



Intellyx White Paper

Preparing the Mainframe for Continuous Integration and Continuous Delivery

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Since the 1990's, pundits have been erroneously declaring the mainframe dead. And now, with digital transformation initiatives incessantly increasing demand for compute power, IT executives are recognizing that the mainframe will be a mission-critical part of their reality for some time to come.

The problem is that a mainframe is a bit like an aircraft carrier steaming steadfastly across the ocean, while jets move nimbly through the sky above it– it's a powerful, game-changing asset, but only if you can make it move fast enough and change course quickly enough to keep it in play.

Exposing a Gap

Designers created the mainframe in a different time – when computing cycles were extremely expensive. Computers were designed to process large amounts of data, with many computations that might otherwise take thousands of hours to calculate by hand. Mainframes became systems of record that stored vast amounts of data and crunched countless calculations.

But while this capability resulted in increased speed for organizations who could now process transactions faster, mainframe developers and operators had the luxury of time. Because of the nature of the business processes running on the mainframe, change occurred slowly. As a result, testing was methodical and predominately done manually.

In recent years, however, the game has changed. Organizations are now rushing to adopt continuous integration and continuous delivery (CI/CD) approaches. The world of IT is awash with stories of

organizations implementing modern technology platforms and deploying hundreds or even thousands of changes each day.

As organizations seek to scale these efforts, however, they are finding that they are as reliant as ever on interactions with their mainframe to access critical data or to connect to key business processes. The impact has been a significant increase in the rate of change in mainframe environments, which has exposed a glaring gap: *an insufficient capability to rapidly and continuously deploy changes to mainframe environments with confidence.*

The Land Where Automation is Key

Two fundamental tenets of CI/CD are testing and automation. While the goal of CI/CD is to enable developers to rapidly deploy changes to an environment, baked into the concept is that teams do not deploy those changes until they can assure their quality. The need to maintain quality at velocity is why test automation is an essential component of any pipeline.


This process, however, has broken down as organizations attempt to pull their mainframe applications into the CI/CD workflow. The slow and steady world of the mainframe has not required anywhere near the level of test automation capabilities that CI/CD now demands – and manual testing just doesn't cut it in the CI/CD world.

While there are some limited options available for mainframe test automation, they were not built to cope with the constant flow and velocity of a CI/CD pipeline. The effect is that most organizations handle changes to mainframe environments manually or semi-manually, creating a significant barrier to realizing the full benefits of modern approaches to software development and deployment.

More than just slowing an organization's adoption, however, the lack of test automation in mainframe environments increases organizational risk. It leaves them both more vulnerable to service disruptions and weakens the organization's competitive posture as they are less able to adapt to shifts in the marketplace.

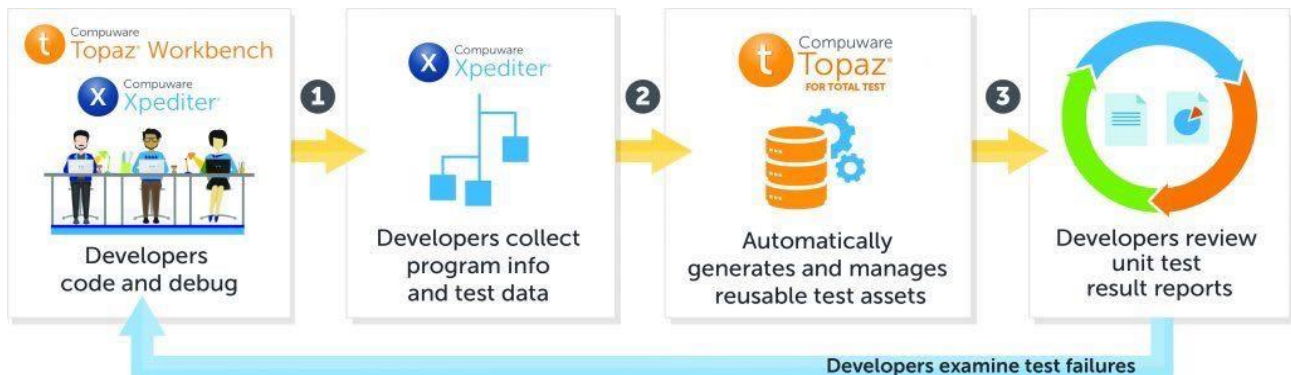
Making the Mainframe a Fast Pipeline Partner

Compuware recently introduced [Topaz for Total Test](#) to close this gap. It enables developers to automate unit testing of changes to COBOL applications running in mainframe environments – and offers developers the ability to fully integrate unit testing into CI/CD pipelines with confidence and assurance of quality.



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It is not merely the automation of test execution, however, that makes Topaz for Total Test different – after all, mainframe test automation platforms already exist. Most organizations, however, use existing mainframe test automation platforms only in later test phases. This is because the significant cost of creating unit test cases using conventional approaches makes it prohibitive.



Topaz for Total Test (Source: Compuware)

Topaz for Total Test is an important new entrant in the market because it uniquely changes the way organization can apply unit test automation within the CI/CD workflow. Beyond just automating the testing process itself, it automates test case creation (including the creation of test scenarios and test suites), automates test data capture and performs both data and program stubbing to simulate data I/O's during testing.

All of these capabilities are possible because of the product's tight integration with Xpediter, Compuware's interactive mainframe debugging and analysis tool. Utilizing Xpediter, developers can peer inside of the application, identify data structure and data flow, and automate the full testing process.

The demands of CI/CD and the need to integrate mainframes into pipelines was a top-of-mind concern during the design of the product. Therefore, Compuware included a command line interface for Topaz for Total Test to enable seamless integration into a workflow. The result is a fast and agile aircraft carrier that can effectively work with the jet fighters in the sky – delivering greater capabilities than either could deliver on their own.

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