Chapter

# 34

# *The TTCN-SDL Co-Simulator (in Windows)*

**This chapter describes the TTCN-SDL Co-simulator in the Windows version of the TTCN suite. It gives an introduction to the concept of the TTCN-SDL Co-simulator, as well as a guide to its functionality.**

**Note: Windows version**

**This is the Windows version of the chapter. The UNIX version is chapter 29, *The TTCN-SDL Co-Simulator (on UNIX)***

# The TTCN-SDL Co-Simulator

The TTCN-SDL Co-simulator allows you to generate executable test suites (ETS) for testing of simulated SDL systems. This allows the testing of the system design early in the design process.

These ETSs allow you to execute test cases and/or test groups (hereafter referred to as tests) at full speed or by single stepping through the selected tests. There is also the possibility to set breakpoints in the tables of the tests.

It should be noted that there is no separate TTCN-SDL Co-simulator GUI. The TTCN-SDL Co-simulator will use the Table Editor to present the current line during execution.

More information about the SDL Simulator can be found in *chapter 50, The SDL Simulator*.

# Performing a Co-Simulation with the SDL Suite

Given a test suite containing a set of tests you want to execute together with a simulated SDL system, the following steps are to be performed:

1. In the TTCN suite, analyze the test suite and make sure it contains no errors.
2. In the TTCN suite *TTCN to C Compiler Settings* dialog, generate an executable test suite.

   The following *TTCN to C Compiler Options* should be set:

   – *Co-simulator*

   – *Ignore bodies of test suite operations*

   In the *Build Options* tab:

   – You should set *Run Make*.

   – You may have to change the *Makefile Type*.

   For more information about the TTCN to C compiler and the options, see chapter 33, *The TTCN to C Compiler (in Windows)*.

3. Start the TTCN-SDL Co-simulator by selecting *Invoke Co-Simulator* from the *Co-Simulate* menu.

   In the file dialog that will be issued, select the simulator ETS – that is, the executable produced in step 2. After that, the TTCN-SDL Co-simulator toolbar will appear.

4. Generate and start the SDL Simulator, if not already done. In the SDL Simulator UI, load the SDL suite generated simulator executable.
5. In the SDL Simulator, give the command **`start-itex`**.
6. In the TTCN Browser, select the tests you wish to execute.
7. Click the *Run/Continue* or *Step* button, to start the actual co-simulation in the TTCN suite.
8. In the SDL Simulator, give the command **`go-forever`**.

# The TTCN-SDL Co-Simulator Operations

To abort the test in progress:

- Select *Co-Simulate* > *Abort*.
  The SDL Simulator may have to be restarted after this step. A new co-simulation can be started now.

To temporarily pause the test simulation:

- Select *Co-Simulate* > *Pause*.
  The co-simulation can be continued by doing a “run” or “step” operation.

To step one line of TTCN code:

- Select *Co-Simulate* > *Step*.

To run/continue a test at full speed until it is finished or until a breakpoint is reached:

- Select *Co-Simulate* > *Run/Continue.*

To toggle breakpoint status at currently selected lines in the Table Editor:

- Select *Co-Simulate* > *Toggle Breakpoint*.

# Information Messages

The TTCN-SDL Co-simulator can present messages to the user in three forms:

- Informative messages
- Warning messages
- Error messages

## Informative Messages

Informative messages are normally presented at the status bar. These might be for instance progress reports or other simple messages, which are only of a temporary interest (such as the tool tips).

## Warning Messages

Warnings, also known as “non-critical errors”, are events that indicate a problem during the preparation for a co-simulation, or during the actual co-simulation run. These are presented in standard warning dialogs.

## Error Messages

Critical errors will halt the co-simulation. They are presented by an error dialog that appears in front of the application. The error dialog can often appear large and intimidating, but it simply gives a more verbose reason to why the error occurred, and what steps should be taken to avoid it.

# Troubleshooting

## The Simulators Stop Communicating

The SDL Simulator and the TTCN-SDL Co-simulator may stop communicating. This can occur if there are “old” instances of the TTCN-SDL Co-simulator ETS process still alive. They will then “steal” messages from the intended recipient. There are some ways to make the Simulators communicate again:

- Exit the TTCN-SDL Co-simulator and start it again.
- Exit the TTCN-SDL Co-simulator. Restart the SDL Simulator. Start the TTCN-SDL Co-simulator again.
- Exit the Simulators and the Organizer. Check that no Postmaster process and no TTCN-SDL Co-simulator ETS process remains. If they do, kill them. Start the Organizer, the SDL Simulator and the TTCN-SDL Co-simulator.

## Test Execution Stops

The execution of tests may stop at a certain point during execution for no reason. If the problem is reproducible, you should check the supported types. There is a possibility that a type has been used in a message between the simulators that is not supported.

## The Simulators Get Out of Sync

The simulators may get out of sync. One way of doing this is when an execution in the TTCN-SDL Co-simulator has been aborted and the SDL Simulator has not been restarted.

- Press the abort button in the TTCN-SDL Co-simulator. Restart the SDL Simulator.

# Type Mappings in Co-Simulation

The data type mapping used by the co-simulation of the SDL simulator and the TTCN-SDL Co-simulator in Windows is the same as for the co-simulation on UNIX. See “Type Mappings in Co-Simulation” on page 1222 in chapter 29, *The TTCN-SDL Co-Simulator (on UNIX)*.