

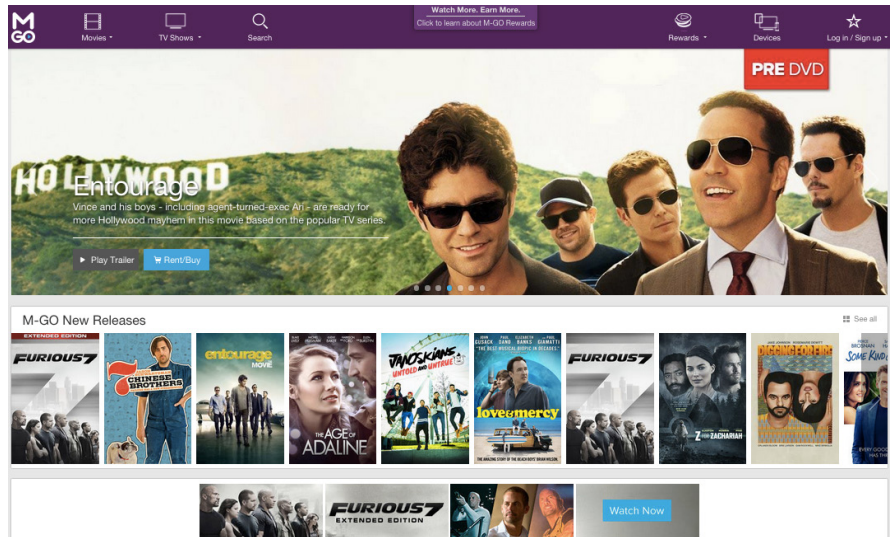
Beamr Case Study: **M-GO**

Beamr's technology delivers network-friendly streams with excellent image quality, resulting in enhanced user experience and significant cost savings.

Samir Ahmed,
M-GO's Chief Technology Officer



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M-GO is the premium digital video on demand (VOD) service created as a joint venture between DreamWorks Animation and Technicolor. With stunning picture and audio quality, smarter browsing, and the convenience of viewing across any device, M-GO strives to seamlessly deliver premium movie and TV entertainment.

M-GO is available on major platforms and functions across a full spectrum of operating systems ranging from Android and iOS to Windows. M-GO is pre-loaded on Roku streaming players, Samsung 4K and HD TVs, LG, VIZIO Smart TVs, Blu-ray players, Wi-Fi tablets and digital media players.

M-GO Chief Technology Officer, Samir Ahmed, who oversaw the creation of the M-GO platform from conception to execution, focuses intensely on providing the best possible user experience. Ahmed frames the issue this way. "The obvious challenge with streaming delivery, is that it's a lot more complex than simply placing a disc in a player. Consumers want the best possible quality for the money they've spent and they aren't concerned with network topology, compression or net neutrality."

Ensuring the Customer Experience

According to Ahmed, M-GO ensures a high quality customer experience by approaching it on multiple fronts. For example, M-GO works with multiple CDN partners to develop an intelligent selection algorithm to deliver content from the most efficient storage facility for that consumer.

Customer education is also key. Consumers experiencing excessive buffering for example, may call to express frustration with the service, however the actual cause may be the distance of their device from their wireless access point. In these cases, the M-GO customer care representatives take the time to educate the customer about how wireless networks operate and suggest alternatives for improving performance.

The best call is one that does not occur in the first place. "From my standpoint," commented Ahmed, "We want to implement technology solutions to avoid that customer call from the beginning. Before we started working with Beamr, we were optimizing on the CDN side, and there were some improvements, but it wasn't enough. We needed to go all the way and optimize our video files as well."

Optimizing with Beamr Video

Beamr Video is a perceptual video optimizer that significantly reduces the bitrate of video streams while preserving their full resolution and quality. This reduces storage and bandwidth costs, and enables the delivery of higher quality video over low bandwidth connections.

The Beamr Video optimization process is a closed loop system that assures the preservation of subjective quality when reducing video bitrates. It is based on a patent-pending perceptual image quality measure, developed over 4 years of intensive research. Beamr Video processing is fully automatic -- there are no settings necessary, since videos are automatically analyzed and optimized to the lowest bitrate possible without losing quality.

Beamr Video runs on 64-bit Ubuntu 12.04 and RHEL 6.x and compatible systems, and is applied to encoded MP4/H.264 files before encryption and packaging, or to H.264 elementary streams targeted for Blu-ray production.

Integrating Beamr Video into M-GO's Encoding Workflow

M-GO ingests several hundred titles per month, all encoded to multiple formats, including DASH, HLS, Smooth Streaming, Widevine, and several legacy formats. Hence, automation is a critical component of M-GO's production workflow.



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Though the company uses software-based QC tools, they also manually verify all files, file packages and layers within those packages.

M-GO/BEAMR VIDEO WORKFLOW INTEGRATION

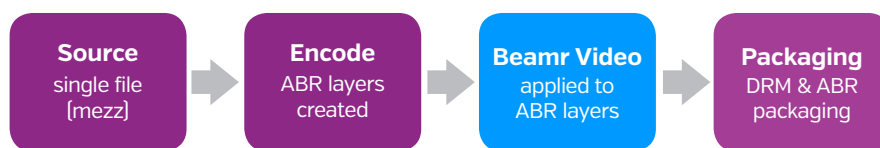


Figure 1. The M-GO encoding workflow and Beamr integration

For M-GO, the three most important metrics for streaming video user experience are video start time, the number of rebuffer events, and the quality of the video. M-GO has witnessed improvements in all of these metrics following Beamr Video optimization.

The process is controlled within their Content Encoding Platform, a homegrown mix of C++ and Node-JS code, which manages orders, tracks assets and allocates cloud resources to the various encoding, optimizing and packaging tasks. Once an order for content [sent to any of their content providers] is filled [i.e., the Source file and other assets are received], the system initiates the encoding workflow (Figure 1).

Architecturally, Beamr Video optimization is simply another discrete step in the M-GO workflow. Within this workflow, the Beamr Video command lines are seamlessly wrapped into the content processing steps. During optimization, the Content Encoding Platform continuously monitors the CPU load and provides consistent status updates to the Beamr Video system. According to Ahmed, the integration of Beamr Video was a simple and unobtrusive process implemented in “hours of work.”

Effect on Adaptive Bitrate (ABR) Profiles

The positive effect of Beamr Video optimization was immediately apparent in the number of files required for effective ABR delivery. Beamr Video reduced the data rate of M-GO encodes by up to 50%.

When you multiply this by the number of discrete packages M-GO has to prepare for DASH, HLS, Smooth Streaming and other formats, it is clear that Beamr Video delivers dramatic reductions in storage expense.

After researching adaptive streaming configuration recommendations in industry white papers, and reviewing the published practices of online video platforms and some broadcasters, Beamr has created layer reduction logic that can be integrated into an automated workflow. A sample script written in Python is provided to customers for this purpose.

It should be noted that all Beamr Video files are encoded using variable bitrate encoding [VBR]. Before deploying files optimized by Beamr Video, M-GO tested them for compatibility and performance within each adaptive format with no issues reported. Furthermore, the optimized files led to several critical performance increases that have improved the customer viewing experience.



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Following Beamr Video optimization: rebuffer events were reduced up to 50%. Beamr Video also decreased video start time up to 20%, meaning viewers were less likely to abandon the video before it started playing.

Improving the Viewer Experience

For M-GO, the three most important metrics for streaming video user experience are video start time, the number of rebuffer events, and the quality of the video. M-GO has witnessed improvements in all of these metrics following Beamr Video optimization: rebuffer events were reduced up to 50%, a very significant finding since many customer calls are directly related to rebuffering. Beamr Video also decreased video start time up to 20%, meaning viewers were less likely to abandon the video before it started playing.

In addition, Beamr Video increased the quality of delivered video by making higher quality (and higher bitrate) layers available to lower-bandwidth users after Beamr Video optimization. This enabled more viewers to watch in 1080p, getting much closer to Ahmed's vision of a Blu-ray like experience.

Looking Ahead to HEVC

As the industry moves towards 4K video and HEVC, M-GO and Beamr both remain at the forefront. In November 2014, M-GO became the first to launch an HEVC-based 4K Ultra HD streaming and download service to Samsung Smart TVs, and has amassed an extensive library of 4K titles.

At CES 2015, M-GO and Beamr demonstrated a proof-of-concept of the Beamr Video optimization process applied to UHD [4K] movies encoded in HEVC. The result was an additional 40% bitrate reduction, from a source 15 Mbps file to an optimized 9.5 Mbps file.

In the short and long term, Beamr Video dovetails perfectly with Ahmed's fanatical focus on customer experience. "M-Go is committed to delivering premium content and the highest user experience possible over every medium and device," says Ahmed. "Beamr's technology delivers network-friendly streams with excellent image quality, resulting in enhanced user experience and significant cost savings."

About Beamr

Beamr is the global leader in media optimization solutions, powering some of the world's top web publishers, social networks and media companies. Beamr offers a patent-pending perceptual video optimizer, which reduces the bitrate of H.264 and HEVC streams by up to 50%, preserving their full resolution and quality. By reducing video bitrates, Beamr enables content and service providers to distribute exceptionally high-quality video, with faster downloads and smoother streaming on bandwidth constrained connections.

We appreciate your interest in Beamr Video. For more information on integrating Beamr Video into your video production workflow, please contact info@beamrvideo.com.



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