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Best Practices

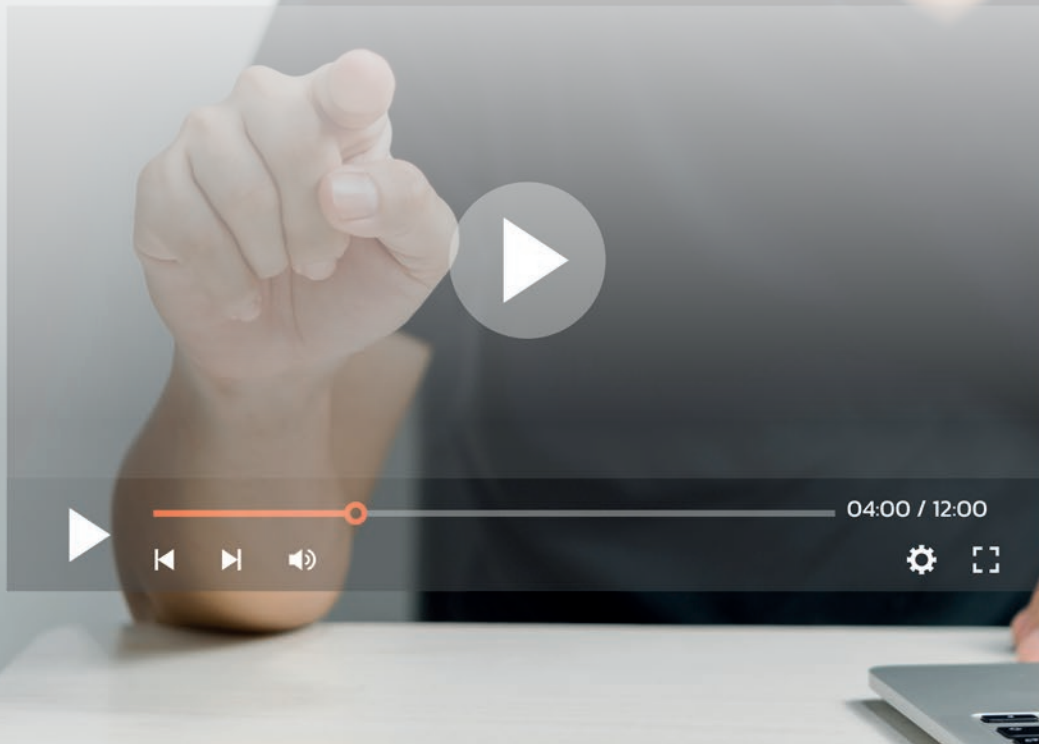
FOR TV PROVIDERS TRANSITIONING FROM QAM TO IP VIDEO DELIVERY NETWORKS

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FOR MULTI-SERVICE PROVIDERS, TRANSITIONING TO A DIFFERENT VIDEO DELIVERY METHOD MEANS A SHIFT IN TECHNOLOGY AND COMPANY OPERATIONS. THE TRANSITION TO VIDEO STREAMING HAS LEFT OPERATIONS AND QUALITY CONTROL (QC) TEAMS FACING NEW CHALLENGES WHEN TESTING AND MONITORING THEIR SERVICE, INCLUDING NEW WAYS OF DEALING WITH TECHNOLOGIES THAT WERE ONCE STANDARDISED SUCH AS DYNAMIC AD INSERTION (DAI). THIS ARTICLE WILL COVER THE BEST PRACTICES AND COMMON CHALLENGES FOR SERVICE PROVIDERS CAUGHT IN THE MIDDLE OF THIS INDUSTRY-WIDE TRANSFORMATION.



STAYING DEVICE STRONG IN A SHIFTING INDUSTRY

For over 20 years, digital television has been widely distributed through coaxial using QAM. Broadband services were also brought through the coaxial cable using DOCSIS, with some QAM delivery of TS live video still remaining to this day. Service providers had a deep understanding of how the technology worked after relying on it for two decades. IP video delivery has emerged as the natural path to sunset legacy technology and have a unified delivery over FTTx and coaxial with DOCSIS.

Since 2020, multiple service providers have seen their subscriber numbers going down. However, it's clear from the success of FAST channels that viewers still enjoy a linear television experience, but they also expect third-party applications to be available at the push of a button. For service providers who own and manage set-top boxes (STBs), the goal is to become the customer's go-to device when watching TV: the coveted "HDMI1 spot." That means ensuring their own linear service works perfectly over IP

delivery – and then going the extra mile beyond that.

It is now more crucial than ever for multi-channel service providers (MVPD) to stay ahead of the competition and leverage the "new ways" to watch TV alongside the more traditional ones. They face the primary competition of direct-to-consumer smart TVs and streaming devices that arrive with pre-installed apps.

HANDLING THIRD-PARTY SERVICES ON STBS

When consumers use an STB, they expect it to have third-party video apps like Disney+, Netflix, and Peacock. Providing access to these services is essential to successfully becoming the main TV watching device in a household. Viewers also expect these services to work perfectly across devices and will hold the STB provider responsible if they don't. It doesn't matter that these apps are provided by completely different companies. The burden lands on service providers to ensure that streaming quality is consistent.

This is further complicated by the fact that third-party video apps can have a negative effect on a provider's main service. In independent testing on real STBs, Witbe observed several instances of Netflix causing errors when viewers tried to exit it and return to linear programming.

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These errors are unique to the systems being tested, meaning they can only be observed on the real devices and networks that viewers are using at home and on the go.

NEW APPROACHES TO QUALITY CONTROL TESTING

The prevalence of video errors today underscores the need for QC testing. However, that process has also changed significantly in the transition to IP video delivery. In the QAM days, most service providers directly controlled the platforms their service ran on. With reference line-ups, QC teams could efficiently run a large-scale testing lab. Now, most IP STBs are built on either Android TV or Comcast's RDK platform. These platforms are not owned by the provider, and they frequently receive framework updates with little prior warning. With each platform update, providers need to retest their service quality to see if it has been affected by the change.

The same QC challenge holds true for providers that offer their service on other third-party devices in addition to their own. Video apps need to be tested on more devices than what seemed previously possible, including popular consumer-grade ones like Fire TV and Apple TV. Apps are also often built directly into smart TVs, most of which run on their own proprietary operating systems, which need to be tested individually. It's an overwhelming task that providers can manage through continuous test automation. Automation is the only effective method to testing their app at scale across different devices that are frequently updated.

Of course, it isn't only the technology that has changed for QC testing. Today, most operations and QC teams have traded their large-scale lab for remote work, often from different countries and continents.

This has created a need for reliable and secure technology that allows providers to access their real testing devices wherever they're located. With IP delivery, testing and monitoring on the actual network where the video is being played is essential to understanding service quality. Remote access technology allows teams to achieve that and easily collaborate, even when they're on the other side of the world.

NAVIGATING CONTENT DISCOVERY AND DYNAMIC AD INSERTION

One factor that should not be forgotten in the video delivery shift is content discoverability. In an environment crowded with services competing for the attention of viewers, discoverability is more coveted than ever. Providers should implement deep indexing, a technology that directs the customer's universal or voice control search requests to the service provider's application. The default response is to direct searches to a platform handler like YouTube or the Google Play Store. Deep indexing is the most effective method to ensure that the provider's content will reach viewers when they are searching for it.

Delivering advertisements is also vastly different with IP delivery. Linear TV has always relied on ad revenue, but recently streaming ads have begun to take hold over subscription-based services as well. Ads delivered over IP are typically handled through DAI. DAI adds cues into the content, which trigger the video player to pull ads from a large inventory of different sources, almost always originating in different servers than the main content.

The complex process of DAI can lead to streaming errors for both ads and the main content being played. These range from poor visual performance, audio issues, and content being cut off, to dire issues like frozen screens, errors returning to the main content, and full device crashes. In testing, we have observed that up to 30% of all streaming video sessions encounter an error caused by DAI. Like other QC testing, some of these errors can also only be seen on real testing devices. As the industry moves to IP and relies on revenue from third-party advertisers, properly verifying and resolving these DAI issues is essential to delivering exceptional video quality to viewers.

ADJUSTING TO IP VIDEO DELIVERY

Transitioning from QAM to IP video delivery has resulted in a massive shift for TV providers. Video operations and QC teams are navigating new platforms, third-party applications, and DAI, on top of having their apps being used on dozens of different devices and fighting for content discoverability. Teams are working remotely and transitioning to using automated testing and monitoring to operate at scale. Reliable technology and testing on real devices are key to operating securely and delivering the best service quality to viewers all around the world. With IP delivery, advanced testing and monitoring are more essential than ever.

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