HbbTV DASH DRM Reference Application

HbbTV Webinar 13th June 2022
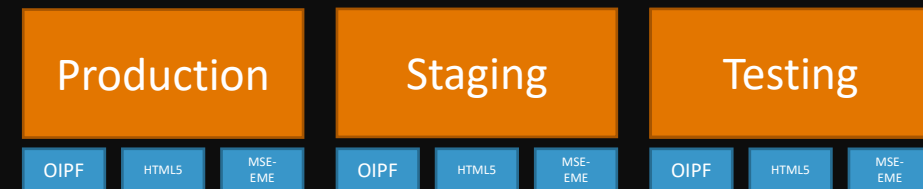
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Brief history

- Development started around 2017 after it was recognized, that DASH DRM playback was a major interoperability issue
  - Commissioned by HbbTV IITF (Improving interoperability Task Force)
- Goal of the project was to offer a toolbox of tested and proven components enabling implementation of a widely tested and working DASH DRM Player application for HbbTV
- Project also offers "industry best-practice" tools for content creation
- First commit was made in May 2017, and a version was released for testing for IRT IOP workshop in July the same year under the MIT licence
- Now the project is celebrating its 5th birthday, development is managed by IITF bi-weekly calls

General Application structure

- All code released under MIT license in github, under HbbTV Association account: https://github.com/HbbTV-Association/ReferenceApplication

- Three live versions always available at https://refapp.hbbtv.org
  - Production
    - Updated three times per year, synced with HbbTV Test Suite Releases
  - Staging
    - Includes features stable enough for wide-spread early access testing§
  - Testing
    - a "playground" for new features and ideas and development work

- Three profiles
  - "OIPF"
    - Uses AVObject and OIPF DRM object for video playback "HbbTV 1.5"
  - "HTML5"
    - Uses HTML5 video player and OIPF DRM object for video playback "HbbTV 2.0.x"
  - MSE-EME
    - Uses MSE-EME extensions and dash.js player for playback
      - Compatible with PC browsers, Xboxes, etc.

- DRM
  - Playready, Marlin, Clearkey
  - Expressplay and Microsoft test servers available

- Dasher tool and video library
  - For creating new test contents
  - Pre-created clear video content (AVC+HEVC)

DASH DRM Reference Application

Production	Staging	Testing
OIPF HTML5 MSE-EME	OIPF HTML5 MSE-EME	OIPF HTML5 MSE-EME

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Traditional tests, since 2018

- Full HD playback, 4k playback

- Playready (cenc) Security Level 2000, single KID

- Multi-Audio testing

- In-band and out-of-band subtitles

- In-band events

- Traditional ad insertion

- Live DASH (livesim)

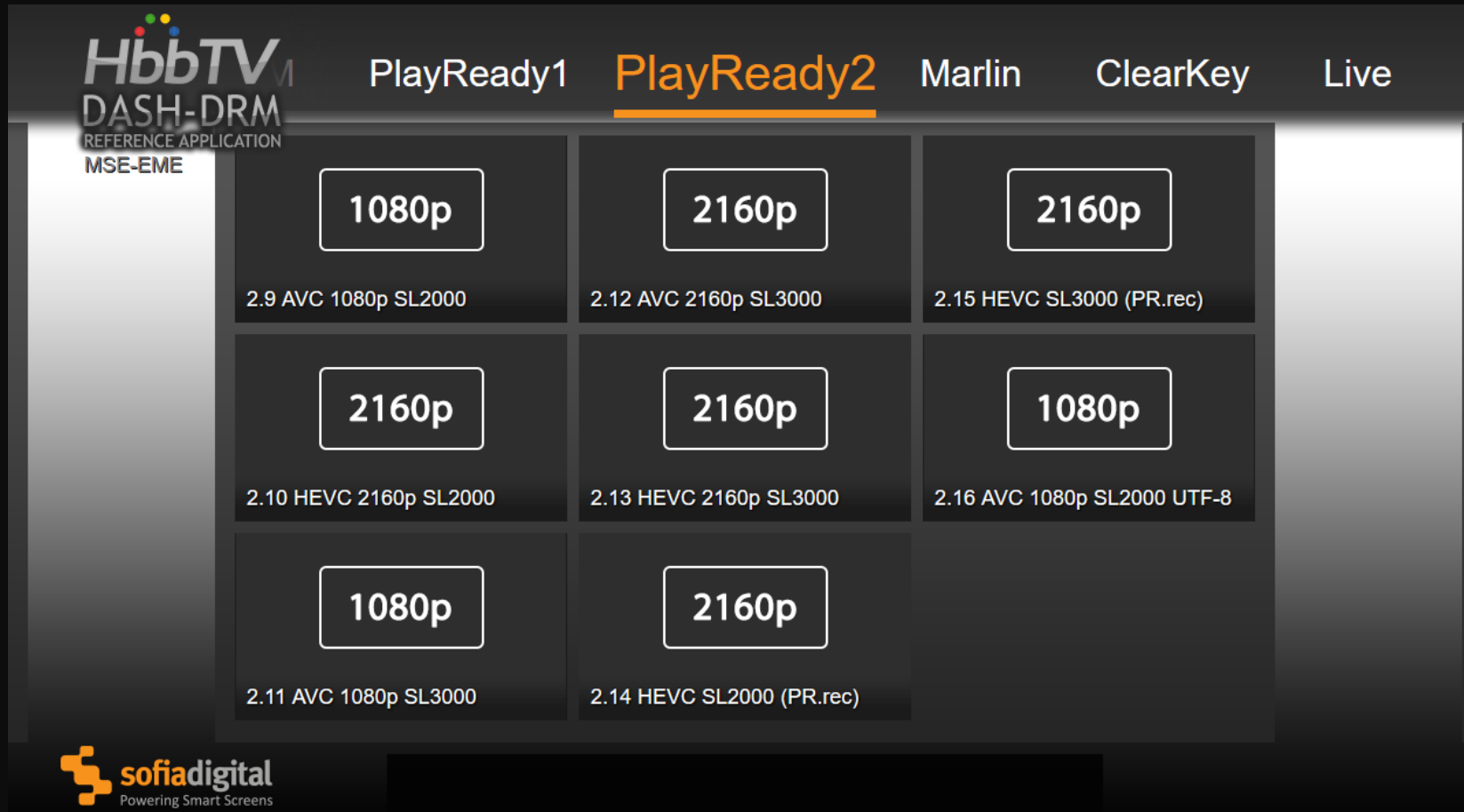- Multiple moof/mdat tests

New (2021/2022) and upcoming tests

- Playready SL3000 (single KID and multiple KIDs, for different levels for video and audio)

- Static and live Multiperiod DASH for testing server-side ad insertion

- Playready cbcs

- Key rotation

- Persistent licenses

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Test reports

- DASH DRM Reference App project produces a monthly test report offering a quick overview of current status of device implementations to HbbTV members

- Anonymized list with 80+ devices in active testing cycle

- All test cycles include the complete set of test tasks, monitoring also the robustness of old features as well as status of new ones

- Results offer insights to operators about the feasibility of introducing new features to network

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User interface demo

Lifecycle of the project and future developments

- Application is under active maintenance and some new features are under consideration

- Development of the application is guided by the industry needs (questionnaires and direct feedback received via github)

- Virtually all new devices coming to market are using the tool to verify correct operation

- Monthly statistics are collected about the usage (on average 50-100 Gib/month, 4000 monthly visitors)
  - Total for 2021: 61 944 visitors / 1.1 TiB transferred

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