Using ABR Optimize with Vantage

telestream

Overview

ABR Optimize for Telestream Vantage Multiscreen intelligently constructs adaptive-bitrate (ABR) packages, which significantly reduce delivery bandwidth and distribution cost while maintaining a high degree of quality. ABR Optimize enables service providers and content creators to set a guaranteed quality level for encoded adaptive bitrate video services that maintain a premium viewing experience. The guaranteed quality level is based on SSIMplus, the Emmy-award-winning quality measurement suite from SSIMWave uses their research and expertise to develop and provide SSIMplus, a quality of experience (QoE) measurement product that closely tracks the perception of actual viewers.

Note: This guide is written for video professionals who are familiar with using Vantage. To use the ABR Optimize option effectively in Vantage, you should know how to create workflows and submit jobs. If you aren't familiar with Vantage, we suggest that you review the Vantage User's Guide.

ABR Optimize Features

Quality of Experience Analysis

Quality of Experience (QoE) is an empirical measurement that quantifies the fidelity of the delivered video according to the way it is perceived by the human visual system. QoE analysis in ABR Optimize is performed with the SSIMplus algorithm from the researchers at SSIMWave. This algorithm's analysis provides consistent measurement across content types and produces the strongest available correlation with human focus group quality scoring.

Package Optimization

Once the video has been scored it is possible to set minimum QoE thresholds to ensure that the delivered quality is consistently maintained. This also avoids delivering video for which there is no perceptible improvement above the desired QoE threshold. The video encodings that exceed the necessary QoE are also the most expensive to deliver since they are generally at the very highest bitrates. The end result of package optimization is dramatic reduction in delivery bandwidth requirements and reliable delivery of specified video quality.

Device Specific Optimization Targeting

In addition to measuring video quality at a given resolution vs. the reference source file ABR Optimize can also considers the typical expected viewing environment and resolution vs. physical size (pixel pitch) of the viewing device. A video signal at 1920x1080 viewed on a 14cm diagonal screen at a distance of 1m is perceived differently than that same signal viewed on a 1.5m diagonal screen at a distance of 2m. Device specific targeting allows for QoE scoring to also take into account the physical device configuration and likely viewing environment.

Licensing

Each license for ABR Optimize allows one job on one server at a time, and additional jobs can be executed with additional licenses. Licenses may float to any available server. Licenses may float across available servers, and there may be as many concurrent analyses as there are available licenses in the pool. If there are more pending jobs than there are licenses, then jobs will queue for an available slot.

Configuring ABR Optimize Workflows

The ABR Optimize action is located in the Multiscreen category. This action is designed to make it easy to automate the analysis and optimization of multiscreen packages to ensure consistent quality output with minimal delivery bandwidth.

The ABR Optimize action can analyze and optimize HLS packages generated by Vantage Multiscreen. These packages can be generated by a preceding Multiscreen Flip action in the Vantage workflow, or they may also have been previously generated and stored as files.

Note: The master playlist must be submitted for previously created HLS source.

Creating a Workflow

To use the ABR Optimize action in Vantage, create a workflow with a *Receive* action, a *Multiscreen Flip* action, and an *ABR Optimize* action. The Receive action is located in the Common section. Multiscreen Flip and ABR Optimize actions are both located in the Multiscreen section.
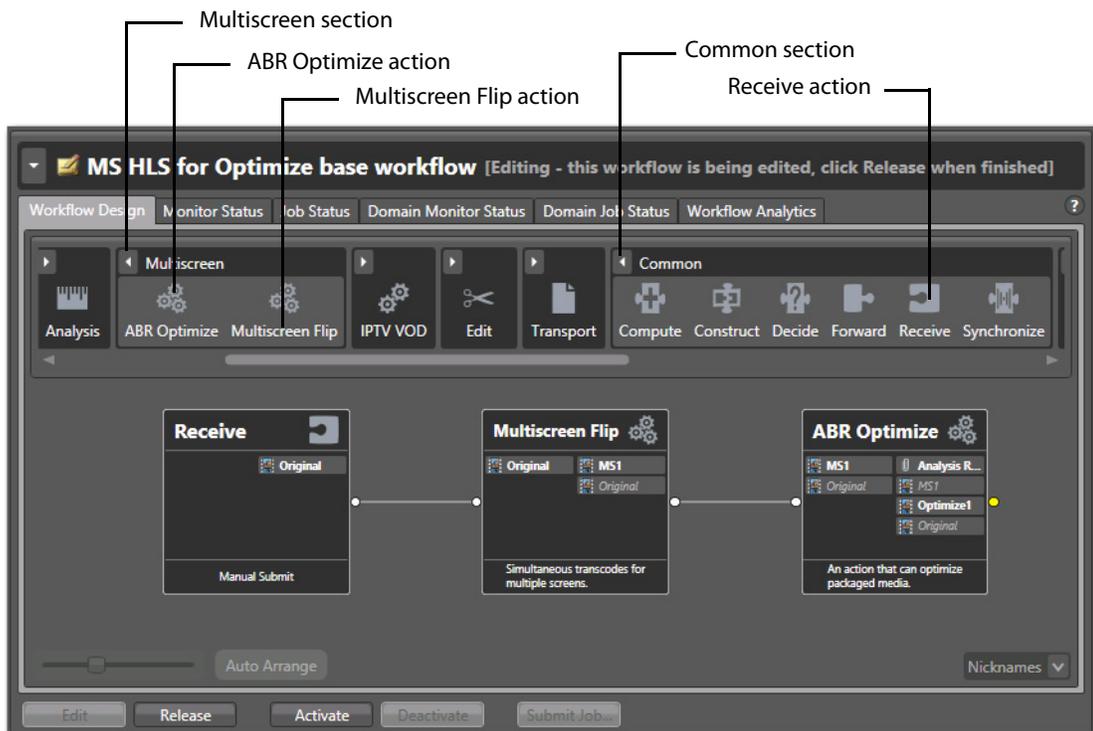
Setting Up the Receive and Multiscreen Flip Actions

To set up the *Receive* action, open its inspector by double-clicking on the action. Since this workflow is a initiated using a manual submit input, you can just take the default settings.
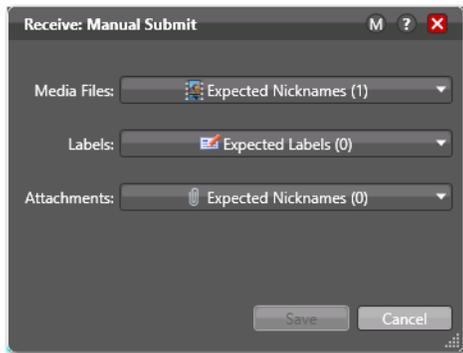
Note: You can also use a *Watch* or *Monitor* action if you want a more automated submission process.

To set up the *Multiscreen Flip* action, open its inspector by double-clicking on the action. Set up audio, transcoders and video as needed. Select *Original* as the Source. Select MS1 on the Output. (You can also create your own nicknames.) Click *Save* when finished.

Select Original

MS1
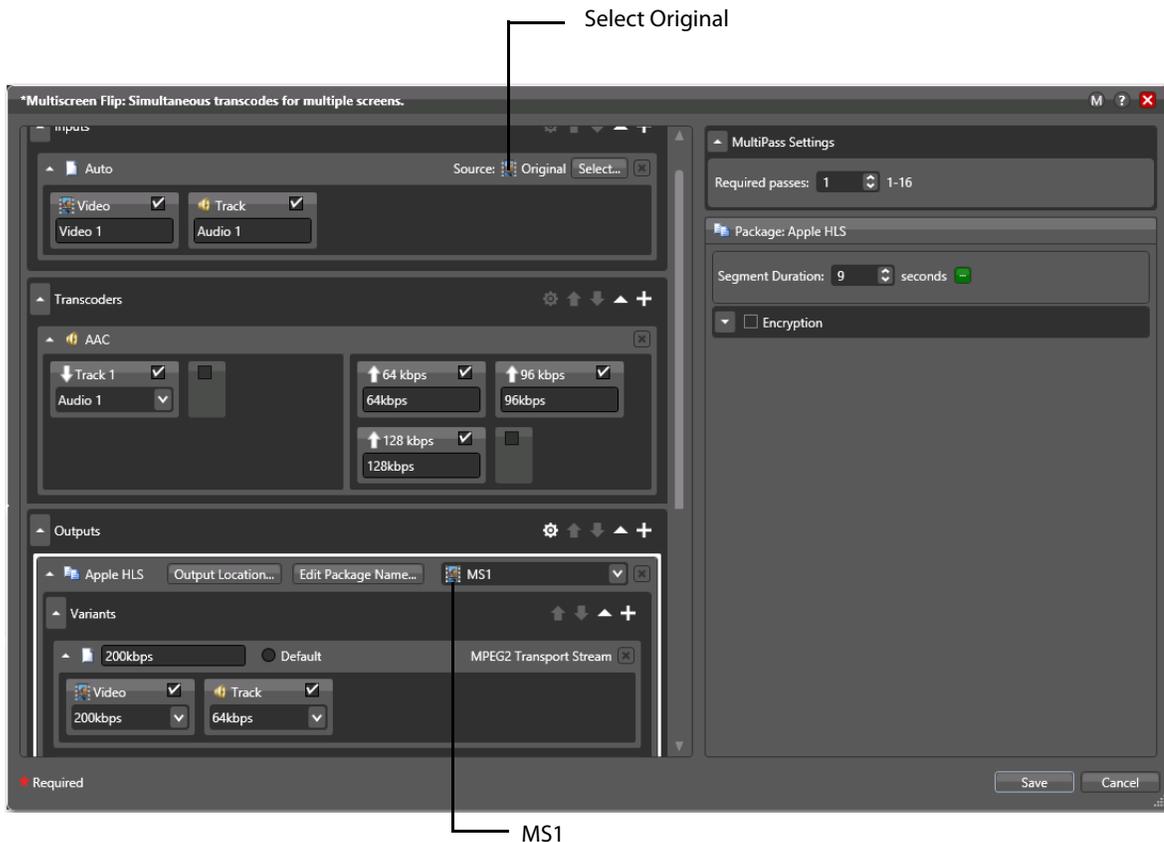
Selecting Reference Media

The optimal analysis can be performed using the original mezzanine input files used to do the original encoding in the Multiscreen Flip Action. This file is typically passed forward from a preceding Multiscreen Flip action using the nickname *Original* that you can select.

Select Original
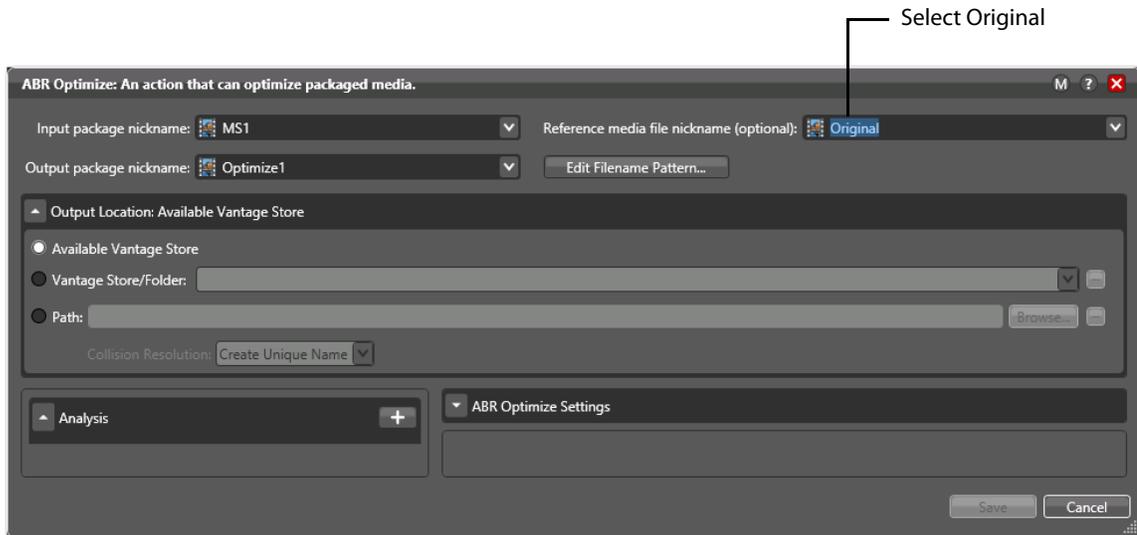
Note: If the reference media is not available ABR Optimize can still analyze and improve packaging efficiency by using the highest resolution and bitrate encoding in the multiscreen package as a reference for the rest of the package encodings.

Configuring SSIMplus Analyzer

The SSIMplus analyzer is responsible for the Quality of Experience (QoE) measurement of the input package. In the Analysis pane click the Add (+) button to select this analyzer. Only one analyzer is allowed.
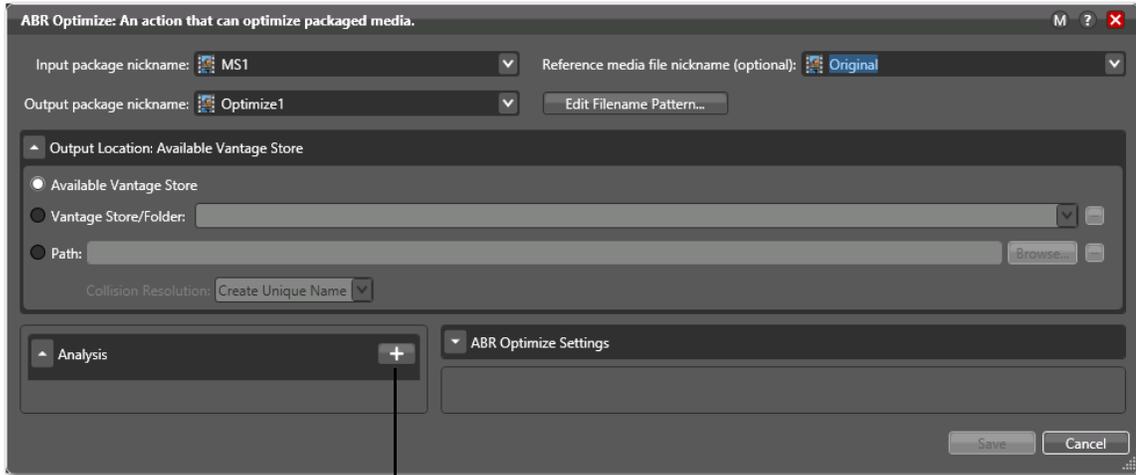
Click the Add button

Selecting Target Quality Level

Under the Optimizer Settings in the General pane, select the Quality of Experience (QoE) Index. This is a value between 0 and 100. The right value will vary depending on the goals of the service. Generally values from 80-100 offer very high quality, along with difficult to detect visual degradation. Values between 60 and 80 are typically used when slightly lower quality is tolerated to gain better bandwidth savings. Values below 60 are typically used when dramatic bandwidth savings are required to enable services that would. otherwise, be unavailable.

Also in the General pane is the ability to fine tune the way QoE scores are calculated and applied. You can specify the mean, median or minimum score for a given segment.
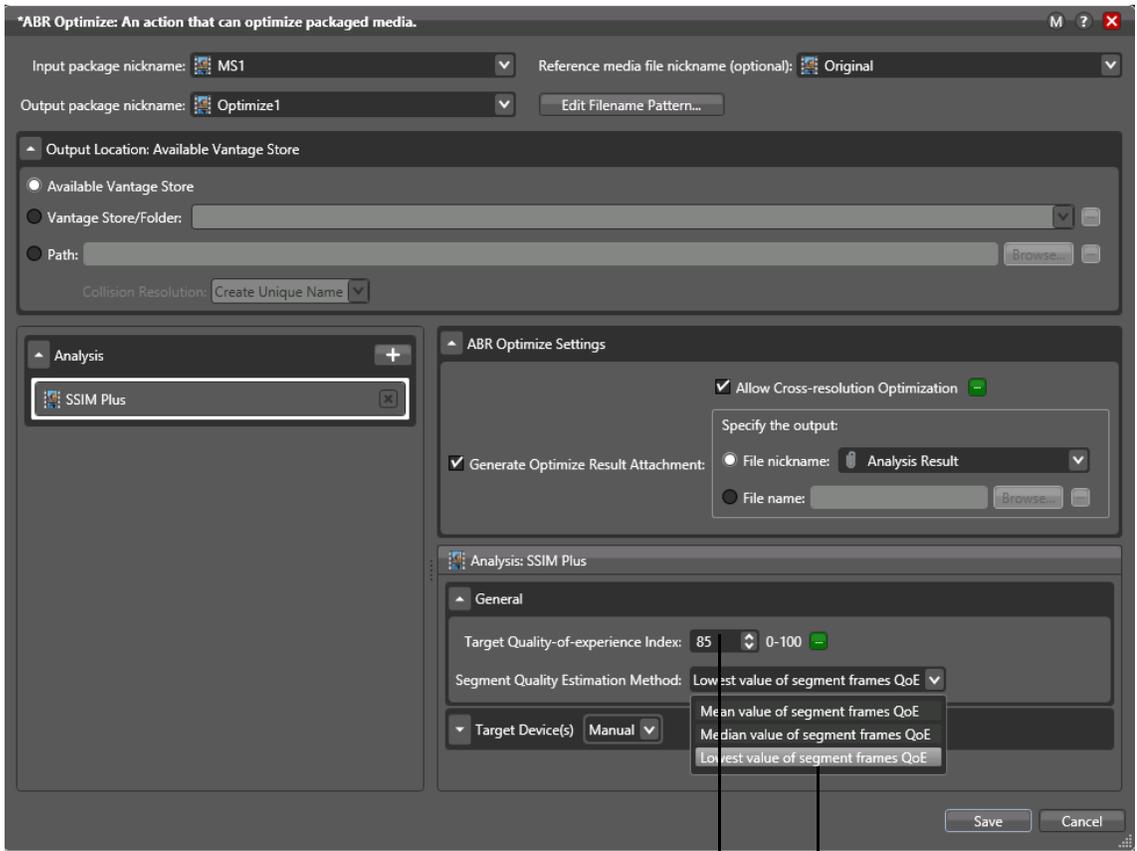
Select QoE index value

Select Quality Estimation

Configuring Target Devices

It is possible to select one or multiple specific devices as targets when computing QoE scores. If an unknown number of devices are targeted, it is best to use the default value.
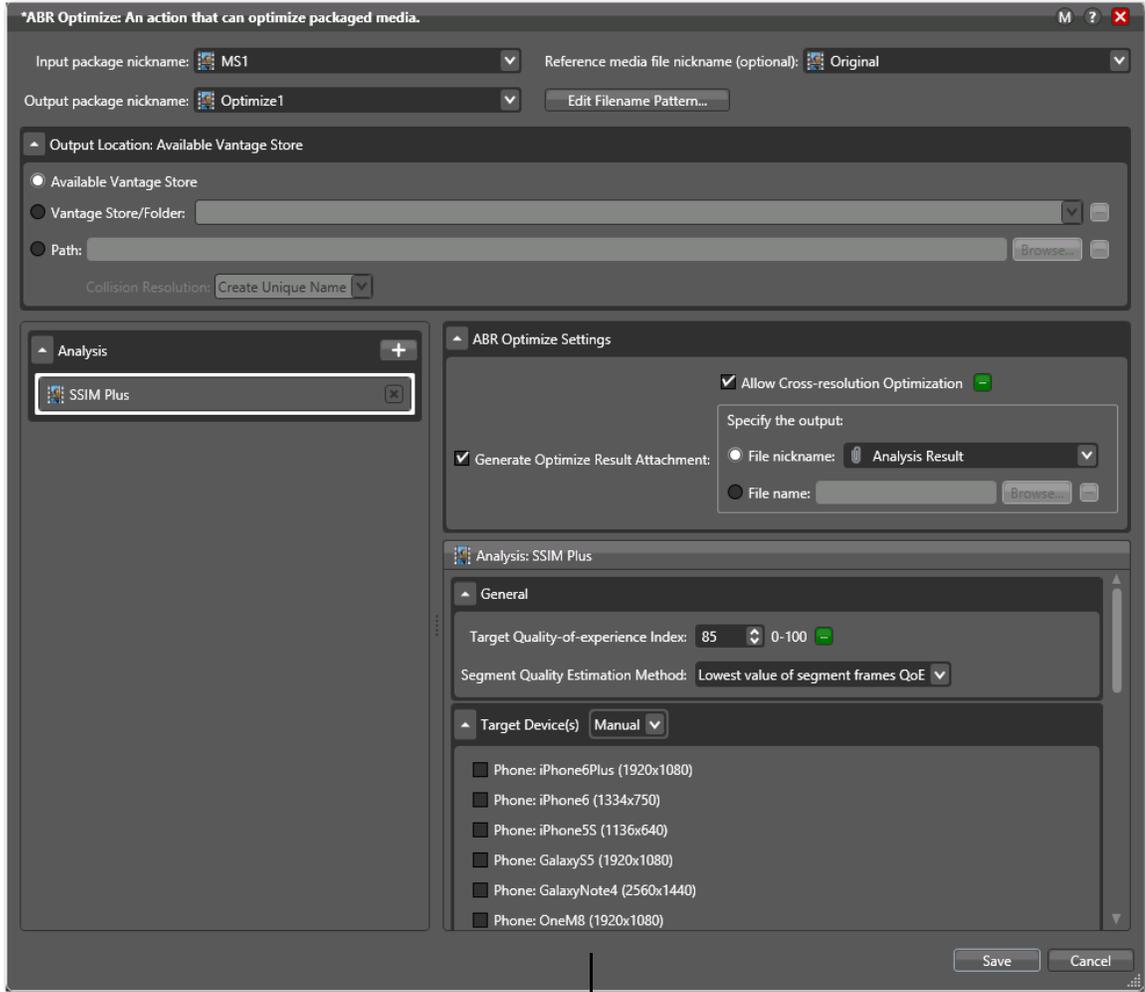
Select target

Reporting

The ABR Optimize action can optionally generate an XML report document which details the QoE scoring for the analyzed content.

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