GO L:VE

SPOTX Akamai YOSPACE

Addressable, Ad-Supported, Live Video At Scale
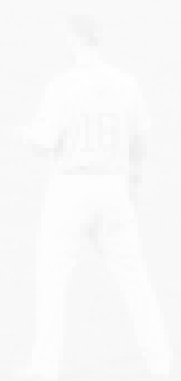
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Executive Summary

Live and linear viewing online, or simulcast, is growing as virtual multichannel video programming distributors (vMVPDs) and broadcast services such as CBS All Access and ITV Hub gain popularity. But they face competition for ad spend from major internet companies, while a new generation of viewers are coming through that have grown used to ad-free video experiences, leading many to question the viability of traditional TV ad models.

To remain competitive and maintain ad revenues, service providers are looking to reduce ad loads and boost ad values with addressable (or targeted) ads inserted dynamically into the video stream. Client-side solutions are frequently used to do this. However, client-side ad insertion has several significant problems:

- Video experience is frequently choppy and inconsistent.
- Ad-blockers can easily prevent ads from playing.
- Advertising malware can monitor ad calls and data and insert competitive ads.
- Multi-platform support is more complicated for client-side apps.
- It is harder to swap out ad ecosystem components because the client-side apps are dependent on them.

Server-side ad insertion (SSAI) fixes many of these problems:

- Video experience is much smoother.
- It is much harder for client-side ad-blockers to remove the ads and for malware to usurp them.
- Server-side apps are less fragmented and easier to maintain.
- Ecosystem components are easier to swap out because all ad system dependencies are on the server-side.

Scaling targeted ad insertion is challenging. SSAI and programmatic ad platforms (or ad decisioning systems (ADS)) work together to automate the buying and selling of ad spots, making large numbers of ad transactions possible in a short period of time.

Even with a streamlined SSAI solution, there are still unique challenges in live video situations, where unexpected ad breaks may force the ADS to resolve millions of ad requests in as little as a second or two. If the capacity threshold of the ADS is reached, it may stop filling ad requests completely, causing many ad slots to go unfilled and thus losing potential revenue for the video provider.

To solve this problem, the SSAI system can begin to send ad calls long before the break, ensuring that the ADS has time to resolve all ad requests. This strategy is called prefetching, and there are three main approaches:

1. While a current ad break is playing, the SSAI system can prefetch ads for the next scheduled break.
2. The SSAI system can prefetch ads for a scheduled break at a predetermined time before the break starts.
3. When a viewer first starts watching a live stream, the SSAI system can fetch ads for a contingency ad pod to be used in filling unscheduled ad breaks.

Using prefetch techniques allows the ADS to cope with the unpredictable surges in ad requests typically seen in live event streaming. It also ensures video service providers maximize ad revenue generation.

In the US, the emergence of virtual MVPDs like Sling TV and DirecTV Now is beginning to take subscribers from traditional pay television.

Introduction

The speed at which viewers are adopting online video has caught many people by surprise. Nearly seven in 10 viewers in the US, and a third of homes in the UK, have at least one subscription video on demand (SVOD) service.[1] The amount of time people spend watching these online sources of entertainment is very similar to traditional television. For example, the 20 million active Roku devices in the United States deliver, on average, 2 hours and 40 minutes per day of streaming video.[2]

Live and linear online viewing is also growing in popularity In the US, the emergence of virtual MVPDs like Sling TV and DirectTV Now are luring subscribers away from traditional pay television. Between the first quarters of 2017 and 2018, Dish Network's satellite service lost 1.3 million subscribers while its vMVPD service Sling TV gained 0.95 million customers. Over the same period, DirecTV and U-Verse, AT&T's two pay TV services, lost 1.1 million subscribers, while the company's vMVPD service DirecTV Now gained 1.1 million.[3]

While linear television navigates the transition online, its traditional business model also faces a challenge from SVOD. US television ad loads of 11.5 minutes per hour in broadcast and 13.5 minutes in cable are too heavy for digital audiences. Hulu CEO Randy Freer crystallized the problem with television:

> "We overloaded the formats; we overloaded the commercial messages going to consumers. So, they started to say, 'this is too much...my time is more valuable than that.' As an industry, I don't think we value people's time in a way that allowed them to say 'I get this, there's a transaction. I'm not paying as much as I could be paying because my entertainment experiences are being supported by advertising." [4]

FIGURE 1

Dish Network and AT&T Pay TV And vMVPD Subscriber GainsLosses Q1 2017-2018
© nScreenMedia, 2018

Sling TV
0.95

DirectTV Now
1.09

Dish Network
-1.33

DirectTV & U-verse
-1.13
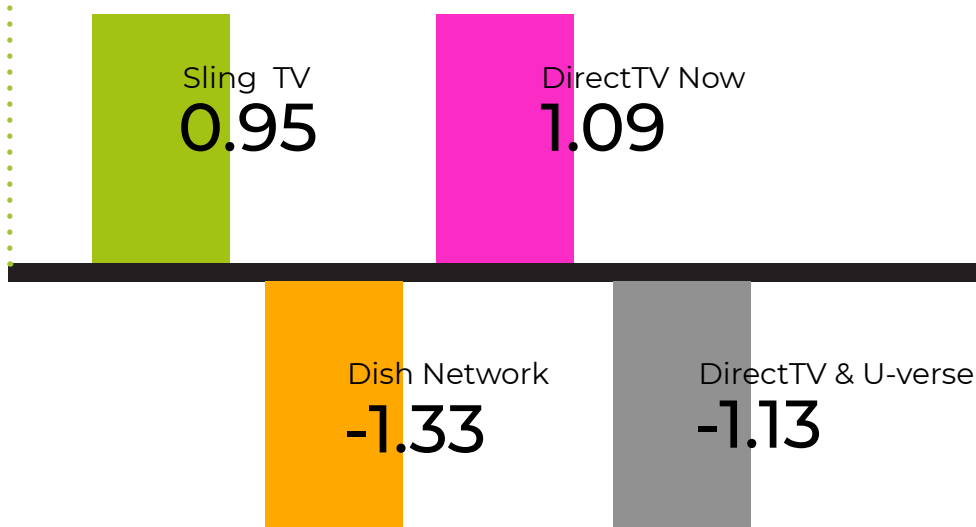
[1] BARB, The SVOD Report, January 2018, says 9 million UK homes have at least one SVOD service, and there are 27 million UK households, https://www.barb.co.uk/download/?file=/wp-content/uploads/2018/01/BARB-SVOD-White-Paper_FINAL.pdf, accessed 31st August 2018
[2] Colin Dixon, Roku Tracker, nScreenMedia.com, Q1 2018, http://www.nscreenmedia.com/roku/ (accessed on June 5, 2018)
[3] Colin Dixon, vMVPDs deliver subs not profit for Dish/AT&T, nScreenMedia.com, 4th of June 2018, http://www.nscreenmedia.com/vmvpds-deliver-subs-not-profit/ (accessed on June 5, 2018)
[4] IAB, Randy Freer, CEO, Hulu on Making Advertising Relevant, YouTube, 13 Feb 2018, https://www.youtube.com/watch?v=FwCZoaldw7w (accessed on June 5, 2018)

Unfortunately, just lightening ad loads is not the silver-bullet answer for programmers. To be sure, fewer ads certainly result in more engaged viewers. Turner saw a big boost in viewership when it cut ad loads by 50% during hit shows such as Animal Kingdom and Full Frontal with Samantha Bee.[5] The restricted ad load also boosts the value of ads sold into the remaining slots. However, this increase might not be enough to cover the lost ads. In Viacom's case, reduced ad loads resulted in a 2% drop in overall ad revenue.[6]

Beyond reducing ad frequency, a more promising way to boost ad values is to make them more relevant to the viewer with addressability. Hulu's targeted ads generate CPMs of $35-$40 in upfronts and three times that amount when inventory is low.[7] What's more, Hulu proves that ad-supported viewing can be competitive with ad-free SVOD. Freer says that most new subscribers choose not to take the extra $4-a-month option to avoid ads when they sign up. Nevertheless, Hulu engagement is the highest in the industry—its viewers watch 28.9 hours a month, outpacing Netflix users who average 26.9 hours.[8]
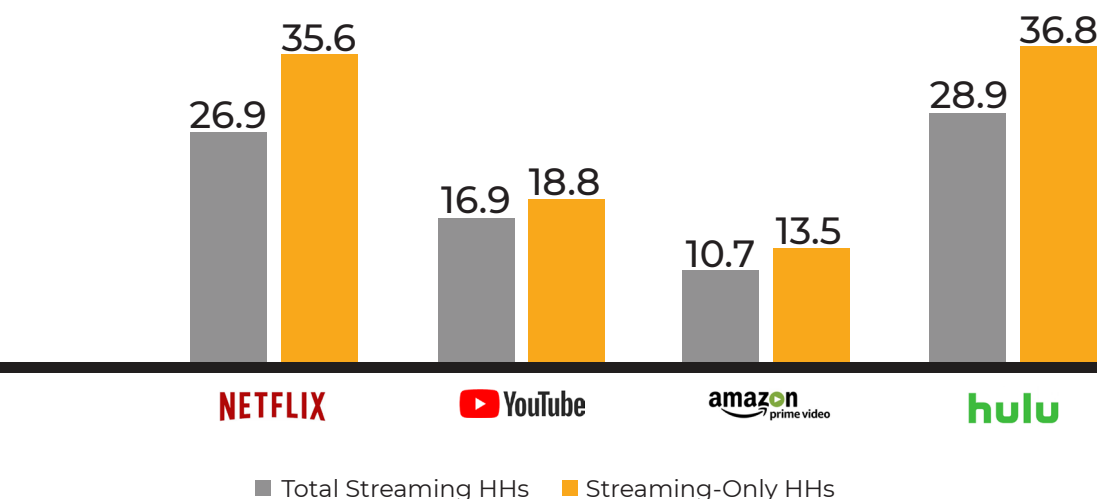
Less frequent, addressable ads appear to be a winning combination for live and linear video services in delivering a competitive experience online. However, can the ad technology ecosystem deliver the scale that is required for live television? Big events attract tens of millions of viewers, all reaching scheduled and unexpected ad breaks at the same time. Delivering a custom ad to every viewer places demands on the ad ecosystem that have never been seen before.

This paper outlines a path forward for how the industry can meet the addressable ad challenge in live video. As we shall see, new technologies such as server-side ad insertion (SSAI) and prefetching techniques are required if the ad ecosystem is to scale up to Super Bowl-sized audiences and beyond.
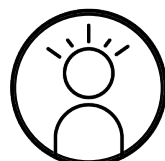
FIGURE 2

Viewing Hours Per Month
comScore OTT Insights, U.S., April 2017

Netflix: 26.9 / 35.6
YouTube: 16.9 / 18.8
amazon prime video: 10.7 / 13.5
hulu: 28.9 / 36.8

■ Total Streaming HHs ■ Streaming-Only HHs

With most viewers watching with ads, Hulu's engagement is still the best in the industry.

[5] Max Follmer, Turner's Reilly Says Reduced ad load Brings Early Success, promaxbda, 31 July 2016, http://brief.promaxbda.org/article/turners-reilly-says-reduced-ad-load-brings-early-success (accessed on June 5, 2018)[5]
[6] Alexandra Bruell, Some TV Networks Take a Hit from Cutting Ad Time, Benefits Yet to Materialize, The Wall Street Journal, 14 August 2017, https://www.wsj.com/articles/some-tv-networks-take-a-hit-from-cutting-ad-time-benefits-yet-to-materialize-1502683263 (accessed on June 5, 2018)
[7] Sahil Patel, Inside Hulu's growing ad-sales research team, Digiday, 2 November 2017, https://digiday.com/media/inside-hulu-growing-ad-sales-research-team/ (accessed on June 5, 2018)
[8] Mike Rich and Andrew Lipsman, State of OTT, comScore, Q3 2017, p20

How To Deliver A Smooth, Safe, Targeted Ad Experience

THE PROBLEMS WITH CLIENT-SIDE AD INSERTION

Viewers switching from traditional linear television delivery to online services expect nothing less than the smooth, high-quality experience they have come to expect from other digital media. Until recently, that experience was hard to duplicate online. Client-side ad insertion technology has been the standard way to insert video ads into a video stream. Unfortunately, relying on the video player to perform this function is fraught with problems. An under-powered device, poor internet connection, or slow ad-serving system frequently leads to choppy and inconsistent viewing experiences. There can also be a big mismatch between the video quality of the ad and the movie or show in which it is inserted. The client video player can do very little to compensate for this problem.

Client-side solutions present another problem: ad blockers have an opportunity to intercept the call. Ad blocker usage is increasingly common, with 28% of US internet users accessing the internet at least once per month via a device with an ad blocker installed.[9]

There are yet other problems associated with client-side ad insertion. For example, the need for sophisticated ad management and stream stitching technology complicates the client software, making the process more difficult to maintain. Also, because every client is making calls to the ad server system, there are higher switching costs to changing ad ecosystem partners; doing so would require every version of the client app to be updated.

It's not only ad blockers that can monitor or disrupt client ad activity. One in five online sessions are impacted by advertising malware, which can monitor ad calls and co-opt the ad data to insert competitive ads. Between 40-70% of malware ad injections are for competitive products and services.[10]

SERVER-SIDE AD INSERTION DELIVERS CONTROL AND A GREAT EXPERIENCE

A better approach is for ads to be inserted into the online video by the streaming server, relieving the client of any dependency on the ad ecosystem. Server-side ad insertion (SSAI) fixes many of the problems of the client-side approach. Without the dependency on the client device, the video playback experience is much smoother, and the server is better equipped to calibrate the viewing experience if there is a difference between the ad and video content quality.

SSAI also makes it harder for third-parties to block the ad calls. According to Kevin Schaum, Senior Director of Advanced Technology at SpotX, the leading video advertising and monetization platform, SSAI is an effective way to counter ad blockers:

> "If you've got ads being delivered through Akamai and that's also where your content is hosted then it's really hard for a client-side ad-blocking technology to step in the way."

With all the ad insertion functionality hosted on the server side, it is easier for client providers to switch out ad ecosystem partners. The video service's apps do not need to be updated since ad stitching is performed entirely via the configuration of the server software.

An SSAI solution is key to delivering a great ad-supported video experience. Next, let's look at how it works with the other components of the ad ecosystem to deliver a targeted viewing experience.

PROGRAMMATIC AD INSETION ECOSYSTEM

In a linear online advertising era where less is more, optimizing ad values has never been more important. Delivering live and linear online video is significantly more complex than on-demand content, and targeting ads simultaneously to millions of viewers is a massive challenge. The programmatic ad ecosystem helps by completely

[9] eMarketer podcast, As Ad Blocker Use Grows, Publishers Face New Challenges, eMarketer, 26 June 2017, https://www.emarketer.com/Article/Ad-Blocker-Use-Grows-Publishers-Face-New-Challenges/1016076 (accessed on June 19, 2018)
[10] Namogoo, Report: Up to 25 Percent of E-Commerce Sessions Hijacked by Digital Malware, Businesswire, 14 August 2017, https://www.businesswire.com/news/home/20170814005499/en/Report-25-Percent-E-Commerce-Sessions-Hijacked-Digital (accessed on June 27, 2018)

automating the creative targeting and ad placement. These solutions are designed to optimize the value of a broadcaster or video streamer's ad inventory, no matter whether those ads come from direct advertiser-video provider relationships, or private and public ad exchanges.

There are three main components of the programmatic ad ecosystem that must work in concert to deliver a personalized ad to the right viewer at the right time: an SSAI solution, a supply-side ad platform (SSP) and demand-side ad platform (DSP). Yospace's SSAI works well with SpotX's SSP, and SpotX works with many DSPs, including Google DBM, MediaMath, and The Trade Desk. This ad decisioning system (ADS) works together to deliver an addressable ad experience using both public and private ad exchanges. To understand the responsibilities of each company in the ADS, consider the following workflow for a public ad exchange transaction:

1. Yospace (SSAI) detects an ad break is approaching and makes an ad call to SpotX (acting as an SSP).

2. Yospace provides SpotX with information about the ad opportunity using a VAST (Video Ad Serving Template) request.

3. SpotX offers the spot to ad buyers by contacting several DSPs.

4. DSPs submit bids on behalf of the ad buyers and SpotX picks the winner.

5. SpotX sends a VAST response to Yospace detailing the ad to insert.

6. Yospace's ad-stitcher inserts the ad into the video stream.

The entire process, from ad break detection to ad insertion, must take less than half a second, and repeats for every viewer at every ad break.

FIGURE 3

US Ad Blocker User Penetration 2014-2018
% of internet users
eMarketer Feb 2017

30.1% 2018

27.5% 2017

24.7% 2016

20.6% 2015

15.7% 2014
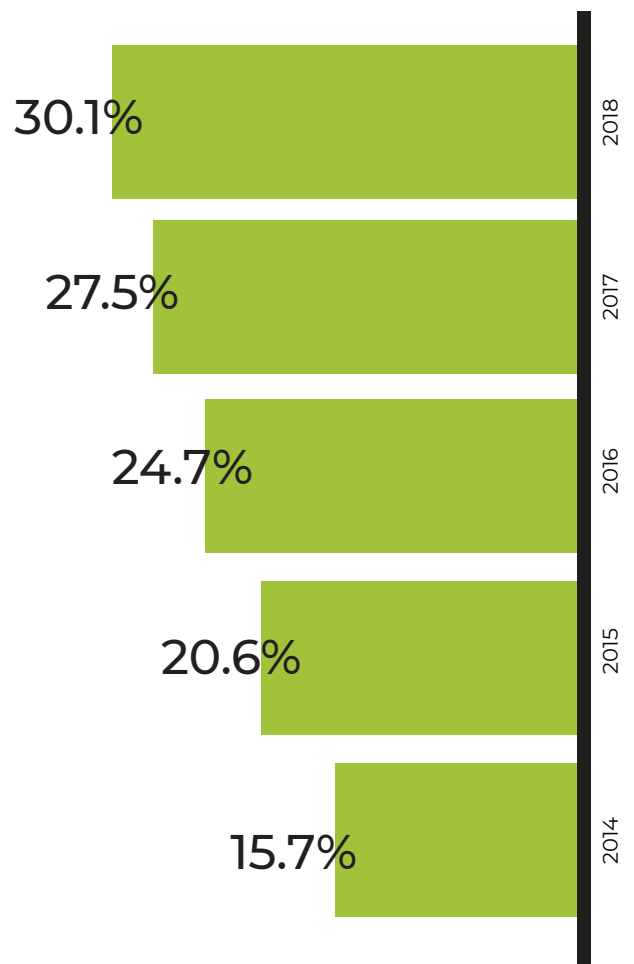
INGEST THROUGH TO DELIVERY

*How Live Content and Ads Reach Viewers*

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The final piece is the delivery of content with the relevant ads to the right audiences, on the right devices, while consistently maintaining the integrity of the viewing experience for each user. This is done through a content delivery network (CDN), such as Akamai. The video content would be combined with the ads using the following steps:

· Akamai ingests the live streams from the encoder that contain the SCTE-35 signals.

· The streams are mapped dynamically, based on network conditions at the time of entry, to the optimal entry points for each video segment to improve resilience.

· The segments are pushed through an origin server where they are replicated across the architecture for redundancy and prepared for handoff to the delivery platform.

· Akamai makes manifest data available to Yospace so that it can provide personalized manifests to each user, based on the instructions from the ad tech ecosystem.

· Yospace delivers the personalized manifest to end viewer devices, while the last-mile video delivery is handled by Akamai.

The entire content delivery system needs to work in tandem with the SSAI workflow in order to ensure a seamless, TV-quality experience across a variety of network conditions, devices and geo locations.

FIGURE 4
The Programmatic Targeted Ad Insertion Ecosystem
% of internet users
SpotX, 2018
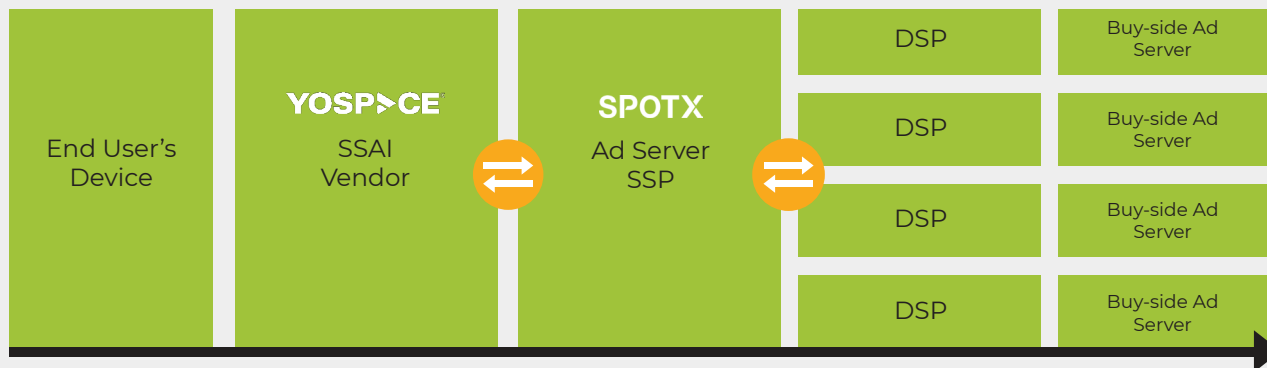
Live Streaming With One-To-One Ad Addressability At Scale Is Challenging

LIVE STREAMING WITH ONE-TO-ONE AD ADDRESSABILITY AT SCALE IS CHALLENGING

Targeting ads in live and linear streams is critical if video service providers are to lighten ad loads and make the experience competitive with ad-free SVOD viewing. However, to do so is particularly challenging, and many of the complexities underlying on-demand SSAI and delivery are amplified for live streaming use cases.

Consider the demands that a live event like the 2018 FIFA World Cup imposes on the ad ecosystem. Yospace provided addressable SSAI in live streams for rights-holders across four continents, while Akamai supported 55 broadcasters in delivering the live streams to viewers across the globe.[11]

Yospace saw peak concurrency rates of over 1.5 million viewers throughout the tournament – each receiving a one-to-one addressable-enabled stream. With so many personalized streams in an environment where all viewers go to an ad break simultaneously, making all the ad calls at the time of the break, also known as a "just-in-time" strategy, would probably not give the ad server enough time to respond.

According to David Springall, Founder and CTO of Yospace, the length of time available to resolve all those ad requests is dependent on the video segment length.[12] "If you use just-in-time ad resolution, what we have found is that 90% of the ad requests to the ad server occur in about 1.5-times a segment duration."

Latency is another important factor to consider when striving to provide a true TV experience for live and linear streaming online.

Low latency streaming typically utilizes smaller video segment sizes and removes single points of failure to ensure robustness. A video segment is the smallest building block of a piece of video content. As an example, a 30-second video would be divided up for transfer into 15 equal parts when using 2-second segments.

Shorter segment sizes help reduce latency by taking up less buffer time on the encoder and player-side when delivering content. For instance, Akamai's platform supports two-second segments as opposed to the traditional four- or six-second segment, translating to an approximately 10 second end-to-end latency (1-2 seconds behind broadcast).

However, smaller segment sizes mean there is less time for the system components to respond to or recover from any issues. With two-second segments in a live stream, every component in the workflow must be able to handle frequent bursts of requests and recover from errors within a very short buffer window. In the case of SSAI's just-in-time ad resolution, the ADS and SSP/DSP must process your entire audience in less than three seconds, as opposed to 8-10 seconds (per the industry norm for latency with four- or six-second segments).

The real challenge for live streaming stems from these two demands: lowering latency while consistently providing a broadcast-quality experience for each of online viewer at scale. Delivering the level of reliability, availability, and consistency required for a competitive live and linear offering makes it imperative for each component within the system to have built-in redundancy and responsiveness to quickly and effectively handle issues or changes that arise during streaming.

From a CDN perspective, eliminating single points of failure—with capabilities such as dynamic mapping to ingest points and the replication of content throughout your origin architecture, while delivering content from a server that is as close to the end viewer as possible allows for an engaging and seamless viewing experience for the audience at any scale.

The crowding of ad calls into such a short space of time also causes tremendous bursts of ad requests to SSPs like SpotX. When the ad breaks are scheduled, and the number of viewers is predictable, the ADS can ensure sufficient capacity is available to service all ad requests.

Unfortunately, live events are frequently unpredictable. For example, the recent World Cup match between Croatia and Denmark was a relatively unremarkable game; after two early goals, nothing much happened for the rest of the 90-minute regulation and 30-minute overtime.

But then between the end of overtime and the start of penalty kicks, the number of concurrent viewers across Yospace's customers doubled – just in time to see an unscheduled ad break right before the shoot-out began. In these unpredictable situations, the ADS can be flooded with ad calls, overwhelming the SSP and, of course, any downstream DSPs.

In such an overloaded situation, far more VAST ad requests sent to the SSP may end up timing out than expected.[13] When the number of requests fielded by an ad server remains below its maximum processing capacity (or threshold), VAST requests are resolved and ad slots are filled. However, when the number of requests to the ad server surpasses its maximum number, the server may stop processing requests altogether. In other words, system overload results in wasted ad placements and a substantial loss in revenue for the service operator.
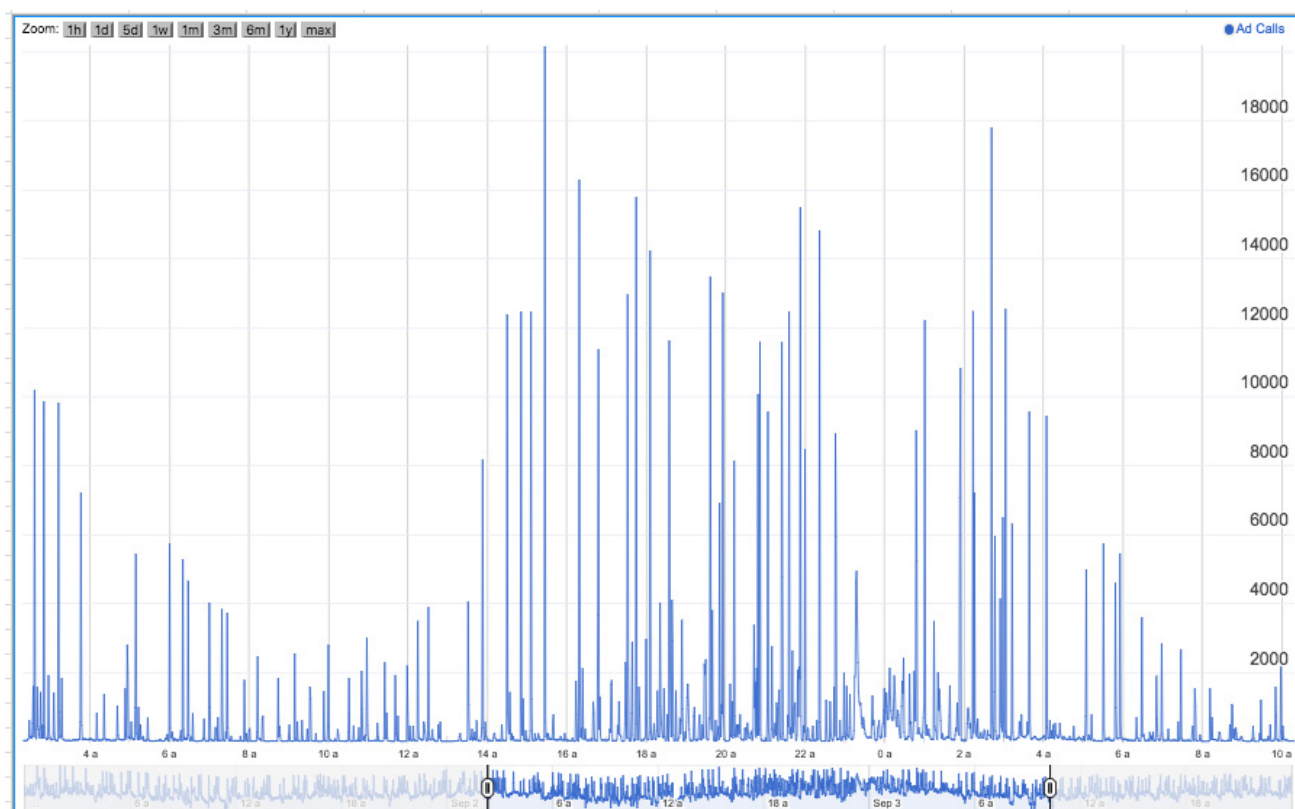

FIGURE 5
Ad Breaks In Live Video Cause Massive Spikes In Calls To The Ad Service
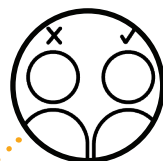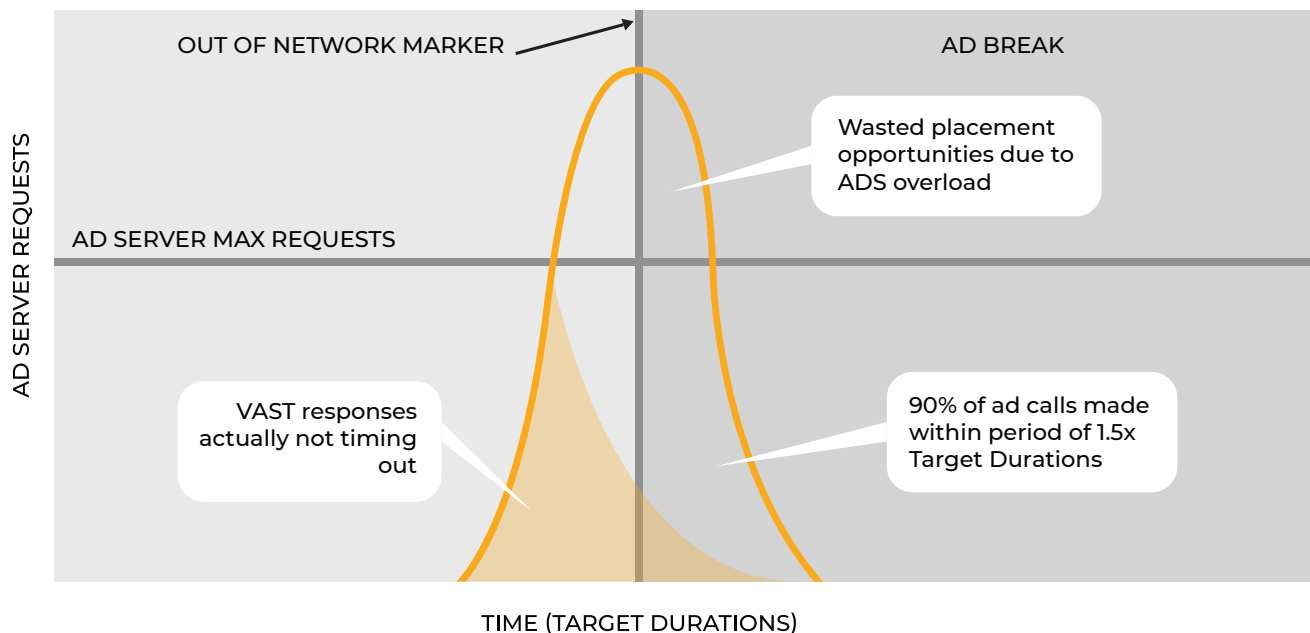Major Teleco/MVPD Trends Chart

[11] Colin Dixon, World Cup wrap-up: streaming records tumble across the board, nScreenMedia, 22 July 2018, http://www.nscreenmedia.com/world-cup-streaming-records-tumble-across-the-board/ (accessed on August 15, 2018)
[12] Streaming video is delivered in segments that vary in length from 2 to 10 seconds or more.
[13] VAST stands for video ad serving template and is an XML script that describes how ads will be served.

FIGURE 6
When The ATD Gets Overloaded Many Ad Slots Go Unfilled
2018 Yospace Technologies Ltd.

OUT OF NETWORK MARKER

AD BREAK

AD SERVER REQUESTS

AD SERVER MAX REQUESTS

Wasted placement opportunities due to ADS overload

VAST responses actually not timing out

90% of ad calls made within period of 1.5x Target Durations

TIME (TARGET DURATIONS)

"The idea of addressability for everybody is a reality. Where there are personalized ads and the media owners, and broadcasters get higher rates because of that (personalization)."

- Kevin Schaum

"As there is more <ad> bidding, there will be more scale challenges with it. Trying to deliver that in the context of ultra-low latency – 1-second segments – and a very low tolerance for error I think is going to make it a really interesting time."

- Wendy Verschoor

Prefetching Ads Allows Live Addressable Ad Insertion To Scale
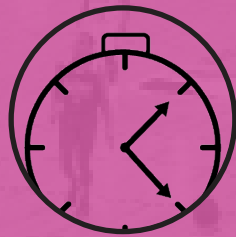
The solution to the ADS overload problem is deceptively simple: rather than waiting until the last moment, servers can begin to make ad requests earlier on in the process. Using such a prefetch strategy paces the requests over a longer period of time and ensures the system remains stable.

PREFETCHING FOR A SCHEDULED AD BREAK

Yospace can avoid exceeding any preset threshold by making ad requests for the next break as soon as the previous break begins. This approach lightens the processing load for SSPs like SpotX. Rather than having to service thousands or millions of requests in a fraction of a second, SpotX receives the requests over a span of several minutes, avoiding ad-server overload.

Prefetching has a dramatic effect on the peak requests made to the ad server. When the ad break occurs, most of the addressable ads are already available to the ad-stitcher for insertion into the live stream. The viewer receives a smooth, personalized ad experience, and the live event provider sees all ad slots filled, thereby maximizing revenue generation.

PREFETCHING FOR LONG BREAK PERIODS

If the gap between ad breaks is very large, as in a soccer match, there can be a disadvantage to prefetching ads starting at the previous ad break. In a 45-minute half, the composition of the audience can change a lot. In this case, filling all the ad slots too early could be wasteful and advertisers could get frustrated that the ads they paid for did not end up reaching the intended audience.

In this case, defining a time to start the prefetch cycle much closer to the upcoming ad break can help. This synthetic ad break marker triggers the prefetch processes for the next ad break. For example, placing the synthetic marker 10 minutes before the end of the half allows time for the all the ad slots to be filled and minimizes the potential impact of audience churn.
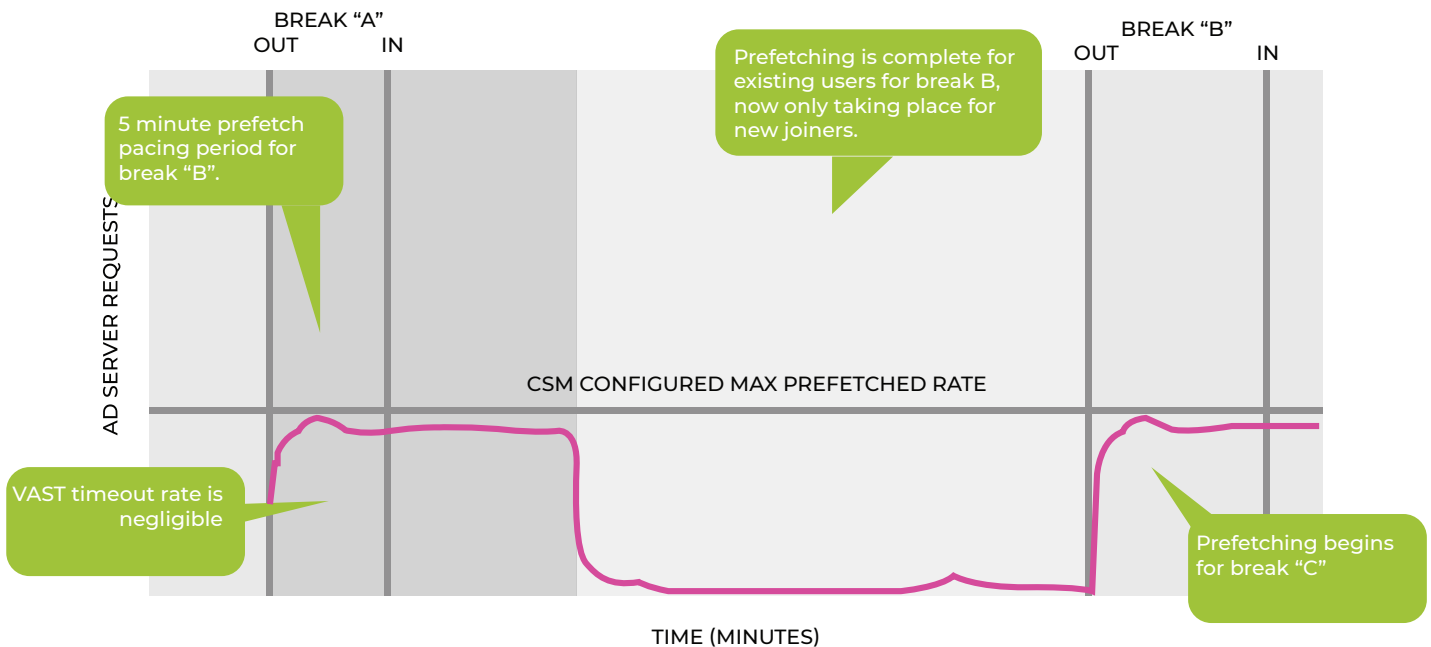

FIGURE 7
Prefetching gives the ADS Plenty Of Time To Fill All Ad Requests
2018 Yospace Technologies Ltd.

PREFETCHING FOR UNSCHEDULED BREAKS

Unscheduled breaks are the most difficult to handle with a prefetch scheme. After all, if you don't know when the break is going to happen when should you start the prefetch cycle? There are two ways to approach this problem.

Scenario A is the simplest: Use ads that have already been prefetched for the next scheduled break. However, there are some potential problems with this approach.

First, the break length may not be the same as the next planned break, meaning your best fill could still result in a small amount of unfilled time. Second, the ads in the prefetched pod may have been specifically purchased for the next scheduled break and can't be used for an unscheduled break. For example, the first ad in a halftime break often commands a premium and the advertiser would not be pleased if its message was delivered elsewhere during the break. Finally, there may not be enough time to replenish the ads for the planned break, and using the next scheduled break's prefetched ad pod to fill the unscheduled break is like robbing Peter to pay Paul.

Scenario B provides much more flexibility in handling an unscheduled break by creating contingency ad pod for each viewer when they start a new streaming session. When the unscheduled break occurs, the contingency pod can fill it, leaving the prefetched pod for the next ad break completely intact.

Prefetch strategies allow the ADS the time it needs to fill all ad requests, deliver a smooth viewing experience, and maximize ad revenue generation. Without it, the ad ecosystem can neither scale to very large audiences nor handle the unpredictable audience sizes and ad breaks of live and linear online.
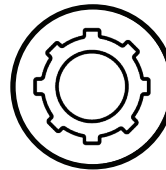
> *"It seems logical to me that all advertising sales will be automated by 2024."*
>
> *- David Springall*

FIGURE 8
Filling An Unscheduled Ad Break
2018 Yospace Technologies Ltd.
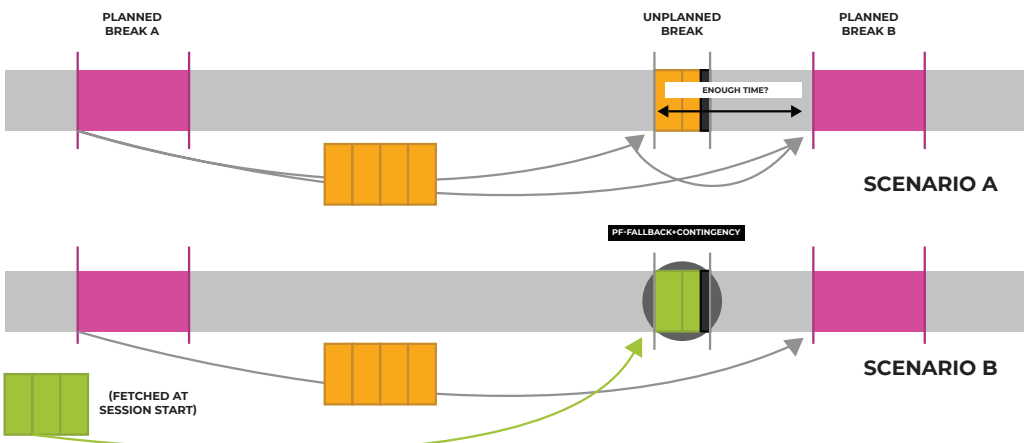
As audiences continue to migrate more of their view time online, they are no longer restricting their consumption to on-demand viewing. Live and linear streaming is becoming an increasingly important part of their online video consumption. For example, during the 2018 FIFA World Cup, Akamai reported that it took only 10 days to surpass the 2014 tournament in total data streamed.[14] Peak bandwidth demand in just the first week of the 2018 tournament was 15.2 TBs, more than double the peak in 2014.[15] However, to maintain a competitive and relevant experience online, live and linear streams cannot deliver the same ad load frequencies as traditional television. However, to maintain a competitive and relevant experience online, distributors need to target advertising in order to improve ad revenues.

Many ad targeting systems are based upon client-side ad insertion technology. Unfortunately, these solutions have severe limitations. For example, the experience is frequently far from smooth, and ad blockers can hurt monetization. Server-side ad insertion-based systems fix many of the problems, providing immunity from most ad blocking techniques and ensuring a smooth video playback experience.

Delivering addressable dynamic ads to large audiences for live and linear video streams is very challenging. Because ads are requested just-in-time, the ad servers see large spikes in requests immediately before an ad break, all of which must be processed in a very short time. Traditional ad decisioning systems (ADS) do not deal well with surprises, and unexpectedly large audiences and unscheduled ad breaks can overload the system. In these situations, many ad opportunities can be missed, resulting in lost ad revenue for the video provider.

Prefetch strategies give the ADS enough time to process the many ad requests. Whether for a scheduled or unscheduled ad break, prefetch guarantees much higher ad fill rates. The result is a smooth viewing experience for the viewer, optimal revenue generation for the video service provider, and impactful brand exposure for the advertiser.

With live and linear audiences growing fast, industry leaders such as Yospace's David Springall believe prefetch is the essential element to ensure that targeted streaming ads can scale. "There is no question that in order to deliver quality fulfillment of monetization the ad-tech ecosystem needs more time to deal with it."

Can an ad-supported video service afford to be without it?

[14] Andrew McDonald, Akamai: World Cup 2018 data traffic outstrips previous tournament, Digital TV Europe, 6 July 2018, https://www.digitaltveurope.com/2018/07/06/akamai-world-cup-2018-data-traffic-outstrips-previous-tournament/ (accessed on July 24, 2018)
[15] Colin Dixon, World Cup breaks records; Premier League bests PGA Tour, nScreenMedia, June 20 2018, http://www.nscreenmedia.com/world-cup-breaks-records-premier-league-bests-pga-tour/ (accessed on June 22, 2018)

summary

About The Authors

Akamai

Akamai secures and delivers digital experiences for the world's largest companies. Akamai's intelligent edge platform surrounds everything, from the enterprise to the cloud, so customers and their businesses can be fast, smart, and secure. Top brands globally rely on Akamai to help them realize competitive advantage through agile solutions that extend the power of their multi-cloud architectures. Akamai keeps decisions, apps and experiences closer to users than anyone — and attacks and threats far away. Akamai's portfolio of edge security, web and mobile performance, enterprise access and video delivery solutions is supported by unmatched customer service, analytics and 24/7/365 monitoring. To learn why the world's top brands trust Akamai, visit www.akamai.com, blogs.akamai.com, or @ Akamai on Twitter.

Yospace

Yospace is the world's leading provider of server-side ad insertion (SSAI) technology for OTT. With proven scale, its platform enables one-to-one addressability while delivering a TV-like viewer experience.

In partnership with the UK's biggest commercial broadcaster, ITV, Yospace was the first company to successfully demonstrate SSAI in a live broadcast stream, in 2012 – an achievement that was recognised by the IBC Innovation Awards. Today, the multi-award-winning platform services major broadcasters across the globe and is widely recognised as both the most innovative and most reliable in scaling to monetize major event traffic.

In 2017, Akamai announced that their dynamic ad insertion capabilities would be exclusively powered by the Yospace platform. Find us at www.yospace.com.

SpotX

SpotX is the leading global video advertising platform that enables media owners and publishers to monetize premium content across desktop, mobile and connected TV devices. As a modern ad server with programmatic infrastructure, data enablement, and monetization solutions for OTT, outstream, and addressable TV, SpotX gives media owners and publishers the control, transparency, and actionable insights needed to understand buyer behavior, manage access and pricing, and maximize revenue. SpotX also provides advertisers with a direct pipeline to premium supply and innovative solutions for optimizing media efficiency, reach, and audience targeting.

Learn more at www.spotx.tv and follow @SpotX on Twitter and LinkedIn.

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