



SimFlex™ SCL Checker

Getting Started

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Table of contents

Table of contents	2
1 Introduction	3
1.1 GridClone contact information	3
2 Purpose of this guide	4
2.1 Trial version limitations	4
2.2 System requirements	4
3 SimFlex™ SCL Checker Installation	5
3.1 Install Microsoft x86 Redistributable	7
3.2 Install WinPcap	9
4 Running your first test case	14
4.1 Start your copy of the SimFlex™ SCL Checker.	14
4.2 Configure the network interface.	15
4.3 Configure details about the DUT	16
4.4 Load the data model from the DUT.	18
4.5 Load SCL (*.icd) file that belongs to the DUT.	20
4.6 Select and run your first test case.	22
5 Table of figures.	24
6 Revision history	25

1 Introduction

This SCL Checker is an easy to use tool with advanced capabilities that enables utilities, manufacturers, system integrators and conformance test laboratories to automatically test IEC 61850 enabled devices.

The SimFlex™ SCL Checker comes with an extensive test suite that implements IEC 61850 test cases that can be individually selected and executed. The SCL Checker is easy to use and its intuitive user interface enables to quickly perform tests. The SimFlex™ SCL Checker is a companion of the SimFlex™ Client Simulator.

This makes the SimFlex™ SCL Checker an excellent software solution for the electrical power industry.

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2 Purpose of this guide

This guide's main goal is to help user to get this version up and running for the first time. Some of the users will be familiar with the installation of one or more tools used by this software such as WinPcap. If you are not familiar with those tools we suggest following the instructions in this manual carefully.

This document consists of two main parts:

- 1) *SimFlex™ SCL Checker* Installation
- 2) Running your first test case

After following the instructions you should be able to run some example test cases against a real IEC 61850 server device and its SCL (*.icd) file.

2.1 Trial version limitations

The trial version is valid for 30 days from the date that you install the software. Some of the functionality has been turned off, removed or will give you only limited access.

2.2 System requirements

This version of the SimFlex™ SCL Checker has the following software and hardware requirements:

- Runs on XP SP3 and Windows 7 SP1
- 1GB of RAM or more
- 1 GHz processor or faster
- 250 MB of free hard disk space
- At least one 100 Mbit Network Interface Card

Install the SimFlex™ SCL Checker software with **administrator** rights. For proper functionality the SimFlex™ SCL Checker shall be run with administrator rights.

The license for the SimFlex™ SCL Checker is not supported on virtual machines.

Before installing this SimFlex™ SCL Checker please make sure that you have installed the .NET version 4.0 or better, the Full profile on your computer. Without installing .NET Full Profile the SimFlex™ installation will not run properly.

The latest version of the .NET Full Profile installation file can be downloaded here:

<http://www.microsoft.com/en-us/download/details.aspx?id=17718>

3 SimFlex™ SCL Checker Installation

This section shows you how to install SimFlex™ SCL Checker step by step. For this you need to be logged on with an administrator account. Start the *SetupSCLx.y.exe* program to start the installation (where x.y is the actual version number). The program offers you to install the Visual C++ 2010 runtime libraries.



Figure 1: Select language of the main setup program.

Please select your preferred language and click [**OK**]



Figure 2: SimFlex™ SCL Checker Setup Wizard.

Click [**Next>**] to continue.



Figure 3 The SimFlex™ SCL Checker EULA

Read and accept the End-User License Agreement. Click [**Next>**] to continue.

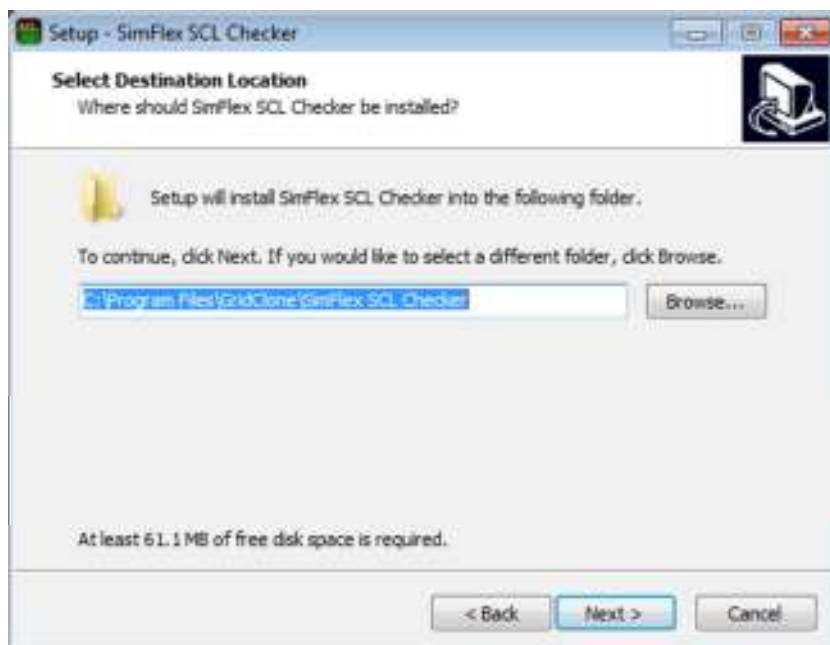


Figure 4 Select the preferred installation folder

If you want to install the SimFlex™ SCL Checker in a different location (not recommended) please specify the location. Click [**Next>**] to continue.

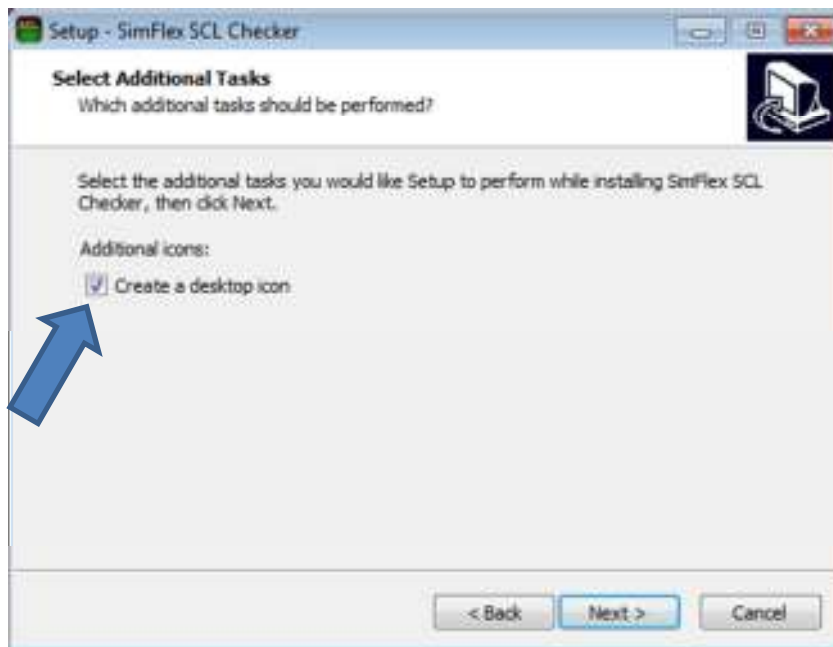


Figure 5 Select whether or not to create a desktop icon

Click [**Next>**] and after that click [**Install**] to start the installation the SimFlex™ SCL Checker and related software tools.

3.1 Install Microsoft x86 Redistributable

In case the Microsoft Visual C++ 2010 x86 Redistributable package is not installed on your PC, you will see the following installation screens. Please follow the instructions on the screen.

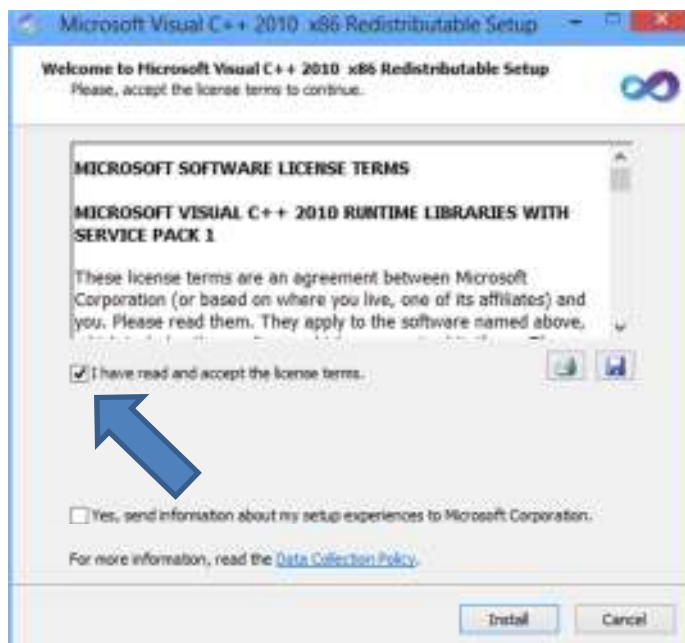


Figure 6: Installation of Microsoft Runtime libraries.

Please tick off “I have read and accept the license terms” and after that click [**Install**] to continue.

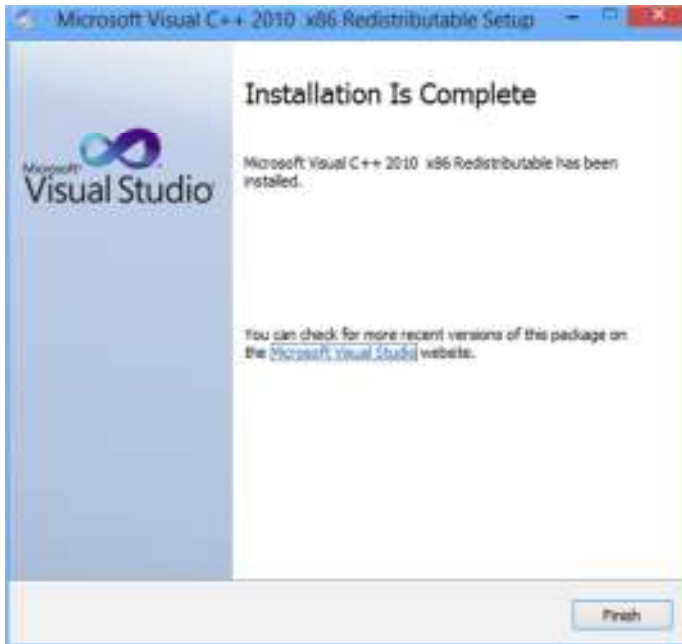


Figure 7: Installation of Microsoft Runtime libraries is complete.

Please click [**Finish**] to continue.

3.2 Install WinPcap

The SimFlex™ SCL Checker uses features that are made available by WinPcap. Therefore these drivers need to be installed. Windows 7 and/or Windows 8 users might see the following screen during the installation process (see Figure 8).

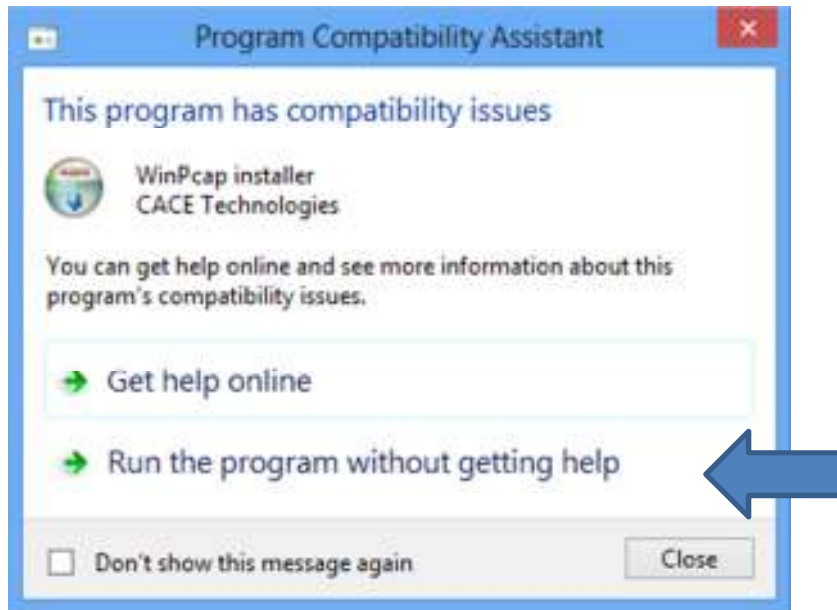


Figure 8: Program Compatibility Assistant.

Please click “Run the program without getting help”. The WinPcap drivers will be installed.

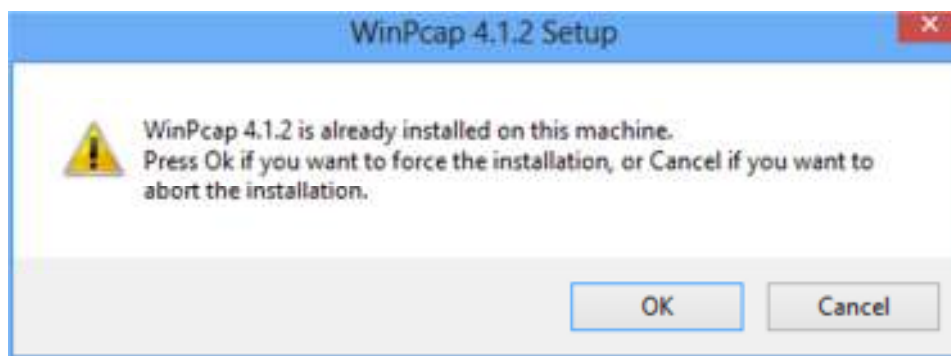


Figure 9: WinPcap already installed.

If you have already installed the WinPcap on your computer then the message in Figure 9 could appear. You can force a re-installation (click [**OK**]), but you can also cancel the installation (click [**Cancel**]).

In case WinPcap is not installed on your computer, yet, you will see a screen like in Figure 10.



Figure 10: WinPcap main setup screen.

Click [**Next**] to continue.



Figure 11: WinPcap setup.

Click [**Next**] to continue.



Figure 12: WinPcap License Agreement.

Click "I agree" to continue.

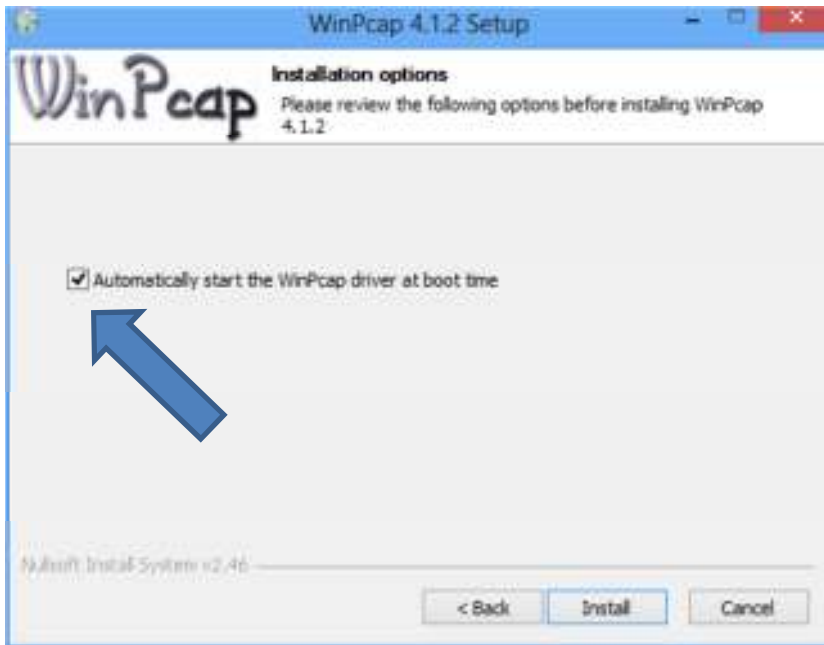


Figure 13: WinPcap installation options.

Make sure that the “Automatically start the WinPcap driver at boot time” is checked and after that click [**Install**] to continue.

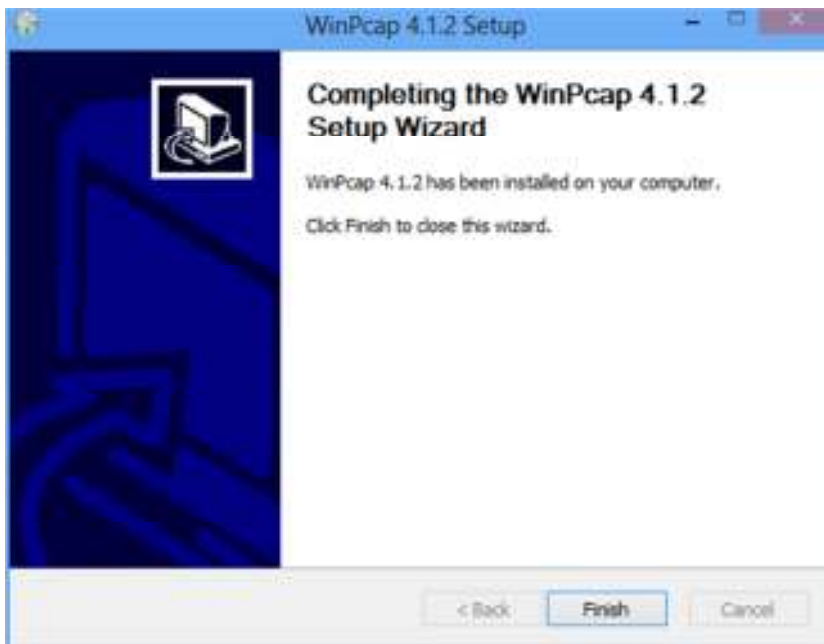


Figure 14: Completing the WinPcap Setup Wizard.

Click [**Finish**] to finalize the WinPcap installation.



Figure 15: Completing the SimFlex™ SCL Checker Setup Wizard.

This completes the installation procedure for the SimFlex™ SCL Checker version. Click [**Finish**] to close the window and start the application

4 Running your first test case

Running your first test involves several steps. Some of these steps are needed only once, the information from it is stored in the configurations database.

Steps involved:

- Start your copy of the SimFlex™ SCL Checker.
- Configure the network interface (once only).
- Configure details about the DUT (Device Under Test) (once only).
- Load the data model from the DUT.
- Load SCL (*.icd) file that belongs to the DUT.
- Select and run your first test.

4.1 Start your copy of the SimFlex™ SCL Checker.

Locate the SimFlex™ SCL Checker icon on your desk top or in your Start menu and click on it and the main screen will open for you.

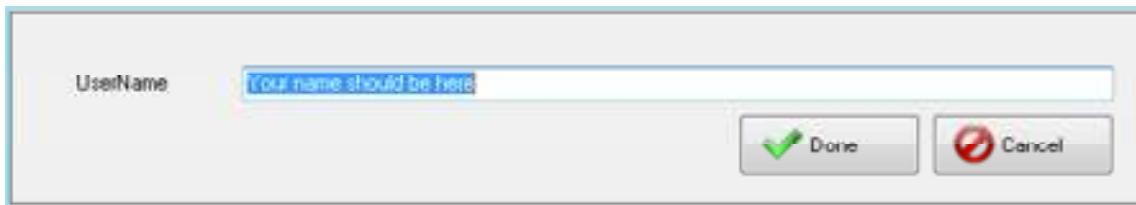


The Desktop Icon on top, right, the menu icon left of it and the main screen below.



Figure 16 SimFlex™ SCL Checker links

When the program starts you are asked to confirm the name of test engineer logged on at this moment.



The screenshot shows a dialog box with a text input field labeled 'UserName' containing the placeholder text 'Your name should be here'. To the right of the input field are two buttons: 'Done' with a green checkmark icon and 'Cancel' with a red 'X' icon.

Figure 17 Log on procedure.

Your user name should be filled in by default but you can correct it if needed. Press [**Done**] when ready.

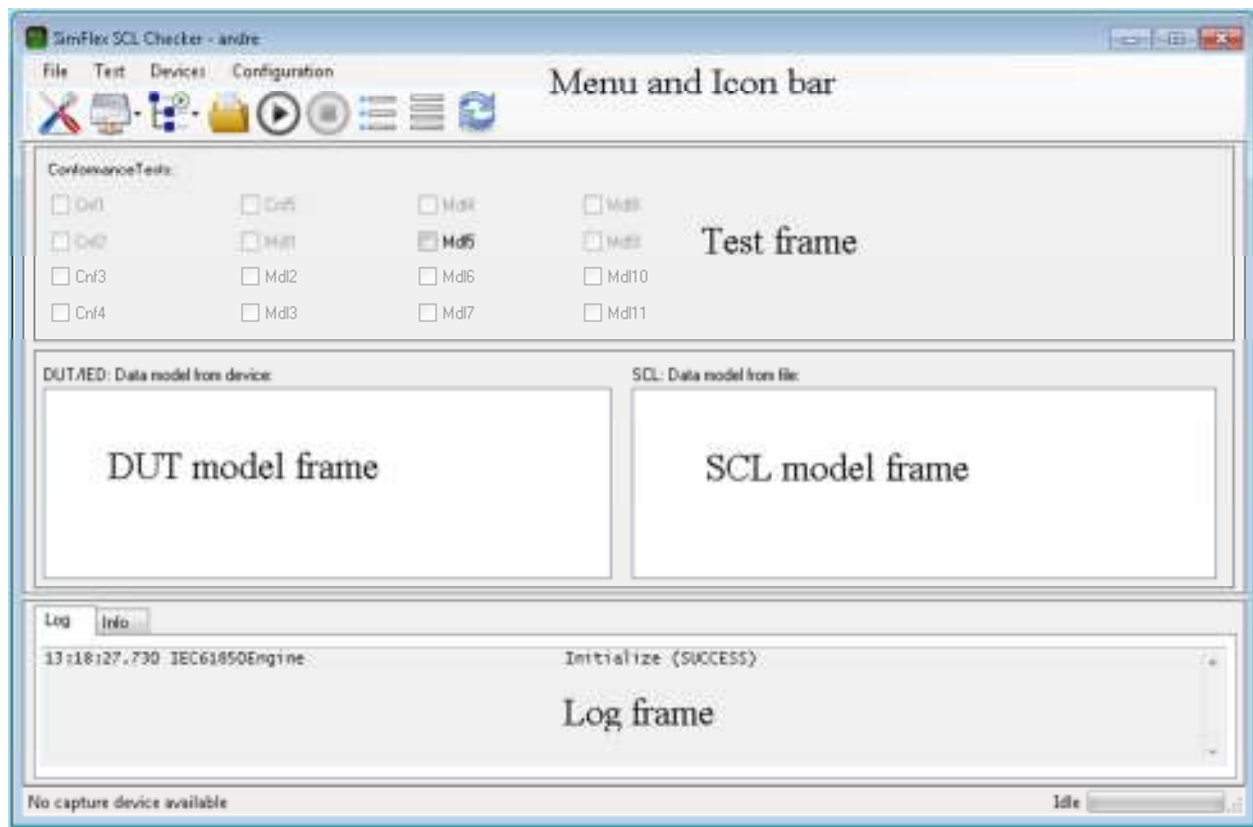


Figure 18: SimFlex™ SCL Checker Main screen.

4.2 Configure the network interface.

The next thing to do is to configure your copy of the SimFlex™ SCL Checker to use the correct IP information for the DUT.



Click on the Configuration Icon (shown left) in the icon bar and select the [**General**] tab in the opening form (shown in Figure 19).

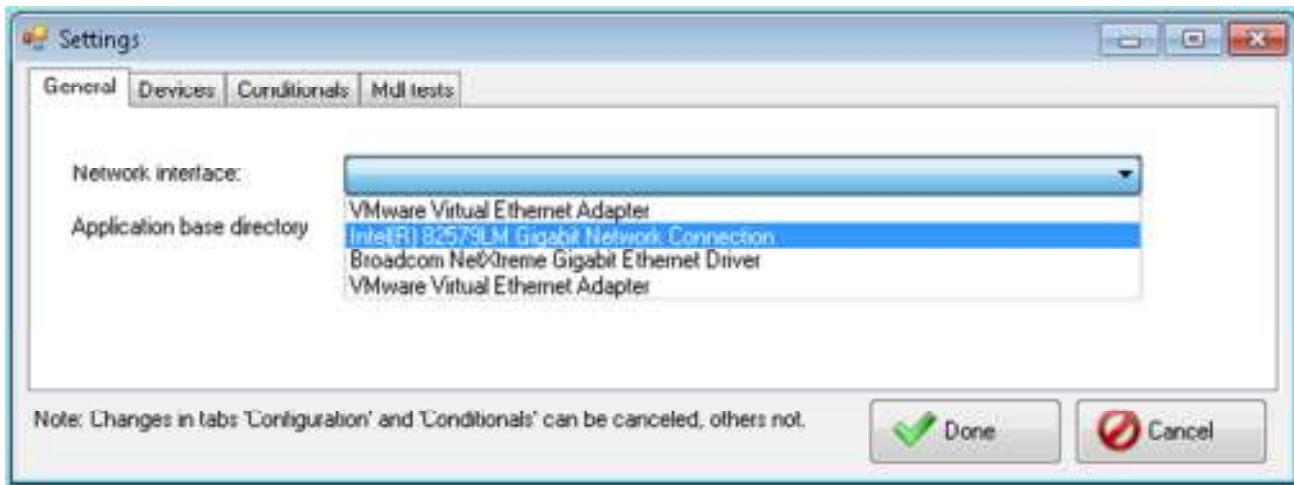


Figure 19: NIC (Network Interface Card) configuration options.

Select the network interface that you want to use for communication with the DUT (Device Under Test). Press the [**Done**] button when ready.

4.3 Configure details about the DUT

This needs to be done only once per model. Use the **Devices** → **Add Device** menu entry to open the device form. You can also use the [**Device**] → **Add Device** icon for that.

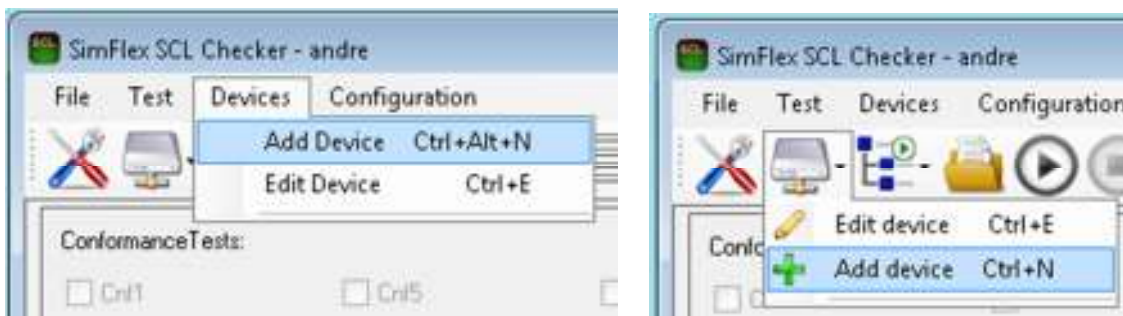


Figure 20: Open Device Configuration.

Getting Started

The device form shows all the details, only a few are needed.

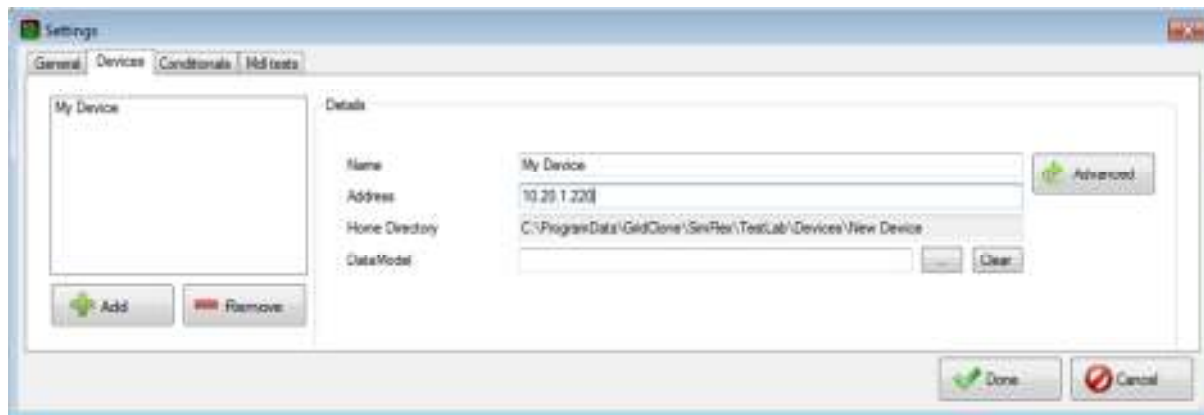


Figure 21: Device configuration.

Fill in a device name, that name will be used to identify the device in the list on the left side. Fill in the known IP number for the device.

For a first run there is no need to configure the [**Advanced**] details about a device, you can do that later.

If you have more than one device that you want to test, use the [**Add**] button. If you want to remove devices, use the [**Remove**] button.

Click [**Done**] when ready. The log frame might show some activities (checking the DUT).

After all details are filled in you can select one via the **Devices** menu or the [**Device**] icon.

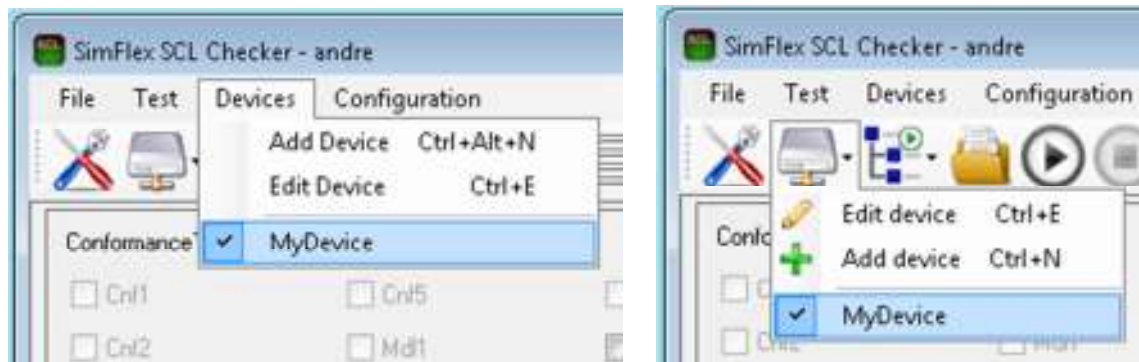


Figure 22: Select a device

Getting Started

You can see which device is selected at the right side of the screen, in the data model frame.

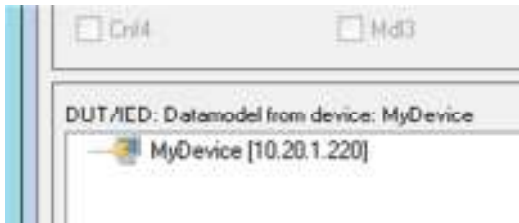


Figure 23: Which device is selected?

4.4 Load the data model from the DUT.

Once you have configured and selected your device in SimFlex™ SCL Checker you can connect to it and let the program build a data model for it. This data model will become available to you in the data model frame. While building the data model the log frame at the bottom will inform you about the progress.

Use the [**Data model**] → **Build Datamodel** icon to start a build, there is no menu item to start this.

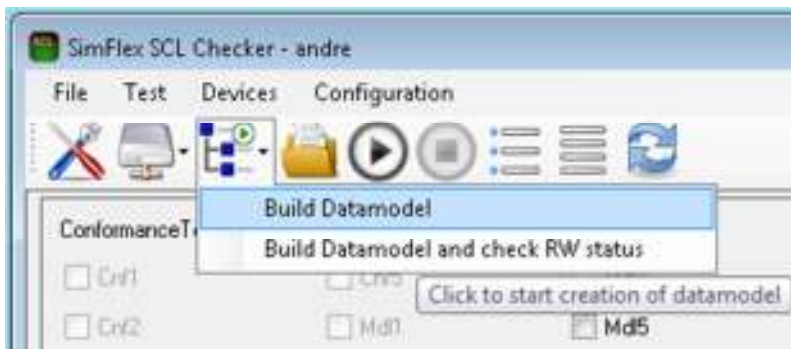


Figure 24: Build a data model (via icon)

You can also right-click on the data model frame and select [**Build data model**] in the popup window.

Getting Started

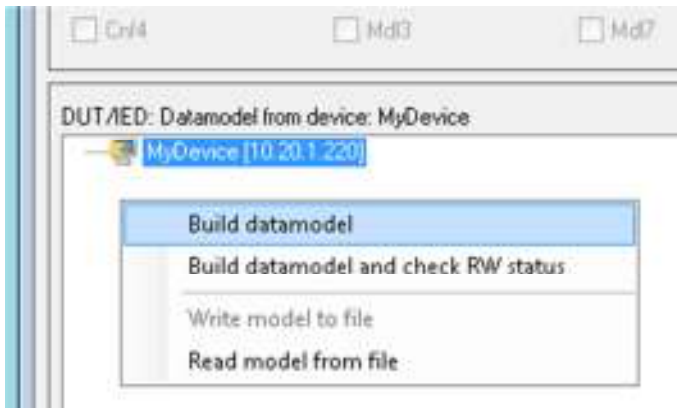


Figure 25: Build a data model (via right-click)

After building the model you should see a model icon in the data model frame, indicating that some information about the model is available.

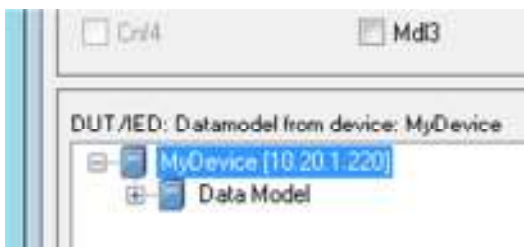


Figure 26: A built data model.

In the log frame you should see a list of lines about communication results. If the last line reads 'Release (SUCCESS)' and you see no error messages you were successful in building a data model.

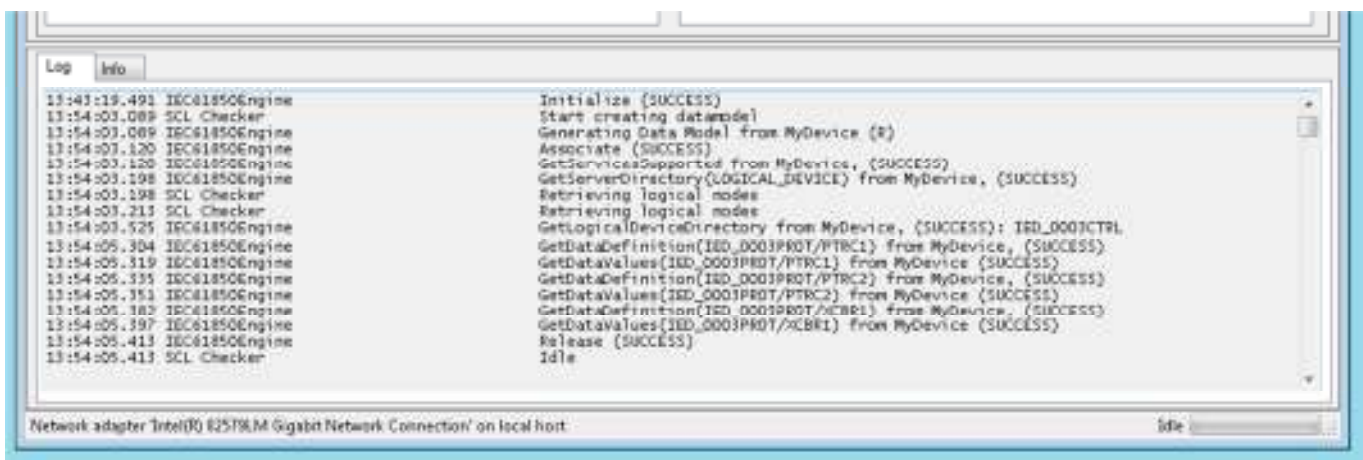


Figure 27: Log for building a data model

Feel free to open the data model and have a look on what kind of information is available.

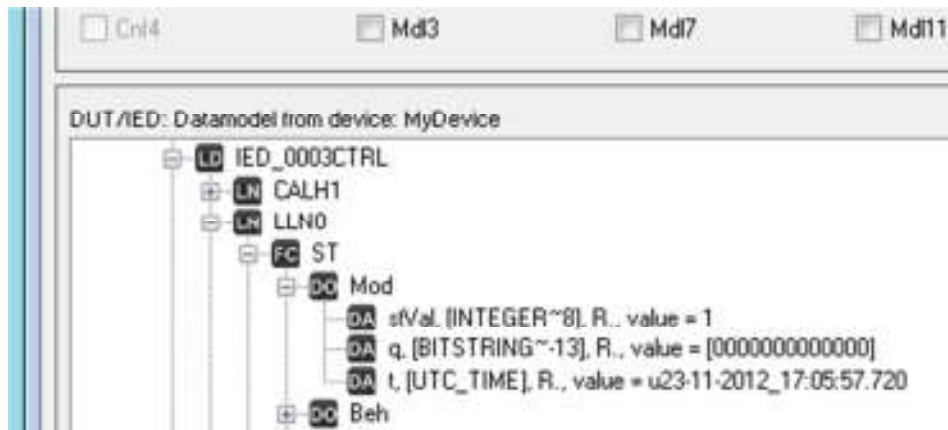


Figure 28: A data model

4.5 Load SCL (*.icd) file that belongs to the DUT.

Most of the validation by the SimFlex™ SCL Checker is not done with the DUT but with the SCL (*.icd) file describing the DUT. This file must be loaded as well. Use the [**Open configuration file**] icon or right-click on the SCL model frame and select [**Build data model**] to start loading it.

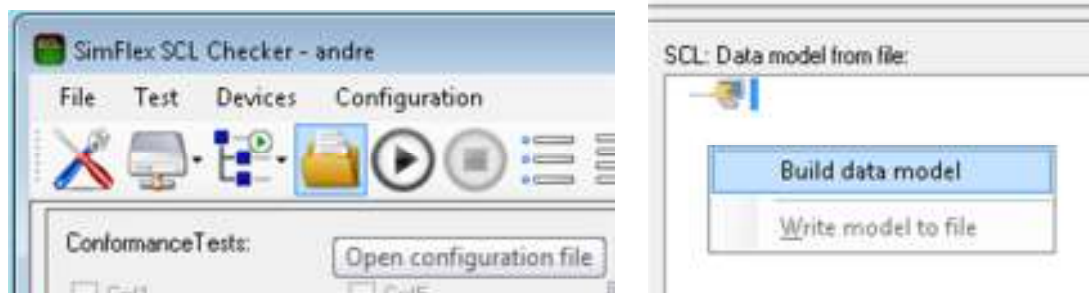


Figure 29: Open Test Suite.

A file selector window will open to enable you to select the correct SCL (*.icd) file.

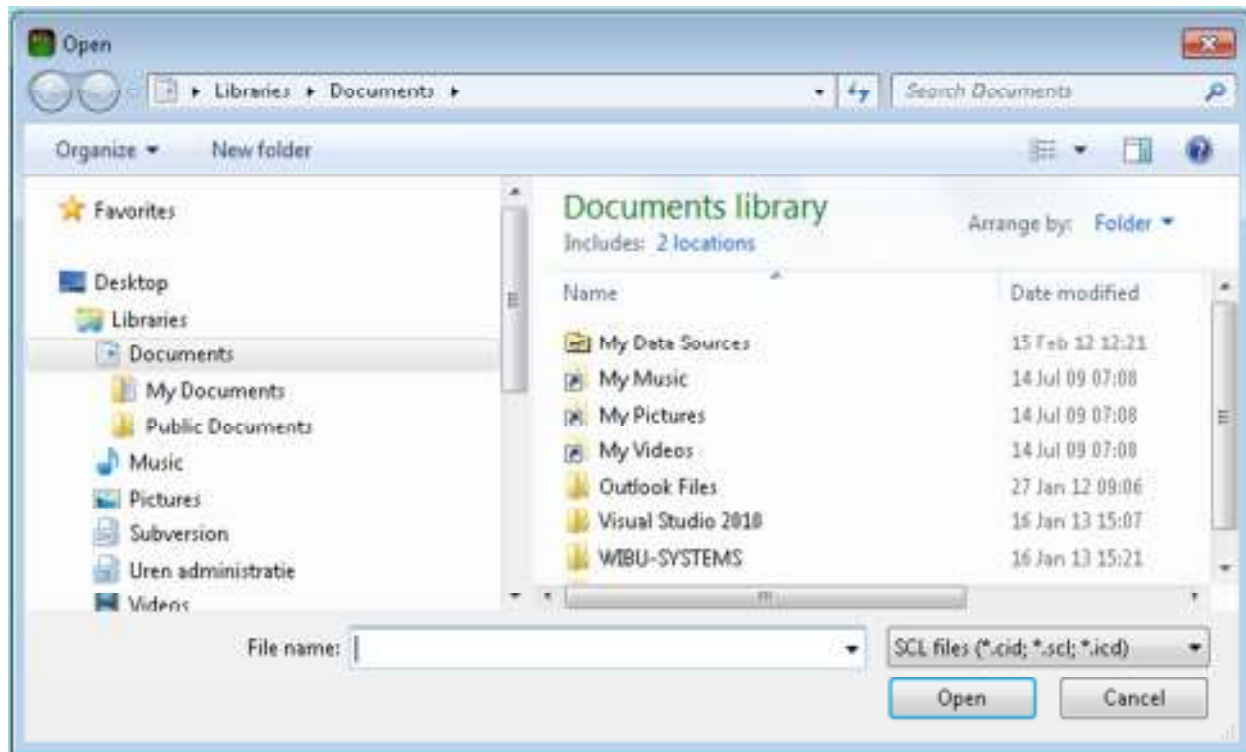


Figure 30 File selector window

Select the correct SCL (*.icd) file and click [**Open**].

When the file is loaded the data model from it will be available in the SCL model frame.

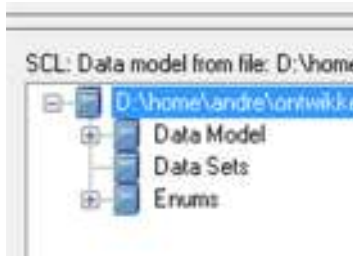


Figure 31 SCL data model

4.6 Select and run your first test case.



Figure 32 A selected test case

When both DUT model and SCL model are loaded all tests are enabled. Select Cnf2 as the first one to run (Cnf1 is a 'formal' test, already failing when the SCL file cannot be loaded.) You are now ready to run the Cnf2 test. Do so by clicking on the **[Run]** icon (See picture below, left side.)



Figure 33: Start and stop a test.

Push the button and the test starts. Some things to notice are:

- The **[Run]** icon is now disabled.
- A lot of activities in the log frame at the bottom.

After a normal run the **[Run]** icon is enabled again and the test is marked as 'Passed' (green tag), 'Inconclusive' (blue question mark) or 'Failed' (red cross).

Getting Started

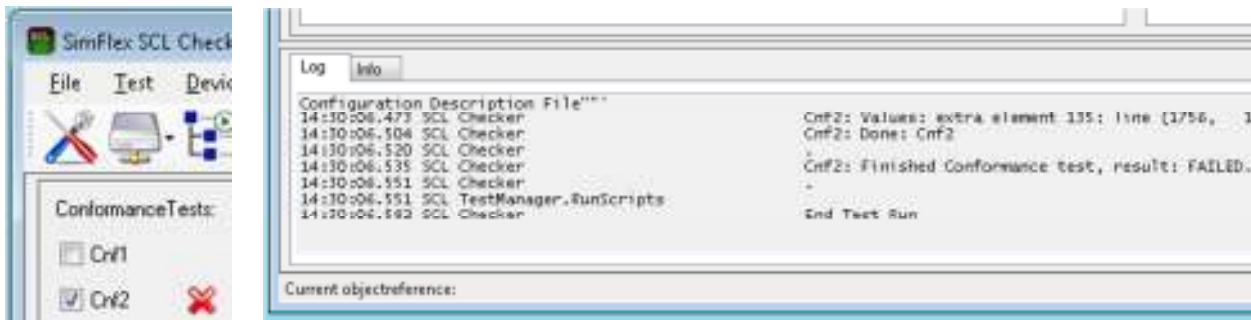


Figure 34: Negative test result

Inspect the log for the exact reason(s) of failing.

5 Table of figures.

Figure 1: Select language of the main setup program.....	5
Figure 2: SimFlex™ SCL Checker Setup Wizard.....	5
Figure 3 The SimFlex™ SCL Checker EULA.....	6
Figure 4 Select the preferred installation folder.....	6
Figure 5 Select whether or not to create a desktop icon	7
Figure 6: Installation of Microsoft Runtime libraries.....	8
Figure 7: Installation of Microsoft Runtime libraries is complete.....	8
Figure 8: Program Compatibility Assistant.....	9
Figure 9: WinPcap already installed.	9
Figure 10: WinPcap main setup screen.	10
Figure 11: WinPcap setup.	11
Figure 12: WinPcap License Agreement.....	11
Figure 13: WinPcap installation options.	12
Figure 14: Completing the WinPcap Setup Wizard.	12
Figure 15: Completing the SimFlex™ SCL Checker Setup Wizard.....	13
Figure 16 SimFlex™ SCL Checker links.....	14
Figure 17 Log on procedure.	14
Figure 18: SimFlex™ SCL Checker Main screen.....	15
Figure 19: NIC (Network Interface Card) configuration options.....	16
Figure 20: Open Device Configuration.....	16
Figure 21: Device configuration.	17
Figure 22: Select a device	17
Figure 23: Which device is selected?	18
Figure 24: Build a data model (via icon).....	18
Figure 25: Build a data model (via right-click).....	19
Figure 26: A built data model.....	19
Figure 27: Log for building a data model.....	19
Figure 28: A data model	20
Figure 29: Open Test Suite.....	20
Figure 30 File selector window	21
Figure 31 SCL data model.....	21

Figure 32 A selected test case22
 Figure 33: Start and stop a test.22
 Figure 34: Negative test result.....23

6 Revision history

Version	Date	By	Subject
1.0	January 1, 2013	EM	Initial version
1.1	January 27, 2013	EM	Reworked the whole document.
1.2	March 25, 2013	EM	Changes in system requirements