

Optimizing Digital Media Advertising Strategy: How 5G and SSDAI are Driving Transformation



Abstract

Online viewing has seen tremendous growth in the last couple of years with a double digit growth in the video on demand (VOD), linear (live sports, events, and so on) and simulcast (multi-transmission) streaming formats. Nearly 70% of traditional TV viewers¹ have switched to over-the-top (OTT) formats. While advertising-based video on demand (AVOD) and transactional video on demand (TVOD) models have been at the top of the online viewership game, the subscription video on demand (SVOD) model has slowly begun to challenge their collective authority.

To remain competitive, broadcasters and communications service providers (CSPs) need to look for addressable (targeted or programmatic), personalized and relevant ads based on viewing history, location, device type, and more. However, delivering a custom ad to each and every viewer places a huge demand on the ad ecosystem.

This paper outlines an approach on how the industry can meet the addressable ad challenges in live and VOD experiences, and how new technologies such as server-side ad insertion (SSAI) and 5G can help scale up the ad ecosystem.

Delivering Seamless, Addressable, Targeted and Measurable Ad Experiences

The global video on demand market is expected to reach nearly \$160 billion by 2027². That said, the subscription video on demand (SVOD) has also been growing steadily as it offers a huge variety of entertainment video content.

To remain competitive, CSPs and broadcasters are looking to reduce ad loads as well as boost ad values with targeted and relevant ads inserted dynamically into the video stream.

Client-side ad insertion is one of the easiest options available where the ads can be added onto the player. However, this approach entails a few challenges. The video rendering experience is inconsistent as the actual video stream and ad video come from different sources and formats, and are stitched together in the player. The ads are vulnerable to malware as they are configured through the client, and can be easily blocked by external plugins. In addition, targeted and programmatic ads decisioning is challenging, given the dependency on the client app.

[1] Zemoga, *45 Enlightening OTT and Live Streaming Statistics To Use In 2020 and Beyond*, <https://zemoga.com/insights/blog/ott-live-streaming-statistics/> (published April 23, 2020), accessed April 20, 2021

[2] *Fortune Business Insights*, <https://www.fortunebusinessinsights.com/industry-reports/video-on-demand-market-100140>, November 2020, accessed on April 21, 2021

Server-side dynamic ad insertion (SSDAI) is an alternative approach, wherein ads are inserted into the online video by the streaming server, without depending on the client or player. SSDAI offers the capability to address these challenges, with benefits such as smoother video streaming coupled with improved video and audio quality. Ad blocking is harder and it helps keep malware infection at bay. It also provides greater visibility for B2B players on the type of ads to be shown, identifying the slots, monitoring and analyzing the insights.

Programmatic Ad Insertion Ecosystem

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: server-side ad insertion (SSAI), supply-side ad platform (SSP) and demand-side ad platform (DSP).

Figure 1 outlines the high-level integration points of the platform, where demand and supply side platforms are integrated with the broadcaster ad decision server.

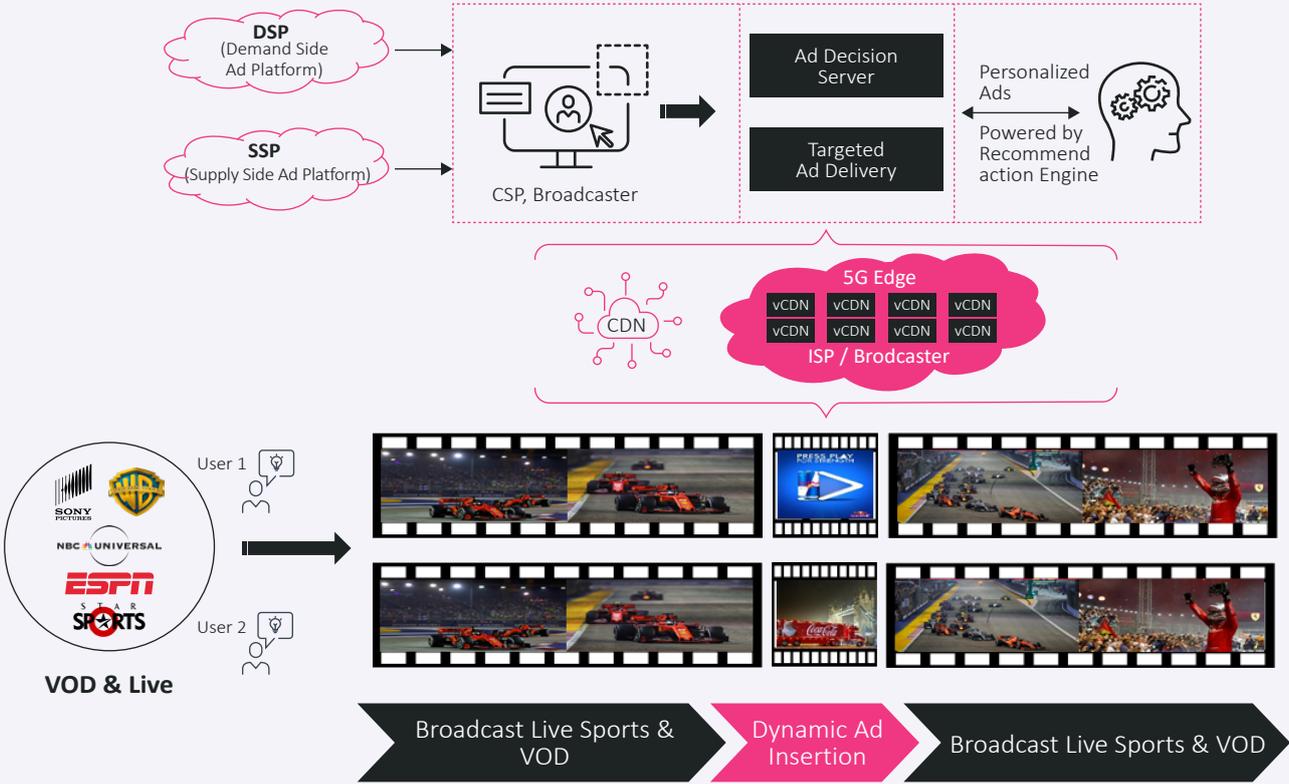


Figure 1: SSDAI 5G-Powered Platform

The DSP enables media and audience buying in real-time on ad exchanges and the SSP allows publishers to manage the yield of ad inventory and enables routing of ad exchanges. CSPs and broadcasters will be able to stitch ads in real-time with personalized ads. The seamless, dynamic and real-time experiences are enabled via 5G edge computing services (vCDN – virtual).

The entire process, from ad break detection to ad insertion, takes less than a second and repeats for every viewer with every ad break. The final piece is the delivery of content with the relevant ads to the right audiences on the right devices by consistently maintaining the integrity of users’ viewing experience. This is done through a content delivery network (CDN).

The CDN makes manifest data available to the SSAI, so that it can provide personalized experience to each user, based on the instructions from the ad tech ecosystem. The SSAI delivers the personalized manifest to end-viewer devices, while the last-mile video delivery is handled by CDN.

The entire content delivery system needs to work in tandem with the SSAI workflow to ensure a seamless experience across a variety of network conditions, devices and geo locations. Here, 5G with mobile edge computing (MEC) is able to harness the required ecosystem in delivering the quality of experience (QoE) in the end-to-end workflow.

Role of 5G with MEC in Addressing QoE

The 5G technology is expected to radically impact content consumption as it is expected to usher in a new and interesting ad inventory with more AR/VR ads. It will also influence digital video ads and dynamic video creatives, which will mature and increase commensurate with faster download and streaming speeds in the coming days.

This much-touted technology offers the opportunity to create new and more immersive ad units that can load quickly, resulting in lower bounce rates and even with a reduced need for ad blockers. Ad tech companies will in all probability embrace 5G to update their infrastructure for increased flexibility with faster audience reconciliation and more programmatic transactions, with latency expected to reduce from 40 milliseconds to 6-10 milliseconds.

Figure 2 provides the modular architecture of the SSDAI integration with the ecosystem.

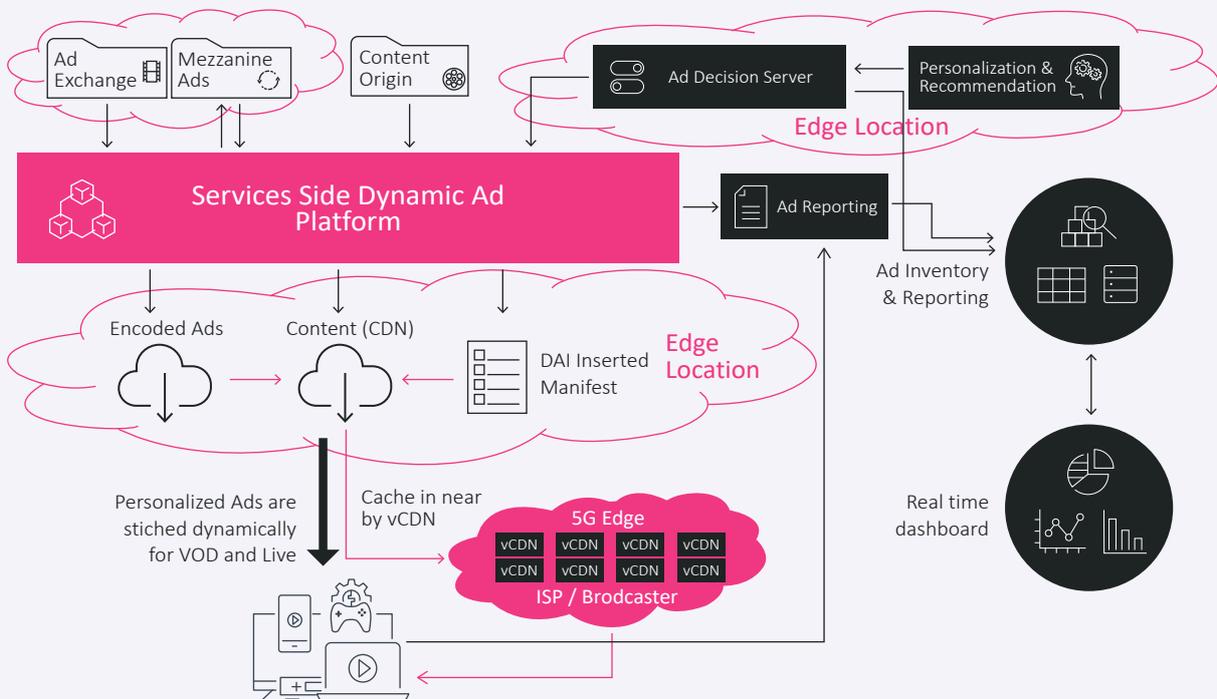


Figure 2: SSDAI Modular Architecture

As shown in Figure 2, the major modules of platform CDN (VOD and live), ads-hosted CDN and manifest files can reside in 5G. 5G will enable mobile edge locations to serve personalized and programmable ads. The ad exchange platform provides ads from different sources, based in edge locations. The source of the ads is in mezzanine format, needing mezzanine ads to be created in different pre-sets just in time (JIT), enabled by 5G.

The modular architecture supports third party or a customized ad decision server. The platform enables a recommendation engine which delivers customized and personalized ads for the individual customer. The ad inventory and real-time dashboard provides ad effectiveness and insights data.

The framework and solution are independent of product vendors and provides seamless integration between technology vendors, SSP and DSP platforms, customized to the individual CSP or broadcaster requirements.

Figure 3 provides details of end-to-end workflow implementation in stitching ads to the players based on customer request.

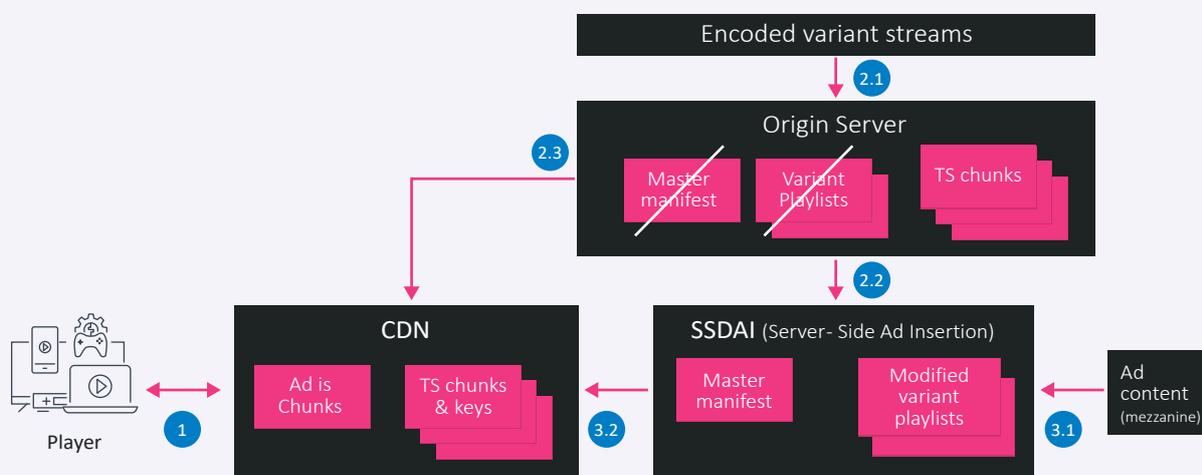


Figure 3: Server-Side Ad Insertion

The workflow is as follows:

1. Player sends a request for live or VOD (video-on-demand) content streaming to CDN
2. Content streams from origin server to CDN
 - 2.1 The encoded streams are pushed from encoders to origin server
 - 2.2 Origin server sends the notification feeds to SSDAI
 - 2.3 Origin server sends only the stream chunks to CDN for player consumption
3. SSDAI module supplies the modified manifest and modified variant playlists based on viewer information gathered from player via user viewing history, device type, current location, etc.
 - 3.1 Ad content will be transcoded and created to stream chunks
 - 3.2 Updated manifest and playlists will be sent to CDN

The overall flow stitching of the ad is completed in 0.5 seconds, and with 5G, the overall response can be reduced to a few milliseconds.

Figure 4 illustrates the benefits of the SSDAI model:

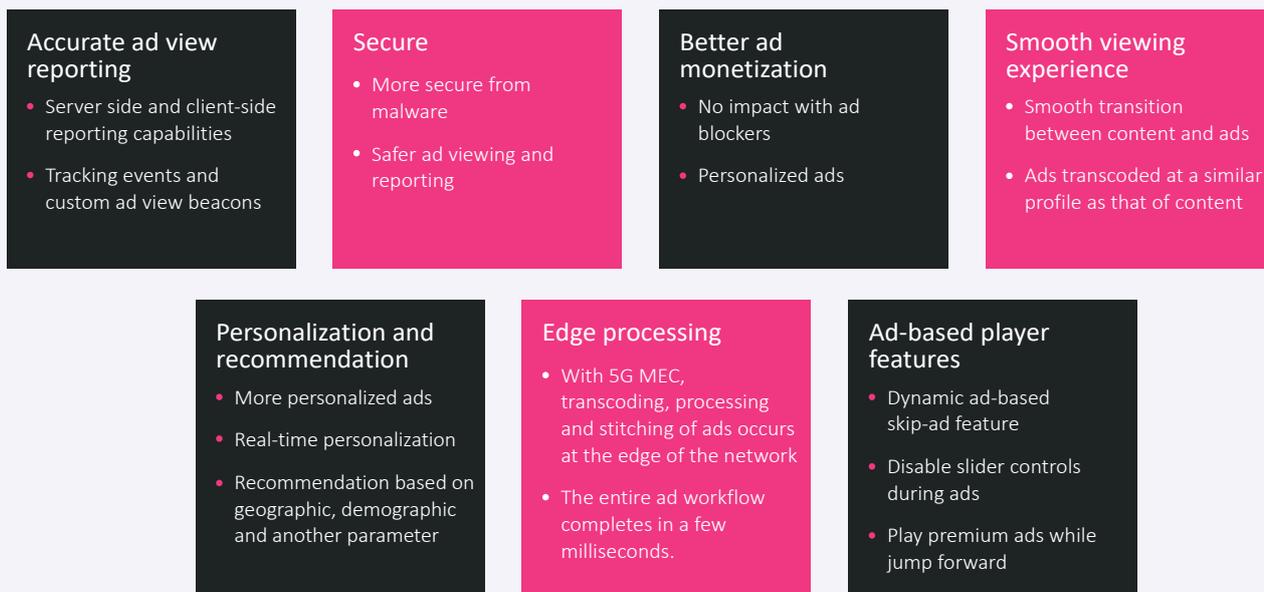


Figure 4: Benefits of SSDAI model

SSDAI with 5G: Transforming video advertising dynamics

Consumers' viewing patterns are constantly evolving. While a majority have been patronizing the SVOD and TVOD models, even those who thus far had not yet cut the cord, are slowly beginning to shift allegiance to the former.

The live and linear formats require ads, but not at the same ad load frequencies and choice as traditional television. It also requires a completely different ad ecosystem to deliver personalized targeted ads with millisecond accuracy.

However, bringing transformation in online video streaming with targeted, personalized and addressable dynamic ads to a large audience for live and linear video streams is a challenging goal. It needs next-gen technologies, global standards, and mature ecosystems. It is important to bring a common platform with technology partners, media and broadcasters, equipment vendors, telcos and other industries in creating the 5G-powered SSDAI ecosystem.

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