EBU
OPERATING EUROVISION AND EURORADIO

TECHNOLOGY
FACT SHEET

DVB-DASH USING HEVC

State of the art online streaming of live and on demand content

NOW YOU CAN:

- Upgrade your On Demand library to UHD video
- Start live streaming of internet services in high quality using HEVC
- Optimise quality of viewer experience using DVB-DASH

DEMO BASICS

State of the art streaming is a combination of the most advanced streaming format DVB-DASH with the new ultra efficient HEVC codec. The streaming format optimises the user experience when delivering content over the internet. One of its main treats is the support of adaptive streaming as shown in EBU's demonstration. The internet bandwidth of the home gateway is artificially throttled over time and one can clearly see that the picture quality improves when there is more bandwidth available and decreases when speed drops; all without interrupting the audio and video playback. In effect the video player of the connected TV and tablet can access separate media files with different sizes over the internet. The available bandwidth prompts the player to select the best file that can be downloaded at that speed. By using HEVC encoding one needs up to 20% less bytes to create the same quality as using the popular H.264 codec. This has a positive impact on both storage and streaming cost of the content provider and allows users to enjoy a better quality video using less internet traffic. Importantly, EBU's demonstration shows both a Live and On-Demand service implementation.

UHD ON DEMAND DEMO

Ultra high definition (UHD) is the next stage in creating higher user engagement by improving the picture quality. The On Demand demo proves content providers can use a picture size that is 4 times that of HD and deliver it over the internet. The maximum quality shown end-to-end is 3840x2160 pixel frame size at a speed of 25 full frames per seconds. When there is less bandwidth available than the 16 Mbps that is needed for this UHD version the video is scaled down in steps to HD representations and finally a SD-version using only 1 Mbps. But also this lowest representation has an optimised quality with thanks to open source HEVC variant X265. Content providers can start improving the user experience of their On Demand services with very low up front investments using open source tools as in done in this setup.

LIVE CONTENT DEMO

Another state of the art streaming solution is the encoding and end to end playout on both a connected TV of a Live feed using HEVC and DVB-DASH. Live services require real-time encoding which is done here software based using one (fast) generic server. There available representations encoded with HEVC the player can switch between are: 768x432p/25, 1280x720p/25 and 1920x1080p/25.

DVB-DASH AND HBBTV

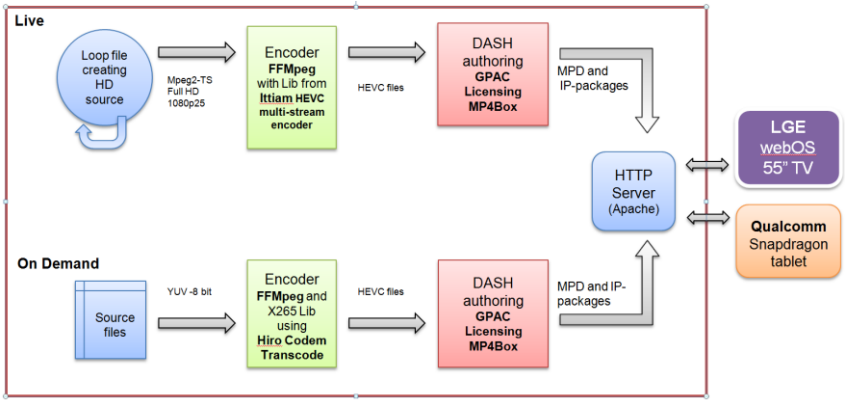
A first of this demo is the use of the new specification DVB-DASH which is a subset of MPEG-DASH optimised for the needs of the DVB community. Officially it is called Digital Video Broadcasting (DVB);MPEG-DASH Profile for Transport of ISO BMFF Based DVB Services over IP Based Networks. DVB-DASH specifies both the On Demand and Live profile of MPEG-DASH and is the main candidate to reference again in the popular hybrid TV standard HbbTV V2 that is expected to be published at the end of this year.

PUBLISHED: 01 September 2014

EBU TEST ENGINE FOR ENCODING

This demo uses the EBU Test Engine for Encoding to generate the On Demand and Live feeds. The test platform is expected to act as 'reference implementation' for creating different audio/video formats in the contribution/distribution production chain using only Open Source Software. It is intended in first instance to facilitate the discussion about suitable MPEG-DASH content generation (including encoding and packaging settings) for different use cases. With an EBU account one can access the created files, test and leave comments. Members of EBU, DASH-IF, DVB and HbbTV can also create files in the automated workflow that can be shared for comments. Go to EBU.IO to access the Test Engine.

DEMO SETUP



Hiro integration of EBU Test Engine for Encoding

Hiro provided the integration of all software components and developed the EBU Test Engine for Encoding using their open source Codem Transcode package.

GPAC Licensing provided their MP4BOX DASH authoring tool and updated it with DVB-DASH support.

Ittiam provided their HEVC live multi-stream encoder to enable realtime encoding in the software based EBU Test Engine.

Qualcomm® is a strong contributor to the MPEG DASH standard. Qualcomm supported conformance testing for the demo including providing the tablet with the Qualcomm® Snapdragon™ processor, running the Qualcomm Technologies Dash Client and Qualcomm® Stream Manager™ that support DASH streaming.

LG Electronics contributed by implementing the DVB-DASH profile and the demo application. LG webOS 55" TV set is provided for this Demo.

DVB published their work on the DASH specification this summer- The spec is publically available via this link: https://www.dvb.org/resources/public/standards/a168_dvb-dash.pdf.

The **DASH Industry Forum** is an organization that promotes market adoption of the MPEG-DASH standard. The EBU is a contributing member.

HbbTV (Hybrid Broadcast Broadband TV) is an industry standard providing an open and business-neutral technology platform that seamlessly combines TV services delivered via broadcast with services delivered via broadband.

For more information on the activities of the EBU with regard to MPEG-DASH contact:
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PUBLISHED: 01 September 2014