



REAL-TIME VIDEO  
OPTIMIZATION SOLUTION



Consumers today expect first-screen video quality on every device. For content providers and pay-TV operators, delivering that quality of experience within the constraints of over-the-top (OTT) video streaming networks provides a unique set of challenges. The need to support a huge array of devices and extensive adaptive bitrate (ABR) profile sets, as well as dependence on the MPEG-4 AVC codec, requires a huge amount of bandwidth and drives up content delivery network (CDN) and storage costs. High-bitrate encoding to maintain video quality further strains the delivery network. No wonder that providing the best possible video quality while keeping capital and operational expenses under control has become a costly and complex endeavor.

What if you could deliver the compelling experience your OTT viewers demand by offering consistent, superior video quality while also reducing bandwidth consumption by up to 50%? It's now possible, with EyeQ™ from Harmonic.

An optional enhancement for the software-based Harmonic PURE Compression Engine™, EyeQ is a video compression optimization solution that leverages the function of the human visual system (HVS) to deliver a superior viewing experience on any device at low bitrates. Directly improving the bottom line through reduced CDN and storage costs, EyeQ delivers its bandwidth savings using a standard AVC codec and with no requirement to upgrade client devices. The technology ensures that video quality is optimized across all delivery networks, that buffering is reduced, and that your customers' quality of experience is improved.

With EyeQ, consumers can watch pristine video on their device of choice — even over constrained OTT/ABR networks. That capability leads to happier subscribers who want to spend even more time watching, and those additional eyeball minutes improve your content monetization opportunities.

HIGHLIGHTS

- Deliver a consistent, superior viewing experience on all devices
- Reduce bandwidth consumption by up to 50%
- Lower CDN and storage costs
- Reach more customers over constrained IP networks
- Reduce buffering
- Improve content monetization
- Utilize existing MPEG-4 AVC client and player ecosystem
- Available on Harmonic Electra X encoders and VOS Cloud, to provide exceptional TCO



*EyeQ allows you to deliver consistently high-quality video with a 50% reduction in bitrate.*

### Achieving Constant Video Quality

The result of a multi-year research effort and several filed patents, EyeQ compression is unique in its ability to assess and adjust encoding parameters to leverage the mechanics of the human eye, without adding latency to the encoding process. One of the key elements of the HVS is the ability to identify individual shapes in a video image. Humans are also more sensitive to changes in contrast than to differences in luminance, more receptive to motion than to texture, and have a specific ability to recognize faces. By weighing the importance of these sensitivities against less relevant elements in a video frame, EyeQ is better able to optimize the balance between video quality (VQ) and bandwidth than competing techniques, such as constant bitrate (CBR) or capped variable bitrate (CVBR) encoding.

Unlike CVBR, EyeQ does not rely on pseudo-linear scaling of picture- and scene-level quant measurements; it employs “quality awareness” to fully measure visual quality in real time. In-loop artificial intelligence then guides the codec to focus bits where and when they matter most for the viewer and reduce bits where they matter less. In this way, EyeQ uses only the bits needed to hit quality targets, which translates into more consistent VQ and significant bandwidth savings.

An additional benefit of EyeQ is that the encoder can be set to a higher peak rate to maintain quality in complex video segments. This capability enables some infrequent but difficult sequences to use more bits, while overall bandwidth usage is still much reduced versus CBR encoding. For example, in a relatively simple 90-second sequence with a single complex video transition, an EyeQ stream with a peak rate of 6.8 Mbps would consume much less than a stream with a constant rate of 4.2 Mbps, yet the overall quality of experience for the viewer would be improved.

EyeQ delivers its benefits while remaining 100% standards compliant and interoperable with existing decoders. With CDN costs growing with every new viewer, and those viewers spending more and more time watching streamed video, EyeQ not only helps you lower TCO on your infrastructure investment, it provides the competitive advantage you need to come out ahead in the high-stakes OTT game.



*Artificial intelligence in EyeQ guides the PURE Compression Engine to focus bits where they matter most for the viewer.*