

SimFlex™




IEC 61850 SCL Checker

The power of simulators

With the introduction of IEC 61850 new system designs are enabled that allow creating a fully digital substation. In such a substation, systems components will exchange information based on serial communication networks using Ethernet. Testing integrated systems however requires serious consideration. How to verify the correct implementation of a function if it uses multiple IEDs communicating over a network? How to test it in the factory but also in service? The answer is simple with the simulators and support tools provided by GridClone!

The SimFlex™ family of simulators and tools

Simulation of IEC 61850 based systems and components require different simulators and tools. GridClone provides these tools in three categories:

-  PC based simulators
-  Embedded Simulators
-  Supporting tools



SimFlex™ SCL Checker

The SCL checker is a tool that checks SCL files on conformance to the IEC 61850 SCL schema and performs many tests on the contents of the SCL file. Very often SCL files are not correct or incomplete and this causes time consuming verification and correction. The SimFlex™ SCL Checker enables utilities, manufacturers, system integrators and conformance test laboratories to automatically verify SCL files. The SimFlex™ SCL Checker comes with an extensive test suite that implements all IEC 61850 conformance test cases that can be individually selected and executed. The SCL Checker performs the tests automatically in a matter of seconds that could normally take hours of manual labour.

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



Our experience moves you forward >>>

SimFlex™ SCL Checker

Benefits

- Fast and accurate automated verification of SCL files including data and services of IEDs
- Reduction of IEC 61850 design and configuration problems during product development, system integration, commissioning and FAT
- Higher success rate in IEC 61850 device certification
- Easy to learn user interface
- Simple configuration

Applications

The SCL Checker has a wide range of applications:

- SCL verification during IEC 61850 device development, system design and integration, configuration and FAT
- IEC 61850 conformance testing
- IED product development
- Preparation for UCA© International Users Group based IED certification
- Interoperability testing

The SimFlex™ SCL Checker has been designed to perform tests on IEC 61850 SCL files and server devices. The SCL checker has an easy to use interface that presents several views.

Tool Bar

The SimFlex™ SCL Checker provides a flexible user interface for IEC 61850 testing. Many of the features of the program are available through an intuitive tool bar. Some of the accessible features are setting up program parameters, add IEDs to be inspected, retrieve the IED's data model, load SCL files and start and stop test cases.



Test Case Selection

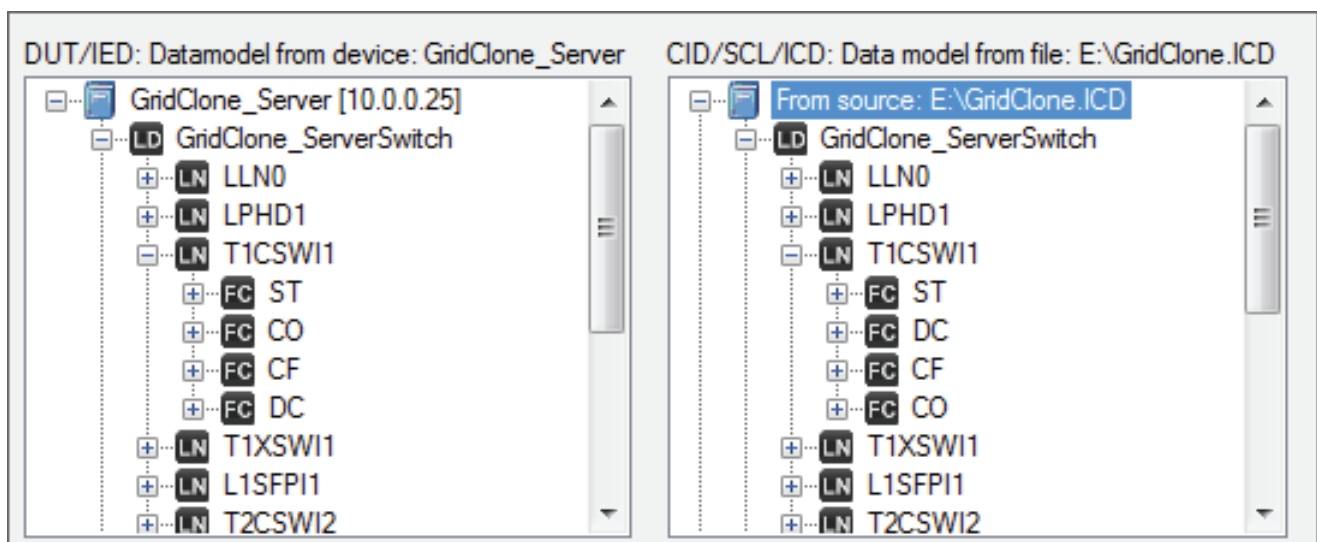
On the main screen the user can make a selection of test cases by placing a check mark next to the test case name. The Toolbar also provides the possibility to select or unselect all test cases at once. After the selection of test cases has been made the user can start executing them by pressing the 'play' button on the Toolbar. The SCL checker shows the test progress and intermediate results in the Logging view and the final results are shown directly next to the test case name. This provides the user a quick overview of the test results.



Data Models

The SCL Checker provides two views of the data model of the tested IED. One data model is retrieved from the server by requesting the information from the device through IEC 61850 services. The other data model is retrieved from the SCL file that was used to configure the device (typically *.cid). Both data models are shown as a hierarchical tree and contain the entire data models and configured data sets. The data model from the IED also shows the data types and the actual values of data attributes. The view representing the SCL file shows the data types and the pre-defined values as well as the defined enumerations in the SCL file.

Both views are fully browsable and provide the user a clear overview of the data models.



SCL Checker

Logging

In this view the user can follow the execution of the test cases. Log messages from the test sequence as well as messages from the test engine are shown. The SimFlex™ SCL Checker shows the results of the SCL test cases and informs the user in case of problems in the SCL file and in the exposed data and services by the IED. This makes it very easy for the user to localize and fix problems in the SCL and the IED.

```
Log Info
10:08:31.196 SCL TestManager Cnf2: Start Conformance test.
10:08:31.229 SCL TestManager .
10:08:31.236 SCL TestManager Cnf2: Check Object reference: Names
10:08:31.276 SCL TestManager Cnf2: Names: No extra elements in ICD file (OK).
10:08:31.312 SCL TestManager .
10:08:31.316 SCL TestManager Cnf2: Names: Found 1 element(s) in IED model which are not available in ICD file (OK)
10:08:31.352 SCL TestManager Cnf2: Names: extra element 1: 'ObjectReference="GridClone_ServerMeter/MMXU1$SP$PFSign$setVal"'
10:08:31.366 SCL TestManager .
10:08:31.371 SCL TestManager Cnf2: Check Object reference: Types
10:08:31.422 SCL TestManager .
10:08:31.427 SCL TestManager Cnf2: Types: Found 633 element(s) in ICD file which are not available in IED model (test failing)
10:08:31.430 SCL TestManager Cnf2: See SimFlexError.log for details.
10:08:31.552 SCL TestManager .
10:08:31.556 SCL TestManager Cnf2: Types: Found 634 element(s) in IED model which are not available in ICD file (OK)
10:08:31.560 SCL TestManager Cnf2: See SimFlexError.log for details.]
```

Key Features

The SimFlex™ SCL Checker is designed to be a easy to use tool for the verification of IEC 61850 SCL files. Key features of the SimFlex™ SCL Checker include:

- Executes the UCA International Users Group test procedures based on IEC 61850-10
- Verifies that the SCL files are well-formed and according to the schema defined in IEC 61850-6
- Compares SCL contents and exposed data and services by IEDs
- Verifies the presence and order of data according the IEC 61850-7-3/4
- Graphical view of the SCL file and the IED data model
- Logging of test progress and test results in human-readable text format
- Automatic and repetitive verification of SCL files
- Fast localization of SCL errors
- Testing of remote IEDs over the Internet

 **GridClone**
Impact 5K
6921 RZ Duiven
The Netherlands
info@gridclone.com
T: +31-26-3193110

Visit our website: www.gridclone.com