Atollic Debugger

Abstract

This document describes the usage of the Atollic GDB/TrueSTUDIO debugger as target system. The minimum required version of Atollic is 5.00. TESSY supports the SEGGER J-Link controller family.

***Please note**: The Atollic debugger does not support interactive debugging features when executing tests with TESSY. The normal TrueSTUDIO GUI is not accessible during the TESSY test execution. (See 3 to learn how to debug interactively having your test data statically built into the target binary.)*

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1 Atollic Debugger

The Atollic debugger uses a special GDB server as backend. This backend will be controlled by TESSY using Atollic's GDB client when executing tests. The start of the GDB server is controlled by the TEE attribute **Slave Call**. The test execution runs fully automated in this case.

In order to debug the test application interactively with the test case values provided from within TDE you need to rebuild the test application in a special mode, i.e. the input values will be compiled into the application. You may then download the test application using Atollic's TrueSTUDIO debugger and step through the test cases.

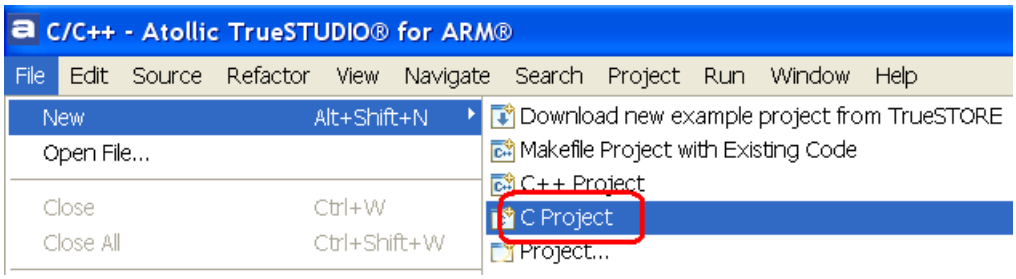
Before being able to execute tests, you need to provide board files which you will find in your own TrueSTUDIO project folder. See 1.4 for further details.

1.1 Setup of the Atollic Environment

Before running a test from TESSY, please make sure that the debug hardware (SEGGER J-Link) and the target controller on the target board are working correctly when operated from within TrueSTUDIO. We suggest that you create a sample project which works on your hardware. TrueSTUDIO will provide the necessary board files along the way. The next section explains how this might be done for the STM32F103RB board.

1.2 Setup TrueSTUDIO C Project

Create a sample project using the TrueSTUDIO **C Project** wizard as shown below.



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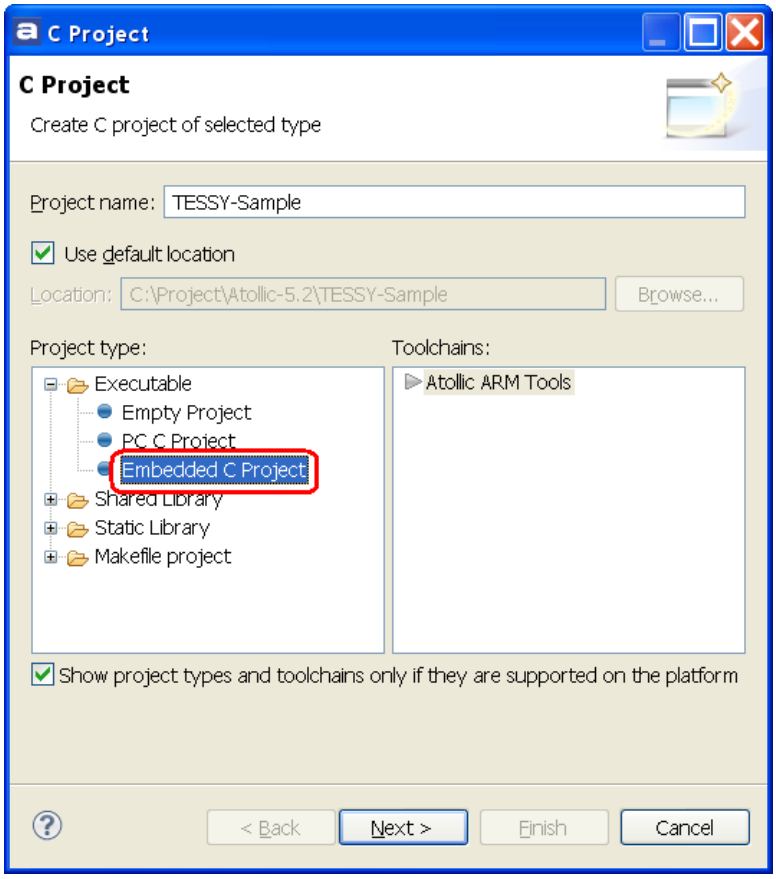

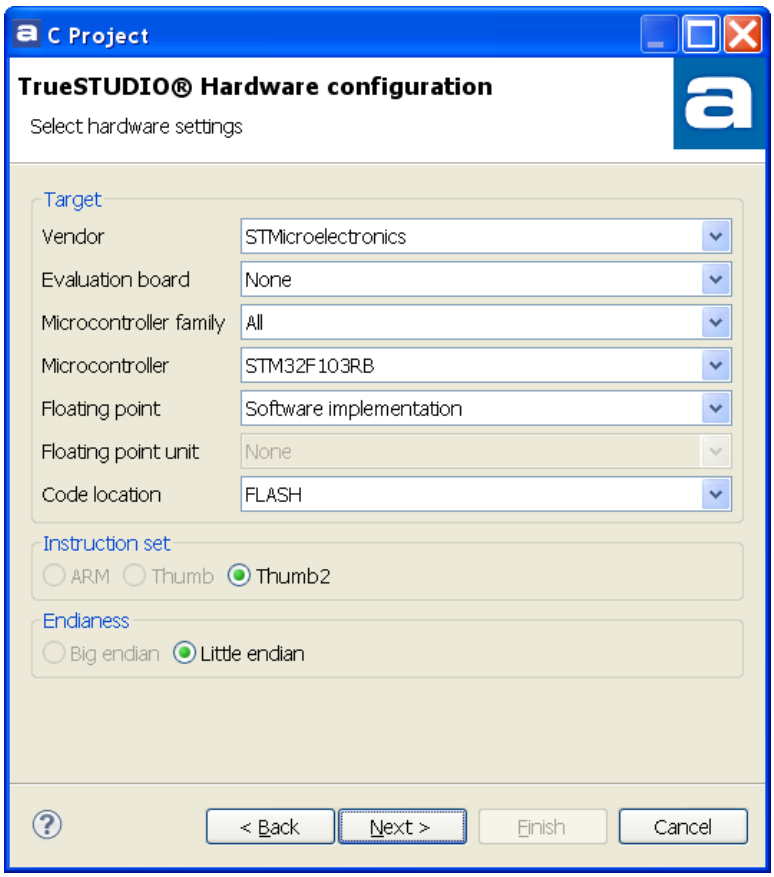

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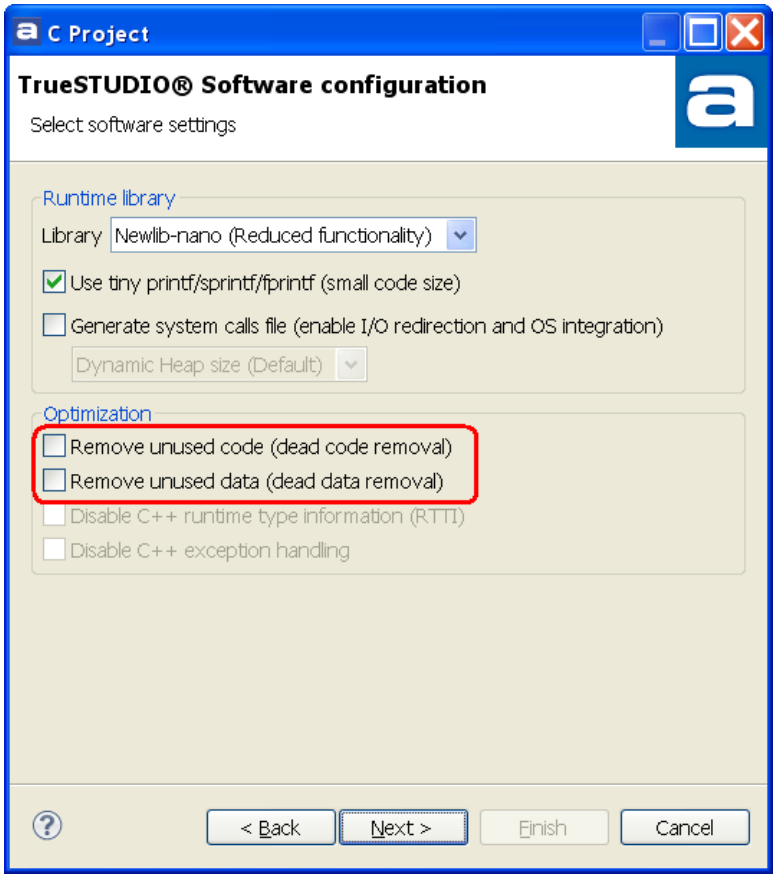

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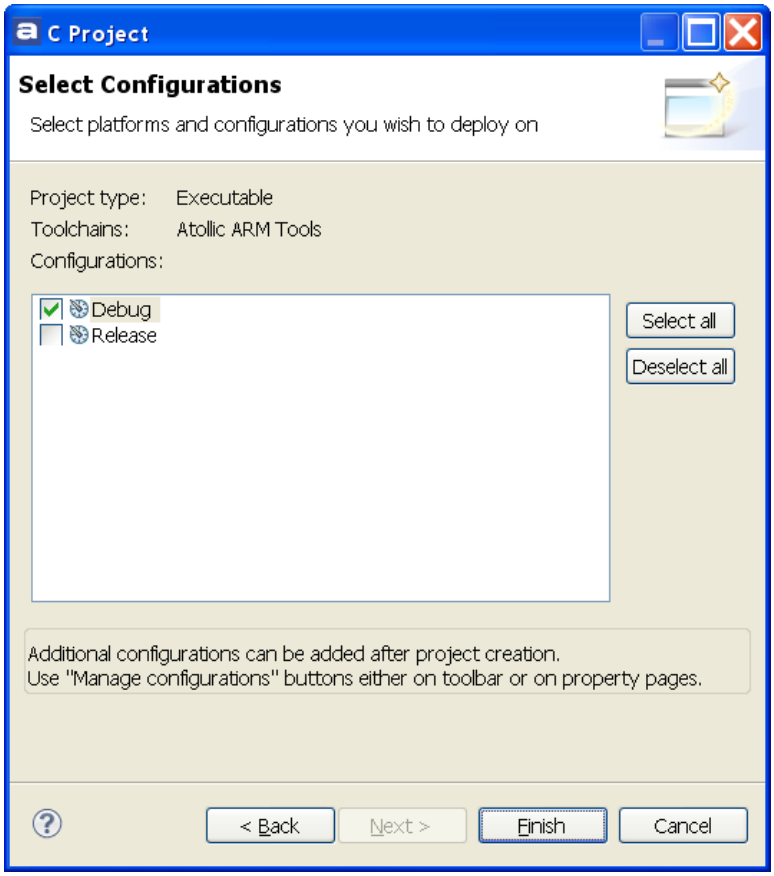
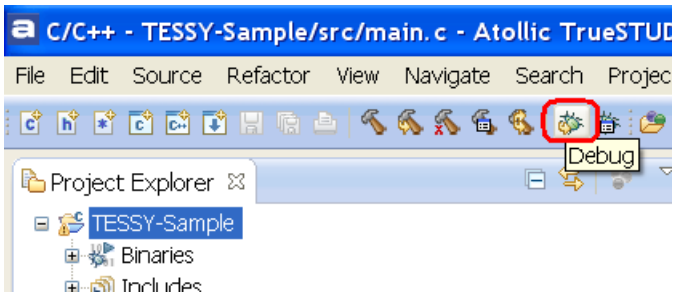


Click **Finish**, select the project name from the **Project Explorer** view and press the **Debug** button. So that TrueSTUDIO will build the project and run the debugger.



1.3 TESSY Environment Settings

The TrueSTUDIO uses specific board defines for the compiler calls. Please, open the build settings from the **Project** menu and select the tool settings as show below.

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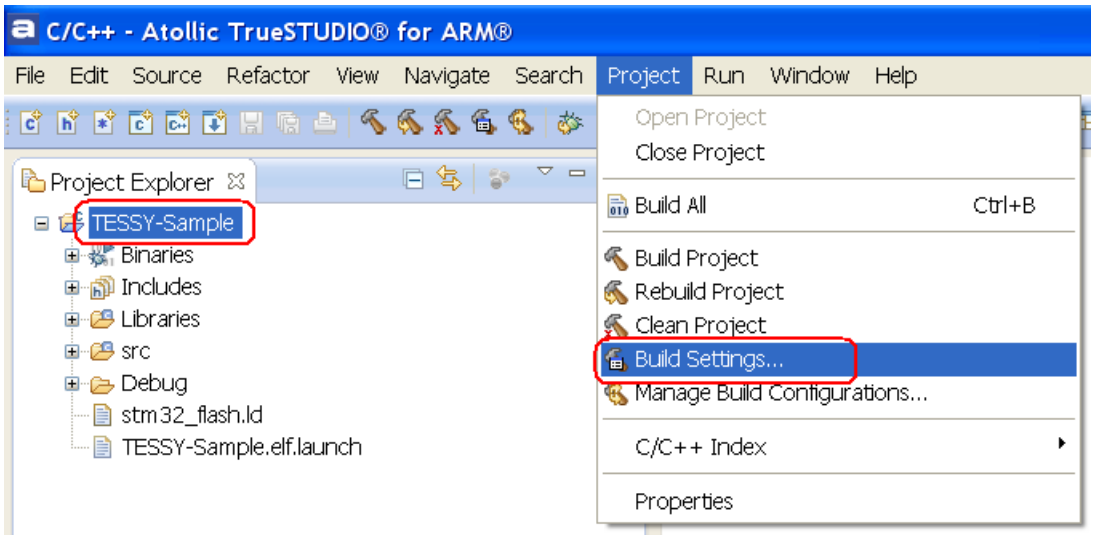

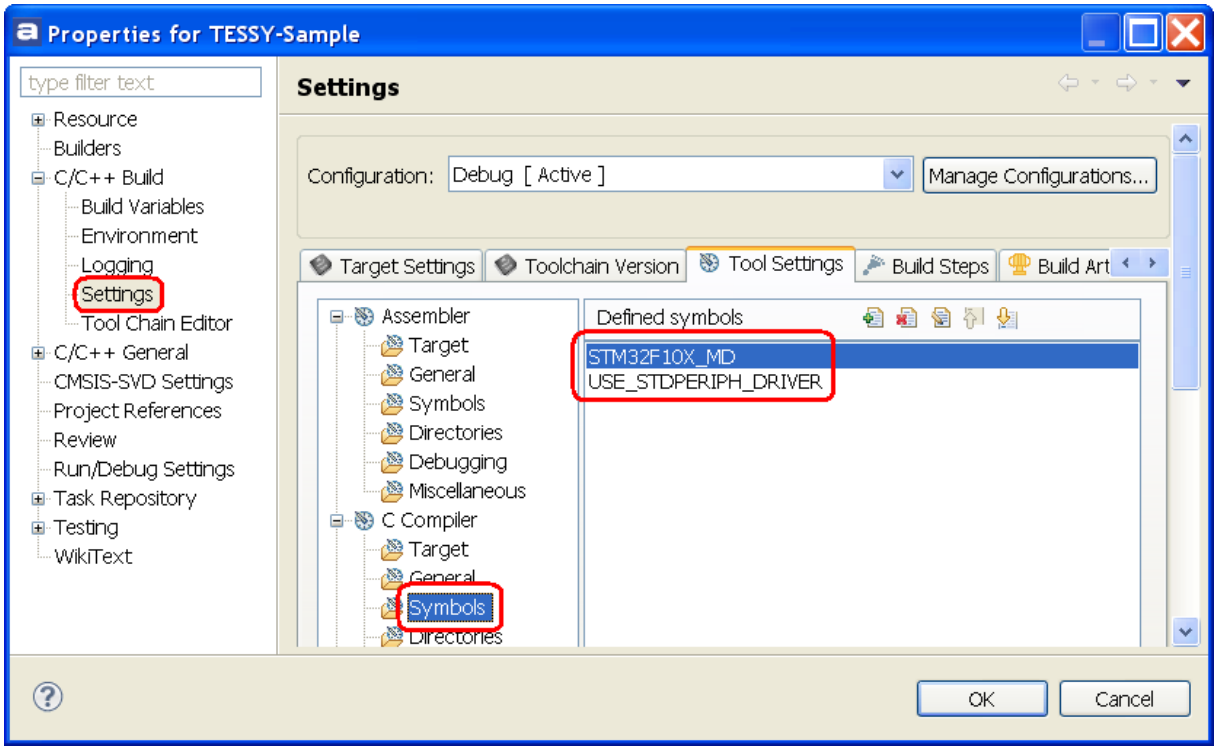

Copy the defined symbols as a comma separated list into TESSY's TEE attribute Compiler Defines.

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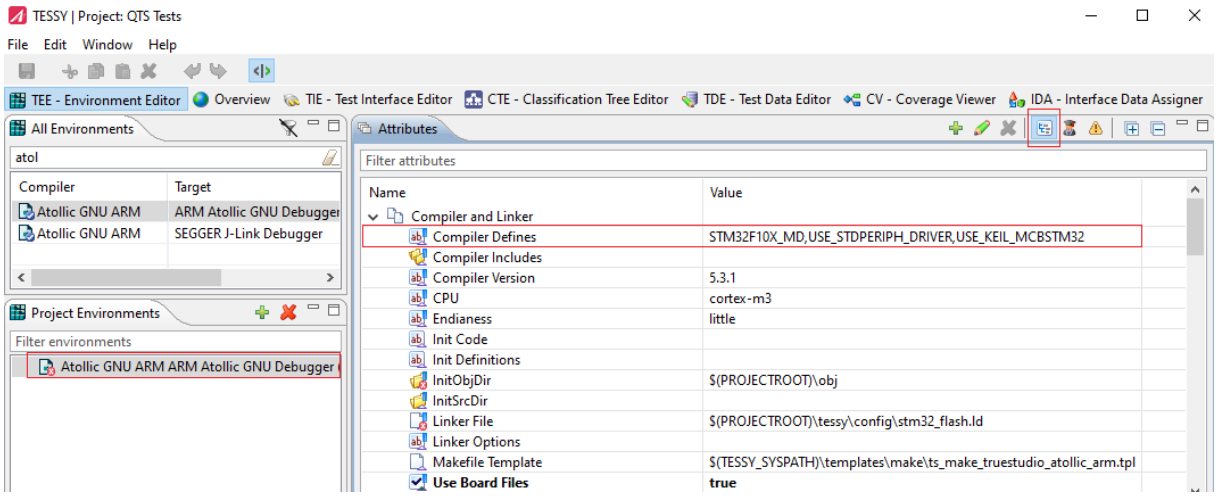
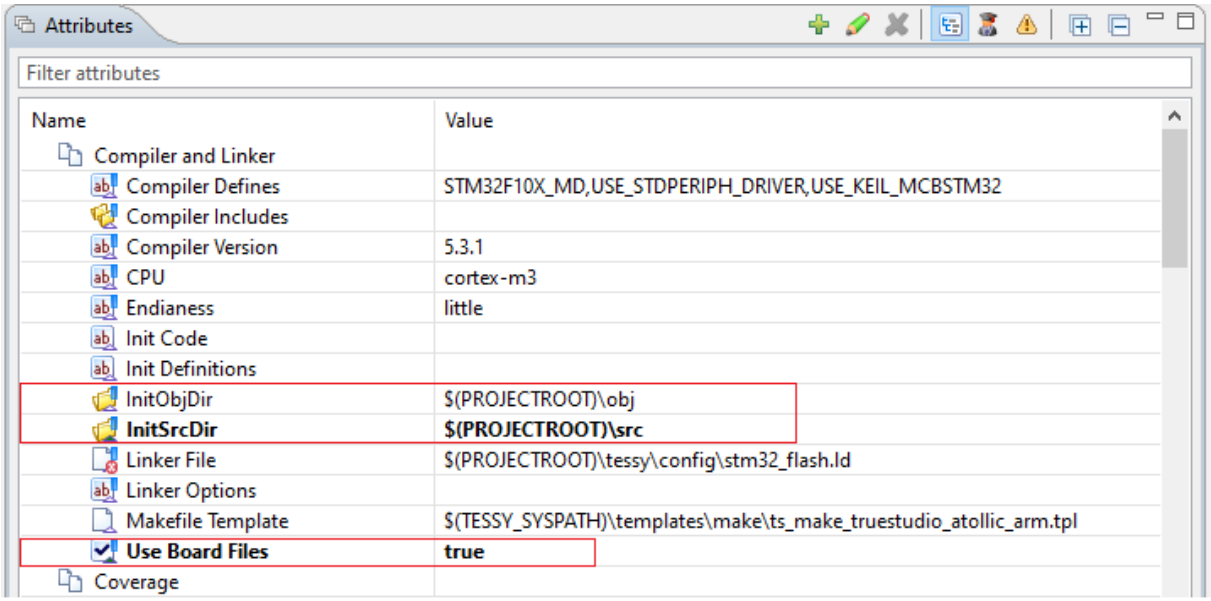


In order to link special start up files, also called board files, with each test object automatically you may use the attributes **InitSrcDir**, **InitObjDir**, and **Use Board Files**. Make sure the folders the attributes **InitSrcDir** and **InitObjDir** point to exist.



In the next section you will learn how to collect the board files from your TrueSTUDIO project.

1.4 Copy Board Files

If you open the **src**-folder from the TrueSTUDIO project tree you can see the board files which TrueSTUDIO associated to the TESSY-Sample project and which you will have to copy now into TESSY's **InitSrcDir** folder. TESSY will have to compile and link the very same files for the test object to be run the test successfully.

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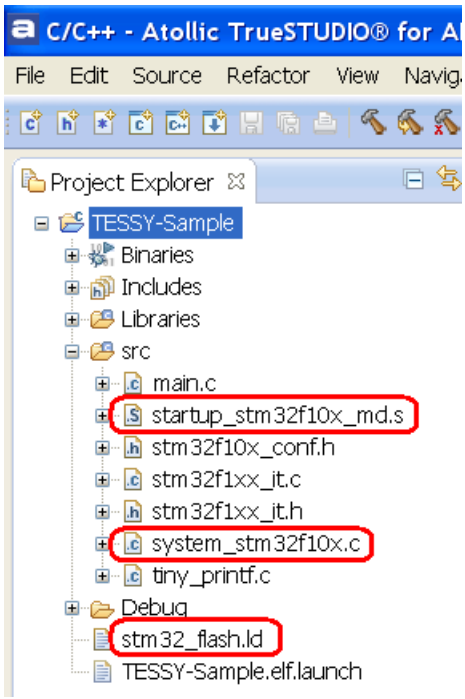
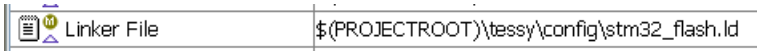
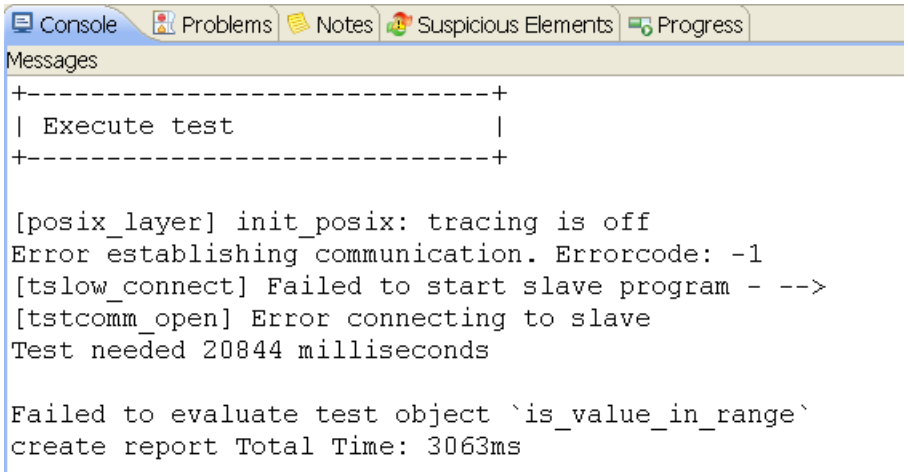


Please, open a normal file browser and point it to the location of your TrueSTUDIO's TESSY-Sample project. Collect the above shown C files or similar ones and all header files and copy them to the **InitSrcDir** folder. Also copy the linker file into your TESSY project's config folder and let the TEE attribute **Linker File** point to it.



2 Error Messages within the TESSY Message Window

The following error messages indicate that the Atollic GDB server is not running.



Please, make sure that the **Slave Call** attribute of the TEE is correct. The **Slave Call** controls how to start the GDB server, which the GDB client connects to.

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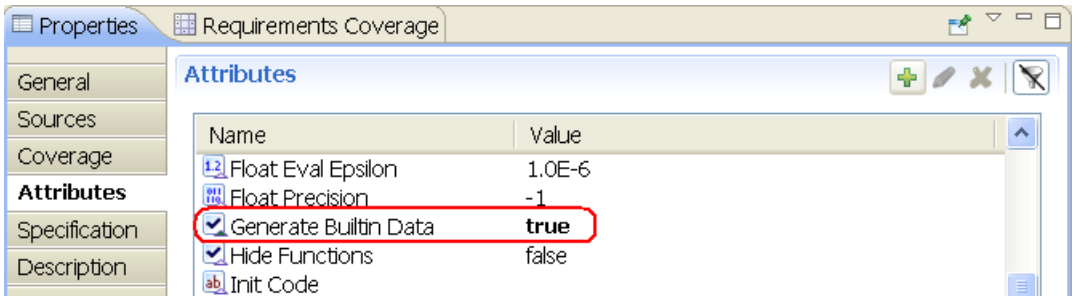
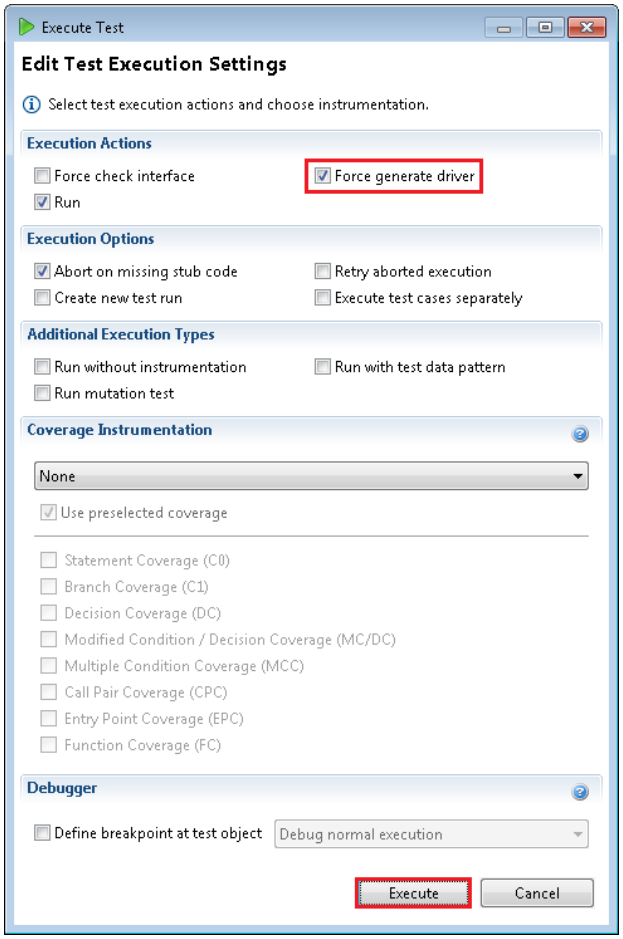
3 Interactive Debugging

The TESSY Atollic debugger adaption does not support interactive debugging during a test run. But it is possible to debug your test object interactively having the test data built-in which might be useful in case of errors during a test run. So, in order to debug the test object interactively TESSY provides the **Generate Builtin Data** attribute. The attribute is of type boolean and if set to **true** TESSY will rebuilt your target binary during the next test run having the selected test data built-in, i.e. TESSY will not actually perform the test run but instead create the target binary with test data built-in. To disable this feature, you have to set the attribute to **false**.



Open the **Execute Test** dialog and make sure **Force Generate Driver** is selected.



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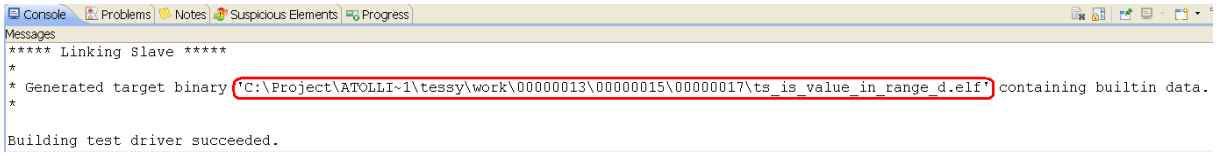
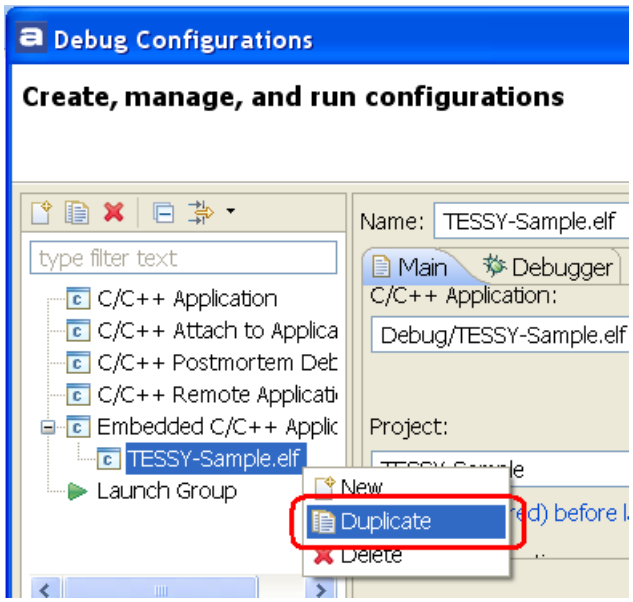
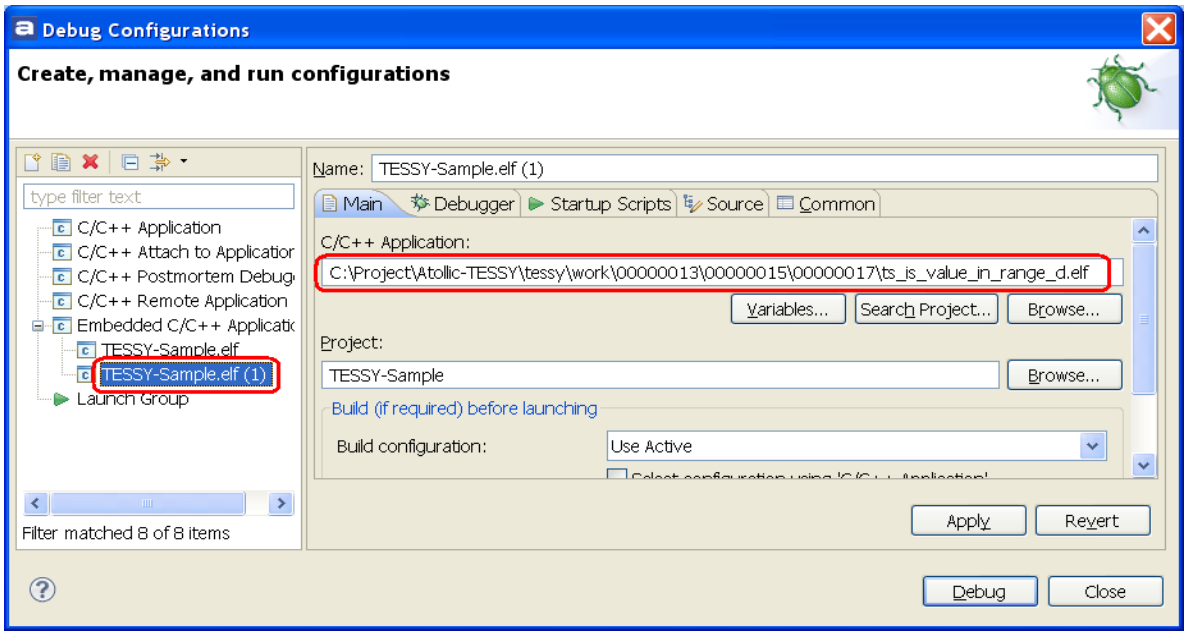
Now execute the test by pressing the **Execute** button. TESSY displays the path to the generated built-in target binary in the **Console** view.



You can copy the path to the generated target binary from TESSY's **Console** view, open the **Debug Configurations** dialog of TrueSTUDIO, duplicate your own debug configuration,



and paste the target binary path into the **C/C++ Application** box. Click **Apply** and **Debug** to start the debugger with your generated target binary program.



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The debugger stops at `main()`. Step forward to function `tessy_execute_task()` and step into the function, step forward to function `TESSY_TestobjectCall()` and step into the function.

```
210 /*
211  * main
212  */
213 #if !defined TS_OTHER_MAIN
214 int main(void)
215 {
216     tessy_init_task();
217
218     while (1) {
219         tessy_start_task();
220         tessy_execute_task();
221         tessy_end_task();
222     }
223     return 0;
224 }
225 #endif
```

Finally, step into the test object.

```
24
25 result is_value_in_range (struct range r1, value v1)
26 {
27     if (v1 < r1.range_start)
28         return no;
29
30     if (v1 > (r1.range_start + r1.range
31         return no;
32
33     return yes;
34
```

Expression	Type	Value
r1	struct range	{...}
range_start	int	42
range_len	int	-50

```
Name : r1
    Details:{range_start = 42, range_len = -50}
```


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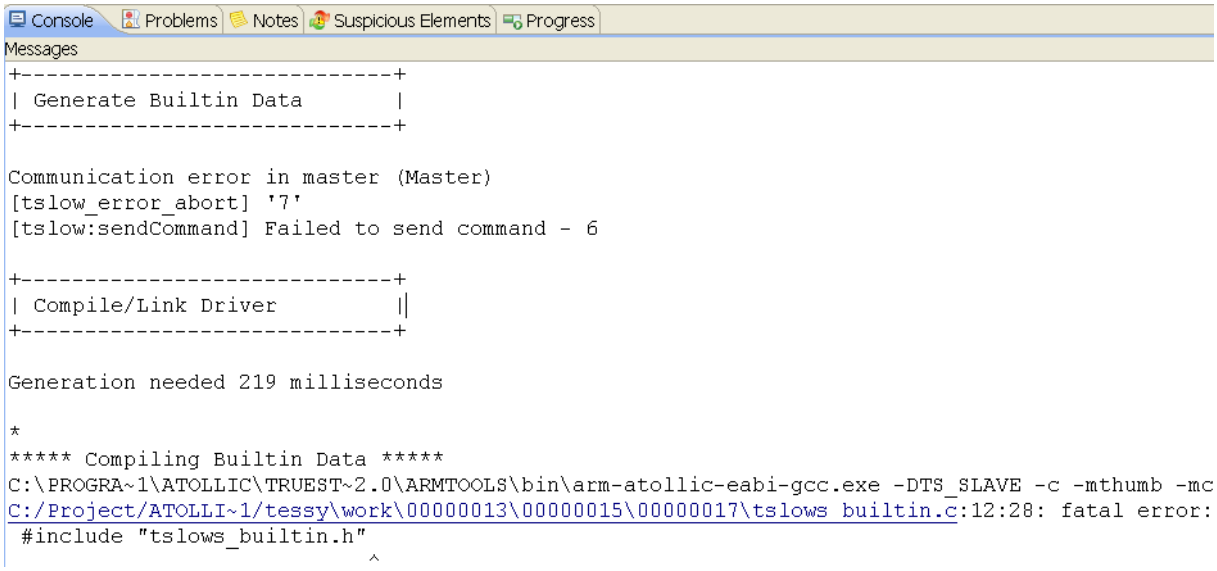
4 Known Issues

4.1 Generating Target Binary Fails

If the following error occurs during the generation of the target binary, please disable the **Comm Checksum** feature by setting the corresponding TEE attribute to **false**.



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