HCLSoftware

HCL DevOps Test - AI-Enhanced Integrated Testing for the Secure DevOps Pipeline

The AI-Powered Testing Platform

Developing modern applications is complex, and today's users demand high levels of quality from the outset. To meet this demand, companies continue to push for faster release turnarounds. Delivering a high-quality product to market at a rapid pace can prove to be a challenging affair, though. If a product is rushed to market with little time for quality assurance, it can massively damage the reputation of even the most well-established organizations. There's also enormous pressure to streamline and eliminate any additional cost factors.

It's time to find testing solutions that can evolve with changing conditions. Complex applications require testing solutions which span heterogeneous environments, allow for changes at scale, meet customer and business demands, rapidly adjust to changing software requirements, integrate with new technologies, and support the fast-paced work environment driven by users who expect more from the applications they work with. Introducing AI into testing activities has proven to tackle repetitive and low-value tasks, allowing users to focus on what truly matters.

HCL DevOps Test is our AI-enhanced testing platform solution.

As part of the wider HCL DevOps Loop, HCL DevOps Test is fully supporting an AI-aided agile DevOps approach. It's a collection of software testing products leveraging AI at different points and offers user interface (UI) testing, performance testing, API testing, synthetic data generation and service virtualization in one platform, so you can focus your testing efforts on the things that matter most to your business.

Challenges

Over time, the complexity of software testing increases for quality management teams. Intelligent testing solutions capable of changing with various technical landscapes, and also include the latest technologies and AIs, are needed.

These large-scale, complex applications often span heterogeneous environments with different systems of engagement and systems of record. Changing software at this scale can lengthen delivery schedules, which in turn leads to higher costs and greater pressure from management.

Customer and business demands add to the challenges for testing teams. However, as these changes occur, they can rapidly alter software requirements, which may in turn necessitate upgrades, either of which may depend on other systems and applications. Adopting new technologies and the fast-paced work environment driven by users who expect more from the applications they work with will not change.

Solutions

HCL DevOps Test comprises a suite of software testing solutions to facilitate an agile and intelligent DevOps methodology while bringing together testers from all disciplines into one team. Fully integrated with DevOps Loop providing everything needed for an overall agile devops strategy , it encompasses a range of capabilities including UI testing, performance testing, API testing, synthetic data generation and service virtualization.

DevOps Test UI:
Application testing through desktop UIs, terminals, browsers, and mobile interfaces

DevOps Test Data:
Synthetic data generation for testing environments

DevOps Test Performance:
Analyzing root cause of issues, tracking SLAs, and bottlenecks

DevOps Test Virtualization:
Simulating missing components of the system for faster development and testing

DevOps Test Integrations and APIs:
Testing system's APIs across different network protocols and message formats

Once considered only as a DevOps Test component, DevOps Test Hub has evolved into the very definition of DevOps Test, powered by modern cloud-native, role-based technology. It fully enables end-to-end interface testing, with continuous development expanding into API and performance testing domains to cover all DevOps Test capabilities.

Features

01. More comprehensive testing with AI:

Broad and deep testing capabilities to perform end-to-end testing of any kind of interface, maximizing the shift-left approach by using computer vision, allowing testing activities to get kicked off as early as possible from designs.

02. Low code:

Benefit from code-free testing, so it's simpler and faster to test.

03. Open architecture:

DevOps Test extends and integrates with open-source software with plug-ins to JMeter, Postman, Selenium, JUnit, Appium, etc.

04. Get the full power of agile DevOps:

Fully part of the wider DevOps Loop, which addresses an overall AI-driven DevOps. It has strong integrations with other HCLSoftware proprietary products in the value stream management, release planning, continuous delivery and deployment, as well as security testing space

05. Cloud native:

Unites testers across various roles and enables distributed test containerized execution, analysis, and reporting. Whether you're a DevOps Test expert or novice, or come from an open-source background, there's something here for everyone.

Benefits and Value

01. Improves quality:

Yields high-quality products thanks to better coverage and faster feedback.

02. Shift-left testing, low code, cost reduction:

Finds defects early when they're less costly to fix.

03. Embraces heterogeneous landscapes:

Evolves with changing landscapes, no matter the situation, and complements your existing tools you're using today (Jira, Azure DevOps, Git, Jenkins, IBM ETM and much more).

04. Improves speed and coverage:

With the support of artificial intelligence, it generates and automates tests previously done by error-prone manual processes.

05. Simplifies teamwork:

Share tests seamlessly with the HCL DevOps Test Hub collaboration framework.

HCL DevOps Test UI

Automate and validate business process flows to ensure high-quality applications

Take automation all the way from mainframe terminals with 3270 interfaces, through .NET and Java-based, thick client applications, through any web application in browsers, and to mobile Android and iOS native applications.

Simple, yet powerful, scripting tools allow you to empower complex verifications with just a few clicks and embed automated testing into the development process to increase the quality of deliveries.

Features

- Automated testing of desktop, mainframe, mobile, and responsive HTML5-based web applications

- Natural-language scripting environment, no programming knowledge needed

- Automated regression testing for traditional GUI clients

- Integration with HCL DevOps Test Data for on-demand synthetic test data generation

- Early test creation at the design stage, using high-fidelity wire frames or rough mock-ups, using computer-vision AI capabilities

- Simple recording, enhance and execute tests

Benefits and value

01. Improve speed and coverage:
Easy test creation and execution through the UI of the application.

02. Reduce costs:
Find defects early when they're less costly to fix.

03. Improve quality:
Achieve fast, comprehensive testing optimized for development environments while yielding higher quality products.

04. Improve efficiency:
Shift-left testing allows early test creation and increases testing productivity.

HCL DevOps Test Integrations and APIs

Ensure complete testing of complex systems.

HCL DevOps Test Integrations and APIs trigger and validate your system's APIs across a wide range of network protocols and message formats within a scripting-free test development environment.

Features

◆ Uncover dependency relationships in your tested system by observing system traffic and extracting information held within servers

◆ Build a model for systems under test to separate logical concerns from physical landscapes, easily switch between environments, and house all connection details in a single location

◆ Create tests using a codeless environment with a set of rich actions to aid development and achieve further customization using ECMAScript or Groovy

◆ Test further by integrating additional code-free automated steps such as shell commands, database interactions, file transfers, data transformations, validations, etc.

◆ Allow single-click test creation for accessing non-visible internal APIs inside a Kubernetes cluster

Benefits and value

01. Reduce risk:
Test complex integration points between applications before they cause problems, while adapting to constantly changing business needs.

02. Reduce costs:
Automate at the API layer to test without needing to set up complex end-to-end environments.

03. Improve efficiency:
Shift testing left to test applications before UI delivery, while enhancing coverage and providing faster feedback to development.

HCL DevOps Test Performance

Quickly execute performance tests that analyze the impact of realistic workloads on applications and validate the scalability of web and server-based applications. Identify, manage, and eliminate application performance problems easily.

Features

- Create realistic user workloads that exercise key business transactions

- Capture and track business SLAs in test plans

- Communicate results and areas of non-compliance to stakeholders

- Integrate with HCL DevOps Test Data for on-demand synthetic test data generation

- See performance trends easily to determine if there is improvement or degradation

- AI-supported result analysis with Deep learning algorithm assistance in identifying hidden diagnostic findings, when performance test result data is important

Benefits and value

01. Accommodate business needs:
Check systems for speed, scalability, and stability.

02. Manage capacity:
Determines if hardware or production configurations need to be improved before going live.

03. Create quick functional flows:
Ensure each transaction is executed as quickly as needed.

04. Easy maintenance:
Generate or update the contents of a DevOps Test Performance test by running a DevOps Test UI test and recording it at the transport level.

HCL DevOps Test Data

Develop the data you need for testing, on demand. Generate synthetic data for all testing environments without the risk of data leaks or privacy issues, all at the click of a button.

Features

◆ The open-modeling mechanism provides flexible methods for modeling the data you need, including regular expressions, weighting, and rules.

◆ Tables schemas are imported from the database and leverage AI and data samples to configure data generators.

◆ Powerful, built-in REST-based APIs allow you to explore, model, and generate data

◆ Invoke data generation in the CI/CD pipeline using HCL DevOps Deploy or Jenkins for real-time automated data generation

◆ Flexible generation file formats allow you to produce data in CSV, Excel, JSON, XML, text, and binary formats

◆ Publish data to relational databases, including all databases that support JDBC

Benefits and value

01. Reduce data privacy risks:
Avoid privacy violations that can come with using real data.

02. Increase testing efficiency:
Achieve better speed and accuracy with predefined data sets and real-time data generation.

03. Generate comprehensive test data:
Include test scenarios difficult to test using production data

04. Avoid production system intrusion:
Remove the need to extract real and potentially sensitive information.

HCL DevOps Test Virtualization

HCL DevOps Test Virtualization enables faster development and testing by simulating missing system components, allowing development and testing activities can continue when the real service is external or unavailable. This includes virtualizing middle-tier and back-end applications and services.

Features

- A wide variety of protocol and message format support lets you mix and match all formats as needed

- Accelerators for understanding the system under test – observe system traffic or extract information held within systems

- Multiple construction options to create virtual services via simple record and playback, data-driven, ECMA Script, and/ or complex data models

- Powerful code-free wizards and capabilities to handle complex logical behaviors

- Automated traffic routing removes the need to reconfigure environments when adding or removing virtual services

- Sift and pass-through capabilities handle specified scenarios with virtual services while allowing other scenarios to use the live system

Benefits and value

01. Reduce dependencies:
Allows teams to work simultaneously while reducing internal and external dependencies.

02. Accelerate time to market:
Enable teams to work in parallel to increase productivity by managing and decoupling dependencies as needed.

03. Reduce costs:
Decrease infrastructure and operating expenses with simulated systems.

HCL DevOps Test Embedded

HCL DevOps Test Embedded automates the creation and execution of component test harnesses, test scripts, and test stubs with complete runtime analysis from any development environment.

Features

- Performance, along with worst-case execution time, aids testers in identifying issues within the application and streamlines certification by providing an estimate of the WCET (Worst-Case Execution Time)

- Code coverage analysis helps the developer and tester develop pertinent test cases and achieve certification objectives, including Modified Condition/Decision Coverage

- Code review ensures that the code under test is compliant with MISRA standards

- Target deployment technology develops tests on a single host and validates on multiple targets

- The qualification kit allows qualification against many industry standards

- Reporting facilitates the certification process

- Control and data processing analysis simplifies the certification process by providing the required report for DO-178B and C

- Runtime tracing allows developers to review how a program behaved after the execution has been completed

Benefits and value

01. Improve tester productivity:
Enable a virtual cycle of test generation while executing, reviewing, and testing improvements to rapidly achieve full test coverage with one click.

02. Identify errors early:
Pre-empt performance issues and program crashes, and adapt to custom memory management methods used in embedded software.

03. Make testing more reliable:
Obtain a deep understanding of the system's behavior under test with visibility on thread execution and switching.

04. Develop pertinent test cases:
Avoid delivering code that is executed for the first time by the user or the target system running the application.

05. Review program behavior:
Help developers understand the system's behavior under test with integrated test results and code coverage data gathered on the fly while the system under test is running.

HCLSoftware

Fueling the Digital+ Economy

Learn more

About HCLSoftware

HCL Software is a global leader in software innovation, dedicated to powering the Digital+ Economy. We develop, market, sell, and support transformative solutions across business and industry, intelligent operations, total experience, data and analytics, and cybersecurity. Built on a rich heritage of pioneering spirit and unwavering commitment to customer success, we deliver best-in-class software products that empower organizations to achieve their goals. Our core values of integrity, inclusion, value creation, people centricity, and social responsibility guide everything we do. HCL Software serves more than 20,000 organizations, including a majority of the Fortune 100 and almost half of the Fortune 500.