WHITEPAPER

A4mation - Test Automation Framework

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INTRODUCTION

AFour has developed A4mation, a robust, scalable, and extensible test data driven automation framework that helps enterprises to deliver better and faster software

Today's enterprises demand quick and high-quality software deliverables in the market to withstand the challenging competitive marketplace. Adopting Cloud and accepting DevOps technologies has powered efficiency and agility, making the testing processes more agile and efficient and reducing turnaround time. Automation testing is not only improving test coverage but also helps in increasing quality, shortening test cycles, and saving costs considerably. As per a report published in 2020 by Herb Krasner from US CISQ Advisory Board, the cost of quality (COQ) due to unsuccessful IT projects, poor quality, and operational software failures is $ 2.08 trillion.

To address this need, AFour has developed A4mation, a robust, scalable, and extensible test data-driven automation framework that helps enterprises deliver software better and faster. Multiple large enterprises use A4mation to automate hundreds of tests. A4mation helps the overall automation development time to be reduced by 30% as the framework has most of the capabilities for rapid automation development.

Challenges

Choosing the right test automation framework is vital in ensuring proper testing and minimizing the cost of quality. Some of the common challenges and requirements are:

1. A common framework to automate frontend and backend tests

2. Extensible option to customize tests based on application requirements

3. A reliable and fast framework that could execute test suites in parallel and consistently produce the right results

4. Scalable to hundreds and thousands of tests

5. Choosing the right set of tools and technologies

6. Integration with DevOps tools and technologies for continuous integration testing and delivery
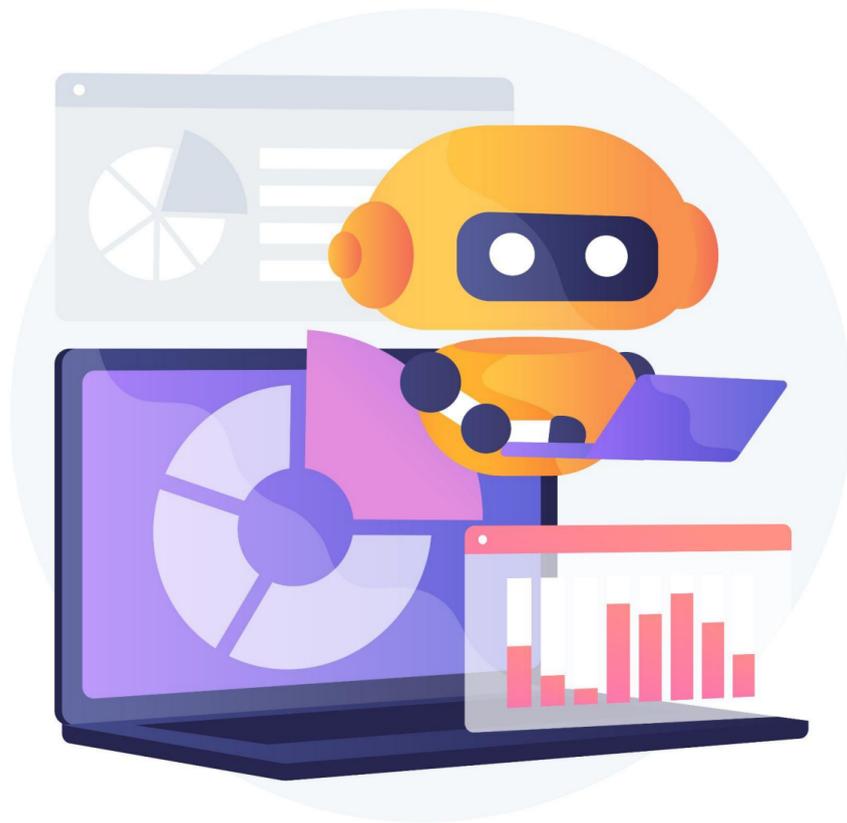
7. Low cost

Solution

A4mation is a Linux and Python-based rapid test automation development framework that allows testers to quickly develop, execute tests in parallel and generate rich test coverage reports. The test framework adopts a data-driven model and repeats a single test with multiple test data to avoid developing a large number of tests.

By adopting A4mation, our customers reduced 30% of their test development time that would have been otherwise spent in developing basic features and libraries needed to create, execute tests, and report results. A4mation has been used for the past few years by many customers, and the test cycle times have been considerably reduced by 70% on average.
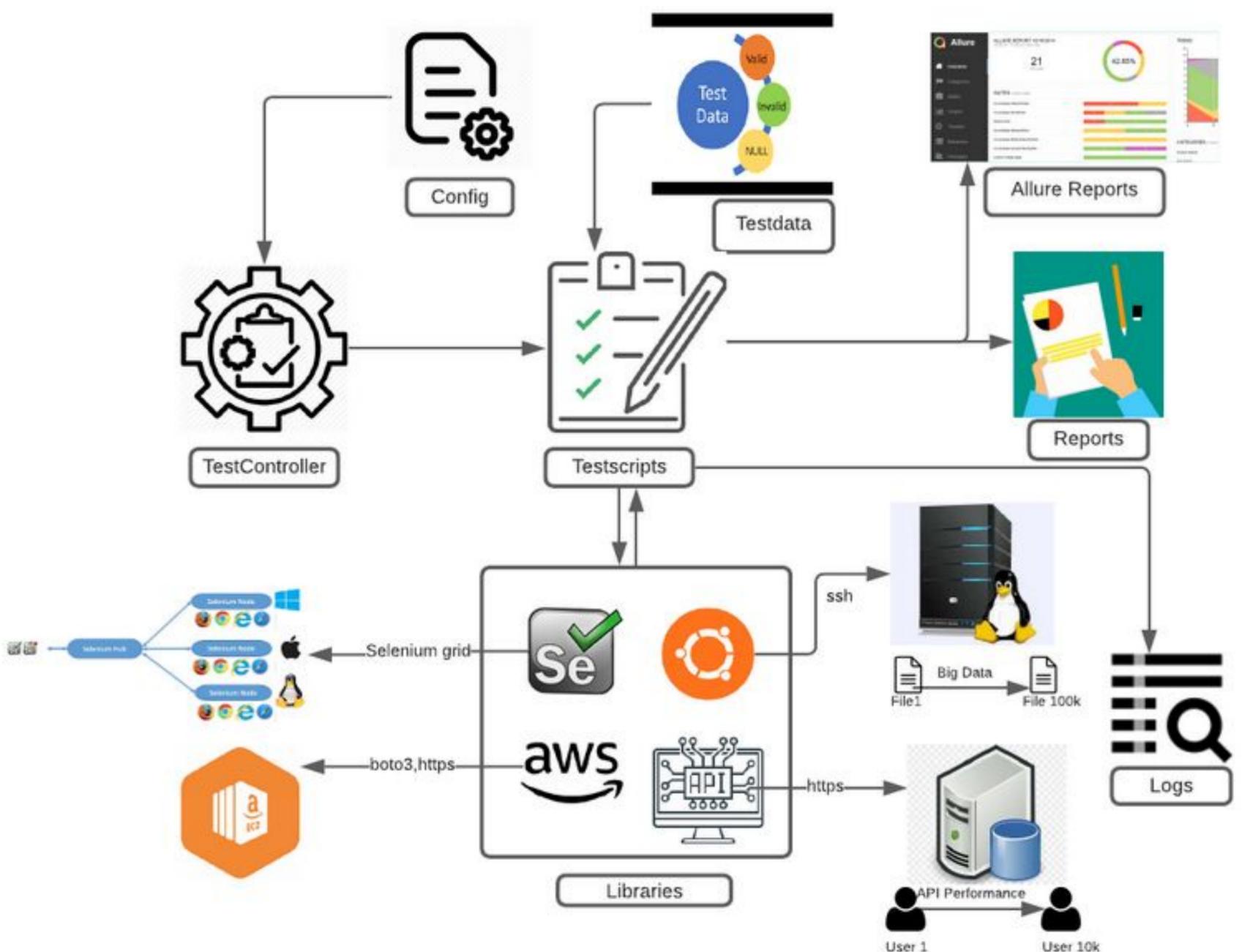
Features

1. AWS Cloud Sysops automation.
2. Web UI automation.
3. API automation.
4. API performance automation.
5. CLI test automation.
6. Concurrent execution of tests to reduce test cycle time.
7. Rich library of reusable functions for:
   a. Web UI browser operation.
   b. API and API performance.
   c. Linux operations.
   d. VDBench integration for large data generation to test storage.
8. Quick and easy integration with CI tools.
9. Rich test reports and test logs.

Architecture

Component Flow

1. Test Controller is the central hub of the test automation framework.
2. Test Controller retrieves configs that have the required settings, e.g., web URLs.
3. Test Controllers invokes Test Scripts that have one or more test cases implemented based on test requirements.
4. Test Scripts retrieve test data required for executing test cases. Test data is in json format and is specific to test scripts.
5. Test Scripts invokes library functions to execute the test cases. The libraries have the required reusable functions to perform useful tasks on AWS, Linux, UI operations, etc.
6. Test Scripts generate rich reports and detailed logs.

About AFour

Established in 2007, AFour Technologies (a.k.a. AFour) focuses on Software Product Engineering Services comprising UI/UX Design, Architecture Design and Consulting, Software Development, DevOps (CloudOps, SysOps and DBOps), QA (Test Strategy and Implementation, Test Automation, Performance, Security) and Monitoring. With an excellent track record of over 10 years and a focus on software product engineering, AFour is a true example of self-belief, consistency, and transparency.

AFour is an ideation and technology house. Product companies associate with AFour for its product conceptualization and technology skills in a wide range of technologies like Java, Python, .NET, JavaScript (MEAN), LAMP (Perl and PHP), Angular, React, C++.

The company is a hub of every cutting-edge technology in software engineering 3 Hyperconvergence, SDN, Virtualization, Next Generation Data Center Technologies, Networking, Enterprise Mobility. Till date, AFour Technologies has been able to bring together some of the best and brightest minds in software engineering.