HCLSoftware

HCL DevOps Test Integrated Testing for the Secure DevOps Pipeline
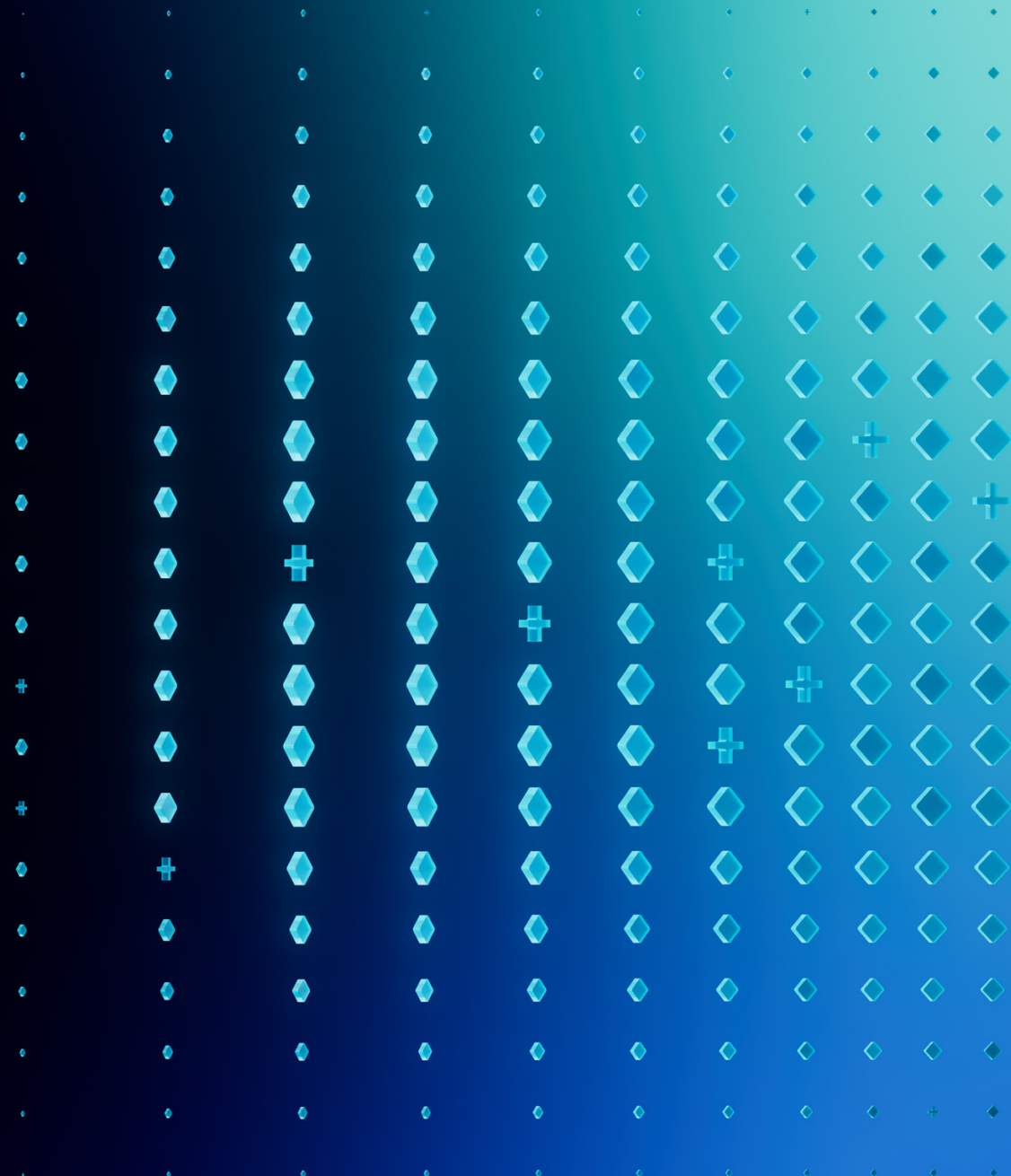
HCL DevOps Test

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01 Introduction

Delivering 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. A product that is rushed to market with little time for quality assurance can massively damage the reputation of even well-established organizations. There is also enormous pressure to streamline and eliminate any additional cost factors.

It is time to find testing solutions that evolve with changing landscapes. Complex applications need testing solutions that span heterogeneous environments, allow for changes at scale, meet customer and business demands, rapidly adjust to changing software requirements, embrace new technologies, and support the fast-paced work environment driven by users who expect more from the applications they work with.

HCL DevOps Test is that testing solution.

HCL DevOps Test is a collection of software testing products supporting a DevOps approach. It offers user interface (UI) testing, performance testing, API testing, synthetic data generation and service virtualization in one platform so that you can focus your testing efforts on the things that matter most to your business.

◇02 Challenges

Over time, the complexity of the software, which quality management teams are expected to test, grows.
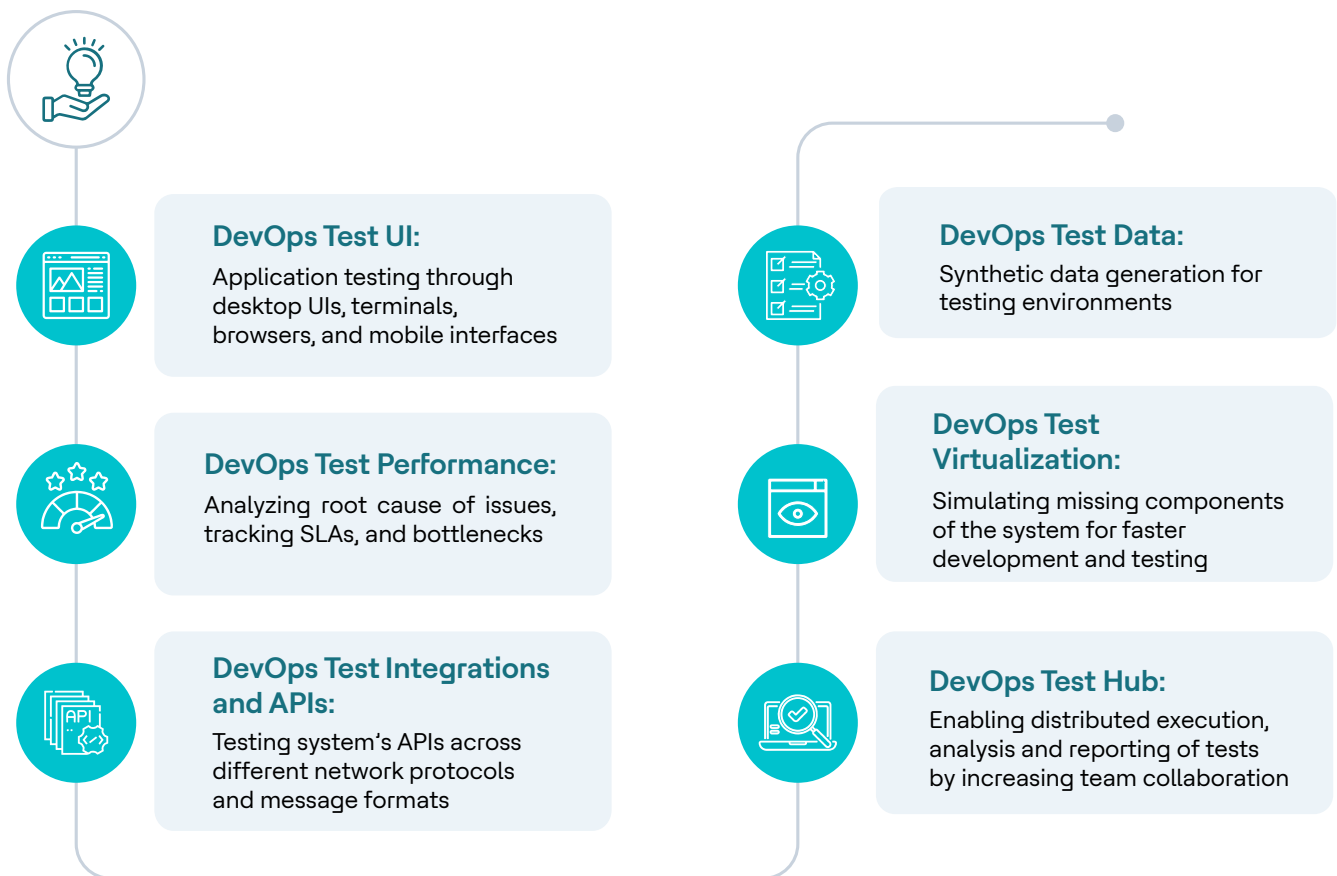
It is time to find testing solutions that evolve with changing landscapes.

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. But as these change, 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.
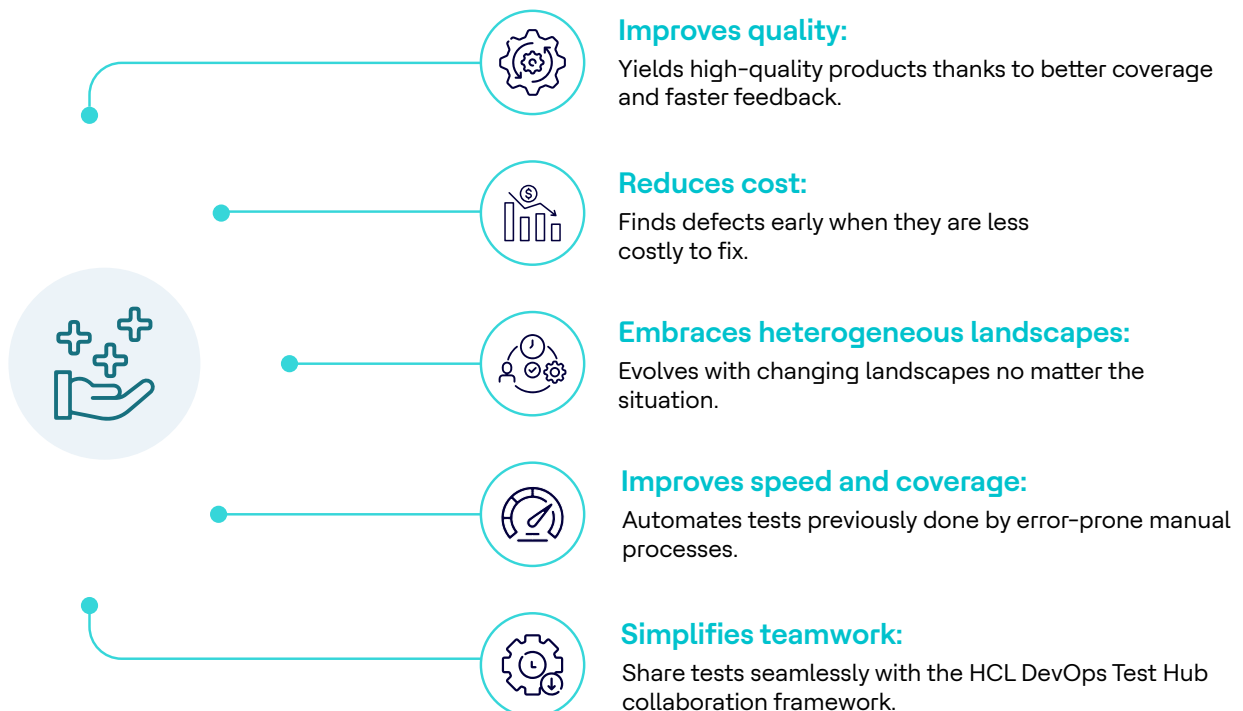
◇03 Solutions

HCL DevOps Test comprises a suite of software testing solutions to facilitate a DevOps methodology. 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 Performance:
Analyzing root cause of issues, tracking SLAs, and bottlenecks

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

DevOps Test Data:
Synthetic data generation for testing environments

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

DevOps Test Hub:
Enabling distributed execution, analysis and reporting of tests by increasing team collaboration

› Features

01. More comprehensive testing:

Broad and deep testing capabilities to perform end to end testing of any kind of interface

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:

Strong integrations with other HCL proprietary products in the value stream management, continuous delivery and deployment and application security testing space

05. Cloud native:

Uniting testers across disciplines, and enabling distributed test 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

04 Benefits & Value

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

Reduces cost:
Finds defects early when they are less costly to fix.

Embraces heterogeneous landscapes:
Evolves with changing landscapes no matter the situation.

Improves speed and coverage:
Automates tests previously done by error-prone manual processes.

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

05 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

01. Automated testing of desktop, mainframe, mobile, and responsive HTML 5-based web applications

02. Natural-language scripting environment, no programming knowledge needed

03. Automated regression testing for traditional GUI clients

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

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

06. Simple recording, enhance and execute tests

Benefits and value

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

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

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

Improve efficiency:
Shift-left testing allowing early test creation and increase testing productivity.

06 HCL DevOps Test Integrations and APIs

Ensure complete testing of complex systems

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

Features

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

02. 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

03. Create tests using a codeless environment with a set of rich actions to aid development and achieve further customization using ECMA Script or Groovy

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

05. Allow single click test creation for accessing non visible internal APIs inside a Kubernetes cluster

Benefits and value

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

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

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

07 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

01. Create realistic user workloads that exercise key business transactions

02. Capture and track business SLAs in test plans

03. Communicate results and areas of non-compliance to stakeholders

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

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

Benefits and value

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

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

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

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

01. Open modeling mechanism provides flexible methods to model the data you need including regular expressions, weighting, and rules

02. Easily seed sample data by uploading Excel or CSV reference files

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

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

05. Flexible generation file formats allows you to produce data in CSV, Excel, JSON, XML, text, and binary formats

06. Publish data to relational databases, including all databases that support JDBC

Benefits and value

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

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

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

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

09 HCL DevOps Test Virtualization

HCL DevOps Test Virtualization enables faster development and testing by simulating missing system components so 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

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

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

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

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

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

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

Benefits and value

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

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

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

HCL DevOps Test Hub

Built on modern, cloud native technology, HCL DevOps Test Hub brings together testers from all disciplines into one team, enabling distributed execution, analysis and reporting of tests. Whether you're a DevOps Test native, or an open-source tester, there's something for everyone with DevOps Test Hub. It truly is the collaborative space for your test teams.

Features

01. System models enable testers to represent the application being tested, and align tests, data, and virtual services with the underlying components they are testing

02. Control visibility and access via Team Spaces and Projects

03. A single dashboard for execution of tests and a single source of truth for all test results, whether DevOps Test or open-source

04. Manage your virtual service catalogue from a single interface, starting, stopping, and reconfiguring virtual components as needed quickly and easily

05. Synthetic data generation allows for the creation of large volumes of data that support performance testing and virtual services

06. Resource monitoring supplements test results with the inclusion of statistical data from a wide range of endpoints, such as Prometheus (OpenMetrics)

07. Seamlessly integrates with other HCL Software products including DevOps Deploy, DevOps Velocity, AppScan, and more to streamline your DevOps pipeline

08. By leveraging AI and machine learning algorithms, DevOps Test Hub runs automated pattern detection on performance test results to identify presence of known patterns and potential issues

Benefits and value

Simplify collaboration:
Containerized cloud-native solution to easily work together towards common quality goals.

Elastic capacity:
Scale tests on demand using local or cloud resources.

Simplify integrations:
Providing a single point of integration to all DevOps Test types, reducing overall administration and effort.

Data generation:
Integrated synthetic data creation to rapidly provision the test data you need when you need it.

Complement your existing tools:
Work with the tools you're using to deliver today, including Jira, Azure DevOps, Git, Jenkins, IBM ETM and much more.

Reporting capabilities:
Reporting in a centralized and unified way for all types of tests, provides machine-learning pattern detection for large amounts of performance test results to identify potential issues.

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

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

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

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

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

05. Qualification kit allows qualification against many industry standards

06. Reporting facilitates the certification process

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

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

Benefits and value

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.

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

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

Develop pertinent test cases:
Avoid delivering code that is executed for the first time by the user or the target system running the application.
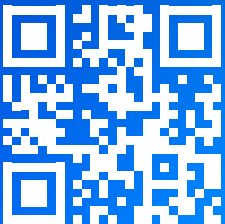
Review program behavior:
Help developers understand the behavior of the system under test with integrated test results and code coverage data gathered on the fly while the system under test is running.

HCLSoftware

Fueling the Digital+ Economy

Learn more

About HCLSoftware
HCLSoftware is a division of HCLTech (HCL) that operates its primary software business. It develops, markets, sells, and supports over 30 product families in the areas of Digital Transformation, Data Analytics & Insights, AI and Automation, and Enterprise Security. HCLSoftware has offices and labs around the world to serve thousands of customers. Its mission is to drive ultimate customer success with their IT investments through relentless innovation of its products.