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Zero-Touch Test Automation Enabling Continuous Testing

A practitioner's perspective from GlobalLogic Research | 2020-21

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Introduction

> "In software, when something is painful, the way to reduce the pain is to do it more frequently, not less"
>
> ***David Farley, Continuous Delivery: Reliable Software Releases through Build, Test, and Deployment Automation"***

In today's modern world of agile project delivery and continuous development, most IT companies are keen to understand the future of Quality Assurance to meet the challenges for continuous software delivery as the business stakeholders and investors strive to stay ahead of the curve in their industry.

With an increasing number of enterprises transforming their business and their systems to a more Digital-centric paradigm, IT companies and departments need a mechanism for quality assurance processes to stay with the pace of development.

In the new paradigm, the idiom has changed to **'right quality at right time with zero efforts'**. To drive the zero efforts, 'Zero touch test automation' approach for continuous testing is recommended. Zero touch test automation approach is a best practice to accelerate, integrate and associate for overall delivery speed.

The top 10 reasons for the need to shift to Zero Touch automation approach are:

1. Eliminating manual aspects of the testing process
2. Quickly and easily identifying failures and their root causes
3. Checking every type of platform and domain
4. Reduces the amount of time spent examining several test runs
5. Overcoming issues caused by delayed results
6. Working in parallel with the progression phase – early in the first stage of the SDLC or TDLC
7. Marketing releases in less time for regressive release cycles
8. Ensuring quality isn't compromised
9. Improving deliverables
10. Increasing customer satisfaction by adding value

Zero Touch Automation is a vision of application of touchless experience in QA orchestration to reduce manual efforts and save costs of quality. This involves no or minimum manual intervention in test automation cycle from “test requirements request for automation, test design, test planning, feasibility, tools & technology selection, implementations, reviews, dry runs, code checking, nightly build trigger, executions, reporting, debugging, fixing, retesting, regression, and test closure”. To realize this vision, one needs to automate application testing end to end, get test results fast, and fix them.

The Zero Touch Automation is an accelerator that provides continuous testing service for the fast and reliable application testing. With continuous testing, one can follow a 3-step process to perform the test automation:

- Write test code using Natural Language or BBD format, use script less tools/utilities
- On test code commit/merge, define automatic build, unit test, code analysis and available to deploy on production.
- Trigger the execution on demand through email or JIRA ticket.

The thought behind this solution is to collaborate the QA and DevOps efforts to automate all test activities and sequence them so that no manual effort is required after the process pipeline is triggered.

The Ecosystem of Zero-Touch Testing

Figure 1 below depicts the development, deployment, and execution phases of test automation. It demonstrates the overall flow of the testing life cycle for test automation.

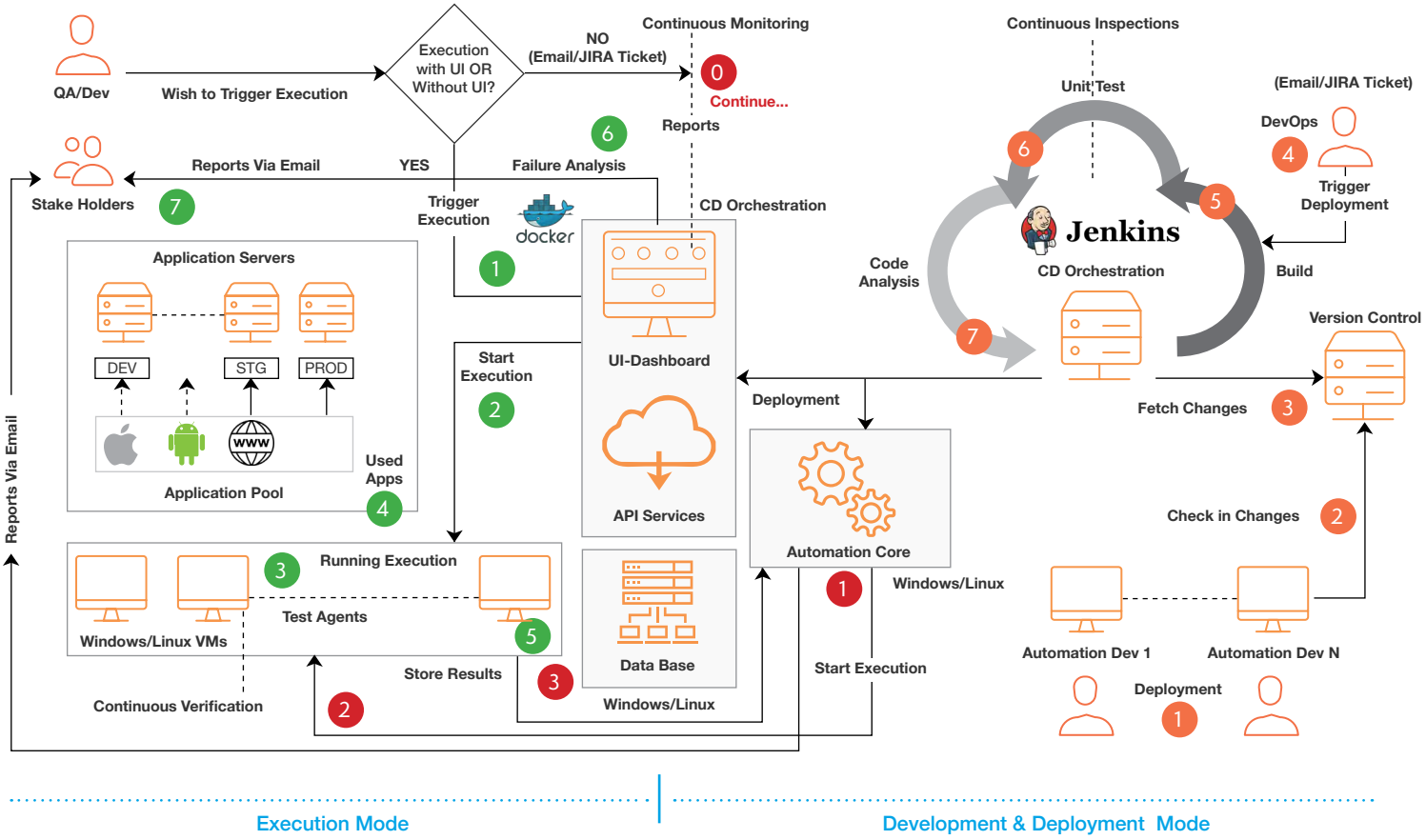

Figure-1: An Ecosystem of Zero Touch Test Automation

Testers, release team, and manager are empowered to trigger the release executions via sending email, for instance, from any medium, like from their cell phone, desktop, laptop etc. from anywhere, anytime. They will receive the test execution report without the need to install any automation software on their phones or Laptops.

The initiation request is received by the pipeline, fetch code from the repository, run test scripts on Docker server, for instance, store results to database, update the UI-Dashboard, send email with test results and failure analysis.

Figure 2 gives a swim lane view of the various overall processes involved in Zero Touch Test Automation with Continuous Testing.

1	Automation developer creates test scripts using framework code
2	Commits/merges their respective code [core framework, other source code] in repository [Version Control]
3	CI-CD pipeline triggers the request for deployment
4	Jenkins' job is to fetch the changes/code once the task is triggered for deployment
5	Starts code build
6	Executes unit test cases
7	Static code analysis is performed
8	Deployment is initiated on targeted master and test agents
1	Team triggers the execution using UI Dashboard feature
2	Selection of test scripts, type of environment is targeted, and execution starts
3	Execution is carried out on test agents
4	Use the targeted applications/products, which have automated test cases
5	Test results stored in DB once execution is done
6	User can fetch the results using UI-Dashboard
7	Once execution is completed, an email notification is sent to all concerned team members regarding the failure analysis
1	The team decides to trigger the execution (without using the UI Dashboard feature)
2	Execution starts with a given pre-defined test suite
3	Execution is carried out on test agents
4	Use the targeted applications/products, which have automated test cases. Test results are stored in Jenkins once execution is finished
5	Once execution is completed, an email notification is sent to all concerned team members regarding the failure analysis

Figure 2: Swim lane view of various process flows for Zero-Touch Test Automation with Continuous Testing

Conclusions and Call to Action

Nowadays, it is increasingly imperative to go the zero-touch test automation path to get the advantages of "right quality at right time with minimal efforts". As we write this article, we are seeing a paradigm shift in the Software Quality space with more focus on use of Artificial Intelligence to go truly Zero Test automation, where AI models will automatically skim the code and user interfaces/interactions to test quality and generate test results. GlobalLogic is working actively to embrace and drive the innovation in this space for its customers.

About the Author

Rashmi Gaidhane is a Technical Test Lead (Sr. Consultant) with GLOBALLOGIC QA automation team. She has extensive experience in multiple test management and automation tools. She has managed and led the multiple testing manual & automation projects in the media, healthcare, telecom, education etc. domain.

References

Various script-less tools for test scripting

A Guide to Codeless Testing

Scriptless test automation: A no code/low code approach for testers

Some useful blogs on Zero Touch Automation

From Continuous to Autonomous Testing with AI

Zero Touch Automation

The Roadmap to Reaching Zero-Touch Automation

Quality assurance - An imperative in the world of zero-touch technology

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