Live Streaming Is the New Normal

INTRODUCTION

The rise of live video streaming has opened a much needed opportunity for broadcasters of all sizes seeking to reach cord cutters and cord nevers who have eschewed traditional cable packages, as well as enable new revenue streams. However, the inherent complexity associated with the technology support and monetization of live events and 24/7 channels has prohibited some content owners from fully capitalizing on this market opportunity.

For established broadcasters seeking to boost live content offerings and niche content owners looking to start broadcasting live events or launch 24/7 channels, this White Paper will provide essential market data, insights and recommendations to help chart a path toward successful and profitable live streaming experiences as will exist on Arumai's Transcoding and Streaming System for Media Companies™ (Arumai TranStream™) being built on Aria Networks Software-Defined Networking SDN + Artificial Intelligence Combo.

Why Live Matters

Technology, and the people who adopt it, continue to revolutionize the way we consume content. A maxim in the consumer electronics industry used to be that a viewer watched 7 hours of network TV per day. In 2015 reports revealed that that number had dropped to 4 hours per day with the balance devoted to streaming video. Just a few weeks ago, it was reported that viewers now watch only watch 3.5 hours of network TV per day. Streaming video has now captured 50% of all video consumption, which is astounding! Why? We want the freedom to stream our favorite shows on any device, and increasingly, that demand extends to live events. The proof is in the numbers: according to FreeWheel's Q4 Monetization report on its market data, in 2016, live streaming surged 36% year-over-year, driven largely by marquee sports and political events.

For example, FreeWheel reports that the volume of live sports viewed via streaming technologies grew 161% from Q4 2015 to Q4 2016, and Super Bowl 50 set a new live stream record with 1.4 million people tuning in. The Summer Olympics and Game 7 of the World Series contributed to the momentum.

Political events, including the presidential debates, President Obama's farewell address and President Trump's inauguration were live streamed by millions of viewers. The 2017 inauguration was the largest single live news event that content delivery network Akamai ever hosted, peaking at 8.7 Tbps.

Upending the Market

Although tentpole events consistently set new records for live events, live streaming isn't limited to one-time spectacles. Increasingly, broadcasters are live streaming their 24/7 linear content,

giving people the freedom to watch premium branded content on the device of their choice, as well as to offer a standalone option for cord cutters.

At the same time, live streaming is opening the door to new competition for broadcasters. Digital-first companies now offer both live shows and appointment viewing, all streamed via the Internet and reaching global audiences.

These trends have combined to upend the notion of what it means to watch television.

New Monetization Opportunities

As always, where consumer attention goes, advertisers follow. In the same recap of its market data cited above, FreeWheel notes that: Live video helped drive the 24th consecutive quarterly increase in both content views (up 20%) and ad views (up 17%) in Q4 '16. For the full year 2016, content views increased 26% and ad views increased 24%.

Thanks to this steady increase, live-streamed programming now represents 19% of ad views for programmers.

Build Audiences

Live streaming offers unique opportunities for broadcasters to expand their viewers' options for where and how they consume content, and to offer a standalone option for cord cutters. It also provides additional opportunities to increase revenue by monetizing live content.

What is more, live streams are inherently more immersive and interactive experiences. Viewers consume the content on devices that allow them to adapt the experiences to their tastes. They can opt to view key plays or moments as often as they wish. For their part, broadcasters can deliver (and monetize) additional content—such as all backstage interviews at the Oscars—that live viewers can consume as desired. This results in an audience far more engaged with the content, and consequently more valuable to the advertisers who reach them during a live stream event.

Although live streaming offers unique opportunities for premium content owners to build viewership and boost revenues, it has not been free of challenges. Some of the difficulties associated with streaming and monetizing live streams include:

Monetization

While the growth of live streaming provides much-needed new revenue channels for broadcasters, technology limitations have hindered their ability to truly capitalize on this growth. Initially, broadcasters used client side ad insertion to monetize live streams. In this scenario, the video player on the desktop or in the device would "see" a signal in a stream indicating an upcoming ad break, initiate a call to an ad network, and insert those ads into the stream. However, this often resulted in a less than ideal user experience, including delays or buffering from the multiple ad calls, and ads were often of lesser quality (i.e. lower bitrate, lower resolution, or incorrect aspect ratio) than

the program streams. On the business side, the increasing number of viewers using ad blockers resulted in fewer ads being played and less revenue.

Lastly, smaller content owners like event based sports organizations typically lack the technical capacity or infrastructure to monetize their live video content.

Device Fragmentation

Viewers tune into a live event or live broadcast on a wide range of devices and platforms with varying degrees of bandwidth, and broadcasters need to ensure their streams are compatible with all of them this is where Arumai TranStream™ comes in.

Event success hinges on a broadcaster's ability to deliver reliable streams to all device types, but too often, they lack the encoder capacity and bandwidth for streaming ad hoc events that leverage adaptive bitrate delivery for improved end-user experiences.

Connectivity and Scale

There are numerous issues that can negatively affect the quality of a live event. For instance, while broadcasters plan for and typically have plenty of bandwidth to downlink their streams, they often fall short on the upstream bandwidth required to transmit the stream from their encoders (the device that prepares the raw video signal for internet streaming) to their live-streaming services.

In some cases, they expect to rely on public or private Wi-Fi connections, which can deliver up to 20 megabits per second. Public Wi-Fi networks can be unreliable, with bandwidth contracting suddenly, or losing a connection altogether. Even private Wi-Fi can be uncertain at live events due to spectrum congestion.

Content Protection

Reliable content protection is table stakes for broadcasters, but most do not have the ability to ensure their streams remain safe from unauthorized URL or platforms. Digital rights management (DRM) does a good job in protecting video on demand, but to date has proved difficult to implement on a global scale in live streams.

Disjointed Workflows

At present, tools for live streaming are disparate and fragmented, requiring broadcasters to string together multiple products to build out a complete workflow and this is where Arumai TranStream™ comes in.

A broadcaster may use one platform for transcoding, another for delivery, and yet another for monetization. Depending on VOD needs, the broadcaster may also need a clipping service to clip snippets of an event for syndication to a website or social media to build the audience in real time, or create high-quality on-demand assets that are then syndicated to a variety of consumption platforms. Few offer these capabilities on the same platform.

This is a significant challenge, as broadcasters need to create and syndicate clips to multiple platforms in order to drive viewership of live event. Many broadcasters do not have the budget to acquire an additional service, or ability to introduce additional third-party vendors into their live feed delivery stack (Arumai TranStream™ offers free hosting, free streaming to a CDN, and free streaming to end users in version 2.0 with a private OTT CDN for Arumai-TranStream™ licensees only). With no ability to clip content directly from a live stream, they are forced to wait until the live stream is archived as a progressive video file.

Best Practices

• Test and confirm the bandwidth available to you on site. This is the most critical part of the chain.

• Understand the various devices and their respective native screen sizes you plan to deliver to. This will help you determine your best target streaming resolution. 720p is recommended, and a maximum of 1080p is suggested.

• Estimate the bandwidth available for your target audience, and only offer what you're willing to pay for, in CDN Bandwidth.

• In most cases, a top rendition of 1280 x 720p feed, at about 2 – 2.5 Mbps will be very high quality. If you have high-motion content (sports), then maybe extend up to 3.5 - 4 Mbps at 720p.

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Arumai is the only leading, independent, pure play OTT products and solutions company in the industry today. Arumai's grounding breaking video frame manipulation techniques, proprietary streaming systems and methods, and OTT Video Suite of products make any video content universally enjoyable in high quality on any screen, by any viewer, across any network, at any time enabling a pure play OTT products and solutions company. Arumai-TranStream™ individually and when combined with Arumai-Multiscreen OTT Platform with Social Media Layers for OEMs™ is prepared to deliver millions of content streams to mobile phones/handhelds, tablets/laptops/PCs, Blu-ray Players, Game Consoles, and Smart TVs, and in every market in the world on behalf of content owners, mobile service providers, cable companies, satellite companies, telecom operators, streaming video providers – OTT products and solutions.