

Objectives and Challenges

Our client, the leading supplier of retail banking software, currently implements their banking solution on dedicated infrastructure using a waterfall-style SDLC with manual testing. This approach results in costly up-front capital investments and longer than desired release cycles. Their initial goal is to shorten the time to deliver new features, with higher first-release quality. Implementing an agile SDLC built upon a cloud containerized architecture using RedHat OpenShift and Microsoft Azure will reduce up front and operational costs.

Elyxor was engaged to demonstrate the value of this new delivery model by deploying one of their clients premier products into a cloud-based, elastic infrastructure leveraging continuous deployment and test automation. The Elyxor challenge was to deliver the following capabilities within an eight week project.

Digital Agility

- Manage change and release functionality on the timeline of business requirements in day or weeks and not months
- Measure the success of change with Green / Blue Deployments, AB testing, and analytics

Continuous Delivery

- Deploy and run test automation to facilitate rapid change and confidence in quality
- Provide a project team dashboard with automation test results and environment health

Elastic Scale

- Deploy a cloud-native component to the Hybrid-cloud on RedHat OpenShift and Microsoft Azure
- Dynamically scale the environment based on customer load

Elyxor Approach

Elyxor provided a team consisting of a project lead, automation architect, automation engineer, and DevOps engineer to partner with the clients Tools team, DevOps engineers, and business analysts.

Work was planned using an agile methodology and managed over three two-week sprints with daily scrum meetings, a mid-point, and project-end executive presentation. The work effort was broken out into the following workstreams. 1) Functional Test Automation, 2) CI/CD/CT pipelines, and 3) Operations health dashboard development 4) Performance Test Automation.

Results

In this compressed time frame, Elyxor delivered a working test automation infrastructure and process that fully integrated into our clients development processes. As a result, our client successfully demonstrated business value at their customer conference as outlined below.

Digital Agility

- Improve customer speed-to-market and business investment
- Deepen partnership as a technology enabler to the business

Continuous Delivery

- Improve project speed-to-acceptance for timeline risk reduction
- Deliver automation for increased margin and release quality

Elastic Scale

- Reduce environment setup time and maintenance costs
- Support future growth and component expansion

Deliverables by Workstream

Functional Test Automation

In order to accelerate the functional test automation workstream, we integrated our proprietary Elyxor Test Automation platform into the client’s process and infrastructure. Depicted in blue within figure 1, Elyxor’s Test Automation platform provides common services that save time and provide a consistent, more maintainable pattern for test case development and maintenance. The custom test cases were written in Java and utilized additional libraries like the Selenium framework to drive UI and headless browser automation. Test data used for inputs and expected result values were managed with externalized JSON files and retrieved by the Elyxor’s Test Automation platform data services. Test management and reporting was done via REST APIs to the client TestRail tool instance via Elyxor’s Test Automation platform test management services.

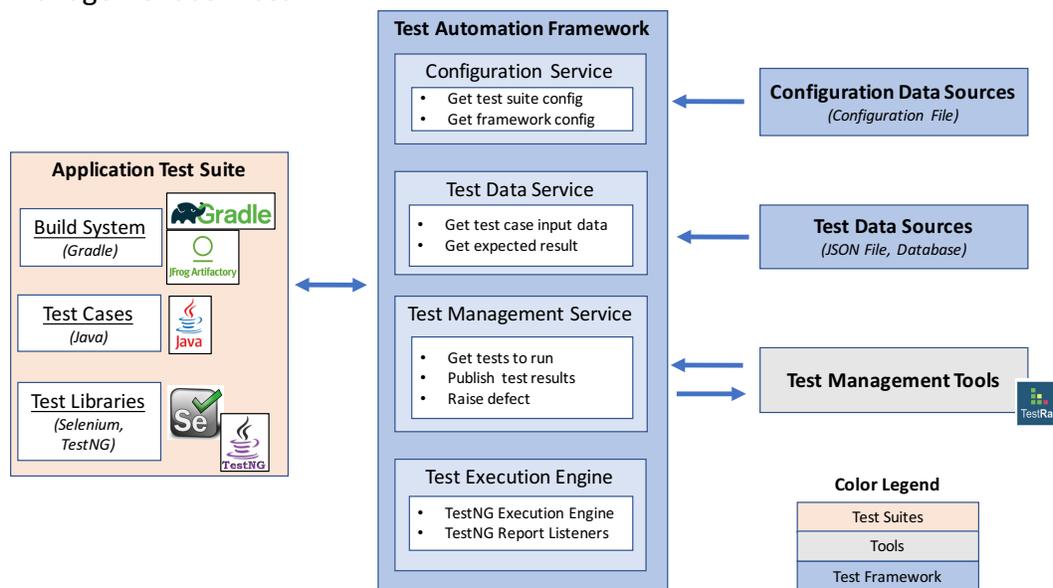


Figure 1 Continuous Automated Testing Framework components

CI/CD/CT Pipelines

Elyxor developed Jenkins files enabling automated pipelines that triggered test behavior and Openshift configuration files that enabled the deployment of new Docker Images into the OpenShift environment. The process flow that was developed to deploy a new release to OpenShift and run automations tests is depicted in figure 2.

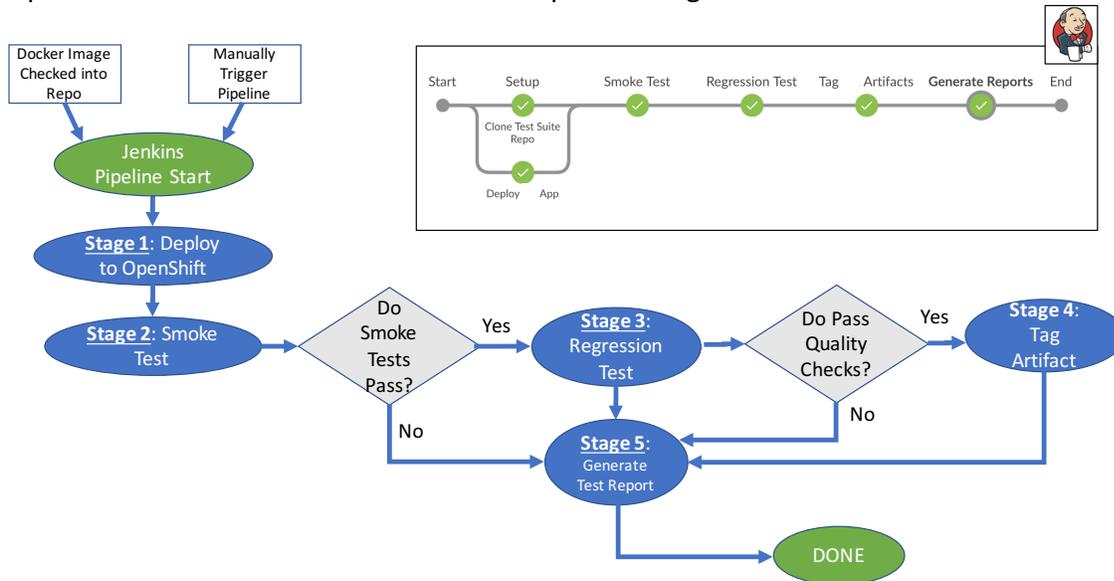


Figure 2 CI/CD/CT PROCESS FLOW DESIGN AND SCREENSHOT OF THE WORKING PIPELINE WITHIN JENKINS

Performance Test Automation

Elyxor was able to quickly demonstrate performance-based scaling in the OpenShift environment by generating enough volume to trigger the elastic scale rules within OpenShift that auto-provision a new pod instance. To achieve this, we used Jmeter load test scripts and the on-demand load test infrastructure provided by BlazeMeter as depicted in figure 3.

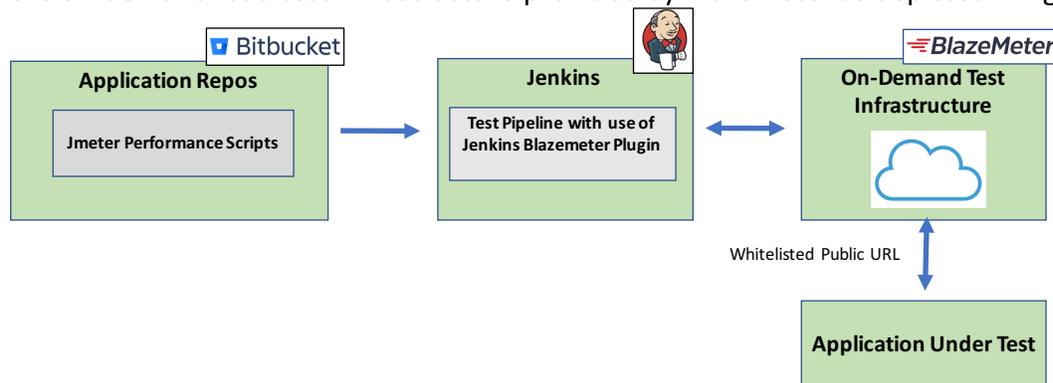


Figure 3 PERFORMANCE TEST CONFIGURATION

Operations health dashboard development

Elyxor developed a working proof of concept web dashboard aimed to be a central point of information for project team providing the following:

- Availability of Test Environment
- Latest Jenkins Pipeline Status
- History of Automation Testing pass/fail test “build” results
- Status and current deployment in the OpenShift environment

This application was developed in Python and Docker and was deployed within OpenShift. The data within the dashboard was pulled real-time via Jenkins and Openshift API calls.

Tech Stack

- Elyxor Test Automation platform
- Testrail
- Jenkins
- Bitbucket
- Jira
- Artifactory
- TestNG
- Openshift
- Java
- Gradle
- Microsoft Azure