

WHITEPAPER

Testing OTT platforms

Things to consider and how automation can help



ENSURING QUALITY ON SCHEDULE

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Video streaming over the internet is gaining ground over other media delivery mechanisms for several years, and it is here to stay. Enhancements in mobile technology, smartphones, and Internet-enabled TV have become a big game-changer as well. This demand in streaming content has fuelled the widespread availability of content over the internet. Worldwide 62% of adults subscribe to a streaming service, which is a very large subscriber base. According to the Allied Market Research report, the global OTT market size was valued at \$121.61 billion in 2019 and is projected to reach \$1,039.03 billion by 2027, growing at a CAGR of 29.4% from 2020 to 2027. In the last year and half, with the Covid lockdown, streaming media has become a major source of entertainment for most. This has opened up a whole new way of living, and the streaming media industry is only expected to grow at an exponential rate across all types of media and devices.

In this world of video streaming, users have lots of choices, and they are not locked to any particular provider, platform, or schedule. The user decides what to watch and when. The barrier to entry for launching an OTT service is extremely low, and with the advent of 5G, high-speed internet is becoming prevalent even in remote locations. With so many choices and options, user expectation has changed dramatically; one will abandon a video if the content doesn't start streaming within 2 seconds. Moreover, research shows that 76% customers discontinue their subscription if the content rebuffers more than once. These expectations set the bar very high for the service provider, considering the plethora of devices being launched and the associated OS versions to support.

Testing the OTT platform and the solution is a key aspect of being successful as a provider. Most concentrate on the content, features, and UI, and not as much to the testing. This is the single biggest short-sightedness on the part of the service provider, because without user stickiness, there is no way to survive in this highly competitive OTT streaming segment.

Challenges of testing OTT platform/solution:

So how to provide the all-important user experience and what are the key areas to consider for OTT testing:

1. Application functionality: Feature and functional testing across different releases is the first priority. Things like:
 - a) UI functions - launching, search, menu options, links verification, recommendations
 - b) Playback scenarios like play, pause, fast forward, etc.
 - c) Audio, Video performance like lip sync, buffering, latency, resolution (high definition, standard definition, low, etc.)
2. Localization: Online streaming must adapt to a specific region or location. Validating for linguistic accuracy, cultural appropriateness, customized symbols, and correct currency formatting is mandatory.
3. Device support: Content delivery over a varied ecosystem of devices should be consistent and the media being watched needs to transition seamlessly across platforms. TV devices that include but are not limited to Roku, FireTV stick, Xbox, Android, and Apple TV create additional testing complexity.
4. Cross-platform and cross-browser compatibility issues: Different platforms and browsers can bring in different design issues, flawless content steaming across all platforms and browsers is important.
5. UI Resolution issues: Users can use the streaming platform from any kind of device, for example, TV has a particular resolution, while some Smart TVs do not support pixel CSS.
6. Playback Quality: If the content isn't available on demand and playable with DTV comparable delay, the audience quickly loses interest; video playback performance is extremely important.
7. Delivery formats – Streaming content is delivered in multiple formats like HLS (HTTP Live Streaming) and MPEG-DASH. Large OTT service providers need to support various formats seamlessly to increase device spread.
8. Security – Testing different types of DRMs like Widevine, Playready, FPS and timely delivery of the secure content with DRM flags enabled on different devices is important.
9. Network adaptability – Service behavior in different bandwidth and network latency conditions is very important to verify. One needs to check the impact of network fluctuations on the platform's response.
10. Network issues: Recovery response due to network issues including network down must be validated to ensure quality user experience. A recovery plan and verifying defects that could result from network issues should not be ignored.
11. Load and Performance Testing – A streaming platform is expected to get a heavy load of traffic, particularly for popular content. Load condition could potentially result in a crash if the platform is not stable. Validating the platform against stress condition is important.
12. Cloud scaling – With increased Cloud adoption, OTT providers have to ensure that the operation of the features and the delivery of the content is proper over Cloud using appropriate safety measures.

13. Network PVR – Verifying different types of recording like personal recording, catchup recording and timeshift recording from a network location instead of user’s device need to be conducted.
14. SSAI (Server Side Ad Insertion) – Need to ensure region based dynamic ads are working with different types of SSAI servers eg., AWS Mediatailor, Adobe ads.
15. Manifest Server – Fast access to Manifest server to fetch the DASH/HLS playlists under different network condition is important for load test and helps in platform dimensioning.
16. Content Ingestion – OTT content ingestion system should accept content from different sources like MRSS Feed, Direct upload, ftp, http etc.
17. CMS (Content Management Server) –Test features like add/update of different content meta data like Genre, Ratings, etc. for different OTT channels and linking with the ingested content.
18. CDN – CDN plays vital role in OTT architecture, must thoroughly test different functionalities like OTT requests/responses, caching, security, etc.
19. JIT Packager – Just-In-Packager convert the content on the fly. For eg., If the origin server has HLS content and request comes from android device, which supports only DASH, JIT server will convert the HLS content into DASH on the fly. JIP performance is important to verify.
20. OTT Server Monitoring – Tool like DataDog, Grafana, kibana are used to monitor backend OTT server. Testing needs to ensure monitoring system captures the problem under different conditions.

OTT Streaming Test Automation Solution

A typical OTT manual regression testing cycle across various platforms and devices requires 7 to 10 man weeks. Moreover, against an aggressive timeline, manual testing can unintentionally lead to product delays and diminished quality. Test automation is the only way to rapidly scale end-to-end testing, provide comprehensive coverage and a cost effective approach to testing an OTT platform. With the right OTT testing strategy, and incorporating automation in the development cycle one can effectively deliver customer satisfaction and reduce churns. However, this is a lot difficult than it sounds, particularly when one takes into consideration the challenge of resource availability with skills in OTT domain, programming, and automation.

Following are a few points to consider while developing or selecting a test automation solution for an OTT platform:

- A. Test case reusability: The same automation scripts should test across a range of operating systems and platform combinations to enable faster and more accurate coverage. This will ensure web services and user interface are all in line with business requirements and consumer expectations, all at a quicker pace.
- B. Expedite testing: The right automation framework can validate each type of browser and device as well as executed in parallel with detailed defect reporting.
- C. Account for media variance: Most content has a “time to live”, beyond that time the content is not viewable because its rights changes, hence validating against expired test data would lead to false results.
- D. Handling Timing issues: The media features like PBR, Subtitles, etc. are extremely time sensitive, the automation solution must address varied networks and time of the day sensitivities.
- E. Intelligent test data: The automation solution should dynamically fetch the right set of the media for the test case, e.g. right entitlements, duration etc. or sometimes create the right media for the intended test case at that moment automatically.
- F. Environment variance: Platform responses against network latency varies, the automation frameworks needs to be resilient to that and account for such conditions.
- G. Account for platform and usability variance: User’s interaction varies with platforms like mobile, web, TV, etc. The automation solution should adapt the same test case to the differences in triggering as well as validation across different platforms.
- H. Failure analysis: In the OTT world, media not playing or a player feature not working is a common problem. Deeper failure analysis in real-time to determine the real cause behind the failure is an important aspect of the automation solution.
- I. Collection of various artifacts: The automation framework will have to collect various artifacts like screenshots, recordings, network logs, console logs, platform logs, etc. and bundle them with the reports for analysis and debugging.
- J. Codeless automation: The test script development should not require knowledge of any programming, scripting or any script generation tools.
- K. Validation of the end user experience: The automation framework has to consider the quality of the playback or the function in order to determine the ultimate user experience.

- L. End to End test automation: The automation solution will have to provide both server-side (backend) and client-side (frontend) automation independently as well as end-to-end system test validating both the server as well as the client.

There are a few OTT automation frameworks available in the industry but they require customization to adapt to the architecture of the OTT, its APIs, the media type, DRM technology, client platforms supported, etc. A/V experience related test cases are very difficult to automate. The automation solution must be able to provide A/V analytics to facilitate validation of the A/V experience. Moreover, streaming video testing would always have a certain percentage of test cases that cannot be automated, these need to be managed and kept to an absolute minimum. While choosing a solution it is important to evaluate how it matches up against the different criteria, ease of customization, support service that comes along with it, and finally the technical expertise required to maintain it on an ongoing basis.

Rebaca's Test Automation framework – ABot for OTT

ABot for OTT is a test automation framework that integrates with any CI engine to provide Continuous Testing as part of the development process. The automation scripts are developed in English like DSL (Domain Specific Language) making it easily understandable by different stake holders. ABot architecture enables the test scripts to be independent of the device platform or UI variations. Following are a few of the features of ABot:

- Comprehensive platform support - Most Browsers, Android Phone & STB, iPhone, AppleTV, TVOs, Chromecast, FireTV, etc.
- Common set test cases for Web GUI, mobile App GUI or, any remote device App GUI. Enables rapid onboarding of new Client platforms.
- Wide range of features support - Authentication, Navigation, Bookmarks, Pop-Up, Playback (Live, Catch Up, Recording, VOD), Trick modes (skip/drag/FF/RW, etc.), Subtitles, In-home, Out-of-home, Download & go, a lot more.
- Codeless Automation, no programming required. Test cases written in set of English-like DSL. Textual interface for both Static Configuration and Dynamic test data.
- Resilient to environment and platform variance by adopting to it dynamically
- Intelligently recognizes and uses the appropriate media for the test script
- Remote test execution and monitoring is possible.
- Captures all kinds of test artifacts, reports, logs, screenshots, recordings, etc. and
- provides failure analysis
- A/V SDK integrates with client side application and provides A/V statistics for analysis.
- CI-CD enabled with parallel execution to support multiple client execution simultaneously
- Backend server API validation support – primary focus areas include media provisioning, configuration profiles, client DRM license calls, media rights, tracing server logs, performance, and failover tests.
- Correlation of frontend and backend log messages to facilitate tracing issues and debugging

These and various other features of ABot OTT make it a great choice for OTT streaming media test automation platforms. Rebaca's professional service team has deep skills in the OTT media domain to facilitate any level of customization, enhancement, and integration.

Please get in touch with us for a detailed understanding of ABot and a live demo of the solution.

Contact Us

Call: +91-33-4009-7177 Mail: marketing@rebaca.com .

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