

HCLSoftware

HCL DevOps Test Embedded

A cross-platform solution for component
Testing and runtime analysis



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Overview

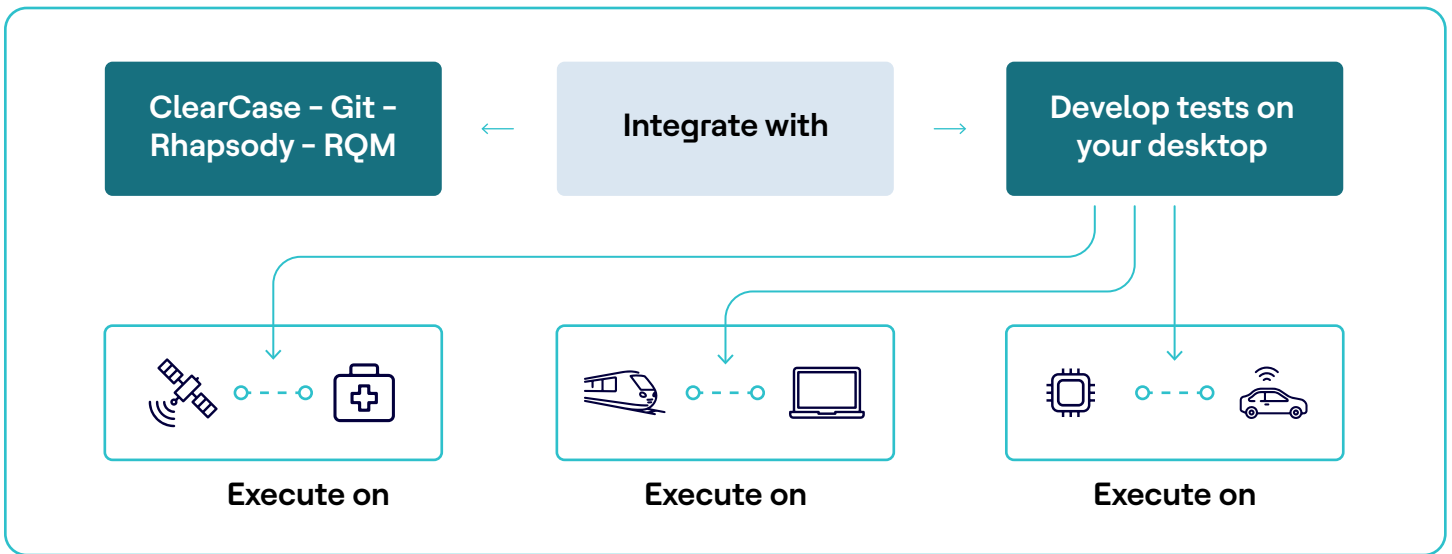
Automating the creation and deployment of component test harnesses, test stubs and test drivers is a cinch thanks to HCL DevOps Test Embedded.

With a single click from any development environment, testers can profile memory and performance, analyze code coverage and visualize program execution behavior.

Additionally, HCL DevOps Test Embedded helps teams be more proactive in debugging and in fixing code before it breaks.

Highlights:

- 01 Automates component testing and runtime analysis for host and target from a single testing environment
- 02 Profiles memory and performance, analyzes code coverage, and visually illustrates runtime tracing
- 03 Easily adapts host-based tests to different targets without rewriting test procedures
- 04 Tests and analyzes directly on target. Supports all common platforms – from 8-bit microchips to a 64-BIT RTOS
- 05 Provides detailed code coverage information required for safety and mission-critical certification
- 06 Provides code coverage and runtime tracing on-the-fly reports
- 07 Provides Qualification Kits for certification processes on request
- 08 Verifies coding rules based on MISRA standards



Compilers: Microsoft Visual, gcc Cygwin & Mingwin, CodeWarrior, ARM GCC, ARM developer Suite, MicroTech, DiabData, Keil, Android NDK, GreenHills, HighTec TriCore gcc, NEC V850, IAR, Microtec, Tasking, Renesas

Debuggers/simulators: gdb, Hiwave, ARMulator, PowerPC Simulator, Code Composer (Texas Instruments), winIDEA, Infineon TriCore simulator, IAR C-SPY simulator

Real-Time OS: VxWorks, QNX

Targets: HCS08, HCS12, NUCLEO (STMicroelectronics), TMS320, freescale

Test. Analyze. Resolve.

The best time to find and fix bugs is during development.

HCL DevOps Test Embedded focuses on developer testing – the kind only code authors can perform effectively. Additionally, they can easily test written components, and analyze the reliability and performance of applications as they run on host development systems.

Additionally, detailed test and runtime analysis reports are hyperlinked to the relevant source code.

HCL DevOps Test Embedded combines component testing and runtime analysis into a single, integrated developer-centric testing solution.

HCL DevOps Test Embedded’s graphical user interface links runtime analysis results (code coverage and run time analysis) directly to a source code, enabling code repairs without ever having to leave the tool.

Feature	Description	Benefit
Component Testing	Automates creation and deployment of host and target-based component tests. High-level test orientated languages allow sophisticated tests to be easily written.	Increases developer and tester productivity through automation. Allows for a virtual cycle of test generation, execute, review and then test improvement to rapidly achieve full test coverage. One-click to build, to execute on the target and to generate the report.
Memory Profiling	Illustrates how a program's memory is being consumed and possibly leaked. Detects memory leaks, potential memory leaks, buffer under and over runs, misuse of memory after liberation and many other memory management errors.	Identifies the source of memory management errors at the testing phase before they occur in production, preempting performance issues and program crashes. Can be adapted to work with custom memory management methods used in embedded software.
Performance and Worst-case Execution Time	Compute the execution time per function directly on a target and estimate the Worst Case Execution Time	Help the testers to identify the performance issues in the application, and simplify the certification by providing an estimation of the WCET.
Code Coverage Analysis	Identifies which portions of the source code that have not been tested from function call up to MC/DC coverage levels.	Helps the developer and tester to develop pertinent test cases. Avoids delivering code that is executed for the first time by the user or the target system running the application.
Control Coupling Analysis	Analyze the dependencies between modules of the application as described in the CAST-19 and generate coverage reports with control and data coupling.	Simplify the certification process by providing required reports for DO178B/C.
Runtime Tracing	Visually illustrates thread execution function calls, and variable values in programs as a function of time via UML sequence diagrams.	Developers can go back in time to review how a program behaved after the execution has completed. Integration of test results and code coverage data helps to provide a deep understanding of the behavior of the system under test. This information can be gathered on-the-fly whilst the system under test is running.
Target Deployment Technology	Provides a versatile, low-overhead technology for enabling target-independent tests and runtime analysis.	Develop tests on a single host and validate on multiple targets. Tests won't need to change when environments do - test script deployment, execution and reporting remain easy to use without changing test scripts.
Qualification Kit	Specifications and test suites are available to qualify HCL DevOps Test Embedded with environments and target devices.	Allows qualification against many industry standards. See the last page of this brochure for a full list.
Reporting	Generation of reports in various formats (XML, HTML, text, etc.).	Consolidated reports facilitate the certification process. Linking of reports allows detailed understanding of the test results.
Requirement Traceability Matrix	Provides a document that demonstrates the relationships between application requirements and test cases, along with their results and defects.	Demonstrating that requirements are formally covered and verified helps projects to prove compliance and eases risk mitigations.

Supported Platforms

Programming languages	Popular targets, others on demand
C++ C	Renesas, WindRiver, Lauterbach, Texas Instruments
Ada (component Testing and Code Coverage)	STMicroARM series – ARM Cortex – Aduino – Raspberry – Windows – Linux – Solaris – Aix – x86 / x64 – GNU toolchains – NXP/FreeScale – ColdFire – Power Architectures – HighTec Tricore
Industry	Standards
Aeronautical	DO178B/C, DO-330
Automotive	MISRA 2004, 2012 and ISO-26262
Defense	Def Stan 00-55
Medical / Industrial	IEC 62304
Rail	EN 50128

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