

# Using Xtensa ISS

## Abstract

This document describes the usage of the Xtensa ISS as target system. The minimum tested version of the Xtensa ISS is 2021.8.

**Important Note:** You need a **functional** development project which can successfully build a target binary and launch a debug session. All required Xtensa environment variables have to be set up for your user or on your system properly.

**Please note:** The Xtensa ISS adaption does not support interactive debugging features when executing tests with TESSY. (See 4 to learn how to debug interactively having your test data statically built into the target binary.)

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## 1 Introduction

The communication between TESSY and the Xtensa ISS is based on GDB client and iss.exe as backend. The Xtensa ISS is started by TESSY by executing the command line found in TEE attribute GDB Server Debugger. By default, the port number is chosen by the Xtensa ISS itself, i.e. **GDB Server Port** is set to 0. *It is strongly recommended to keep this value at 0.* It is required to be 0 to let the iss.exe run in parallel. The iss.exe outputs its server port on command line, which TESSY's master reads and uses to connect. TEE attribute **Port Trigger** holds the unique string, which precedes the port number directly.

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 the respective GDB client debugger and step through the test cases (see chapter 4).

## 2 TESSY Environment Settings

There are several Xtensa specific TEE attributes you have to pay attention to. At first, check the **Xtensa Base Path** and the **Xtensa Version**. By default, **Compiler Version** and **Target Version** are set to **Xtensa Version**. So, normally you have to set the latter one only. Now, select the correct **Xtensa Core**.

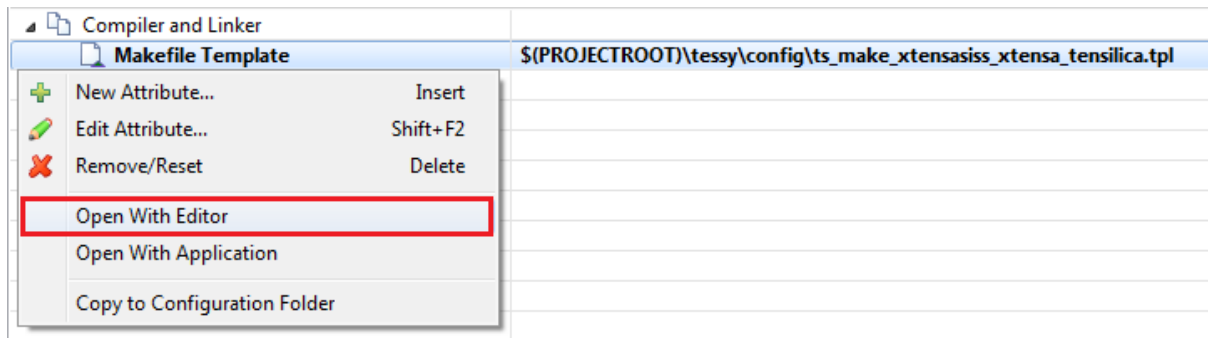
Installation Paths	
Xtensa Base Path	\$(ProgramFiles)\xtensa\XtDevTools\install
Test Execution	
Xtensa Core	tie_dev1
Xtensa Params	
Xtensa System	\$(Target Install Path)\builds\RI-\$(Target Version)-win32\\$(Xtensa Core)\config
Xtensa Version	2021.8

Check the GDB client debugger path and the parameters used to start the debugger.

Test Execution	
Debugger Path	\$(Target Tools Path)\lib\iss\iss.exe
GDB Client Debugger	\$(Target Tools Path)\bin\xt-gdb.exe
GDB Client Debugger Args	--xtensa-core=\$(Xtensa Core) --xtensa-system=\$(Xtensa System) --xtensa-p...
GDB Server Debugger	"\$(Debugger Path)" --pchistory=1 --trace=0 --nosummary --gdbserve=0 "\$(...

Finally, check the **Compiler and Linker** attributes within the TEE. For more advanced compiler and linker settings copy the Makefile template into your TESSY project's config folder, open the file, and adjust the variables **S\_COMP\_OPTIONS** and **S\_LINK\_OPTIONS** accordingly to your local settings.

Compiler and Linker	
Makefile Template	\$(TESSY_SYSPATH)\templates\make\ts_make_xtensasiss_xtensa_tensilica.tpl
<div style="border: 1px solid gray; padding: 5px;"> <ul style="list-style-type: none"> <li><span style="color: green;">+</span> New Attribute... <span style="float: right;">Insert</span></li> <li><span style="color: red;">✏</span> Edit Attribute... <span style="float: right;">Shift+F2</span></li> <li>Open With Editor</li> <li>Open With Application</li> <li style="border: 2px solid red; padding: 2px;">Copy to Configuration Folder</li> </ul> </div>	



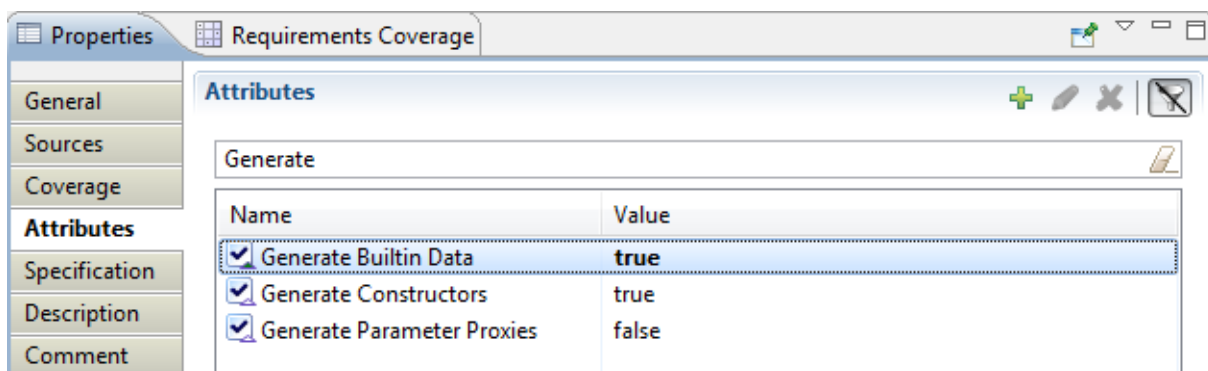
### 3 Parallel Built and Parallel Execution

The amount of test objects built in parallel is given by **Compiler Concurrency**, while 20 source files per test object are compiled in parallel. So, no more than 80 processes run in parallel for the built. You can disable the parallel built by setting TEE attribute **Compiler Concurrency** to **1** and by clearing the TEE attribute **Make Options**. The parallel execution is set to 10 by default. Too much compiler or simulator processes in parallel may result in compiler or simulator license errors. For our tests the following values have been appropriately.

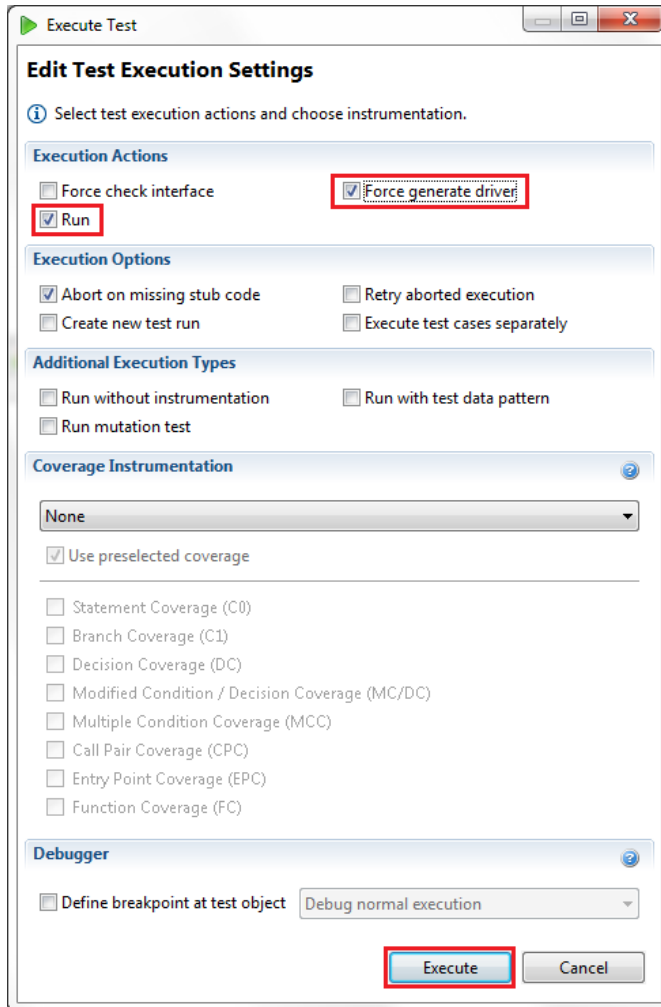
Test Driver Build	
Compiler Concurrency	4
Test Execution	
Target Concurrency	10

### 4 Interactive Debugging

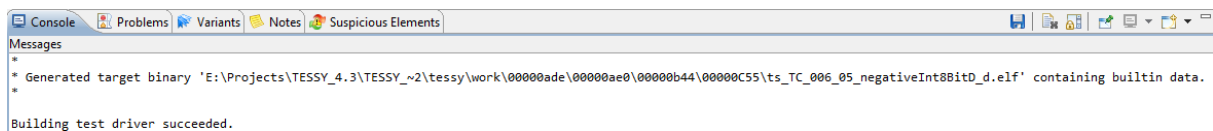
The TESSY Xtensa ISS adaption does not support interactive debugging during a test run. But it is possible to debug your test object interactively having the test data built-in which might be useful in case of errors during a test run. So, in order to debug the test object interactively TESSY provides 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 it. 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.



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 of the generated target binary from TESSY's **Console** view and use the corresponding GDB client to debug the application. Please, consult the GNU GDB documentation found on the internet on how to debug the application.

## 5 Troubleshooting

By now, there are no known problems. Please contact [support@razorcat.com](mailto:support@razorcat.com) if you encounter any unsolvable problems.