On-Target Software Testing for TI Code Composer Studio™ IDE

By the Technical Team at Vector Software

The Embedded Software Testing Problem
One of the challenges many projects face is how to quickly and easily test their embedded application on live hardware. Testing on live hardware presents many challenges, including:

- Dealing with limited target memory resources
- Minimizing the impact on execution times
- Collecting test data off the target through automated communication mechanisms
- Training teams on how to configure and troubleshoot target execution

Vector Software provides a family of tools that solves this problem by automating the test configuration and execution process so that engineers can focus on building accurate and effective software tests.

Automating On-Target and Simulator Testing
There are two complementary approaches to embedded software testing. First, software unit and integration testing focuses on isolating a portion of the application code, typically a few C or C++ source code files, and thoroughly testing that sub-set to ensure it works properly and meets its low-level requirements.

VectorCAST/C++:
- Automates software unit and integration testing
- Assesses the correctness of the application code
- Provides code coverage analysis on all tests executed
- Delivers standards-compliant report generation

Second, code coverage analysis measures what portions of the application code have been executed. Code coverage is the single easiest way to quantify the thoroughness of your test activities allowing you to make an informed decision on how much testing is enough.

VectorCAST/Cover:
- Provides code coverage analysis for any system or homegrown low-level test
- Automatically instruments an application during build time
- Measures what portions of the application code have been executed
- Quantifies the thoroughness of test activities for assessment of how much testing is enough

VectorCAST and Texas Instruments Code Composer Studio™ IDE
When VectorCAST/C++ is combined with VectorCAST/RSP for TI Code Composer Studio™ (CCS) IDE and a development board, completely automated regression testing becomes a reality. CCS provides support for a wide variety of chip architectures, JTAG emulators, and development boards. VectorCAST leverages this technology to provide the most sophisticated and seamless target test environment possible.

Tests that are developed in VectorCAST can be executed manually within CCS to allow test failures to be easily resolved. Once a set of tests is complete, they can be committed to a regression test environment, allowing for unattended execution without the need for the Code Composer Studio IDE.

The VectorCAST tools are integrated with the microprocessors supported by CCS including C2000™, C5500™, C6000™processors, C33, C40, TMS470, and the multi-core OMAP™ family of processors. Because of the modular nature of VectorCAST new processor families are easily added.

By using the VectorCAST family of products, you can easily create suites of tests for all of your embedded targets. These suites can be run as frequent regression tests resulting in always available dashboard reports of your current test status.

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