DashCast: A Live DASH Streaming Server

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***Abstract*—Adaptive HTTP streaming of video has become a cornerstone of video distributions. In this paper, we present DashCast, an open source live real-time DASH streaming application. DashCast grabs live video/audio from a webcam/microphone or a recorded source, transcodes each media source in multiple qualities and publishes the media according to the DASH standard. DashCast has been evaluated in terms of live latency, with delays below 1 second.**

I. Introduction

Live video streaming is becoming more and more popular with increasing network bandwidths and hand-held devices connected to Internet. Among existing adaptive HTTP streaming solutions, the MPEG-DASH [1] standard brings a unifying solution.

DashCast, a new application which is part of the open-source GPAC project, enables low latency live DASH encoding and streaming. DashCast can be used in academia to teach students how the new DASH standard works for live scenarios and in research laboratories to experiment and help to improve the standard. DashCast acquires media from a live or recorded source, transcodes it in multiple qualities, with different resolutions and bitrates and publishes the result in DASH format in a single process. It is composed of three layers: input layer, transform layer, and output layer. All layers communicate with each other through synchronized buffers. A general overview of the system is illustrated in Figure 1.

II. Demonstrations

Simple Live DASH Streaming: In a first demonstration, DashCast (running on a laptop PC) transcodes a 1280×720p30 Webcam feed into AVC/H264 videos, without B-frames and with optional Gradual Decoding Refresh encoding, with resolutions of 1280×720, 960×540, and 640×360 at bitrates of 800, 600, and 400 kbps, and AAC audio at bitrates of 128 and 256 kbps. MP4Client is used to visualize the DASH content and switch between resolutions and bitrates. It connects to DashCast through local network ethernet. Use of different input formats (MPEG-TS files, MP4 files, RTP streams) is also demonstrated, for both live and off-line encoding.

Low Latency Streaming: In a second demonstration, end-to-end delays of the system are demonstrated: 1.7 seconds for the segment duration of 500 milliseconds. Using a node.js-based web server and HTTP chunk-transfer encoding, the results from [2] are reproduced, with DashCast reaching latencies below one second.

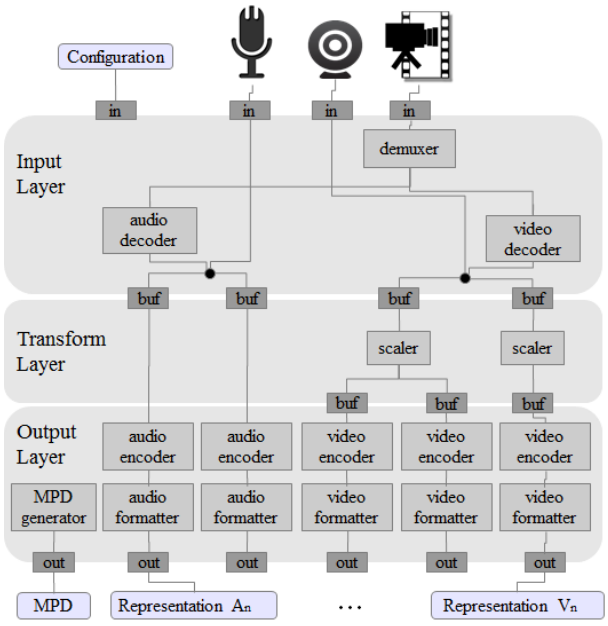

Fig. 1. DashCast architecture

Source Switching: In the last demonstration, DashCast is instructed to switch between the live feed and a recorded file, illustrating an ad-insertion scenario.

III. Future Work

In the future we will add audio sample rate scalers, video frame rate scalers, support for subtitles and support for MPEG-2 TS output format. We also intend to add support for Apple HTTP Live Streaming and Microsoft Smooth Streaming to DashCast, and will conduct further experiments on very-low latency DASH streaming with Content Delivery Networks.

Acknowledgments

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References

[1] I. Sodagar, "The MPEG-DASH Standard for Multimedia Streaming Over the Internet," *MultiMedia, IEEE*, vol. 18, no. 4, pp. 62–67, 2011.

[2] V. Swaminathan and S. Wei, "Low Latency Live Video Streaming using HTTP Chunked Encoding," in *Multimedia Signal Processing (MMSP), 2011 IEEE 13th International Workshop on*, 2011, pp. 1–6.

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