AdaCover

Summary:

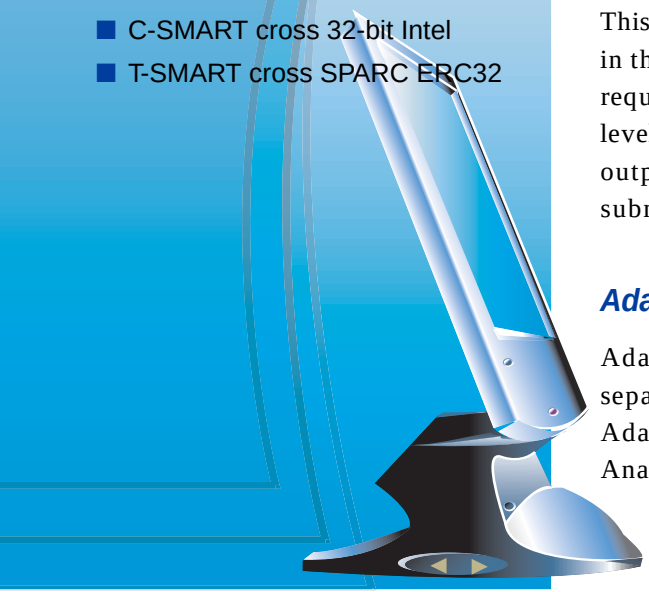
- Machine Level Coverage Capability
- Satisfies Top-Level Safety Requirements
- Satisfies “DO-178B Level A” Requirements
- Runs on Actual Target
- Host Side Report Generation
- Report Combine and Merge Capability

Supported Hosts:

- Windows NT/2000
- Sun Solaris
- HP-UX

Supported Products/Targets:

- ObjectAda Raven cross Motorola PowerPC
- ObjectAda Raven cross Motorola MC680x0
- ObjectAda Raven cross 32-bit Intel
- ObjectAda Raven cross SPARC ERC32
- C-SMART cross Motorola 68k
- C-SMART cross 32-bit Intel
- T-SMART cross SPARC ERC32



AdaCover™: Aonix Safety-Critical Machine Level Coverage Capability

Satisfies DO-178B Level A coverage reporting requirements and other safety-critical standards!

AdaCover, is an Aonix coverage tool, for collecting and analyzing statistics on which instructions in an Ada program have been executed and which have not. The coverage is performed at the assembly-language level and the result is a marked-up, assembly-language listing.

Safety-Critical Execution Coverage Reporting Requirements

To comply with certification criteria, every byte of code must be executed. AdaCover performs dynamic machine-code-level coverage analysis on program execution. It provides the evidence that all the code has been covered and all conditions and decisions have been taken, by the test. This shows that no dead code remains in the application, satisfying the requirements for testing at the highest level of criticality, Level A. AdaCover output may be used as part of the submission of evidence required.

AdaCover Components

AdaCover is comprised of two separate software components, the AdaCover Monitor and the AdaCover Analyzer.

The ***AdaCover Monitor*** is target resident software that monitors the execution of a target application and creates a table of executed instructions.

The ***AdaCover Analyzer*** is a host resident application that analyzes the table generated by the AdaCover Monitor and produces a marked-up code listing.

How AdaCover Works

The AdaCover Monitor sets the processor into single-step mode and installs a handler for the single-step interrupt event. After each application instruction is executed the handler code examines the program counter and builds up a coverage table detailing which instructions have been executed. In the case of conditional branch instructions further data is collected to determine whether the branch was taken or not.

When the execution coverage analysis is complete, the coverage table is emitted in text form for transfer to the host. When using AdaCover for execution coverage analysis, the modules under test are not changed in any way and there are no insertions of trace code.

Aonix

Making Ideas a Reality

AdaCover

Obtaining Execution Coverage Data Using AdaCover

To obtain program execution coverage data using AdaCover, the user will nominally go through the following steps:

- Compile / assemble the AdaCover Monitor.
- Compile / assemble the test harness. The test harness is user code that directs the application execution coverage testing, using the AdaCover Monitor. It is built with the target application module(s) for which execution coverage data is required.
- Compile / assemble the application code for which execution coverage data is desired. You request generation of an assembly source listing when compiling / assembling this code since the AdaCover Analyzer will annotate these listing files to indicate the execution coverage attained.
- Bind and link the application with the test harness and AdaCover Monitor. In some implementations, the AdaCover Monitor runs as a separate program. In this case, the application is built without the AdaCover Monitor and the AdaCover Monitor is loaded on the target prior to downloading the application.
- Load and execute the application executable (with the AdaCover Monitor incorporated). Running the application outputs the coverage test results. This output is captured in a text file.
- Run the symbolic name listing tool (nm or equivalent) with the application executable to produce a symbol map. If the application executable does not contain the program symbols, then a link map file must be generated at link time instead.
- Run the AdaCover Analyzer program. This program takes the coverage table output file, map file, and assembly listing files and produces annotated assembly listing files.

AdaCover Features:

- Target - Data Collection
- User selectable start/stop points
- Single steps on target
- Provides full machine level coverage data
- Uploaded to Host after execution
- Host - Post Analysis
- Coverage reports
- Updates assembly listing
- Merge to create total execution report

AdaCover Is A Qualified Coverage Tool!

AdaCover is well proven by the many Aonix customers that have used it, as well as by Aonix where we use it to certify all our kernels to DO-178B Level A. AdaCover was initially offered with the Aonix Ada 83 / AdaWorld / C-SMART environments and is now available for the Ada 95 / ObjectAda / RAVEN environments as well.

AdaWorld® Real - Time

ObjectAda Real-Time RAVEN

To obtain more information, please contact Aonix at **www.aonix.com** or your local Aonix office.

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