



# UNLOCKING TESTING AUTOMATION – THE POWER OF APPIUM 2.0 IN QUALITY ENGINEERING

## Abstract

In today's mobile-centric world, business success hinges on delivering high-quality, flawless mobile applications. Appium 2.0, the latest release of the open-source mobile testing framework, emerges as a dynamic force that is revolutionizing mobile testing. This white paper looks at the innovative strides made by Appium 2.0, highlighting its pivotal role in quality engineering. Exploring its benefits and business value, we explain how Appium 2.0 empowers developers and quality engineers. It achieves this with an efficient, streamlined, and automated testing approach, accelerating the delivery of exceptional mobile application experiences. This paper can serve as a valuable resource to help understand the transformative impact of Appium 2.0 on elevating mobile application testing and quality engineering practices.

## Introduction

According to a recent market research report<sup>1</sup>, the market for mobile application testing services surged to US \$5.59 billion in 2022. With a projected compounded annual growth rate (CAGR) of 17.38%, it is poised to reach US \$14.24 billion in the next five years. From communication and entertainment to productivity and commerce, mobile applications have become integral to our daily lives. This widespread adoption has propelled mobile testing to the forefront of software development.

Mobile testing, a critical part of software quality engineering, evaluates and validates the functionality, usability, and performance of mobile applications across various devices and operating systems. The rigorous process ensures that applications not only meet user expectations but also function seamlessly, delivering unmatched user experience. Appium, a cutting-edge open-source mobile automation framework launched in 2012, has emerged as a cross-platform solution for automating mobile applications. Its transformative Appium 2.0 release in 2023 seamlessly integrates drivers and plugins, redefining the testing and quality engineering landscape.

## Appium 2.0: A Major Leap Forward

Appium has consistently aspired to move beyond its identity as a mere mobile application automation tool. With the WebDriver paradigm proving successful for the web, Appium extended its effectiveness seamlessly to mobile applications as well. Appium 2.0 is a groundbreaking leap, empowering quality engineers with a unified tool capable of automating tasks seamlessly across different platforms. Appium 2.0 marks a significant turning point in the evolution of the Appium framework, introducing a host of innovative features and enhancements that take mobile application testing to unprecedented heights.

In its upgraded series, Appium 2.0 redefines itself as a comprehensive platform, facilitating effortless creation and sharing of drivers and plugins. It brings with it a more user-friendly and standardized interface, which includes:

- An innovative system for developing and sharing Appium drivers for automating new platforms and operating systems, like Linux, or any other apps or platforms.
- A robust plugin architecture that extends and modifies Appium's functionalities, enhancing its adaptability to diverse testing scenarios and use cases
- A single-command mechanism for installing drivers and plugins from a diverse ecosystem, optimizing testing and simplifying quality engineering workflow

## Extensibility to Optimization: Key Features of Appium 2.0

Appium 2.0 brings with it the following features:

- Enhanced extensibility and flexibility: Appium 2.0 introduces a

revolutionary architecture for extensions and drivers, simplifying the creation and sharing of custom Appium components. This enhanced extensibility empowers quality engineers with the flexibility to tailor the framework to their specific testing needs and scenarios, fostering a robust and adaptable testing environment.

- Powerful plugin system: Appium 2.0's dynamic plugin system enables users to seamlessly integrate new features and functionalities into the framework without modifying the core code. This modular approach fosters innovation, allowing quality engineers to extend the capabilities of the framework in response to evolving testing requirements.
- Broadened platform support: Expanding its reach beyond native mobile applications to include web and hybrid applications, Appium 2.0 provides comprehensive testing capabilities across a wide range of mobile applications. This enhanced platform support aligns with the diverse needs of the contemporary mobile application landscape.
- Performance and stability optimizations: Appium 2.0 demonstrates significant performance and stability enhancements, ensuring faster execution of test scripts and bolstering overall reliability. These optimizations streamline the testing process, mitigate the potential risk of test failures, and enhance quality engineering efficiency.
- Lightweight design: With the deprecation of the graphic user interface (GUI), Appium 2.0 opts for a lightweight design in console usage. Appium Inspector requires separate installation, with the browser version offering convenient access without the need for a standalone application. Appium 2.0, therefore, provides quality engineers with a lightweight testing solution that is easy to use and improves testing efficiency.



## Appium 2.0 Architecture

The Appium 2.0 release provides quality engineers with a significant shift in terms of unparalleled control and flexibility in the testing environment. In this section, we outline the advancements in Appium 2.0's driver and plugin frameworks.

Driver architecture: Appium 2.0 allows for independent maintenance, installation, upgrade, and uninstallation of drivers without impacting the core Appium versions. This marks a significant improvement from the constraints of the Appium 1.X series, where driver installation and upgrades were closely tied to the core framework. The decoupled architecture of Appium 2.0 enables upgrades without the need for new drivers or plugins, streamlining the framework and making for a lighter and loosely coupled system. This improves test execution performance, eliminates conflicts between different driver versions, and mitigates the risk of test breakage by upgrading each driver separately. Figure 1 represents the driver architecture of Appium 2.0.



Figure 1: Appium 2.0 Driver Architecture



## Plugin architecture:

Appium 2.0 adopts a robust plugin architecture that extends the functionality of the Appium framework. It integrates new commands, modifies existing commands, and offers additional features. These plugins, scripted in TypeScript, dynamically load into Appium at runtime. They can be used for various purposes, including supporting new application platforms, introducing additional capabilities within existing platforms, integrating Appium with other testing tools and frameworks, and providing custom reporting and logging functionalities. Figure 2 depicts the Appium 2.0 workflow architecture.

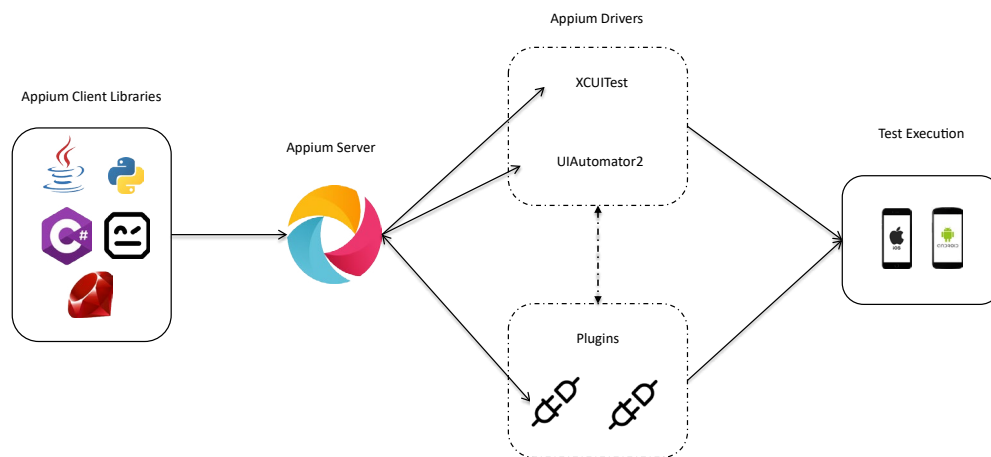


Figure 2 - Appium 2.0 Workflow Architecture



## Advantages of Appium 2.0

From accelerated time to market and elevated testing quality to streamlined collaboration and enhanced platform coverage, Appium 2.0 unpacks transformative advantages that can help enterprises fast-track their journey to the future of mobile application testing. Some of the chief advantages of Appium 2.0 are:

- **Reduced time to market:** Appium 2.0's automated testing capabilities not only accelerate the testing process but also significantly reduce the time required to test and release new mobile applications. This empowers businesses to capitalize on emerging market opportunities and gain a competitive edge.
- **Enhanced application quality:** The comprehensive testing functionalities of Appium 2.0 play a pivotal role in early defect detection and resolution during the development process. This proactive approach results in bug-free application release, ensuring exceptional user experience.
- **Reduced testing costs:** The automation capabilities of Appium 2.0 eliminate the need for extensive manual testing, resulting in substantial cost savings and improved resource utilization.
- **Improved team collaboration:** Appium 2.0's intuitive interface and extensive documentation foster collaboration between developers and quality engineers. This synergy between the two teams promotes a unified testing approach, streamlining communication and improving overall efficiency.
- **Expanded platform coverage:** Appium 2.0 extends its support to the Windows platform, complementing its existing compatibility with iOS and Android platforms. This enhanced platform coverage equips businesses with the capability to test their mobile applications across a broader range of devices, ensuring consistent functionality and compatibility across different operating systems.
- **Performance optimizations:** Appium 2.0 offers significant performance and stability improvements, ensuring that test scripts run smoothly and efficiently. This translates into faster test execution time, reduced waiting periods, and a more streamlined testing workflow.
- **Future-proof testing:** Positioned as the future of mobile testing, Appium 2.0 undergoes continuous development and active maintenance, ensuring a stable and reliable testing environment. Businesses that adopt Appium 2.0 stay ahead of the curve, leveraging the latest advancements in mobile testing technologies.





## Conclusion

In the realm of mobile application testing, Appium 2.0 represents a significant leap forward in innovation, signifying a paradigm shift for quality engineers and developers. It empowers them to streamline their testing processes, enhance application quality, and accelerate delivery. The enhanced flexibility, powerful plugin system, expanded platform support, and performance optimizations integrated with Appium 2.0 make it an indispensable tool for organizations aspiring to deliver exceptional mobile application experiences. Embracing Appium 2.0 not only streamlines testing processes but also enables businesses to consistently deliver high-quality mobile applications, giving them the edge in an ever-evolving mobile landscape



## About the Authors



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As a seasoned delivery manager, Hariprasath Vasudevan brings over 26 years of extensive experience in the IT industry. A digital enthusiast, he has a keen interest in connected device technologies, including mobile devices and the Internet of Things (IoT). Hariprasath's expertise spans mobile payments and mobile device cloud, where he has successfully led and delivered large-scale programs. He is an active contributor to the Connected Devices and API Center of Excellence (CoE) within Infosys Quality Engineering Unit (IQEU) where his contributions have helped shape the landscape of such testing. With a master's degree in computer science, Hariprasath remains at the forefront of industry trends and latest technologies.



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Gowrisankar Rajendran is a technology architect with over 18 years of extensive experience across various technologies and domains. Specializing in mobile and web app automation, he has a track record of delivering innovative, cutting-edge solutions to clients across industries. Gowrisankar holds a bachelor's degree in electronics and communication engineering, and a master's degree in communication systems. He believes in continuous learning and experimentation.

## References

1 Mordor Intelligence | Mobile Application Testing Services (MATS) Market Size & Share Analysis - Growth Trends & Forecasts (2023 - 2028)

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