



TI Compiler Qualification Kit

Coverage Testing User's Guide

1. Introduction

Application of the TI Compiler Qualification Kit (QKIT) may require generating coverage data in order to verify that all portions of the compiler tool chain used for compiling application code are also exercised by validation testing. TI C/C++ Compilers with instrumentation for collecting coverage data can be downloaded from the same tool folder where your QKIT installer was obtained.

NOTE: The data collection files you send TI (*.cov files) only include coverage data for the compiler. No coverage data is generated or collected for the application code.

2. Coverage Testing

Process flow for collecting coverage data is as follows.

Download the instrumented compiler for your compiler version from the same tool folder where your QKIT installer was obtained.

Unzip the "bincov" folder into a temporary location. This folder contains instrumented versions of all compiler tool chain executables along with coverage data collection files (*.cov files) for each executable.

NOTE: For the TI Arm Clang toolchain, there will be a single armlvm.cov file that corresponds to all the llbm-based tools: tiarmclang, tiarmar, tiarmcov, tiarmdem, tiarmnm, tiarmobjcopy, tiarmobjdump, tiarmprofdata, tiarmreadelf, and tiarmsize. Individual *.cov files will be present for: tiarmasm, tiarmdis, tiarmhex, tiarmlibinfo, tiarmlnk, tiarmofd, and tiarmstrip.

Rename the original compiler installation folder from "bin" to "bin.old".

Create a new "bin" folder within your compiler installation folder and copy in the executables and *.cov coverage files from the "bincov" folder.

NOTE: Reset coverage data collection by copying in the *.cov files from the original "binconv" folder.

NOTE: The directory of the instrumented compiler tools must be writable. An instrumented compiler will contain a corresponding .cov file for every compiler executable. As the instrumented compiler executes for coverage, data will be written to these .cov files.

Set the environment variable COVFILELIST. This is a comma-separated list of the paths to all the compiler executable .cov files.

Commandline:

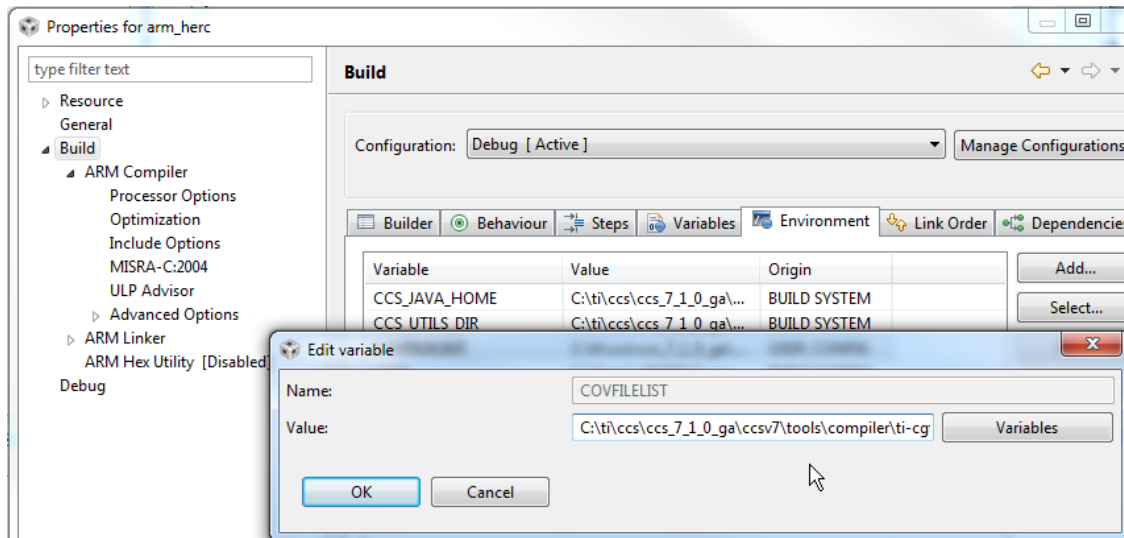
Using cmd.exe and command line execution of the compiler, then use below to set COVFILELIST within your existing cmd.exe console:

```
set
COVFILELIST=C:\ti-cgt-armllvm_1.3.0.LTS\bin\armllvm.cov,C:\ti-cgt-armllvm_1.3.0.LTS\bin\tiarmasm.cov,C:\ti-cgt-armllvm_1.3.0.LTS\bin\tiarmdis.cov,C:\ti-cgt-armllvm_1.3.0.LTS\bin\tiarmhex.cov,C:\ti-cgt-armllvm_1.3.0.LTS\bin\tiarmlibinfo.cov,C:\ti-cgt-armllvm_1.3.0.LTS\bin\tiarmlnk.cov,C:\ti-cgt-armllvm_1.3.0.LTS\bin\tiarmofd.cov,C:\ti-cgt-armllvm_1.3.0.LTS\bin\tiarmstrip.cov
```

CCS:

If using CCS, then use below steps to set COVFILELIST:

- Open "Project properties"
- Click on "Build"
- Click on tab for "Environment"
- Click on "Add" and add COVFILELIST



Build your application. Note that the time stamps for *.cov files update each time the instrumented executables are exercised.

Once coverage data collection is complete, rename the "bin" folder to "bin.cov" and rename the original "bin.old" folder to "bin" to restore the original un-instrumented compiler executables.

After building your application with coverage, email the following to TI for analysis:

- zip file containing all *.cov files
- include list of compiler and linker options used for compiling your application
- email to: safeti_cqkit_data@ti.com

TI will perform a comparison of function coverage for your submitted coverage data files as compared to coverage data files collected during compiler release validations. TI will send a summary report.