

Wind River Debugger

Abstract

This document describes the usage of the Wind River debugger as target system. The communication is done via the Wind River DeBuG shell (WRDBG). The minimum required version of WRDBG is 3.1. By the writing of this document TESSY supports the RH850 controller family. The minimum required version of the Wind River Workbench is 4. This document will help you to adjust your Wind River Workbench and TESSY's Environment Editor (TEE). You will need a working Wind River Workbench project to be able to configure the Workbench and the TEE properly.

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1 Wind River Debugger

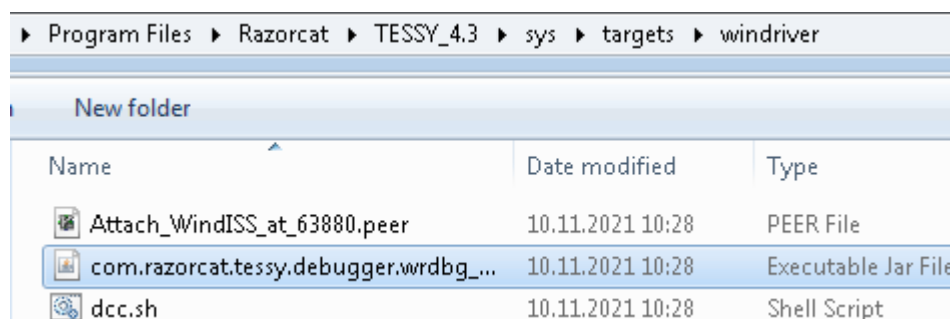
The communication between TESSY and the Wind River debugger is based on the Wind River DeBuG shell (WRDBG), which uses a GDB like command language. TESSY's WRDBG specific master launches and controls the WRDBG to communicate with the Wind River debugger. Furthermore, a plugin has to be dropped into the Wind River installation `dropins` folder which enables TESSY's master to automatically trigger the connection between the Wind River debugger and the target device. It performs the same command action as if you click onto the **Connect** button of the Wind River Workbench's toolbar. The plugin may be used on 32-bit as well as on 64-bit platforms.

As a prerequisite you will have to create and setup a new Wind River ISS Connection environment on your own. Please consult the corresponding Wind River manuals. The path of the image has to match the path given in TESSY's TEE attribute **Target Binary**.

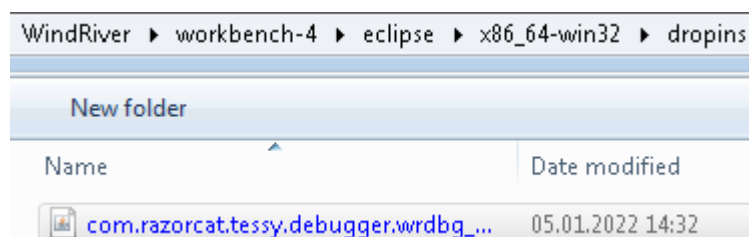
The following chapters will guide you through the adjustments needed for the Wind River Workbench environment, the TESSY Environment Editor (TEE) setup and point you to a special TEE attribute you will have to adjust in order to optimize the test run speed.

1.1 Adjustments of the Wind River Workbench Environment

Before you start the Workbench copy the plugin from TESSY's `windriver` folder

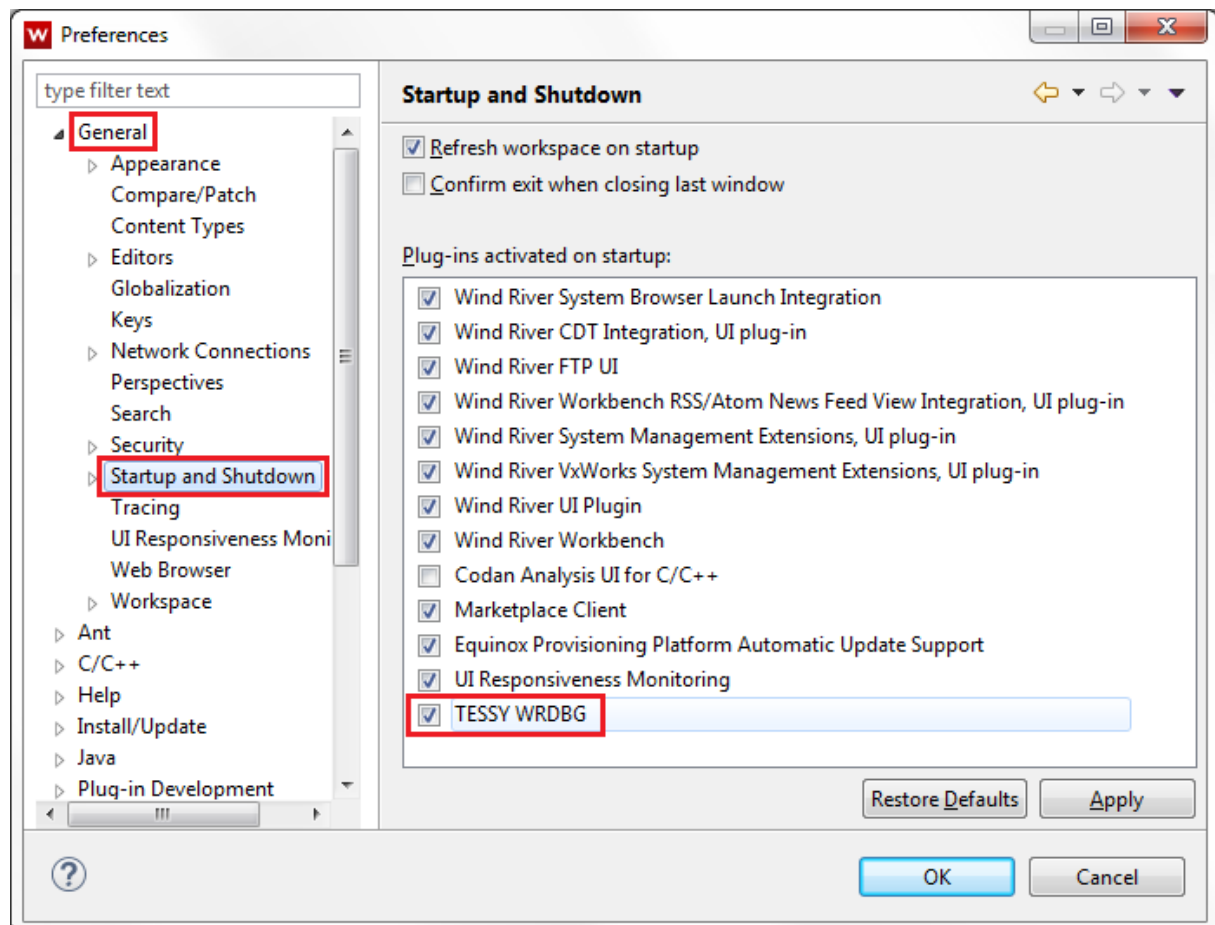
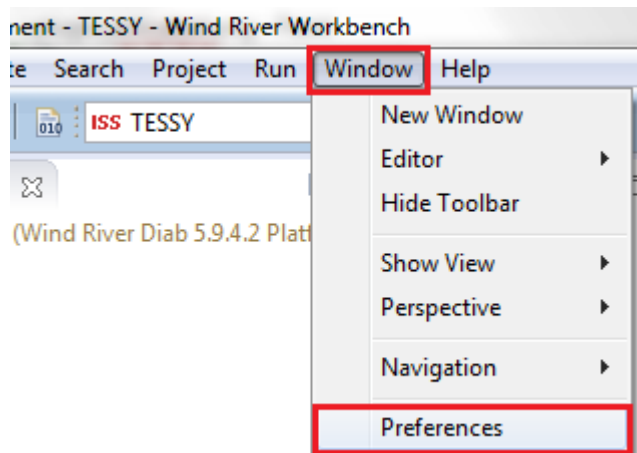


into Wind River's `dropins` folder. The path may be different on 64-bit platforms. The plugin may be used on 32-bit as well as no 64-bit platforms.

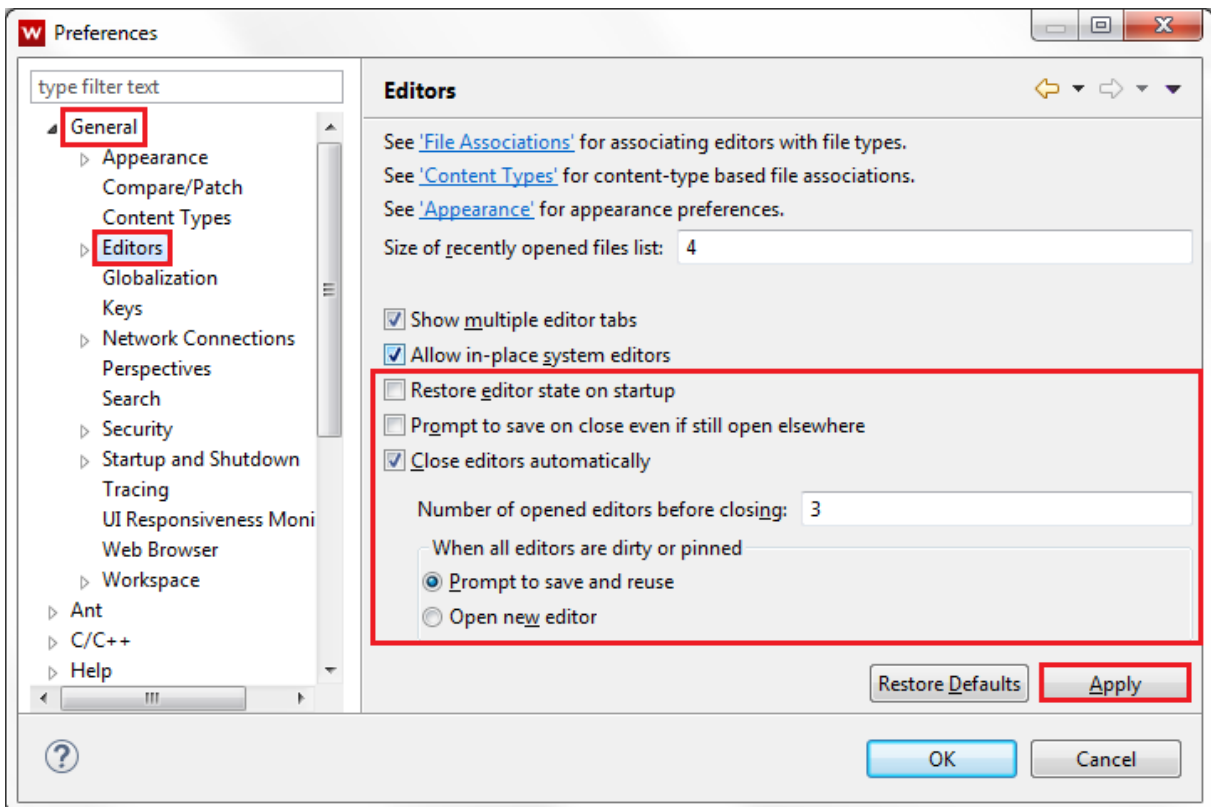
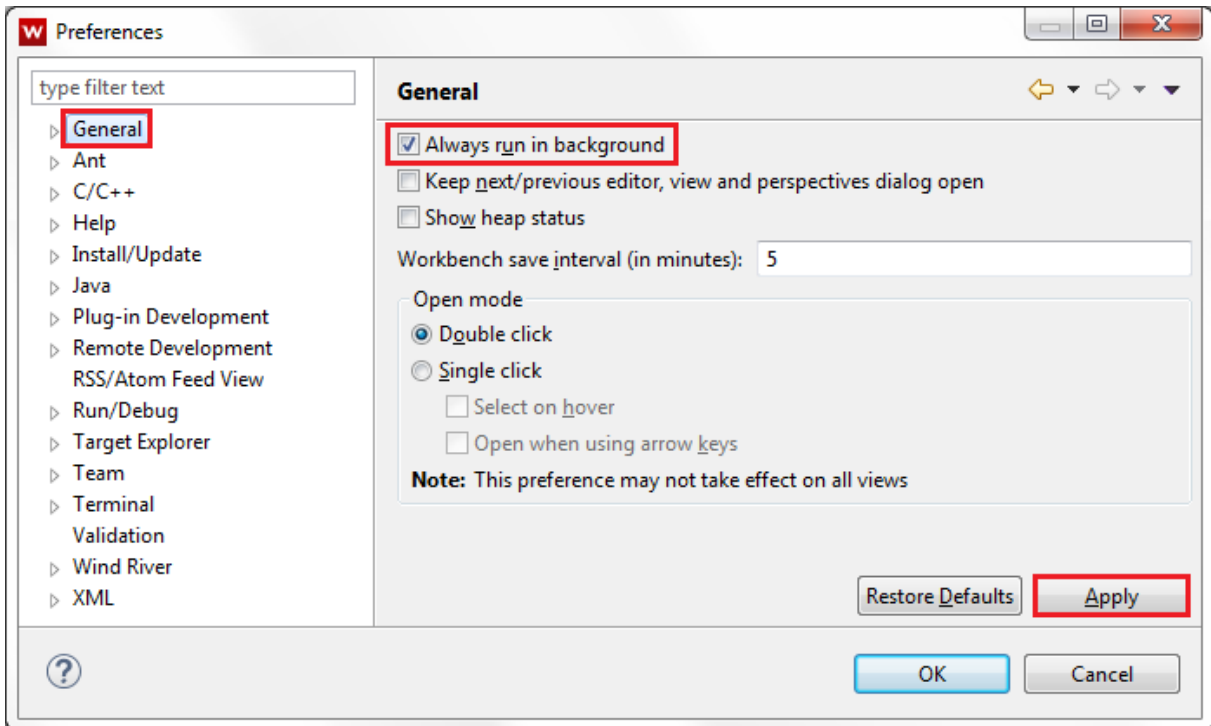


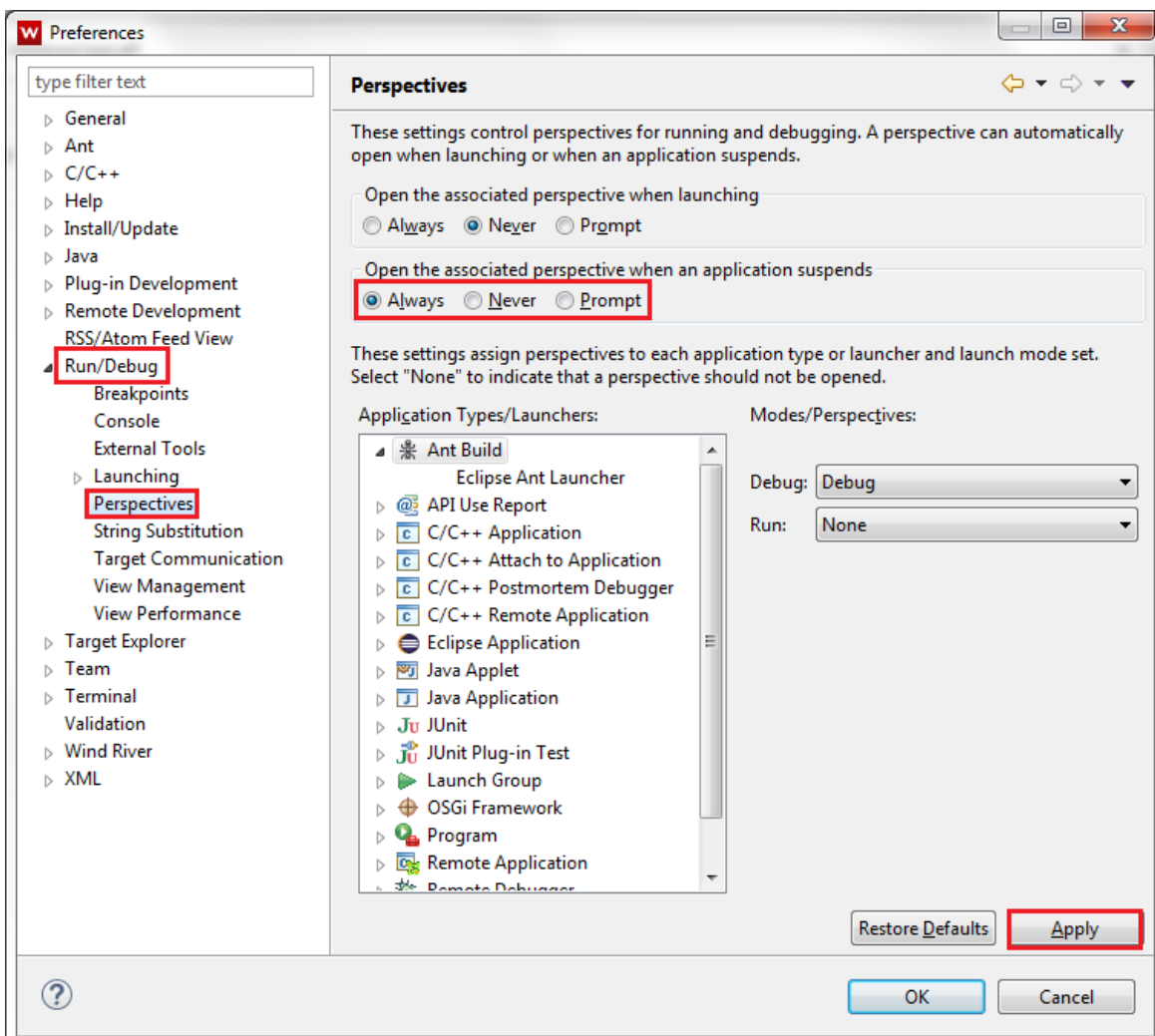
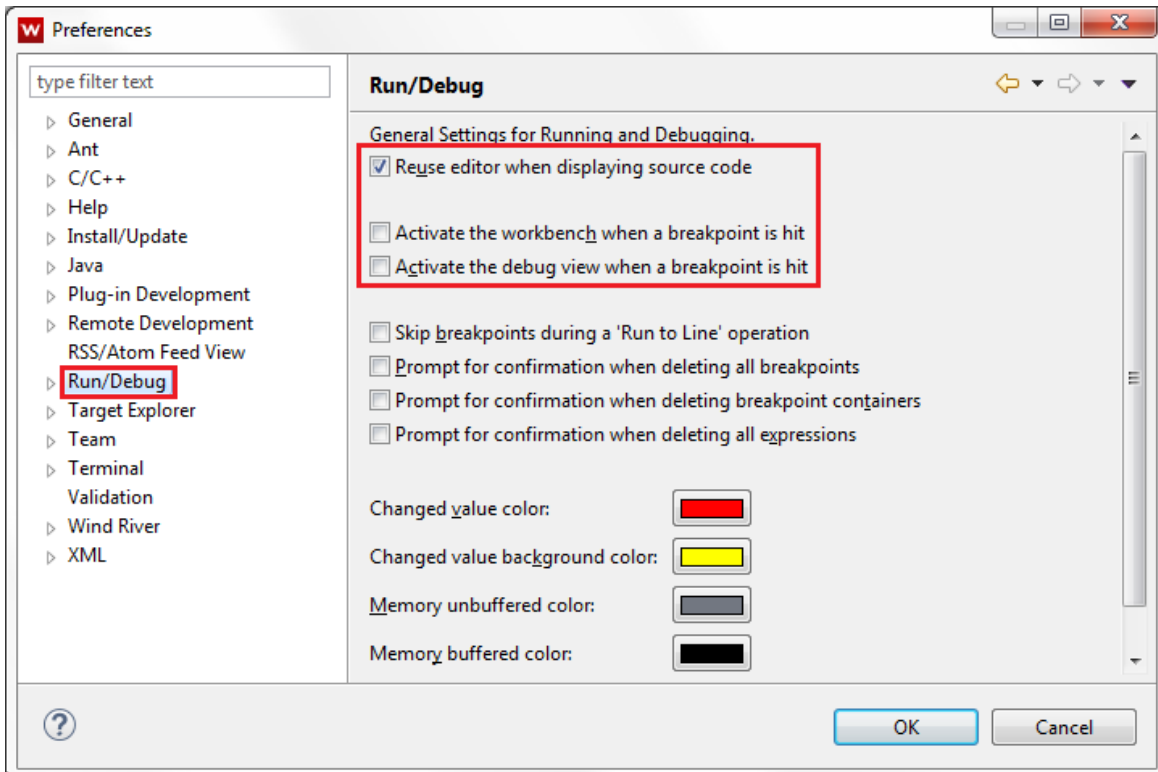
TESSY Application Notes

Now start the Wind River Workbench and make sure the plugin was successfully activated, i.e. that the tick mark is set as shown below.



Some further performance adjustments are recommended which can be set from the Workbench's **Preferences** dialog as well. Please do not forget to click **Apply** for all tabs.

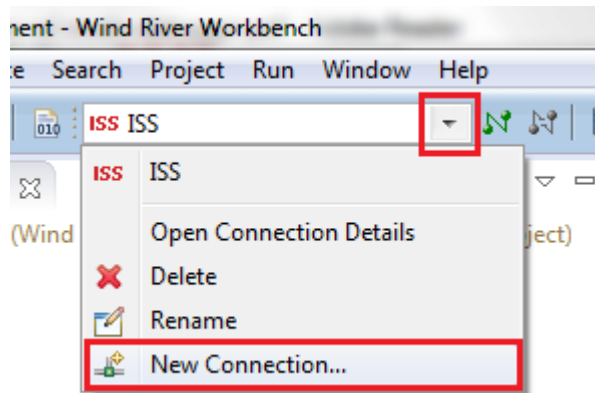




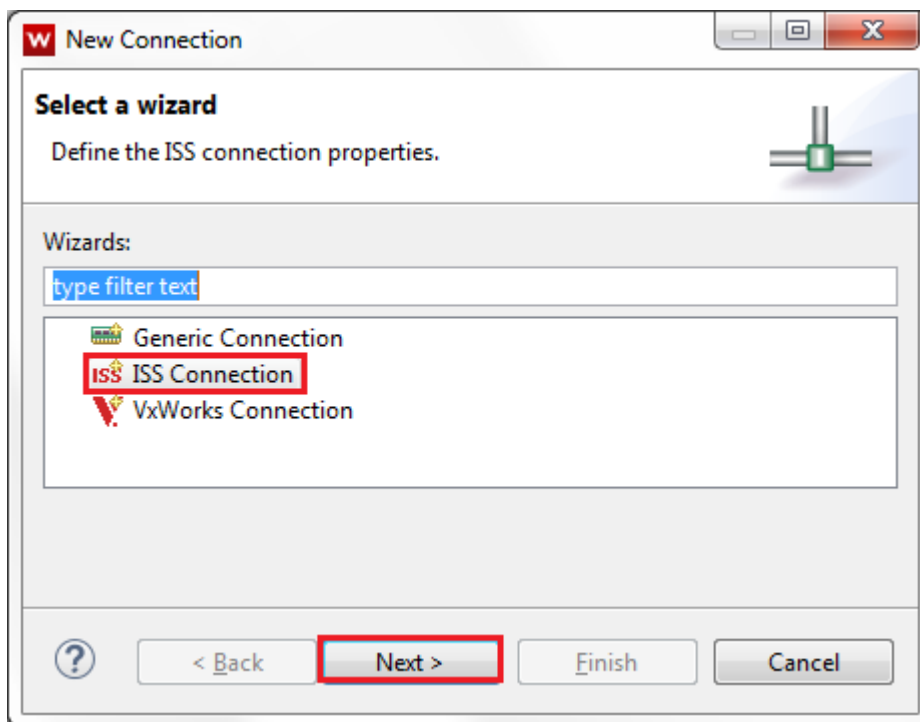
TESSY Application Notes

Now create a new ISS connection as shown below.

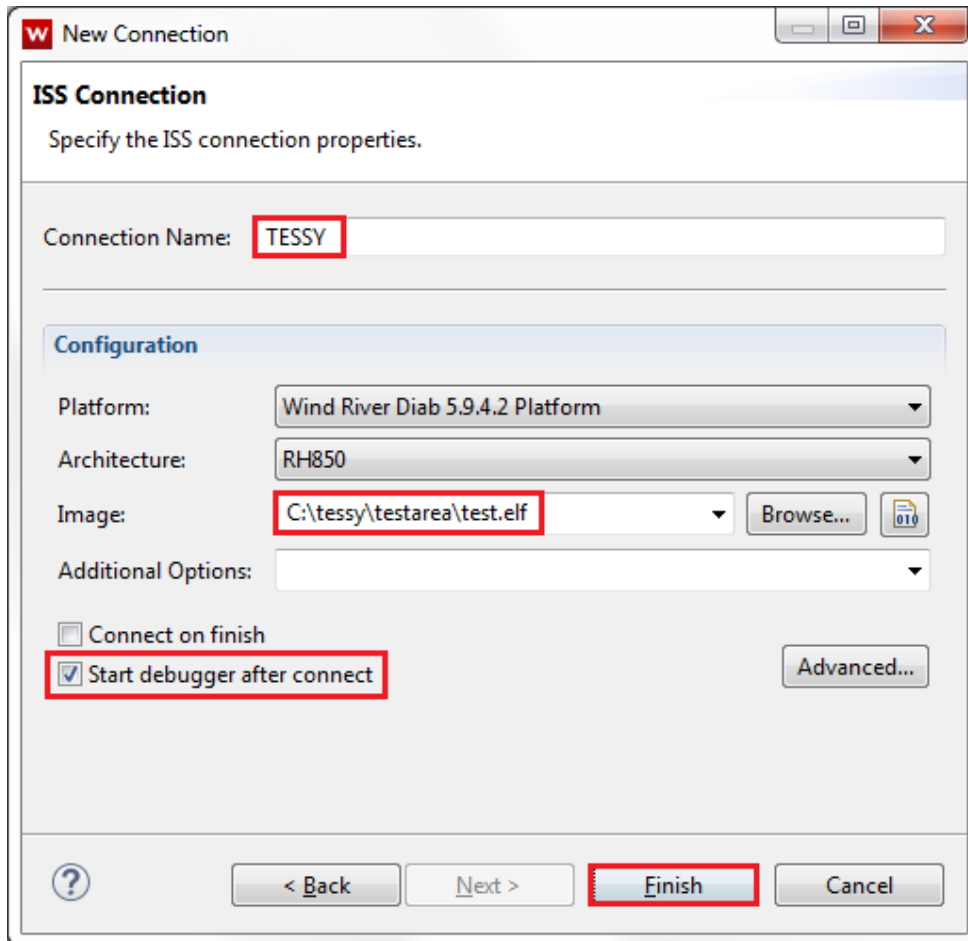
Select **New Connection...** to open the **New Connection** dialog.



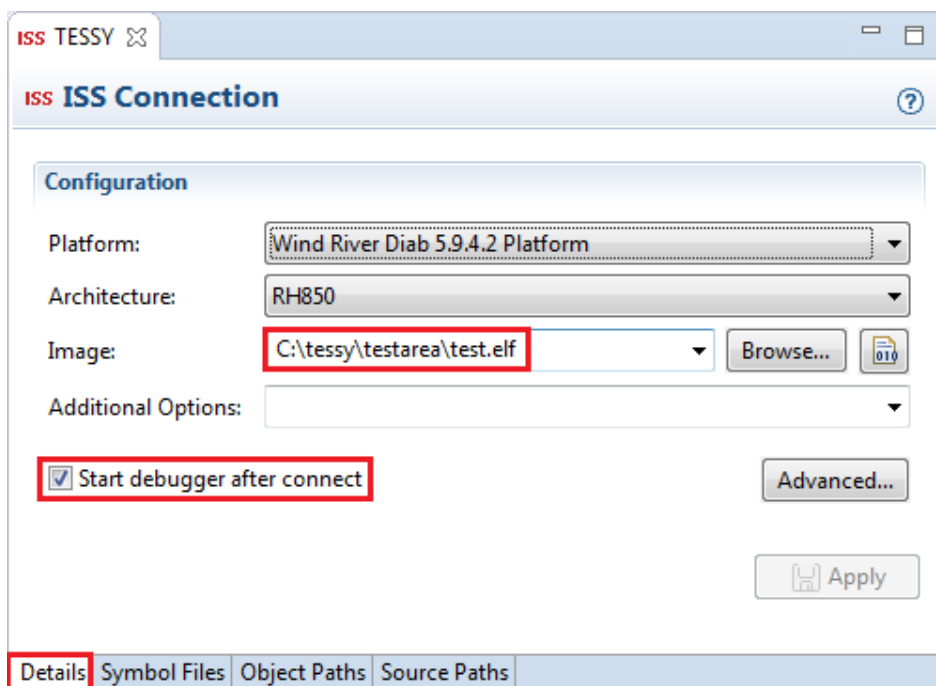
Select **ISS Connection** and click **Next**.



Please note: Select an appropriate connection name like TESSY. TESSY's plugin does not know the name and cannot select any ISS Connection proactively. You have to select the correct ISS Connection before you close the Wind River Workbench. TESSY's plugin will then activate the one which is currently selected. Furthermore, make sure that you unset all breakpoints you set manually. TESSY cannot unset these breakpoints.



Please copy the path you choose for the image and paste it into the TEE attribute **Target Binary**. Finally, check the **Start debugger after connect** option, which is needed for interactive debugging, and click **Finish**. You should now find an ISS Connection which looks similar to the picture shown below.



2 TESSY Environment Settings

The TEE attributes **Compiler Version**, **CPU**, **Execution Environment**,

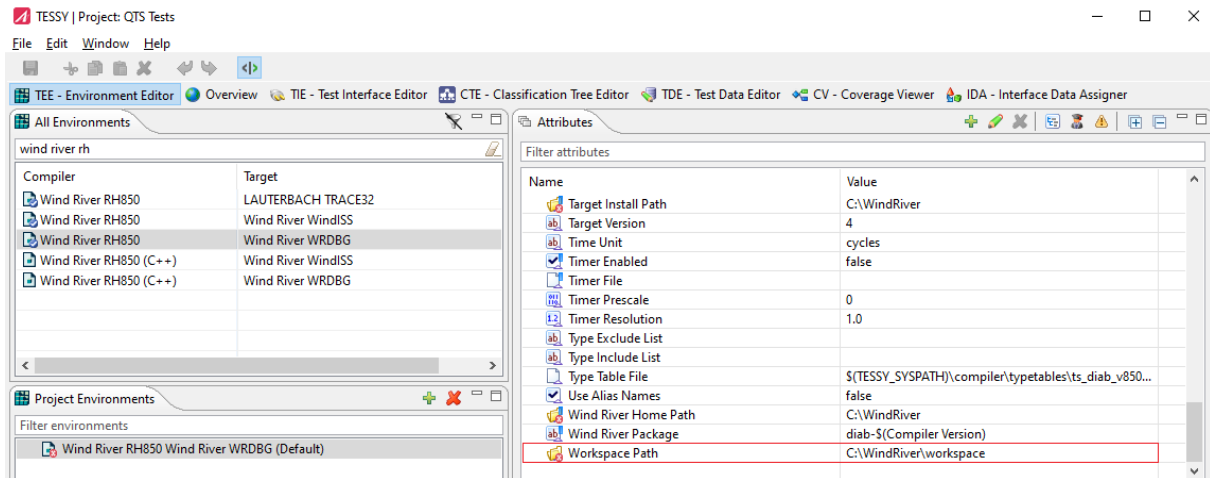
The screenshot shows the TESSY IDE interface. The 'All Environments' pane on the left lists several compiler-target combinations for 'wind river rh'. The 'Attributes' pane on the right shows a list of attributes for the selected environment. The following table represents the data visible in the 'Attributes' pane:

Name	Value
Compiler Version	5.9.4.8
CPU	RH850EN
Defines Exclude List	*TESSY*, unix, *, *i386*, *x86*, WIN32, WINNT
Doxygen Executable	
Doxygen Ignore Includes	false
Doxygen Input Encoding	UTF-8
Enable CLANG	false
Enable Collect Implicit Constructors	true
Enable const As IN	false
Enable Create Default Constructors	true
Enable Create Function Stubs	false
Enable Create Method Stubs	true
Enable CTC++	false
Enable Define Variables	true
Enable Doxygen	false
Enable Inline Functions	true
Enable setjmp/longjmp	false
Enable Static Functions	true
Enable Static Locals	true
Enable User Includes	false
Endianness	little
Enum Exclude List	
Enum Include List	
Execution Environment	RH850EN:windiss
Execution Timeout	0

ExeFile Extension, Target Install Path, Workspace Path, and Target Binary

The screenshot shows the TESSY IDE interface. The 'All Environments' pane on the left lists several compiler-target combinations for 'wind river rh'. The 'Attributes' pane on the right shows a list of attributes for the selected environment. The following table represents the data visible in the 'Attributes' pane:

Name	Value
Execution Timeout	0
Execution Timeout Call	
ExeFile Extension	.elf
Float Eval Epsilon	1.0E-6
Float Precision	-1
Generate Constructors	true
Generate Parameter Proxies	false
IDE Wait Timeout	6000
Init Code	
Init Definitions	
Insert External Stub At Declaration	false
Linker File	
Linker Options	
Main Type	0x00010103
Makefile Template	S:(TESSY_SYSPATH)\templates\make\ts_make_wrdbg_...
MISRA Do While Expressions	0U, false
Relative Path Variables	
Startup File	
Synthetic Declarations In Source	true
Target Binary	S:(TESSY_TESTAREA)\testarea\test\$(ExeFile Extension)
Target Install Path	C:\WindRiver
Target Version	4



are relevant for this target adaption and have to be carefully examined. You may also create the TEE attribute **TCF Agent Prefix** which is by default set to **windiss**: and denotes the prefix of the TCF agent. See Wind River Workbench documentation for further information. As long as the underlying simulator is WindISS you do not need to change this value and can leave it to its default value. If the test run gets stuck after the debugger connection was triggered you may want to increase the value of the TEE attribute **IDE Wait Timeout**.

2.1 Board files specific attributes

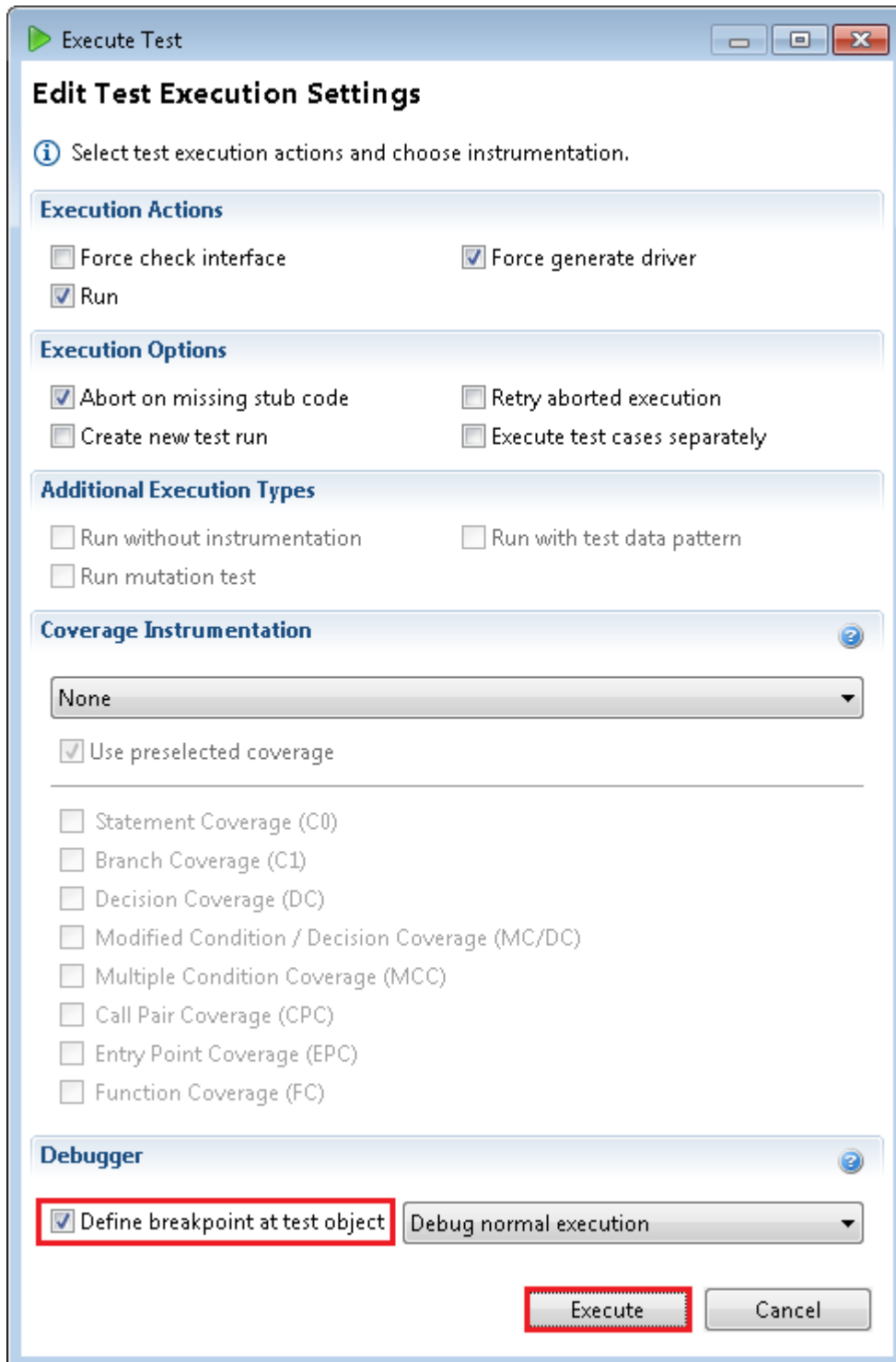
Normally the Wind River linker adds board files automatically. Nevertheless, TESSY provides the attributes **InitSrcDir**, **InitObjDir**, and **Use Board Files** to cope with this situation in case you need it. If the *Directory* type TEE attribute **InitSrcDir** contains a valid path and the *Boolean* type TEE attribute **Use Board Files** is set to **true** all files contained in the specified folder are compiled into the folder pointed to by **InitObjDir**. If the attribute **InitSrcDir** is empty all object files found in the folder which **InitObjDir** points to are linked to the target program.

3 Test Run

TESSY starts the Wind River Workbench automatically with the given project path from the TEE attribute **Workspace Path**. The Workbench stays open until TESSY is closed. If you close the Workbench manually it will be open again with the next test run.

4 Interactive Debugging

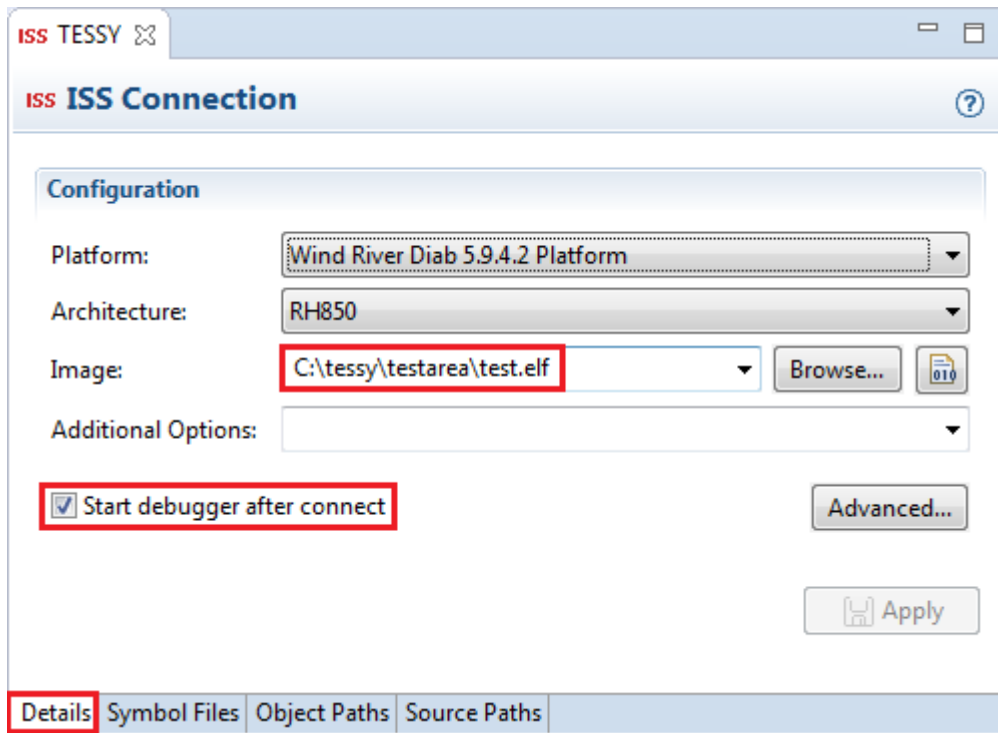
The adaption supports interactive debugging in case you need to step through the code having your test data loaded. From the **Execute Test** dialog select **Define Breakpoint at Test Object** and click **Execute** as shown below. The debugger will halt at your test object so that you can analyze the test run.



5 Troubleshooting

5.1 The Workbench does not open the corresponding editor

If you need to interactively debug your test object using your test data from TESSY it might happen that the editor is not opened automatically by the Wind River Workbench. Please assure that the option **Start debugger after connect** is enabled as shown below. If it is not enabled do so and click **Apply**.



The screenshot shows the 'ISS TESSY' application window. The main title bar reads 'ISS TESSY'. Below it, the 'ISS Connection' panel is active, featuring a 'Configuration' section. In this section, the 'Platform' dropdown is set to 'Wind River Diab 5.9.4.2 Platform', and the 'Architecture' dropdown is set to 'RH850'. The 'Image' field contains the path 'C:\tessy\testarea\test.elf', which is highlighted with a red box. To the right of this field is a 'Browse...' button and a file icon. Below the 'Image' field is an 'Additional Options' dropdown. A checkbox labeled 'Start debugger after connect' is checked and also highlighted with a red box. To the right of this checkbox are 'Advanced...' and 'Apply' buttons. At the bottom of the window, a tabbed interface shows 'Details' as the selected tab, with other tabs for 'Symbol Files', 'Object Paths', and 'Source Paths'.