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Title **GPAC Updates on DASH**
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1 Introduction

This contribution describes a few enhancements in GPAC support for DASH, with a string focus on low latency experiments.

2 DashCast

A new application has landed in GPAC: DashCast. This tool allows live DASH transcoding of media sources, either static (files) or live compressed (RTP) or live uncompressed (WebCam). The tool supports multiple output resolution and bitrates, and currently generates segments in ISO BMFF format with MPD manifest using template URLs. DashCast currently supports live encoding using AVC|H264 for video and MPEG-4 AAC for audio.

For more information, check DashCast dedicated web page, http://gpac.wp.mines-telecom.fr/dashcast/.

There are many options in the DashCast application, and we encourage people to check the online documentation. Among the interesting features of DashCast, we would like to emphasize:

- The ability to specify fragment duration and segment duration independently
- The ability to use Gradual Decoding Refresh in AVC
- The ability to shift the availabilityStartTime

As an example, the following command line will stream your Linux desktop over DASH in 2 resolutions!!

```
DashCast -vf x11grab -v :0 -seg-dur 1000 -frag-dur 200 -live -conf
dashcast.conf -ast-offset 0 -vres 1280x720 -vfr 25
```

Dashcast.conf file example:

```
[v1]
type=video
width=1280
height=720
bitrate=800000
[v2]
type=video
```

```
width=640
height=360
bitrate=400000
```

3 DASH and Media Source Extensions

As presented in contribution m29408, the Media Source Extensions API is developed by the W3C HTML Working Group, soon to reach Last Call status. It defines JavaScript interfaces to enable the consumption of non-linear media in the browser and the adaptive streaming of media to a browser. It is currently supported in Google Chrome Canary, and in GPAC since a few months. We believe, given that both specifications MPEG-DASH and W3C MSE provide mechanisms for adaptive stream, that this report may be of interest to the group.

A demonstration of SVG+MSE in DASH is available at http://download.tsi.telecom-paristech.fr/gpac/MSE/

4 Updates

4.1 Chunked-Transfer Encoding

The main new feature in GPAC is the support for Chunked-Transfer Encoding in the HTTP stack. This has been coupled with progressive parsing of ISOBMFF boxes and MPEG-2 TS packets in the player, allowing parsing and decoding of media data at the beginning of the segment while the rest of the segment is still being downloaded.
MP4Client has been updated in its switching mechanism, with some fixes in the up and down switching policy.
MP4Box has been updated to support fast production of media fragments while creating the segment: when no SIDX is used, each fragment is flushed to disk once completed, rather than waiting for the complete segment to be ready. This is coupled with the ability to shift the *availabilityStartTime* to reflect the early production time of the first fragment. In order to optimize furthermore, segments can now be generated entirely in memory (moof, mdat and sidx) before being flushed on disk/to transfer pipe.

4.2 DASH SVC Support

MP4Box now supports dashing of SVC representations. The SVC content has to be imported in MP4 with one track per layer, as follows:

```
MP4Box –add content.svc:svcmode=split –new svc_split.mp4
```

The resulting file can then be DASHed as any other file with MP4Box, using:

```
MP4Box –dash DURATION [OPTIONS] –out test.mp4 svc_split.mp4
```

The SVC segments can be either in a single file or in multiple files, as with regular representations. Note that level assignment and sub-representations are not supported.

Sample bitstreams are available at http://download.tsi.telecom-paristech.fr/gpac/dashsvc/. The playback can be checked with MP4Client, as with any other MPD.

4.3 DASH WebVTT Support

See related contribution m30301.

5 Conclusion

We're happy to provide more tools for the DASH community to play with, we encourage our known and anonymous users to check them out and give feedback on our forums!