SimFlex™

IEC 61850 Client Simulator

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™ Client Simulator

This Client Simulator 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™ Client simulator comes with an extensive test suite that implements IEC 61850 test cases that can be individually selected and executed. The Client simulator enables users to create new and combine existing test cases to perform complex test scenarios. The simulator is easy to use and its intuitive user interface enables to quickly perform tests.

This makes the SimFlex™ Client Simulator an excellent software solution for the electrical power industry.

GridClone

Our experience moves you forward ➤➤➤

SimFlex™ Client Simulator

Benefits

- Fast and flexible automated testing of System and IED behavior
- Verification of IEC 61850 implementations
- Easy setup of a conformance test laboratory
- Generation and capturing of standard network traffic that can be stored in files

Applications

The Client Simulator has a wide range of applications:

- IEC 61850 conformance testing
- Functional testing of IEDs and systems
- IED product development
- GOOSE publishing
- Network traffic generation
- Preparation for UCA© International Users Group based IED certification

The SimFlex™ Client Simulator has been designed to perform tests on IEC 61850 server devices. The simulator has an easy to use interface that presents several views.
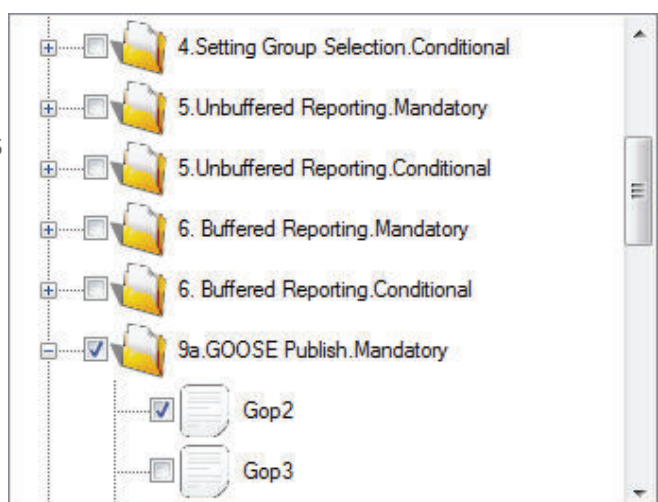
Tool Bar

The SimFlex™ Client Simulator provides a flexible user interface for IEC 61850 testing. Many of the features of the program are available through an intuitive tool bar.
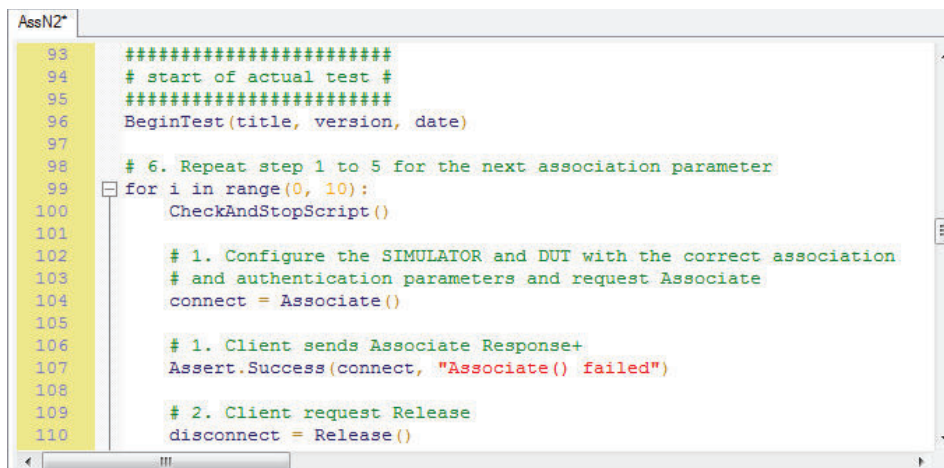

Test Suite

The core of the simulator is an engine that executes predefined and user defined test definitions. These definitions are located in groups that, together, form a test suite. The test suite is represented as a hierachical tree and offers functionality to add, rename and delete groups and test scripts. Each group and test script can be enabled separately, which makes it possible to execute any combination of groups and test scripts. To facilitate its use the SimFlex™ Client Simulator comes with a complete test suite that implements the UCA© International Users Group detailed test procedures for server devices.
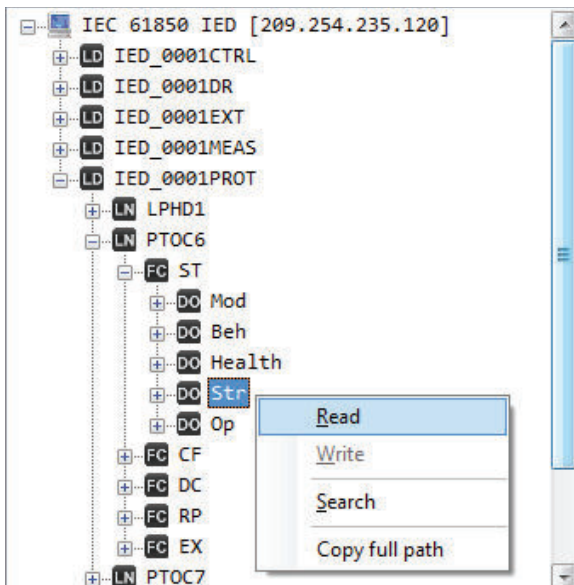
Script Editor

The SimFlex™ Client Simulator has a built-in editor for creating test definitions to be executed. The interface provides many of the defined services in IEC 61850-7-2 to be called from within the test sequence. The response from the called services can be checked and the flow of the test scripts can be logged in the Logging View. With a simple command the user can start and stop network capturing and store the communication in a PCAP file format. It is also possible to define and show message boxes when user-input is required in the script.

Test Sessions

Testing of IEDs and systems requires that test results can be stored orderly. Especially for IEC 61850 Conformance Test Laboratories it is important that test information and results are kept together and stored safely. The SimFlex™ Client Simulator provides Test Sessions that enable the user to create a specific environment for the device or system under test where all necessary information and test results are stored. This makes it possible to organize the results and easily analyse test results at a later stage.

Data Model

One of the functions in the SimFlex™ Client Simulator is the retrieval of the complete data model from an IEC 61850 server device.

The data model is presented in a tree-view that shows the Logical Devices, Logical Nodes, Data, Functional Constraints and Data Attributes. One each level the data can be read and write-enabled data attributes can be written. This enables the user to get a clear view on the structure, data type and values of the entire data model of the server device.

SimFlex™ Client Simulator

Logging

In this view the user can follow the execution of the tests. Log messages from the test sequence as well as messages from the test engine are shown.The SimFlex™ Client Simulator automatically shows the response and retuned values of called IEC 61850 services. This makes it very easy for the user to monitor test execution.

Key Features

The SimFlex™ Client Simulator is designed to be a versatile simulator for IEC 61850 devices and systems. Key features of the SimFlex™ Client Simulator include:

- Executes the UCA International Users Group detailed test procedures based on IEC 61850-10
- Design and execute any test case through a flexible interface
- Logging of test progress and test results in human-readable format
- Capture network traffic in PCAP format that can be read by free tools like Wireshark
- Advanced GOOSE engine enables publishing GOOSE messages, including faulty ones for negative testing
- Enhanced test case editor with syntax highlighting
- Visual representation of and interaction with server's data models

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