

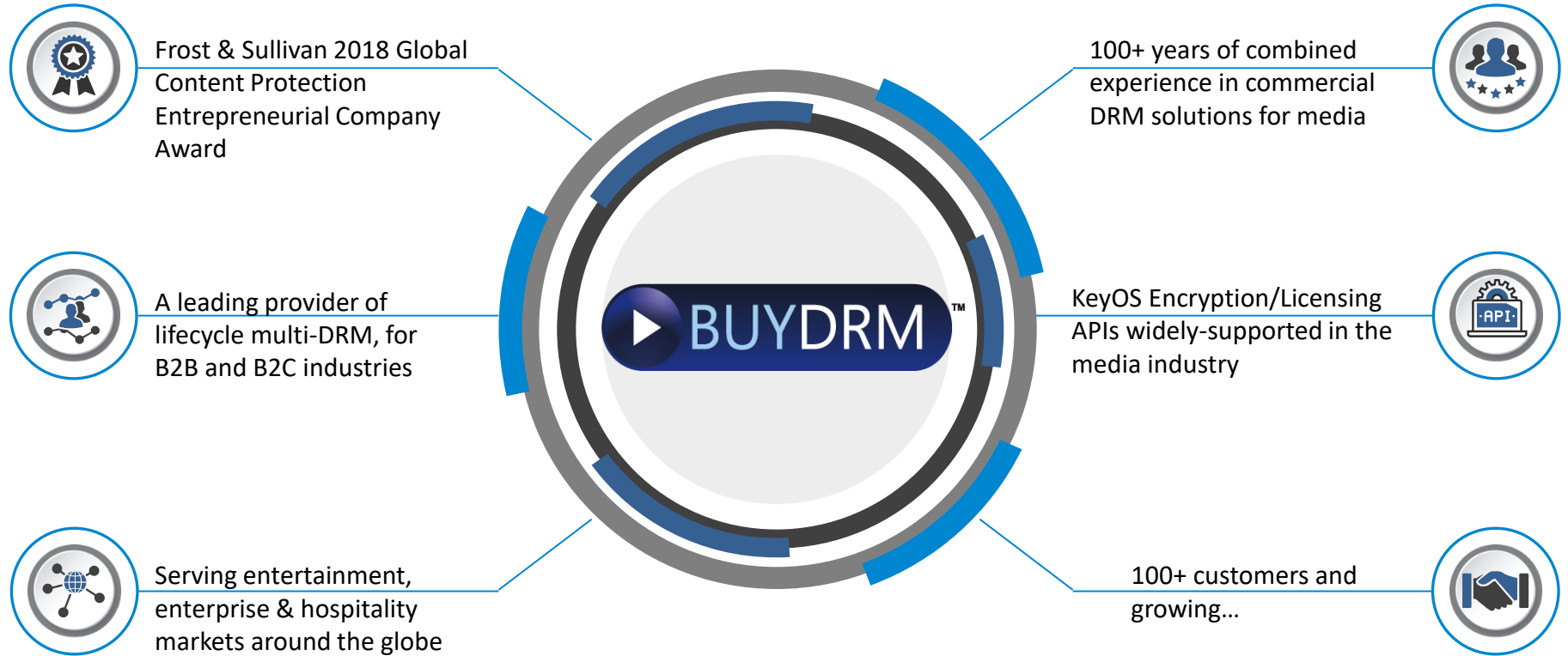


Deploying Multi-DRM for CMAF

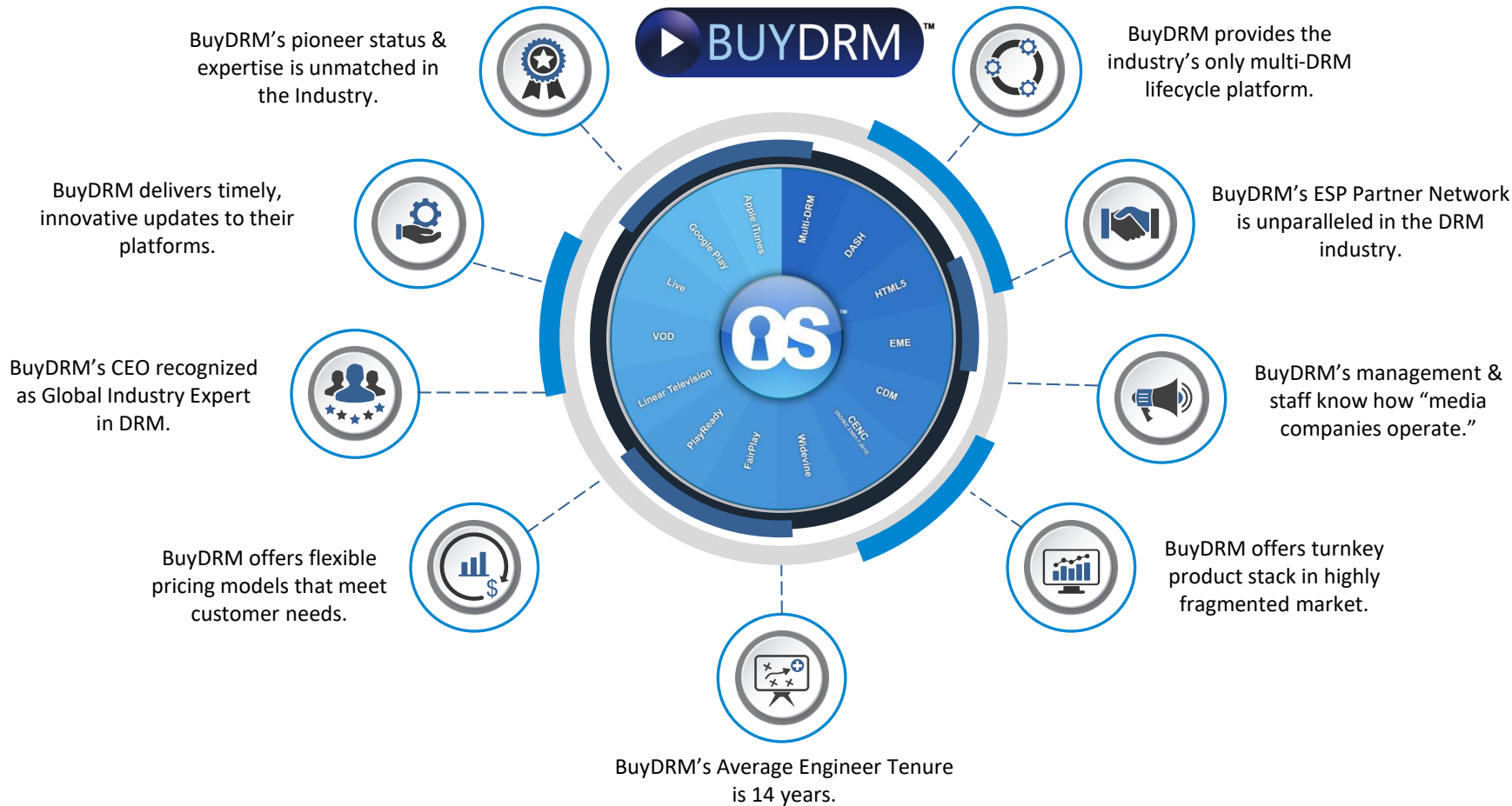


November 2020

BuyDRM OVERVIEW



BuyDRM Differentiators



Why BuyDRM ?



DRM-TO-SCALE

BuyDRM Operates the single largest DRM platform in the world, serving 10B+ licenses a year and over 30M plays a day. Massive operators like Sony, Blizzard, BBC iPlayer, Showtime, Crackle and Zee5 all rely on our highly-available, extremely-robust, carrier-grade DRM technologies to power their global video presence.



ECOSYSTEM

The KeyOS ESP Program encompasses the leading Encoder, Server and Player companies in the marketplace including AWS Elemental, Anevia, Bitmovin, Encoding.com, THEOPlayer, Flussonic, Unified Streaming and Wowza.



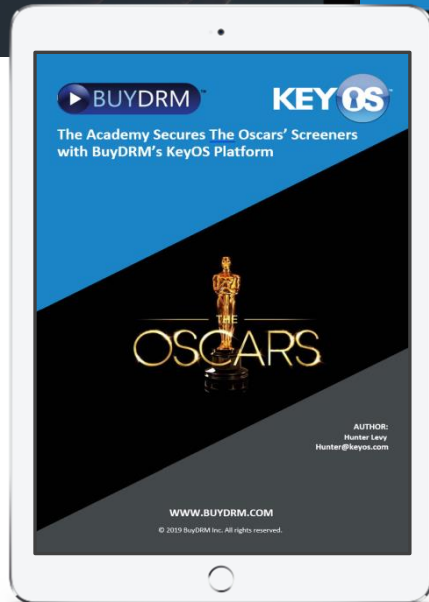
PEDIGREE

Since the turn of the century, BuyDRM has amassed considerable success stories around the development and deployment of commercial DRM applications. As thought leaders in the space, BuyDRM has evolved DRM into an integrated and valuable component of the video delivery ecosystem.

BuyDRM Customers



BuyDRM In The News



The DRM Blog

Deploying A Proxy for License Acquisition

By [Roman K.](#) • October 13, 2020 • [DRM](#) , [PROXY](#) , [DEPLOYING](#) , [LICENSE ACQUISITION](#)

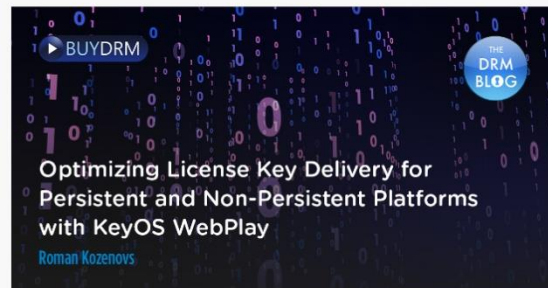


Today I want to introduce you to one of the most flexible ways of getting a DRM license from the KeyOS MultiKey License API and this may push you towards setting up the License Acquisition Proxy, or just proxy on your side as many our customers...

[READ MORE](#)

Optimizing License Key Delivery for Persistent and Non-Persistent Platforms with KeyOS WebPlay

By [Roman K.](#) • September 22, 2020 • [DRM](#) , [NON-PERSISTENT LICENSE](#) , [WEBPLAY](#) , [PERSISTENT LICENSE](#)



Deploying DRM to scale includes analyzing how and where you can use persistent licensing versus non-persistent licensing. This blog provides a strategy to lower your overall DRM licensing costs by tapping into persistent licensing.

[READ MORE](#)

Using Native DRM to Defeat Screen Capturing

By [Roman K.](#) • September 08, 2020 • [DRM](#) , [SCREEN CAPTURE](#) , [NATIVE DRM](#)



Digital rights management (DRM) technology is designed to protect valuable content from being stolen, hacked and downloaded. One of the most common ways that people try to steal content is through screen capture technology, usually in the form of...

[READ MORE](#)

[illegible]

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KeyOS Multi-DRM OTT PRODUCTS



The **KeyOS™ MultiKey™ Service** supports Microsoft PlayReady, Google Widevine Modular, and Apple FairPlay DRMs including support for HLS, MPEG-DASH and Microsoft Smooth Streaming. By supporting adaptive streaming technologies the MultiKey Service enables smooth playback of media to clients via HTTP to popular consumer platforms.



The **KeyOS MultiPlay™ SDKs** support secure, studio-approved video playback with a feature-rich player and Multi-DRM support. Using conventional development platforms, the SDKs are integrated into our clients' premium apps for Apple iTunes and Google Play and utilized during the content playback and download processes.



The **KeyOS MultiKey™ Server** enables in-network, on-premise and cloud, support for delivering multi-DRM license keys to a broad array of popular platforms and devices using widely-supported commercial DRMs. The KeyOS MultiKey Server can be provided as a Docker container or AMI for AWS cloud computing for global deployments.



The **KeyOS MultiScreener™** platform provides every aspect of Screeners. Digital Dailies, Marketing, PR and sell-through for premium video content. Included are secure user access, multiple layers of access control, forensic and visual watermarking, just-in-time packaging streaming, rights policy creation, license key delivery services and secure content playback.

New Products for 2021



- **KeyOS MultiMark™ Service**
 - Watermarking as a Service (SaaS)
 - Cloud-based Watermarking Service
 - Accessible through common APIs
 - On-The-Fly Watermarking Process
 - Primarily for B2C Markets
 - Aggregating Watermarking OEMs like Multi-DRM
 - Alpha Trials Q121
- **KeyOS MediaEngine™ Server**
 - Watermarking as a Solution (Software)
 - On-Prem, In-The-Cloud watermarking with DRM
 - Accessible through common APIs
 - Docker-based orchestration with robust security
 - Functions as an Origin Server and Streaming Server
 - Support for VOD and Live Events for HLS and DASH
 - Alpha Trials Q221



KeyOS ESP PARTNER PROGRAM | Launch

At BuyDRM we understand the importance of having great partners and the value that strategic integrations bring to companies deploying premium video offerings. The goal of the KeyOS ESP program is to align partner technologies with the KeyOS Encryption Key and License Key APIs so that mutual clients can utilize the technologies in parallel as they deploy.



Encoders	Servers	Players	+
 anevia YOUR NEXT GENERATION TV, NOW	 broadpeak	 ACCURATEPLAYER	 digital element
 aws elemental	 flussonic	 BITMOVIN	 im infomir
 encoding.com	 MistServer	 bradmax	 interra systems
 BITMOVIN	 Unified Streaming Platform	 NEXPLAYER Passion for High Quality Video Services	
 Qencode	 WOWZA™ media systems	 THEOplayer	



BuyDRM and Bitmovin



- Companies first partnered in February of 2014 for Player POC
- December 2014, we integrated KeyOS Encryption Key API with Bitmovin Encoder
- March 2016 we further demonstrated DASH DRM support for Bitmovin Player
- April 2017 we produced our first Webinar "**Deploying Bitmovin With KeyOS**"
- March 2018 BuyDRM provided DRM for Bitmovin NAB Demos
- May 2018 BuyDRM participated in the Bitmovin White Paper "**DRM - State of the Web 2018**"
- IBC 2019 BuyDRM Presented "**Lifecycle DRM: Closing the Gaps Between Studios and Consumers**" at Bitmovin Popup
- April 2020 BuyDRM and Bitmovin Presented "**Speed Up Your Streaming with Low Latency DRM**"

CMAF, CENC, CBCS, and CTR – the Alphabet Soup?

Why is CMAF Support Critical to DRM?

MPEG DASH and Apple's HLS are the dominant streaming protocols for delivering Adaptive Bitrate (ABR), segmented content over the Internet.

In the past, if a content provider wanted to stream using both MPEG-DASH and HLS, it meant that they needed to store their assets in the

- MPEG-TS (Transport Stream) container format for HLS, and in the
- mp4 format for MPEG-DASH (*well, DASH does support TS files, but it is seldom ever used*).

The CMAF Content Delivery Conundrum

What is the impact of storing your media in multiple container formats – in terms of cost and workflow?

To answer this question, let's assume that you had to deliver an asset with ten renditions (bitrate and resolution combinations) using both DASH and HLS.

Firstly, not having a common container format meant that you needed to store **each of the ten renditions as both a TS and an mp4 file**.

So, you incur **twice the storage and processing costs** -- which is not great news. And these costs get troublesome as you start streaming larger resolutions such as 1080p, 4K, UHD, etc.



The CMAF Content Delivery Conundrum Cont.

Secondly, **CDN caching becomes inefficient.**

Why does this affect CDN Caching?

Well, if a user consuming the DASH stream and a user consuming the HLS stream both request the same segment of the video, **your CDN provider must store two copies of the same segment because of the different container formats used by DASH and HLS.**

If it becomes expensive for the CDN providers to cache your content, it's quite likely **they'll pass the costs down to you!**



WHY?

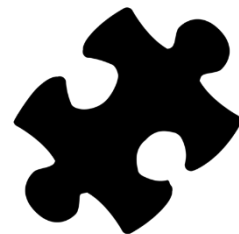
How Does CMAF Solve The CDN Conundrum?

As a solution to the above-mentioned problems, in 2016, the CMAF (Common Media Application Format) [specification](#) was created, which specified that **media could be stored in the fragmented mp4 container format (fmp4/ISOBMFF, or ISO/IEC 14496-12:201).**

Apple announced support for the fmp4 file format in the [WWDC 2016](#), and along with DASH's support for fmp4, it meant that **an asset could now be stored in a single file format and streamed using DASH and HLS.**

While this meant that storage costs would potentially reduce, there was a cog in the wheel when it came to CMAF's encryption recommendations.

The CMAF specification states that "Encrypted track sample data in a CMAF SHALL use an encryption scheme defined in CENC Section 4.2."



How Does CMAF Solve The CDN Conundrum?

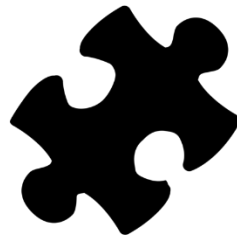
The CENC specification goes on to say that videos can be encrypted using either

- AES-128 CTR
- AES-128 CBCS

Where CTR and CBCS are different Cipher Block Modes.

Since CENC did not advocate a single encryption mode for AES-128, it meant that DRM providers could choose any flavor of AES-128 cipher block modes leading to a fragmented eco-system.

Thus, despite using CMAF, **you need to produce multiple variants of your media to support multi-DRM.**



Today With and Without CMAF.

Streaming Protocols

Protocol	With CMAF	Without CMAF
MPEG-DASH	CBCS and CTR	CTR
HLS	CBCS	CBCS

It looks confusing, right?

DRM

DRM	Encryption Mode
Apple FairPlay	CBCS
Google Widevine	CBCS and CTR
Microsoft PlayReady	CBCS and CTR

But there is a path to a unified and un-fragmented streaming solution.

The Road To The Format Holy Grail.

If you create a single set of files using CMAF and encrypt them using CBCS, then you can use this single set of files to stream your content using DASH and HLS with Widevine, PlayReady, and FairPlay DRM.

This is the Format Holy Grail.

Updates To The MultiPack Product Line with CMAF Support.

1. Our latest product update provides universal CBCS support for CMAF.
2. This means that you can create a single encrypted file using the fMP4 container format, encrypt it with the CBCS, and then package it for both HLS and MPEG-DASH.
3. The benefits of doing this are massive.
 1. Your storage costs will reduce considerably (*compare with creating multiple versions of the same file*)
 2. You now have a simplified workflow at your disposal.
 3. You will see an improvement in CDN caching because both HLS and DASH streams now refer to the same underlying fmp4 media files.



CMAF Updates To The KeyOS MultiPack Utility



1. With version 1.2.1-1.6.0.637 of the [KeyOS MultiPack Utility](#) release, we are announcing support for producing a single CBCS encrypted source (using the ISOBMFF or fmp4 file format) from HLS, or MPEG-DASH files.
2. The result is a reduction of your storage costs and an improvement in caching due to the use of a single source file with multiple manifests to support different streaming protocols.
3. In addition, we are announcing full support for Widevine signaling for HLS files. This feature addition helps you stream using the HLS protocol to devices that support Widevine DRM.
4. Again, like the CMAF support, we just announced, supporting Widevine for HLS is a step towards a simpler, more efficient workflow with reduced storage costs and increased caching efficiency.

CMAF Updates To The KeyOS MultiPack Plugin For Wowza

1. As you probably already know, you can use BuyDRM's KeyOS MultiPack plug-in with Wowza's Streaming Engine.
2. With this product update, BuyDRM's KeyOS MultiPack Plug-In for Wowza's Media Engine now supports all the streaming protocols and formats supported by Wowza, which are
 - MPEG DASH,
 - HLS,
 - Microsoft Smooth Streaming (MSS)
 - CMAF compatible output with AES-128 CTR encryption (Widevine/PlayReady).
 - **CMAF HLS w/ FairPlay is not yet supported by Wowza.**
3. As an extension to this, when a user generates HLS outputs, they can now choose to use either Apple's FairPlay Streaming or Microsoft's [PlayReady Envelope](#) DRM.



CONCLUSION

- In conclusion, this product update signals a massive win for us and our customers.
- It showcases our commitment to providing the latest technological innovations for our customers with a singular focus – protecting their content and providing the best experience for our customers and their end-users.
- If you have any questions, please fill out the contact form. We will get back to you as soon as possible.
- THANK YOU for watching today and thanks to Bitmovin for Hosting!



Thank You



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