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The OTT Video Experience: what mobile service providers should be doing to monitor OTT video

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It could be argued that Over-the-Top (OTT) video is having the single biggest effect on Content Service Providers (CSPs) since the advent of text messaging. While taking advantage of the easy-to-stream videos companies such as Netflix, Hulu and YouTube are providing, smartphone, tablet and PDA owners are congesting networks and, in the process, unwittingly having a detrimental impact on their own stream and video Quality of Experience (QoE).

The rise in OTT video presents network providers with a tantalizing monetization opportunity via advertising, paid-for content and download-only special offers—if they can tackle the issue of Quality of Experience (QoE) head-on. QoE is the perceived level of quality at which customers view their streaming applications, which can be compromised by the sheer volume of people downloading OTT video over the networks. However, service providers can deploy OTT video analytics solutions that measure perceived subscriber QoE in real time and provide actionable business intelligence that enables service providers to improve customer experience, troubleshoot issues, and upgrade their networks accordingly.

A recent study of media consumption trends reveals that the number of mobile video consumers is growing by 41%, and the number of viewing hours is growing by 20%[1]. This represents a significant opportunity for monetization but, because of the currently fragmented value chain, there is a substantial gap between mobile video viewer penetration (10%) and the amount spent on advertising in that market (0.5%)[2]. While mobile viewers account for 10% of all video viewers, they represent 50% of data traffic[3]. Service providers are already struggling to meet the demand mobile viewers place on their networks. If network providers can resolve the detrimental effects such intense levels of streaming have on their networks, they could be in a position to develop new and compelling services that meet evolving subscriber expectations (view any content, anywhere, any time, on any device) This remains a hypothetical scenario

as long as CSPs fall short of delivering and meeting customer QoE expectations and in the absence of a framework.

It isn't just smartphone owners that are at the forefront of the mobile video revolution. 50% of tablet owners are not only viewing feature-length movies on their device, but TV shows as well. Nearly 60% of smartphone/tablet owners will also be viewing OTT video at home, demonstrating yet another monetization opportunity for savvy network providers.

Video traffic today accounts for 50% of all mobile traffic and it's on a trajectory to reach the 70% mark in a few years.[4] YouTube alone accounts for 13% of all global mobile data bandwidth.[5] Consumer frustration grows as a result of constrained bandwidth, stalling playback and poor video fidelity. Acknowledging that nearly three quarters of mobile video consumers have experienced video QoE issues, it's no wonder 63% are willing to pay for value-added services to improve their viewing experience.[6]

Traditional IP networks (without an end-to-end QoS architecture) provide best-effort service over a common, shared infrastructure. Any link or node in the network can experience congestion. The primary mitigation strategy is to drop packets reactively. Reliable networking protocols such as HTTP Live Streaming account for this and have built-in congestion avoidance algorithms and retransmission mechanisms, however these protocols are limited to only reacting to congestion and are not pro-active. More importantly, they cannot identify subscribers or content providers willing to pay a premium for higher quality.

Wireless networks pose additional problems due to radio transmission issues. This leads to increased latency and packet loss. In TCP-based delivery, this manifests itself as sender-side timeouts and retransmissions. As a result, the user is frustrated watching an hourglass instead of steaming video.

With so much for mobile service providers to consider when investigating how they can measure and evaluate the QoE their customers receive, it is no wonder that so many of them get lost in a multitude of network Key Performance Indicators (KPIs) that may not be relevant to the customers' perceived experience.

Avvasi is helping service providers address the video traffic growth phenomenon. Avvasi technology enables service providers to see in real time what their subscribers are seeing. For example, if a subscriber gets an hourglass on a stalled video playback, Avvasi's solution will report the issue to the service provider operations center in real time, enabling the service provider to take action.

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Avvasi has developed Q-VUE, a unique OTT video analytics product that supports all major OTT protocols, including progressive download, HTTP chunked download, RTMP, HTTP Live Streaming and Silverlight Smooth Streaming, amongst others. Q-VUE produces two different scores – Presentation Quality Score (PQS) and Delivery Quality Score (DQS). PQS measures the quality level of a media session, taking into account display device and ignoring the impact on the network. For each media session relevant audio, video and device KPIs are extracted. These parameters are incorporated into a no-reference bit-stream model of satisfaction with the audio-visual quality of the media session. DQS measures the success of the network in streaming delivery, reflecting the impact of network delivery on QoE while ignoring the source quality. Simply reporting on the overall number of stalls or stall frequency per playback minute is insufficient to provide a reliable representation of QoE. The model must be tested with, and correlated to, numerous artifact scenarios, using a representative sample of viewers, to arrive at an accurate Delivery Quality Score. Real-time media sessions are recorded, monitored and inspected. Avvasi's approach applies best practices from professional video broadcast standards, including the use of subjective testing methods to evaluate viewer satisfaction with the video session, and is based on a MOS score of 1-5. These results are then correlated to the subscriber model, which allows for automatic and objective measurement of the subjective quality. We believe that understanding and measuring QoE is critical because, simply put, QoE leads to future service revenue.

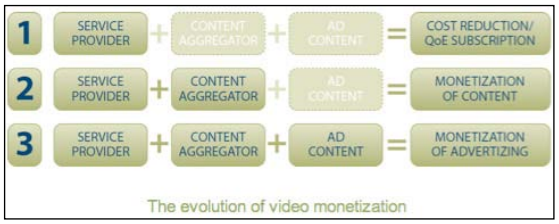
MEASURING QUALITY OF EXPERIENCE

Traditional methods of measuring video QoE are not suitable for OTT video since they are too computationally intensive for real-time monitoring of unicast streaming services, and do not address the variety of streaming protocols and devices in the OTT ecosystem. Avvasi's patent pending Q-VUE system supports all major OTT protocols and enables real-time monitoring of video sessions and associated video quality over an entire network, including the largest tier-1 broadband and mobile networks, and the technology.

For a more detailed explanation of how video QoE is measured and the video properties that affect QoE, visit www.avvasi.com or download our whitepaper Measuring Quality of Experience for Over-the-Top Video Services

As in broadcast video markets, CSPs must be able to accurately measure and assure their subscribers' video QoE in order to monetize their services. Unfortunately, traditional methods of measuring quality do not translate to OTT video. Where broadcast video deals with a limited number of formats and a small set of known standards, OTT video must grapple with a vast number of formats and a large number of changing standards. In comparison to the broadcast ecosystem—a unified, single entity with end-to-end control—the OTT value chain is currently fragmented and, as a result, many parties involved in the OTT ecosystem are not able to realize this massive opportunity for monetization. We are in the early stages of an evolution. More and more people are viewing video content on the internet. This represents a shift from traditional broadcast video market to OTT video. Broadcast video advertising and subscription revenue in the US amounts to approximately USD$150 billion per year.[7] The current shift presents service providers in the fixed and mobile networking landscape with a significant opportunity to develop new services that will ultimately replace legacy broadcast video revenues—if, that is, they can develop an architecture that delivers to subscriber expectations.

QoE-differentiated services are the first step in the evolution of OTT video monetization, followed by monetization through revenue sharing with content providers, and finally by monetization through targeted advertising.



The evolution of video monetization

Such an ecosystem does not exist yet, and that is why a framework is needed to support it. A successful architecture will bring together service providers, content providers and advertisers who recognize the issues and opportunities that OTT video presents. This ecosystem must incorporate an open architecture for video service delivery that includes: measurement and assurance of video quality, open interoperability between all facets of video traffic management including traffic analytics, OSS/BSS management, PCRF and CDNs.

Reliable, high-quality video traffic management is the first step to QoE-differentiated subscription revenue which sets the stage for content monetization and, ultimately, ad revenue. Avvasi is the award-winning company helping fixed and mobile service providers understand and leverage the opportunities created by the surge of internet-based, Over-the-Top video. Avvasi's patent-pending, revolutionary video analytics eclipse traditional network analytics, offering highly detailed measurement capabilities that report video-based QoE, and a MOS-like score that accurately reflects the subscriber's perceived experience with video content. Service providers around the globe are deploying Avvasi OTT video analytics to understand the network impact of new devices and subscriber usage patterns, plan and dimension network expansion and optimization solutions, while reducing subscriber churn and maximizing revenue. For more information, please visit http://www.avvasi.com.

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CLOSING THE GAP BETWEEN EXPONENTIAL BANDWIDTH AND SHALLOW REVENUE GROWTH

CONNEXUS brings together service providers, content providers, advertisers, and leading network vendors to deliver open interoperability between network traffic management and content delivery systems to provide reliable high-quality, end-to-end video service delivery across the value chain, and a monetization platform that scales for personalized, on-demand content delivery for multi-screen consumption.

CONNEXUS GOALS:

- Promote the notion that service provider monetization of OTT video services requires a mind-set shift from that of selling data to marketing the application experience
- Leverage existing standards to define how OTT video is delivered and monetized, and govern interoperability within the ecosystem
- Accelerate the availability of integrated solutions across the OTT video ecosystem

For more information on CONNEXUS, visit www.connexus-ecosystem.com

1. Neilsen, 2011. Based on total users of each media type.

2. Nicole Perrin, eMarketer, March 2011, "Traditional Media: Dollaras and Attention Shift to Digital"

3. Cisco Visual Networking Index: Global Mobile Data Traffic Forecast Update, 2010–2015 (February 2011). Source: http://www.cisco.com/en/US/solutions/collateral/ns341/ns525/ns537/ns705/ns827/white_paper_c11-520862.html

4. Cisco Visual Networking Index: Global Mobile Data Traffic Forecast Update, 2010–2015 (February 2011). Source: http://www.cisco.com/en/US/solutions/collateral/ns341/ns525/ns537/ns705/ns827/white_paper_c11-520862.html

5. Jeremy Scott, "YouTube Accounts for 13 Percent of All Mobile Data Usage", www.reelesco.com

6. Acision, Feb 2011 http://www.acision.com/News-and-Events/Press-Releases/All-Destinations/2011/Global-Mobile-Broadband-Report.aspx

7. Combined reported revenue from major broadcast television operators, ad revenue and media sales (Nielsen, 2011)