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EXECUTIVE BRIEF

Big Data and Real-Time Analytics: The Keys to Effectively Delivering OTT Video to Subscriber TV Screens

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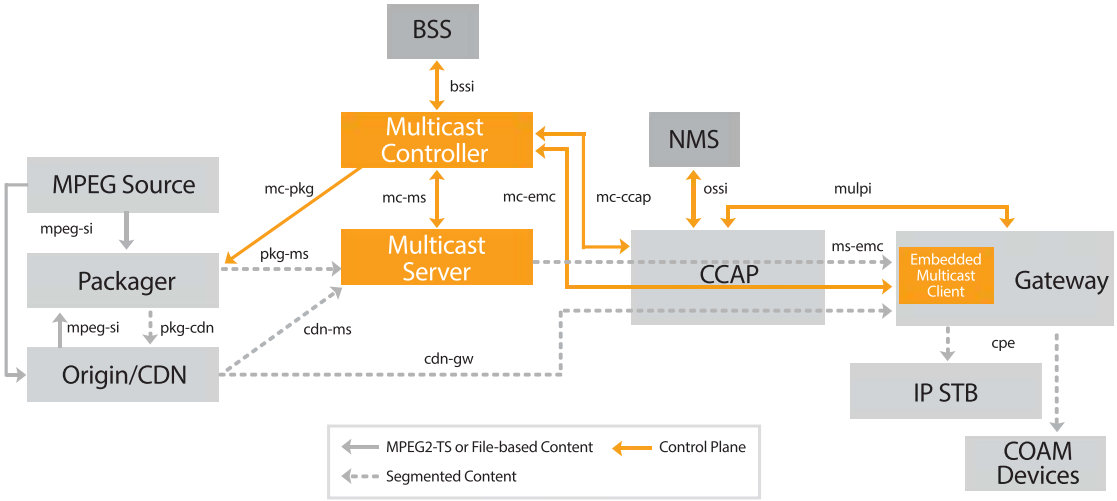
With operators migrating to IP video and the availabilty of IP capable gateways, streaming Over-the-Top (OTT) video to subscriber TV screens—the primary device on which consumers prefer to watch videos—is becoming a reality. This development will quickly generate a much higher demand on network bandwidth. Service providers that continue to rely on the Adaptive Bit Rate (ABR) protocol to deliver OTT video will likely experience a lot of complaints from subcribers who can't enjoy the viewing experiences they've come to expect.

Fortunately, a relatively new technology—the Multicast Assisted Adaptive Bit Rate (M-ABR) protocol—makes it possible for service providers to solve this challenge. Instead of relying on the ABR unicast approach—where a one-to-one stream is delivered for each program a subscriber watches and quickly overwhelms networks delivering OTT programs—the M-ABR protocol utilizes a one-to-many multicast approach. These programs can be broadcast via a single stream, and EMC devices can then request that stream when a subscriber "tunes in."

By leveraging the bandwidth efficiencies of IP multicast operator networks, M-ABR allows TV-subscriber devices to deliver linear channels as they are being broadcast from the networks—such as live sporting events and the news or pre-recorded programs.

The following diagram illustrates the major components of an M-ABR solution based on the recently-released CableLabs specification:



The major components of an M-ABR system delivering OTT video to TV screens

In this pay-TV operator scenario, a transcoding-packaging system publishes ABR content into the operator's content delivery network. The M-ABR server packages the content in NORM multicast protocol and sends the multicast stream across the network. The Embedded Multicast Client (EMC) application inside the gateway takes the multicast stream and converts it into unicast, which end-user devices and IP set-top boxes (STBs) readily understand. Thus, the EMC acts as a transparent proxy with no changes to the end-user devices and IP STBs, even though the content was sent as a multicast stream.

Opening the Window to New-Age IP Video Analytics

The M-ABR embedded client also opens the window to a whole new world of Big Data for service providers. This is critical because multicasting requires real-time analytics to help service providers decide which programs should be broadcasted using the multicast protocol (M-ABR) vs. which programs should be broadcasted using the unicast protocol (ABR). Service providers can also leverage Big Data to determine in real time how their network routers and switches should adapt to meet the demand. Today's infrastructures simply can't support broadcasting all programs via multicast.

As an example, service providers will want to determine which of their 800 total programs to be broadcasted during a specific time frame will fall into the top 100 as far as total viewership is concerned. The 100 programs will vary from hour-to-hour and may even change within each hour as viewers tune into and away from various programs.

In order to manage that traffic in real time, service providers will need to deploy a business analytics engine to manage their M-ABR deployments and their network infrastructure so subscribers have an enjoyable viewing experience. That engine will play a critical role in the analytics that can be derived from collecting and processing the huge amount of data generated by millions of EMC-enabled gateways.

Deep Insights into Network Performance and Subscriber Behavior

A few million subscribers using multiple devices generate millions of data events every minute. Analyzing this network data provides the service provider with insights into the M-ABR ecosystem for understanding operational issues and generating feedback to help automate the process for fixing those issues. For this to be effective, the collected data must be analyzed in real-time.

If a service provider detects that network latency extends beyond a particular threshold, this information can be used for instant corrective action. Similarly, if the cache hit ratio sinks below the 99% watermark, analytics can identify network problems in real-time that need immediate attention.

M-ABR analytics can also provide insights into quantifying viewer behavior to facilitate various types of analysis and recommendation systems. Client-facing applications resident on end-user devices can collect viewer interaction and content consumption information to derive real-time insights into video consumption trends. When combined with external data such as electronic program guide metadata and consumer demographics, service providers then gain even deeper insights into viewer behavior, which can drive more informed programming decisions.

Discover the Keys to M-ABR Success

To find out more about the wealth of insights service providers can generate using the real-time Big Data analytics that M-ABR enables, ***check out this white paper from ARRIS*.** The paper provides an overview into how Big Data and real-time analytics can be applied to video consumption trends and network operation dynamics to make M-ABR more effective. The insights are sure to play key roles in helping service providers meet their subscribers' needs while also making sure their networks operate at optimal levels when delivering OTT video.