ended. |
| Sample percentage | The proportion of streaming sessions that shall report metrics for this metrics configuration set.  If not specified, reports shall be sent for all sessions. |
| Streaming source filter | A list of content URL patterns for which metrics reporting shall be done for this metrics configuration set.  If not specified, reporting shall be done for all URLs. |
| Metrics | A list of metrics which shall be collected and reported for this metrics configuration set.  For progressive download and DASH streaming services, the listed metrics are associated with the 3GPP metrics scheme and shall correspond to one or more of the metrics as specified in clauses 10.3 and 10.4, respectively, of TS 26.247 [7].  In addition, for the 3GPP metrics scheme as applied to DASH streaming, the quality reporting scheme and quality reporting protocol as defined in clauses 10.5 and 10.6, respectively, of [7] shall be used.  If not specified, a complete (or default if applicable) set of metrics will be collected and reported. |

When 5GMSd AF-based Network Assistance is activated for a downlink streaming session the parameters from Table 4.2.3‑5 below shall be additionally present.

Table 4.2.3-5: Parameters for 5GMSd AF-based Network Assistance configuration

|  |  |
| --- | --- |
| Parameters | Description |
| Server address | 5GMSd AF address that offers the APIs for 5GMSd AF-based Network Assistance, accessed by the 5GMSd Media Session Handler. The server address shall be an opaque URL, following the 5GMS URL format. |

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## 4.X Downlink Streaming to Media Players with Different Manifests

### 4.X.1 General

This clause considers downlink streaming in which a 5GMS Application Service provider performs playout of one or more ISO MPEG Common Media Application Format [CMAF] presentations, for example according to TS 26.511 [X] content format. The player addresses the CMAF Presentations on a content delivery network utilizing the information provided by a manifest and performs playout utilizing a reference playback platform.

In this particular case of Downlink Streaming to Media Players with Different Manifests (SMDM), the same CMAF content is provided to 5GMS Media Players with different manifest formats, for example HTTP Live Streaming [HLS] and Dynamic Adaptive Streaming over HTTP [DASH]. This approach is aligned with CTA-5005 [X], which primarily focusses on creating interoperable CMAF content such that it can be used at the same time with DASH and HLS to the most extent.

An overview of the envisaged deployment architecture with impacted interfaces and reference points is documented in Figure 5.4.3-1.



Editor’s Note: Figure needs update to align with 5GMS Terminology

Figure 5.4.3-1: Deployment Architecture for Downlink Streaming to Media Players with Different Manifests (SMDM),

### 4.X.2 Extensions to 5G Media Downlink Streaming for SMDM

Editor’s Note: tbd

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### 5.2.X Procedures for SMDM

Editor’s Note: tbd

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### 5.4.2 Media ingest procedure

The media ingest procedure is as follows:



Figure 5.4-1: Media Ingest procedure

The steps are as follows:

1: Initialization: the 5GMSd Application Provider discovers the entry point and authenticates itself with the 5GMSd AF.

2: Create Content Hosting Configuration: the 5GMSd Application Provider creates a new Content Hosting Configuration for its content through the 5GMSd AF. The configuration specifies a domain name, supplies a certificate for HTTPS access to the content, sets the caching rules per media type, indicates the distribution area (e.g. through geofencing), distribution protocol, the desired content preparation, URL signing, etc. Upon successful configuration, the 5GMSd AF responds with a Content Hosting Configuration identifier, and the location of the 5GMSd AS to which to send the content (if using the push mode).

3: Provision 5GMSd AS(s): The 5GMSd AF configures the related 5GMSd AS(s) to prepare for media ingest for that particular Content Hosting Configuration. This step may involve instructing the 5GMSd AS(s) to set appropriate caching rules, to perform URL signature validation and to limit access through geofencing. The 5GMSd AS(s) will respond whether the configuration is successful or not.

4: Confirm configuration information: The 5GMSd AF communicates the Content Hosting Configuration of the 5GMSd AS(s) back to the 5GMSd Application Provider for further media push or pull.

5: Publish Media Player Entry: The 5GMSd Application Provider shall then publish the Media Player Entry to the 5GMSd-Aware Application to enable access to the content.

6: Media ingest: The 5GMSd AS(s) may start pulling or receiving content (if using push mode) from the 5GMSd Application Provider. The 5GMSd AS performs the requested content preparation prior to providing access to the content.

NOTE: Pull of media content from the external 5GMSd AS(s) may be triggered by a request from the 5MGSd Client.

The 5GMSd Application Provider may update a Content Hosting Configuration subsequently to modify some of its parameters. The subset of parameters that can be updated may be limited by the 5GMSd AF.

For the case of Downlink Streaming to Media Players with different Manifests as defined in clause 4.X, the Media Ingest is extended as follows:

Editor’s Note: Details tbd

**===== CHANGE =====**

### 5.10.X Procedures for Downlink Streaming to Media Players with Different Manifests (SMDM) via eMBMS

Editor’s Note: tbd