

# Monitoring Matters: Viewers Have Little Patience For Poor OTT Performance

To ensure a high quality of experience  
for Over-the-Top (OTT) viewers,  
comprehensive monitoring is paramount

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“With proper monitoring, it is quite possible for an OTT service to build a reputation for reliability and quality that’s on par with what viewers expect from broadcast TV.”

The path from a video headend to OTT viewers is long and complex. Without strategically placed probes to monitor quality continuously, it’s impossible to correct problems when they occur. Rather, it can take months to identify the source of a problem – long after viewers are fed up and turn their attention to competitors.

**By Phil Kurz**

It’s a matter of common sense that viewers will be put off by a poor quality of experience when watching live and VOD library content delivered over the top to their device of choice.

However, empirical research conducted by content delivery network provider Akamai Technologies and emotional brand research company Sensum set out to measure the physical reaction of people to high-quality, smooth streaming video versus video of a lower quality filled with re-buffering. The results, presented in “Bit Rate and Business Model: The Science Behind How Our Bodies React To Video Quality,” are nothing short of breathtaking.

Using techniques such as galvanic skin response, facial coding, implicit association testing and traditional survey methods, the researchers tested 1,200 people to measure their responses to the quality of experience they were given.

Among the findings: lower quality streams created a 16 percent increase in negative emotions; higher quality streams generated nearly 20 percent more emotional engagement; a low-quality viewing experience resulted in participants assigning 20 percent fewer positive keywords to describe their experience; and – most importantly – 76 percent said they would discontinue using an OTT service if buffering or similar problems happened repeatedly.

Clearly, online video providers, content producers and anyone else associated with delivering video to viewers over the top of an unmanaged network have a monumental interest in delivering a quality of experience commensurate to what TV viewers expect from traditional television. Achieving that result, however, requires an understanding of where problems can arise, a means to monitor a sizable number of parameters at strategic points in the distribution chain and a way to take corrective action quickly – without the finger



### KEY TAKEAWAYS:

1. Viewers have a low pain threshold for poor quality, buffering and other glitches that negatively affect their quality of experience.
2. The end-to-end OTT delivery chain is multifaceted and complex, requiring comprehensive monitoring at multiple strategic points to guarantee viewers’ Quality of Experience (QoE).
3. Faults that otherwise may have taken months to identify in an OTT network can be uncovered in minutes with the right monitoring.

pointing and resulting delays that frequently occur when multiple different organizations and service providers are involved.

Unlike the walled gardens of IPTV, over the top content delivery exists in a world based upon adaptive bitrate (ABR) streaming to deliver content to much bigger audiences via multiple content delivery networks.

Over the past five or six years, monitoring systems have adapted to this new reality in which Online Video Providers (OVPs) want solutions that tap into the divides between different players in the end-to-end content delivery chain to make sure video quality is maintained. In essence, these monitoring probes are inserted at clearly defined lines of demarcation along the path to the viewer so that when a problem arises it's rather easy to identify its source.

The place to start is at the video headend to ensure the integrity of the transport stream coming out of the encoder or transcoder, says Stuart Newton, Telestream VP of Strategy for iQ Solutions. Identify any packet loss, and if a metric, such as media delivery index, is in use, record how much loss and jitter is happening on the live services. It is also imperative to decode the video at this point to inspect video quality, audio loudness, black screen, still frame and a whole suite of other measurements to take stock of video quality before the content is passed down the line.

Next up is inspecting all of the processes that take the transport stream into the HTTP/ABR streaming domain for delivery from the headend to a content delivery network, says Newton. At this point, it's necessary to inspect the files to make sure all of the manifests and adaptive video chunks are the right size, that they are being pushed out consistently and that when they are pushed out they actually are received by the origin.

On the downstream side of the CDN, additional active testing is needed. In this case, monitoring probes act as synthetic clients that are requesting streams. Streams are inspected to make sure all the bit rate variants and manifests are available in a timely fashion from the CDN when a content request is made from specific cities and locations, says Newton. If additional CDNs are being used, the same process must be replicated to monitor their performance.

Further downstream, additional probes can be inserted to monitor the performance

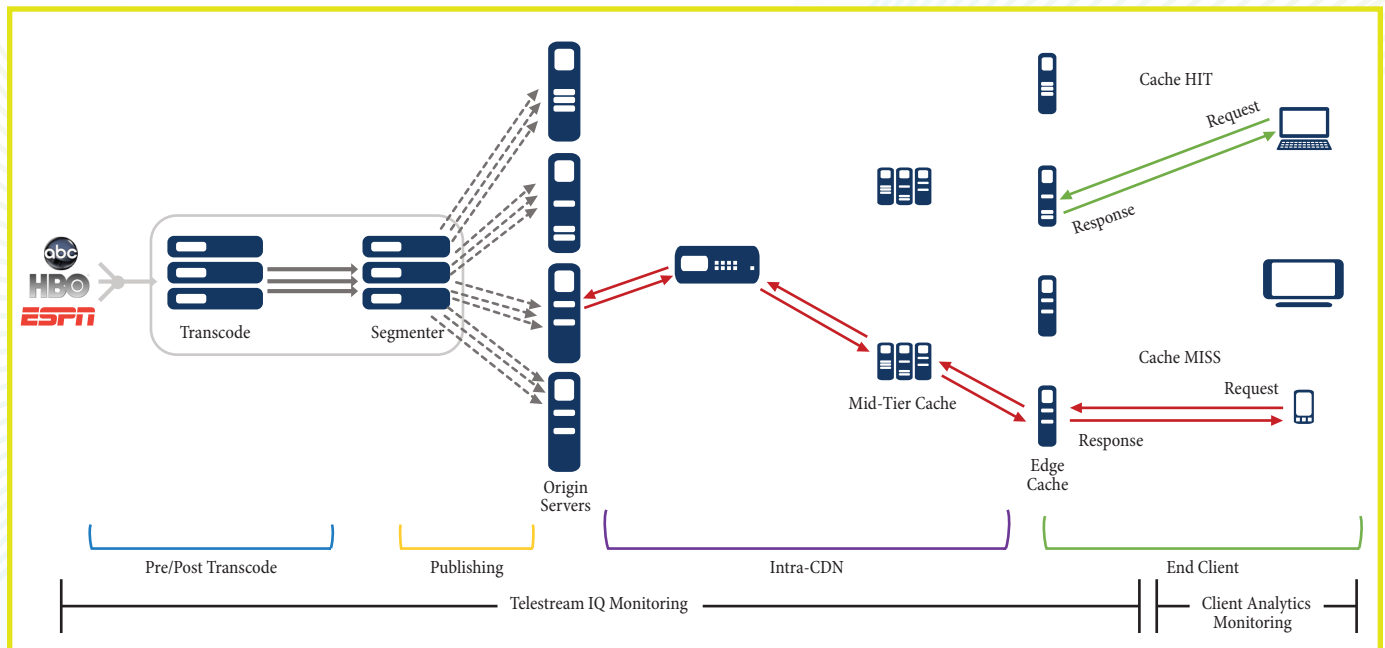
of various access networks, such as a wired broadband network, wireless 4G network or Wi-Fi cloud, he adds.

With so many potential points of failure throughout the entire chain, it is not uncommon to have multiple parties, including content owners, online video providers and CDNs, independently monitor performance – often without each other knowing and in effect providing a level of redundancy that guards against monitoring failures, says Newton.

While the number of probes monitoring the distribution chain, the quantity of measurements they take and the rapidity with which they are taken create what amounts to a tsunami of data. Video management systems that correlate all the information on a per channel basis across the chain make it easy to understand what is happening and where a failure may soon or has occurred, he says.

## ABR MONITORING POINTS

Unlike the walled garden of an IPTV offering, adaptive-streaming-based OTT delivery requires monitoring a variety of critical parameters at multiple points in the end-to-end distribution chain.





Rather than taking months to diagnose the source of a problem in this complex, multifaceted distribution network, quality monitoring of the end-to-end delivery path can identify problems within minutes, he adds.

## VENDOR PERSPECTIVES

Delivering live video over the top is very complicated. Many things can go wrong like buffering, loss of video, loss of audio, freeze frame and black screen. When they do, the big question becomes: Where did things go wrong?

There are many places, especially when adaptive streaming is employed. Typically, multiple companies are involved in delivering an adaptive bitrate stream to viewers, including a video headend, private or third-party CDNs and access networks. So when things do go off the rails, finger pointing typically ensues.

For viewers, problems create dissatisfaction, which ultimately leads to lost revenues for providers. The solution is a

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flexible, correlated monitoring approach, like Telestream's iQ Solutions, that quickly identify failures before they can turn a subscriber sour on an OTT channel.

### ADDITIONAL RESOURCES

#### IQ SOLUTIONS

Video quality assurance solutions for OTT, multiscreen and traditional linear TV.  
<http://www.telestream.net/iq/overview.htm>

#### OPERATIONAL INTELLIGENCE SOLUTIONS FOR ADAPTIVE BITRATE VIDEO/OTT DISTRIBUTION

Many different formats, bit rates and format variants must be prepared and published properly.  
<http://www.telestream.net/pdfs/iq/solution-briefs/IQ-OPS.pdf>

#### IQ SOLUTIONS VIDEO BY STUART NEWTON

A two-part introduction to iQ Solutions by Telestream.  
<https://vimeo.com/216903654>

investments made in acquiring content, live production and building subscriptions.

As the Akamai research unveiled, viewers aren't likely to long tolerate spinning wheels, frozen frames or other glitches before they decide simply to choose a different provider of streaming video content.

That's especially true for premium streamed live sporting and entertainment events. "A few years ago, people would live stream to a phone or an iPad, and they would put up with the fact that it was new and would start and stop occasionally," says Newton. "With the advent of live sports events and live concerts that you can stream, people are paying money for this content, and they want to get it and not put up with bad service anymore."

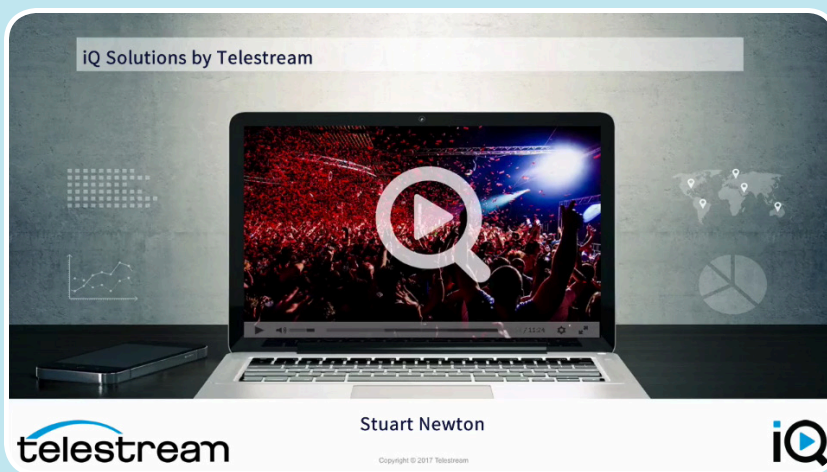
As OTT offerings multiply and content providers look for ways to attract new subscribers, a service that consistently delivers a high quality of experience to viewers will find it has a leg up on the competition, says Newton. Doing so comes down to deploying monitoring probes strategically throughout the content delivery chain to identify problems when they arise, to take corrective steps quickly and ultimately to maintain a reputation for excellence in the minds of viewers.

### ABOUT TELESTREAM

Telestream solutions span the digital media lifecycle, including video capture and ingest; live and on-demand encoding and transcoding; captioning; playback and inspection, delivery, and live streaming; and automation and orchestration. With its iQ product line, Telestream enables the monitoring and management of quality service and experience over any network.

### ABOUT THE AUTHOR

Phil Kurz is a contributing editor for *TV Technology*. Over his 30-plus year career covering the broadcast and non-broadcast video industry, he has served as editor of three magazines as well as multiple niche e-newsletters. In that time, Kurz has written more than a thousand articles, columns and editorials on technology-related topics.



Telestream's iQ Solutions video analytics and service assurance solutions ensure quality and confidence, end-to-end, for the delivery of all video services including Multiscreen and OTT, Linear Broadcast TV, and Video on Demand (VOD).