**3GPP SA4#115-eS4-211097**

**18-27 Aug 2021**

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| *CR-Form-v12.0* | | | | | | | | |
| **Pseudo CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **26.804** | **CR** | **<CR#>** | **rev** | **-** | **Current version:** | **0. 2.1** |  |
|  | | | | | | | | |
| *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:*** | [FS\_5GMS-EXT] Uplink Streaming: Metric Reporting | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Tencent | | | | | | | | | |
| ***Source to TSG:*** | SA4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | FS\_5GMS-EXT | | | | |  | ***Date:*** | | | 2021-08-12 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **B** |  | | | | | ***Release:*** | | | Rel-17 |
|  | *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 study item description identifies the key topic “Uplink Streaming”. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Adding additional gap analysis: metric reporting | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Key topic not addressed | | | | | | | | |
|  | |  | | | | | | | | |
| ***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:*** | |  | | | | | | | | |
| ***56*** | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

**===== CHANGE 1 =====**

### 5.5.5 Potential open issues

#### 5.5.5.1 Potential open issues in 5G Media Streaming stage 3

The following open issues seem to exist in TS 26.512 [16]:

1. Lack of a standard template (or clear reference on how to use an existing standard template) for inclusion in a Content Publishing Configuration, i.e. to be able to provide content preparation instructions in a defined, interoperable format that the 5GMS AF supports through M1.

…

6. Lack of metrics for uplink streaming. While the metric reporting APIs are defined for both downlink and uplink media streaming, the Metric Reporting Configuration in Clause 7.8.3 of [16] only defines a metric scheme for download media streaming, using the TS 26.247 metrics. No scheme for uplink metric scheme is currently defined in this table. Defining a minimum set of metrics for uplink streaming would be beneficial for main-stream applications.

**===== CHANGE 2 =====**

### 5.5.6 Candidate Solutions

#### 5.5.6.5 Uplink streaming QoE metrics

##### 5.5.6.5.1 General

For simple uplink streaming application the following QoE metrics are suggested.

##### 5.5.6.5.2 Average throughput

This metric is from TS 26.247 Table 27 with some modifications as shown below.

Table 1: Average Throughput

|  |  |  |  |
| --- | --- | --- | --- |
| Key | | Type | Description |
| AvgThroughput | | Object | Average throughput that is observed by the client during the measurement interval. |
|  | numbytes | Integer | The total number of the content bytes, i.e. the total number of bytes sent/received during the measurement interval. |
|  | activitytime | Integer | The activity time during the measurement interval in milliseconds. The activity time during the measurement interval is the time during which at least one push or pull request is still not completed. |
|  | t | Real Time | The time of the start of the measurement interval. |
|  | duration | Integer | The duration in milliseconds of the measurement interval. |
|  | accessbearer | String | Access bearer for the TCP connection for which the average throughput is reported |
|  | inactivitytype | Enum | Type of the inactivity, if known and consistent throughout the reporting period:  User request (e.g. pause)  Error case |

If the client streams media segments to the 5GMSu AS separately over multiple non-competing parallel TCP connections established over separate access network bearers named as accessbearer, then the average throughput values should be reported as a list of events with average throughput for each access network and associated access network bearer information reported separately, following the same guidelines as described above.

NOTE: The above table is similar to the downlink average throughput table. Only few statements are changed that are shown with yellow highlights.

##### 5.5.6.5.3 Activity list

This reports activity during the uplink session. The captured samples that are continuously encoded and uploaded implicitly define the time period. The activity list is defined as a sequence of periods of continuous delivery started by a user action that begins at a specified and continues until temporarily paused by the user or terminated by failure. A candidate activity list structure is shown in the following table.

Table XXX1: Activity List

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Key | | | | | Type | Description |
| ActivityList | | | | | List | A list of uplink periods during each, the content is uplink streamed. An uplink period is the time interval between a user start and whichever occurs soonest of the user’s pause, the end of the session, or a failure that stops uplink streaming. |
|  | *Entry* | | | | Object | A record of a single uplink period. |
|  |  | start | | | Real Time | Timestamp of the user action starts the uplink period. |
|  |  | starttype | | | Enum | Type of user action which triggered uplink period  - New uplink request  - Resume from a pause  - Other user requests (e.g. user-requested quality change)  - Start of a new metrics collection period |
|  |  | Trace | | | List | List of uplink periods |
|  |  |  | *Traceentry* | | Objects | Single entry in the list. |
|  |  |  |  | qualitymetricid | String | The identifier of the quality metric id that is used |
|  |  |  |  | qualityvalue | Integer | The target average quality of content during this period |
|  |  |  |  | bitRate | Integer | The target average bit rate of the content during this period |
|  |  |  |  | start | Real Time | The time at which the first sample was captured |
|  |  |  |  | duration | Integer | The time in milliseconds of the duration of the continuously uplinked samples. "Continuously presented" means that the media clock continued to advance at the encoded sample rate throughout the interval. |
|  |  |  |  | stopreason | Enum | The reason why the uploading period was ended. Either:  - protocol timeout  - user request  - end of content  - end of a metrics collection period  - encoding error  - unknown failures  - other |
|  |  |  |  | stopreasonscheme | String | The URI identifier scheme to signal the reason of stop when stopreason is set to ‘other’. The scheme defines its values and their meaning. This value shall be present only if stopreason=’other’ |
|  |  |  |  | Stopreasonvalue |  | The reason for the stop, using the stopreasonscheme. This value shall be present only if stopreasonscheme is present. |

##### 5.5.6.5.4 Media info

This metric can be used to report media information and is shown in the following table.

Table XX2: Media info for Quality Reporting

|  |  |  |  |
| --- | --- | --- | --- |
| Key | | Type | Description |
| MediaInformation | | Object |  |
|  | contenttype | String | Defines the media content type |
|  | info | RepresentationType | Provides the information for content such as average and max bandwidth, width and height, mimeType, codecs parameters (profiles and level). |

##### 5.5.6.5.5 Device information

This metric contains information about the captured video resolution.

The metric is logged at the start of each QoE reporting period, and whenever the characteristics changes during the session (for instance if the UE is rotated from horizontal to vertical orientation, or if the capturing resolution is changed due to the change of capturing camera).

Table 31b defines the device information metrics. If an individual metric cannot be logged, its value shall be set to 0 (zero).

Table 31b: Device information

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Key | | | Type | Description |
| DeviceInformationList | | | List | A list of device information objects. |
|  | *Entry* | | Object | A single object containing new device information. |
|  |  | start | Real-Time | Timestamp when the device information was logged. |
|  |  | videoWidth | Integer | The width of the displayed video, in screen pixels (not encoded video pixels). |
|  |  | videoHeight | Integer | The height of the displayed video, in screen pixels (not encoded video pixels) |
|  |  | fieldOfView | Float | The actual or estimated horizontal angle subtended at the eye by the screen, measured in degrees. |

The above table is a simplified version of the TS 26.247’s device information for the downlink streaming.