intertrust | fastly

One stop multi-CDN, multi-DRM service with packaging capabilities

Integrated Fastly on-the-fly packaging
with Intertrust's ExpressPlay DRM™

Industry
Media and Technology

Location
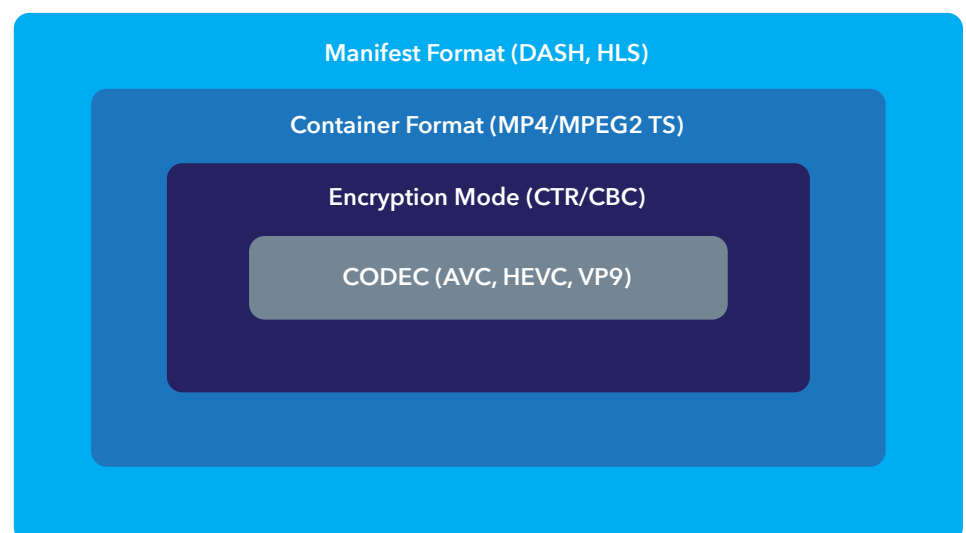San Francisco, California
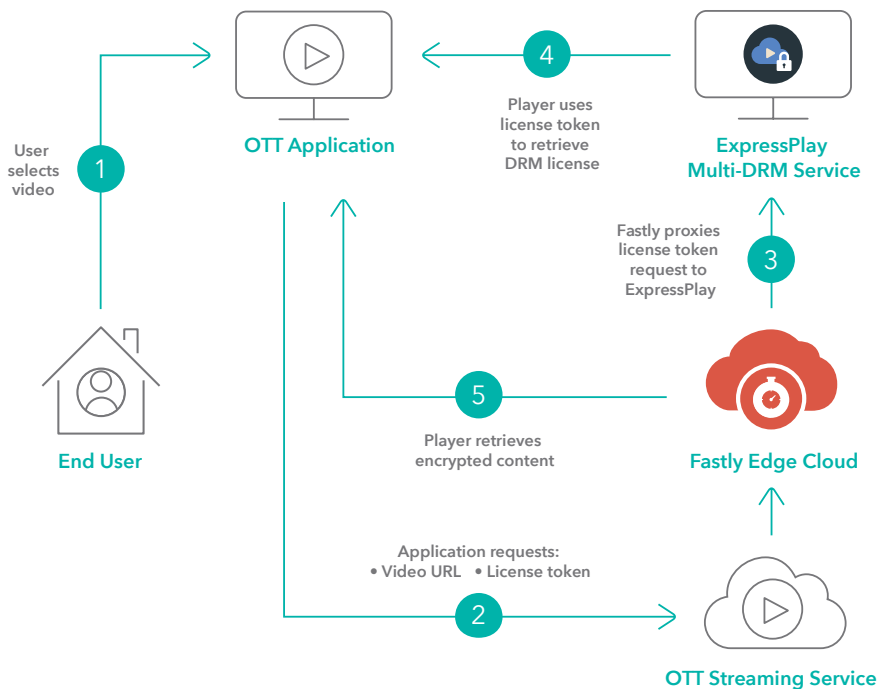
Solution
ExpressPlay DRM

The challenge

As consumers increasingly opt to stream high resolution videos on their preferred devices and players, service providers face the challenge of packaging video into multiple permutations. Whether the videos are delivered over-the-top (OTT) or as part of a pay-TV operator's multi-screen and multi-network offer, this generates a content packaging workflow challenge that is difficult and costly to implement, test, and maintain.

The problem is further compounded when streamed content is protected (encrypted) as there is no common protection format that has been widely adopted. To integrate digital rights management (DRM) into the packaging and playback workflow (in particular encryption key management) requires duplication of media versions, additional storage requirements, and complications of the media packaging workflow.

Illustration of streaming media format structure – Several permutations of Manifest, Container and Encryption modes are required based on the player capabilities and DRM system supported by the device

Manifest Format (DASH, HLS)

Container Format (MP4/MPEG2 TS)

Encryption Mode (CTR/CBC)

CODEC (AVC, HEVC, VP9)

Fastly and Intertrust joint solution workflow

The solution

To address these challenges, Fastly, Inc. (NYSE: FSLY; HQ: San Francisco, California) and Intertrust Technologies (privately held; HQ: Sunnyvale, California) have partnered to offer a joint solution for streamlining packaging and playback of protected content. Fastly is a provider of an edge cloud platform and edge computing technologies, while Intertrust is the developer of ExpressPlay DRM, a cost-effective and cloud-based multi-DRM service.

The fully integrated solution comprises Fastly's on-the-fly packaging (OTFP) service and Intertrust's ExpressPlay DRM Key Management Service (KMS), including multi-DRM license issuing. Content is encrypted and packaged seamlessly, so customers do not need to manage the encryption workflow including management of the keys, which stay in the ExpressPlay DRM database. Video service operators can now deploy a single copy of an asset protected with the joint ExpressPlay DRM and Fastly OTFP services into MPEG-DASH, HTTP Live Streaming (HLS), or HTTP Dynamic Streaming (HDS), with all the standard codec formats and container formats.

The solution complies with the MovieLabs Enhanced Content Specification (ECP) for UHD/4K content. It is fully compatible with Fastly's Media Shield and can thus support multi-CDN (content delivery network) use cases for improved Quality of Experience (QoE). As an additional benefit only content with a user viewing request is actually packaged, resulting in further savings of processing and storage resources. In the diagram above, the Fastly OTFP interacts with the content management system (CMS) and the ExpressPlay multi-DRM service to deliver DRM-protected content to the end user (viewer):

1. A user selects a specific video resulting in a request for an Asset ID and associated license token

2. The app authenticates and requests the license token for the user's content rights

3. Fastly requests both Content Encryption Key (CEK) and license tokens for the user's content rights from the Intertrust ExpressPlay DRM service

4. The app or media player redeems a license using the token

5. The encrypted video is delivered and decrypted by the user's device for local viewing

The keys used by Fastly's OTFP service are securely stored in the ExpressPlay DRM KMS, which is fully integrated with the ExpressPlay DRM License service to support all major DRM systems including Apple FairPlay Streaming, Google Widevine, Microsoft PlayReady, Adobe Access/Primetime, and the open-standard Marlin DRM.

Moving these traditionally offline DRM workflows to the edge of the network helps streamline internal processes and reduces operational and infrastructure costs, all while enabling the use of popular players like Shaka Player, Bitmovin, THEOplayer, DASH.js, or other native/HTML5 players with no proprietary SDK or library integration required to enforce rights management.

In the below integration scenario, Fastly acts as a proxy for generating the tokenized DRM license URL from the content rights associated with the requesting end user. The player then requests the DRM license using this tokenized URL, which decrypts the content and enables the user to watch it.

Fully integrated with the ExpressPlay DRM License service to support all major DRM systems including:

FairPlay Streaming

WIDEVINE

Microsoft PlayReady

Adobe Primetime

marlin

Fastly's Edge Cloud Platform

Fastly's edge cloud platform is designed to cache and rapidly deliver both frequently requested and long-tail, on-demand videos. By moving data and applications as close to the end-users as possible, operators can deliver fast, highly personalized experiences to viewers around the world.

Fastly offers an 'on-the-fly,' dynamic, VOD content packaging service. Rather than requiring the operator to pre-package the video, the content is packaged in real-time and immediately made available to viewers. Fastly supports both HLS (Envelope AES and Sample AES Encryption) as well as MPEG-DASH (ISO/IEC 23001-7 Common Encryption). The joint solution also supports low-latency live streaming workflow with Common Media Application Format (CMAF) when combined with industry leading products and solutions from video player and transcoding partners. The single format aspect of CMAF improves the CDN efficiency and consequently the viewing experience.

Intertrust ExpressPlay DRM

ExpressPlay DRM is a cloud-based multi-DRM service for pay-TV and OTT operators, and content distributors, supporting all major DRMs as mentioned earlier. The ExpressPlay multi-DRM service enables operators to monetize valuable assets while reducing both CAPEX and OPEX – no need for on-prem servers and fewer operations staff are required since the service runs securely in the cloud.

ExpressPlay DRM main features:

- Scalability proven in the largest streaming platform in Asia with 25M+ concurrent viewers
- Broad CE device support: smart TVs and STBs, Windows/Mac, Android and iOS mobile devices, Android TV
- MovieLabs ECP compliant content security facilitates licensing of UHD/4K and premium programming

The cloud-based ExpressPlay DRM service secures premium services for the demanding viewers of today who expect to enjoy their content anywhere, anytime, on any device.

Operators are able to serve millions of concurrent viewers for major live events with a cost-effective multi-DRM service featuring a global footprint with geo-redundancy and automatic fail-over options that maximizes performance and uptime. Together with Fastly's edge cloud platform capabilities, this ensures the lowest service latency wherever subscribers are located.

In addition, as an adjunct to ExpressPlay DRM, Intertrust offers session-based watermarking complemented by advanced monitoring and anti-piracy services. By monitoring the web for illicit re-streaming of content, and enabling identification of the last authorized recipient, it allows the operator to decide on course of action, for example instant shutdown of the illicit stream source and/or building a case for subsequent legal proceedings.

As media companies continue to evolve beyond traditional print and broadcast to new digital models, they are looking to high-impact technologies and services that help them scale and monetize to remain competitive. Even when breaking news or big sporting events spike demand, this integrated solution gives viewers and readers access to the media content they desire without skipping a beat.

Lee Chen, VP Corporate Development and Strategic Partnerships, Fastly

Summary

The Fastly and Intertrust joint solution provides a one-stop highly scalable, simplified and secure workflow for packaging and delivery of protected content with minimal latency and studio-approved security, to virtually any device. The integrated solution means that OTT operators do not need to concern themselves with managing keys, packaging, or content encryption and secure delivery.

Multi-DRM and multi-screen support

The solution supports both OTT live events and on-demand use cases. It enables operators to address audiences on a global scale as proven in large deployments in Asia and Europe. The joint solution enables operators to:

- **Configure** live stream delivery, enabling millions of concurrent users across all HTTP streaming standards

- **Secure** HTTP streaming with token authentication, content targeting, and media encryption

- **Deliver** the best possible experience regardless of user location, device, or connection

- **Update** catalog content instantly and save on costs serving long-tail content with dynamic packaging

Operators can thus be confident in their content distribution infrastructure and security, allowing them to focus on their core business, improving overall competitiveness and providing consumers with a great experience.

Learn more at:

https://docs.fastly.com/products/fastlys-onthefly-packaging-service

https://www.intertrust.com/products/drm-system/drm

About Intertrust

Intertrust provides trusted computing products for leading corporations – from mobile, CE and IoT manufacturers, to service providers, and enterprise software companies. These products include the world's leading digital rights management (DRM), software tamper resistance, and technologies to enable secure data exchanges for various verticals including energy, entertainment, retail, automotive, and fintech.

Intertrust is headquartered in Silicon Valley with regional offices globally. The company has a legacy of invention, with fundamental contributions in computer security and digital trust. Intertrust holds hundreds of patents that are key to internet security, trust, privacy management, mobile code, networked operating environments, web services, and cloud computing.

About Fastly

Fastly helps people stay better connected with the things they love. Fastly's edge cloud platform enables customers to create great digital experiences quickly, securely, and reliably by processing, serving, and securing our customers' applications as close to their end-users as possible – at the edge of the internet. The platform is designed to take advantage of the modern internet, to be programmable, and to support agile software development. Fastly's customers use our edge cloud platform to ensure concertgoers can buy tickets to the live events they love, travelers can book flights seamlessly and embark on their next great adventure, and sports fans can stream events in real time, across devices. They include many of the world's most prominent companies, including Alaska Airlines, The New York Times, and Ticketmaster.

intertrust®

**Building trust for
the connected world**

Learn more at: intertrust.com/drm
Contact us at: +1 408 616 1600

Intertrust Technologies Corporation
920 Stewart Drive, Sunnyvale, CA 94085