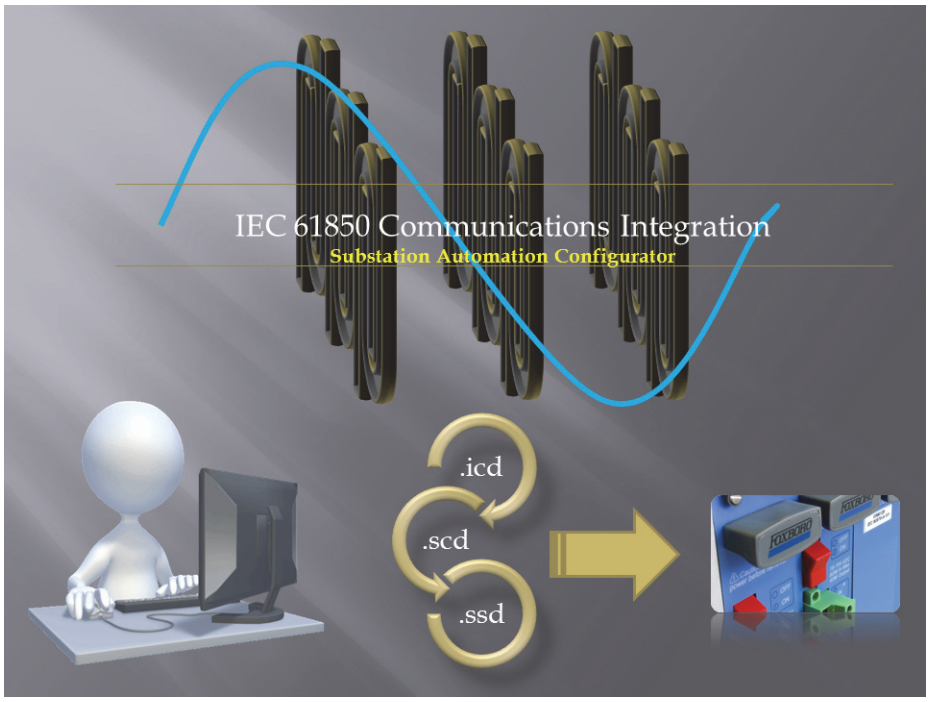
Foxboro Evo™ Process Automation System

Product Specifications

Foxboro by Schneider Electric

PSS 31S-10G4

Foxboro Evo™ Substation Automation Configuration (SAC)



OVERVIEW

Foxboro Evo™ Substation Automation Configuration (SAC) software is an add-on module for the ArchestrA® Integrated Development Environment (IDE). It provides an integrated solution for easier creation and configuration of devices and substations that comply with the IEC 61850 standards of the International Electrochemical Commission.

When used in substations, the IEC 61850 standard allows development of multi-functional Intelligent Electronic Devices (IEDs) for substation protection, monitoring, and control systems. IEC 61850 has an XML-based Substation Configuration Language (SCL) for IED communications and configuration, but creating and configuring the required files in XML can be tedious and is prone to errors.

With the SAC software, system engineers can use the ArchestrA IDE to build substation topologies and configure IEC 61850 devices. SAC enables system engineers to design, configure, and maintain an IEC 61850 IED configuration by providing the ability to:

- Design an IED Capability Description (ICD) file
- Customize the ICD file with parameters to suit specific needs and produce the Configured IED Description (CID) file
- Create the Substation Configuration Description (SCD) file that describes the IEDs deployed in a substation
- Generate the System Specification Description

(SSD) file containing the SLD of the system

The SAC software is available in two forms:

- Basic: To configure the IEC 61850 devices
- Advanced: To configure the IEC 61850 devices and substations. The substations are configured using SLDs and require Microsoft Visio® 2007.

You need different licenses from Buy Automation for these two products.

FEATURES

- Windows-based GUI for user-friendly data entry and editing
- User-friendly navigation with drop-down/pop-up menus, tree-type functional display, and intuitive techniques such as copy/paste and drag and drop
- Efficiently converts a CID file created by other tools to an ICD file
- Easy IED configuration of Services, Data Object Instances (DOI), Generic Object Oriented Substation Events (GOOSE), Generic Substation Status Events (GSSE), Report Control Blocks, Datasets, Logical Devices, Logical Nodes, and Data Types
- Ability to design an ICD file that represents the Foxboro Evo Remote Terminal Unit (RTU) as a IEC 61850 server device, providing an intelligent tool for mapping RTU points to data object attributes in the logical node
- Visual configuration tool that helps engineers compose SLDs of substations. The Single Line Diagram (SLD) file, which is compatible with Microsoft Visio® 2007, can be exported as an SSD file or extracted from the SCD or SSD file
- Produces standard ICD, CID, and SCD files. The SCD file can be uploaded to the Foxboro Evo RTU Station to create the Foxboro Evo SCD5200 configuration file

FUNCTIONAL DESCRIPTION

The SAC software is an add-on module for ArchestrA IDE created to allow process operators and engineers to configure devices and substations that comply with the IEC 61850 standards.

The Substation Automation Configuration Software CD includes:

- IEC 61850 Device Application Object Package
- IEC 61850 Substation Application Object Package
- Substation Automation Configuration License Manager

The SAC is easy to install and the installation process starts automatically when you insert the CD.

Main Screen

The main ArchestrA IDE screen has a menu bar with drop-down menus and a tool bar at the top. A status bar at the bottom displays the user and database details. See Figure 2.

The main screen is divided into left and right panes.

- The upper left pane contains the Template Toolbox and Graphic Toolbox and displays a hierarchical tree view of the object templates. The Template Toolbox, selected by default, contains the SAC tool set with the two application object templates:
  - $IEC_61850_Device
  - $IEC_61850_Substation
- The lower left pane, containing the Model, Deployment, and Derivation views displays the hierarchical tree view of the objects.
- The right panel displays the editor window for configuring the selected items.

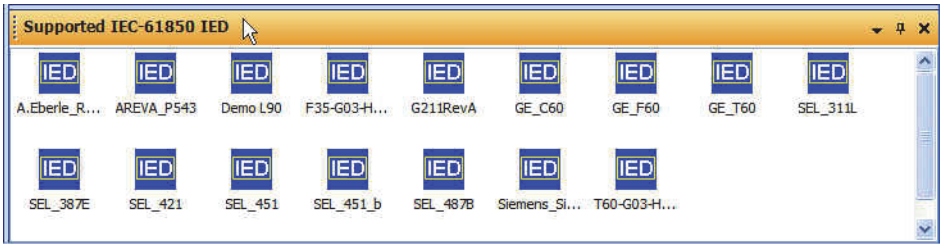


Figure 1. ICD File Management

Managing ICD Files

You can simply register the ICD files to use them for configuring IEDs. Therefore, the number of ICD files available from various vendors increases along with the variety of IED models used in the substation.

The SAC software manages the large collection of ICD files at a central location. You can view all the available ICD files in the Supported IEC-61850 IED window. When selected from the ArchestrA IDE **View** menu, this window panel is displayed at the bottom of the right pane. See Figure 1.

Configuring IEC 61850 Devices

The parameters that you can configure for an IEC 61850 device are defined by the ICD file supplied by the device manufacturer. You can edit an ICD file or define a new model using the XML Editor.

After assigning an IED model to the device, you can configure or view its parameters using the tabs on the editor window. Figure 2 shows a typical configuration session of the IEC 61850 device instance.

Depending on the IED model, you can configure IED parameters such as enable or disable services, networking addresses, GOOSE/GSSE, reports, datasets, and initial values of the IED data objects.

Configuring IEC 61850 Substations

You can configure a substation object and assign an IED to the substation using the drag and drop method in either the Model or Deployment view.

After generating the SCD file, you can create an SLD for the substation on the Composer tab if you have Visio on your system. The top left pane on the Composer tab shows the functional structure of a substation in a tree view. The bottom left pane shows a list view of the attributes of the selected component. The right pane shows the SLD representing the substation topology and contains a tool bar at the top. The SLD looks similar to an MS Visio file.

Figure 3 shows a typical configuration session of the IEC 61850 substation instance.

The substation composer:

- Guides in building the hierarchy of a substation with simple menus and quick visual compositions
- Automatically creates shapes in the SLD for components that are added in the tree view
- Accepts only valid changes to the SLD and does not recognize any invalid adjustments
- Displays a simple window to customize the parameters of the substation components

- Provides an easy and automated way to configure the attributes of the substation component's Logical Node (LNode)
- Allows you to check the validity of the LNode from the context menu in the top right pane of the Composer tab
- Allows you to export the SLD to a Visio or SSD file
- Allows you to import the SLD from an SSD or SCD file to save time.

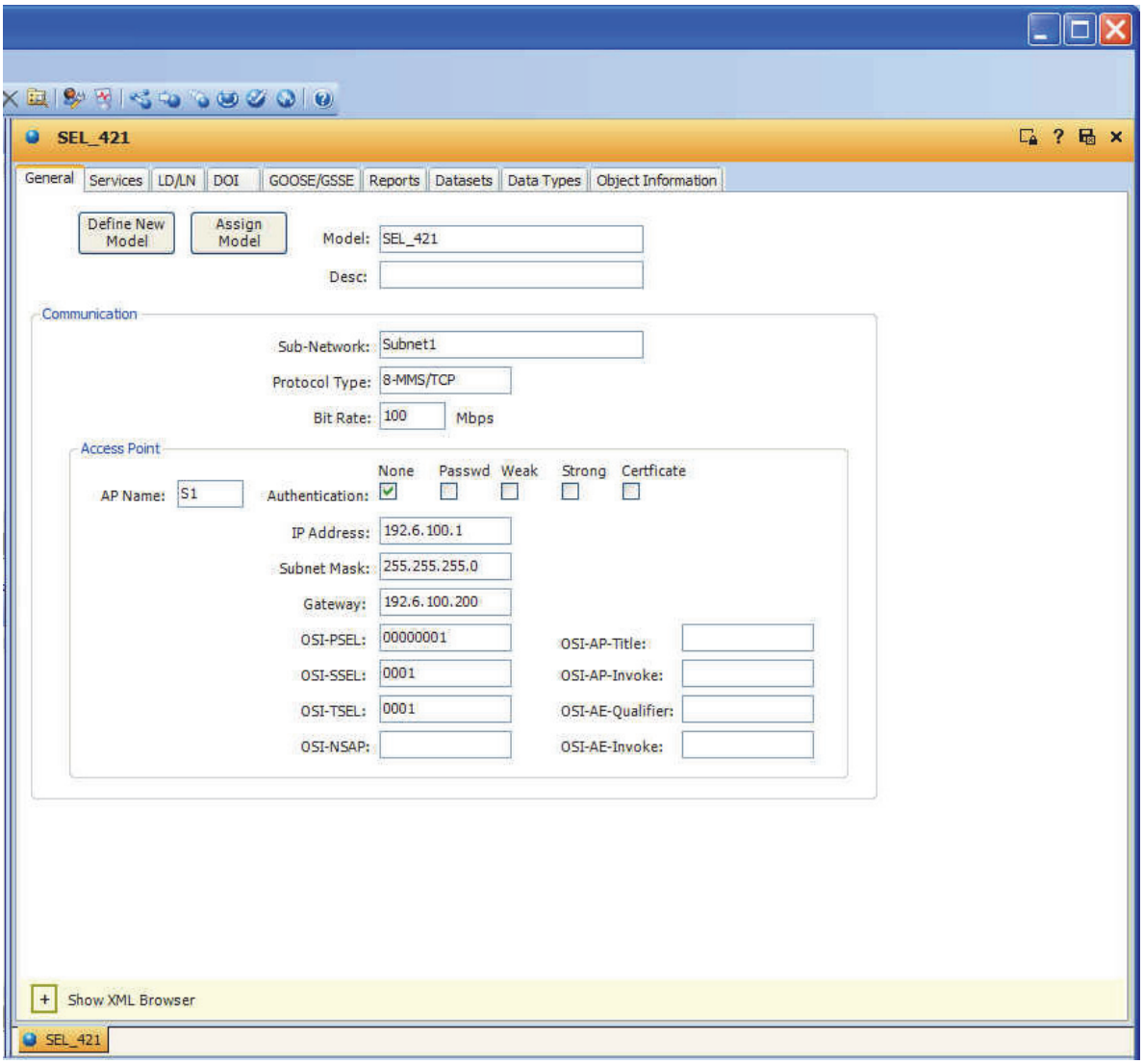


Figure 2. Configuring an IEC 61850 Device

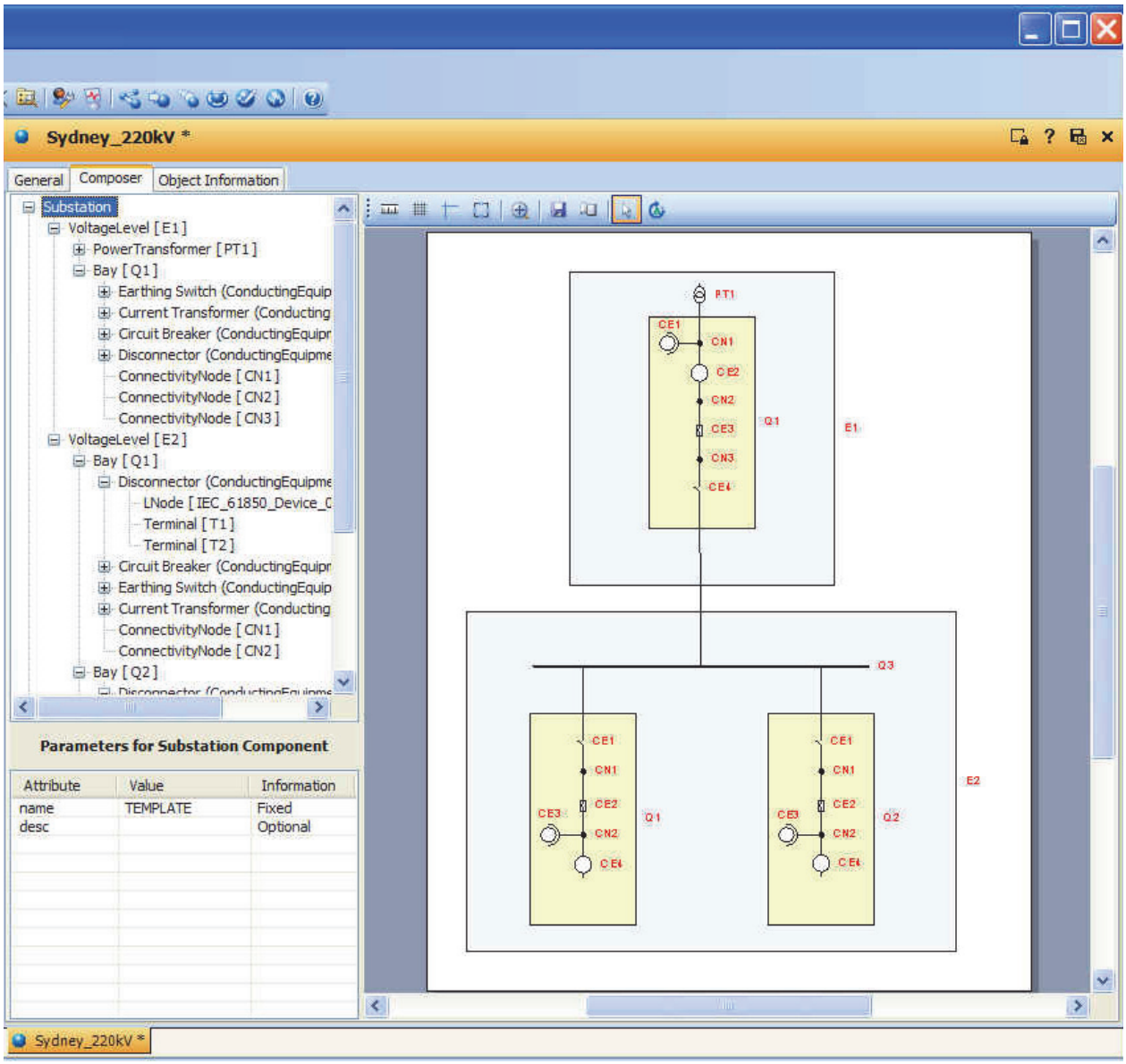


Figure 3. IEC 61850 Substation Configuration

File Names and Types

The files used or generated by ArchestrA IDE are:

File Suffix	Description
.icd	IED Capability Description file
.cid	Configured IED Description file
.scd	Substation Configuration Description file
.ssd	System Specification Description file

System Requirements

The SAC software operates on the following platforms:

- ArchestrA System Platform (ASP) 2012, ASP 2012 R2, or ASP 2014
- ArchestrA IDE and Wonderware® Application Server 3.6 and later.

The SAC software runs on workstations that support ArchestrA IDE.

The following software are prerequisites for installing the SAC software:

- Windows Server® 2008 R2 (64-bit) or Windows® 7 (32-bit or 64-bit) operating system
- ArchestrA IDE that includes Microsoft SQL Server® 2008 and Microsoft .NET 2.0 and later
- Microsoft Visio 2007 (required only if you want to configure Substation objects to build SLDs).

Foxboro®

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