HbbTV DASH DRM Reference Application

OSMART 9th May 2022

Project Target and Timeline

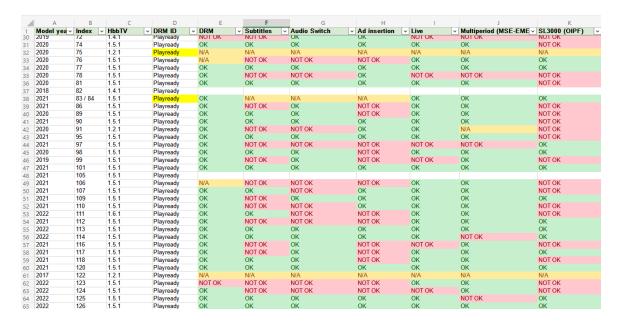
- Development started around 2017 after it was recognized, that DASH DRM playback was a major interoperability issue
 - Commissioned by IITF (Improving interoperability Task Force)
- Goal of the project was to offer a toolbox of tested and proven components enabling implementation of a widely tested and working DASH DRM Player application
- 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 characteristics

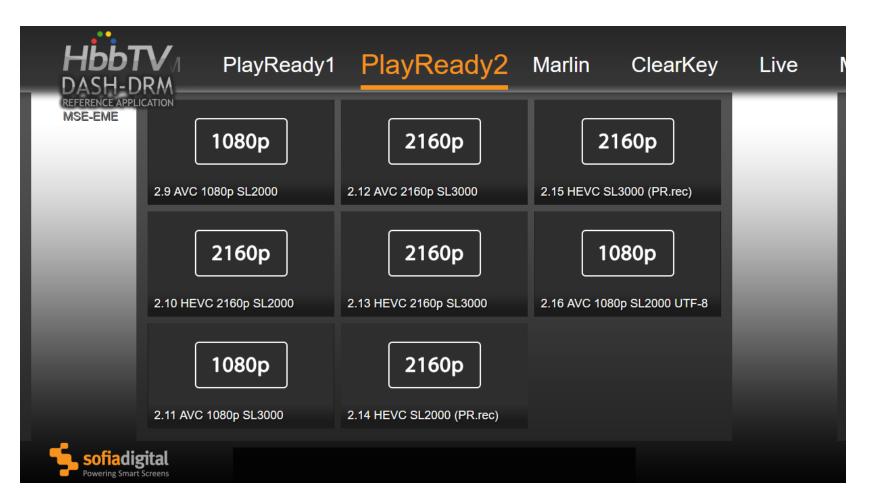
- All code released under MIT license in github, under HbbTV Association: https://github.com/HbbTV-Association/ReferenceApplication
- Three versions always available at https://refapp.hbbtv.org
 - Production
 - Updated three times per year, synced with HbbTV Test Suite Releases
 - Staging
 - Includes features stable enough for wide-spread early access testing
 - Testing
 - a "playground" for new features and ideas, 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.
- Dasher tool and video library
 - For creating new test contents
 - Pre-created clear video content (AVC+HEVC)
 - Expressplay Marlin/Playready and Microsoft Playready test servers available for tests

Testing

- DASH DRM Reference App project produces a monthly "testing report" offering a quick overview of current status of device implementations to HbbTV members
- Anonymized list with 70+ 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 takeup of new ones
- Results offer insights to operators about the feasibility of introducing new features to network



User interface example



Features:

- Easy-to-use UI
- Test tasks arranged in groups
- Clear feedback and result interpretation
- On-screen and server debug logging

Test categories (DRM):

- Playready
- Marlin
- Clearkey (not really DRM)

Available tests

- Full HD playback, 4k playback
- Playready (cenc) Security Levels 2000 and 3000 (single KID and multiple KIDs, for different levels for video and audio)
- Static and live Multiperiod DASH for server-side ad insertion testing
- Multi-Audio testing
- In-band and out-of-band subtitles
- In-band events
- Live DASH (livesim)
- Multiple moof/mdat tests
- Almost all content available protected by Marlin as well
- Some clearkey tests also included

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