SIEMENS

Software
IEC 61850
System Configurator

V5.90

Manual

E50417-H1140-C520-B1

NOTE

For your own safety, observe the warnings and safety instructions contained in this document, if available.

Document version: E50417-H1140-C520-B1.01

Edition: 06.2019

Version of the product described: V5.90

Preface

Additional Support

For questions about the system, please contact your Siemens sales partner.

Support

Our Customer Support Center provides a 24-hour service.

Siemens AG
Customer Support Center
Humboldtstrasse 59
90459 Nuremberg
Germany
E-mail: *support.energy@siemens.com*

Training Courses

Inquiries regarding individual training courses should be addressed to our Training Center:

Siemens AG
Siemens Power Academy TD
Humboldtstrasse 59
90459 Nuremberg
Germany

Phone: +49 (911) 433-7415
Fax: +49 (911) 433-7929
E-mail: *poweracademy@siemens.com*
Internet: *www.siemens.com/poweracademy*

Open Source Software

The product contains, among other things, Open Source Software developed by third parties. The Open Source Software used in the product and the license agreements concerning this software can be found in the Readme_OSS. These Open Source Software files are protected by copyright. Your compliance with those license conditions will entitle you to use the Open Source Software as foreseen in the relevant license. In the event of conflicts between Siemens license conditions and the Open Source Software license conditions, the Open Source Software conditions shall prevail with respect to the Open Source Software portions of the software. The Open Source Software is licensed royalty-free. Insofar as the applicable Open Source Software License Conditions provide for it you can order the source code of the Open Source Software from your Siemens sales contact - against payment of the shipping and handling charges - for a period of at least 3 years since purchase of the Product. We are liable for the Product including the Open Source Software contained in it pursuant to the license conditions applicable to the Product. Any liability for the Open Source Software beyond the program flow intended for the Product is explicitly excluded. Furthermore any liability for defects resulting from modifications to the Open Source Software by you or third parties is excluded. We do not provide any technical support for the Product if it has been modified.

Table of Contents

1 Introduction

1.1 Overview IEC 61850

The IEC 61850 standard has been defined in cooperation with manufacturers and users to create a uniform, future-proof basis for the protection, communication, and control of substations.

The advantages of using this protocol are as follows:

- **Interoperability**: With IEC 61850, you will not encounter protocol diversity and integration problems.
- **Simpler Engineering**: From engineering to implementation, from operation to service, it saves time and costs on configuration, commissioning and maintenance.
- **Reduction of costs**: IEC 61850 replaces wiring among feeders, control switches, and signaling devices.
- **Reliability**: It uses only one communication channel for all the real time data synchronized using Ethernet.

The IEDs (Intelligent Electronic Devices) communicate with each other through a high-speed messaging technique called GOOSE (Generic Object-oriented Substation Event) messaging. On the occurrence of any status change, an IED multicasts a high-speed GOOSE message, which typically contains the status of binary inputs, trip signals, or status of primary equipment (for example, circuit breaker). They are all grouped in a dataset.

GOOSE is based on repetitions for a high reliability and for monitoring purposes of the communication link.

The IEC 61850 **Edition 2** has been published to address certain issues such as interoperability and extensions of data models and functions for the use in the following new areas or domains:

- Distributed Energy Resources
- Power Quality
- Hydropower and Wind Power

The IEC 61850 **Edition 2** also supports new engineering possibilities, for example, for the SED file for GOOSE intersubstation communication and the use of the functional product naming **IdName**.

The IEC 61850 part 6 Amendment 1 of Edition 2 has been published in 2018; the other parts of IEC 61850 are about to be published as well.

The part 6 defines the SCL: Configuration description Language, and the new amendment addresses the following issues:

- Clarifying ambiguous points
- Correcting technical Issues
- Extending the IED service capabilities
- Defining the Later Binding full support
- Specifying upgrading and downgrading conversion rules to address the mixed version projects

An Edition 2.1 station is capable of hosting Edition 1, Edition 2 and Edition 2.1 devices. An Edition 2 station is reduced to Edition 1 and Edition 2 devices, and an Edition 1 station to Edition 1 devices. The highest the SCL configuration description language, the better and unambiguous is the system configuration.

It is to note that now a device can be described with a newer SCL version, wherein, an Edition 1 device can be described (ICD, IID file) using the SCL syntax of Edition 2.1.

1.2 Overview System Configurator

The standard IEC 61850 System Configurator tool is designed to:

- Replace DIGSI 4 V4.89 System Configurator
- Replace DIGSI 5 V6.0 integrated System Configurator
- Can be used with all Siemens IED tools like DIGSI 4, DIGSI 5, ReyDisp Manager, SICAM I/O Mapping tool, and SICAM ToolBox II
- Use as a vendor-neutral tool for IEC 61850 interoperable projects
- Reduce the engineering effort using fewer interfaces between software products

The IEC 61850 System Configurator performs the following operations defined in IEC 61850-6 standard:

- Integrating and managing IEDs
- Configuring network
- GOOSE engineering
- Report engineering
- Process bus engineering
- Export of SCL files
- Import SCL files
- Protocol mapping for IEC 60870-5-104 according to IEC 61850-80-1

2 Working with IEC 61850 Station

2.1 Starting IEC 61850 System Configurator

You have the following options to start the IEC 61850 System Configurator:

Start from the Windows Start Menu

To start the IEC 61850 System Configurator from the Windows Start menu, proceed as follows:

✧ Select **Start** > **All Programs** > **Siemens Energy** > **IEC 61850 System Configurator** > **IEC 61850 System Configurator**.

The IEC 61850 System Configurator opens.

Multiple IEC 61850 System Configurator Windows

You can open multiple instances of IEC 61850 System Configurator. This is only applicable for IEC 61850 System Configurator V5.40 and later.

NOTE

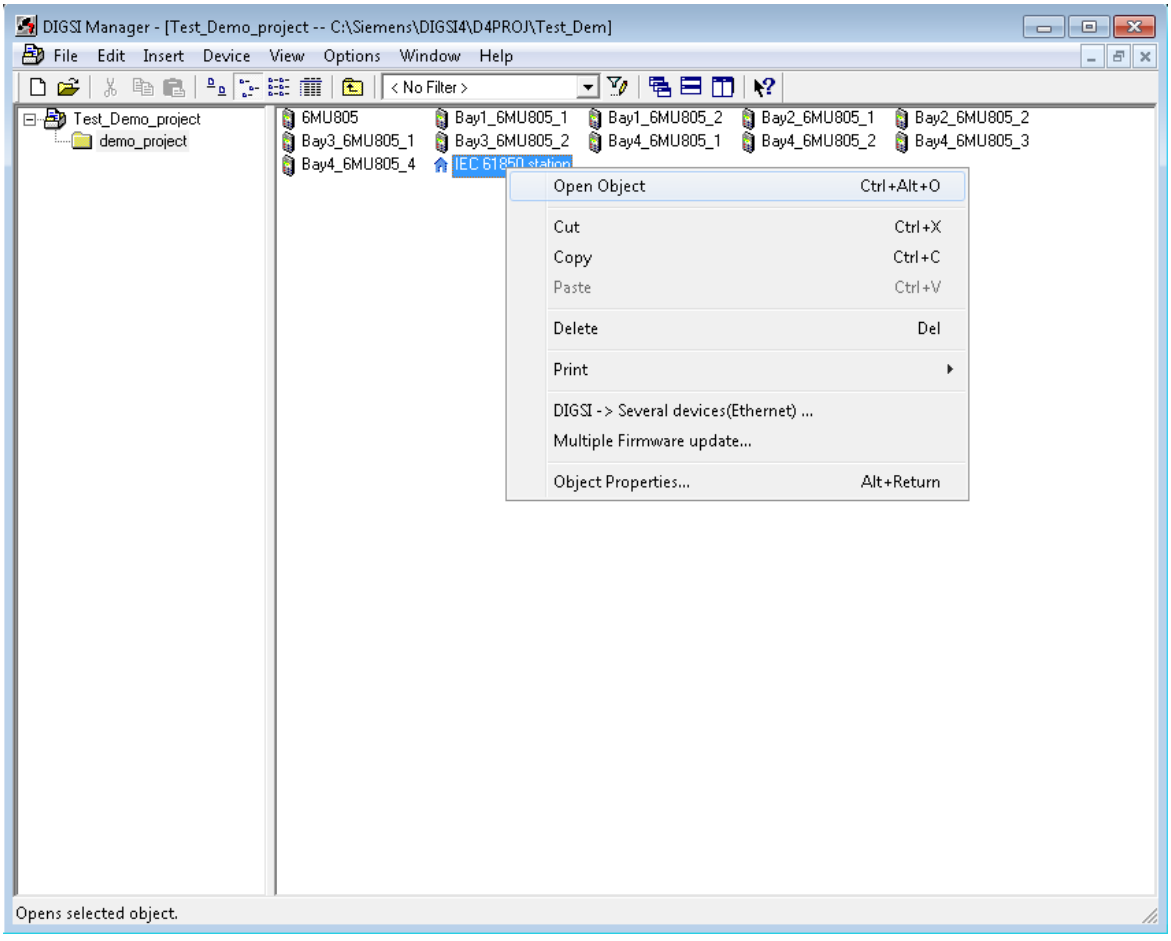
You cannot open multiple instances of the same project.

Start from DIGSI 4

To start the IEC 61850 System Configurator from DIGSI 4, proceed as follows:

✧ In the DIGSI 4 window, right-click the station you want to open in the IEC 61850 System Configurator and select **Open Object**.

- or -



[sc_DIGSI4, 1, en_US]

Figure 2-1 Starting IEC 61850 System Configurator – DIGSI 4

✧ Select the station and press **Ctrl+Alt+O** on the keyboard.

- or -

✧ Double-click the station you want to open in the IEC 61850 System Configurator.
The IEC 61850 System Configurator window opens with the selected station.

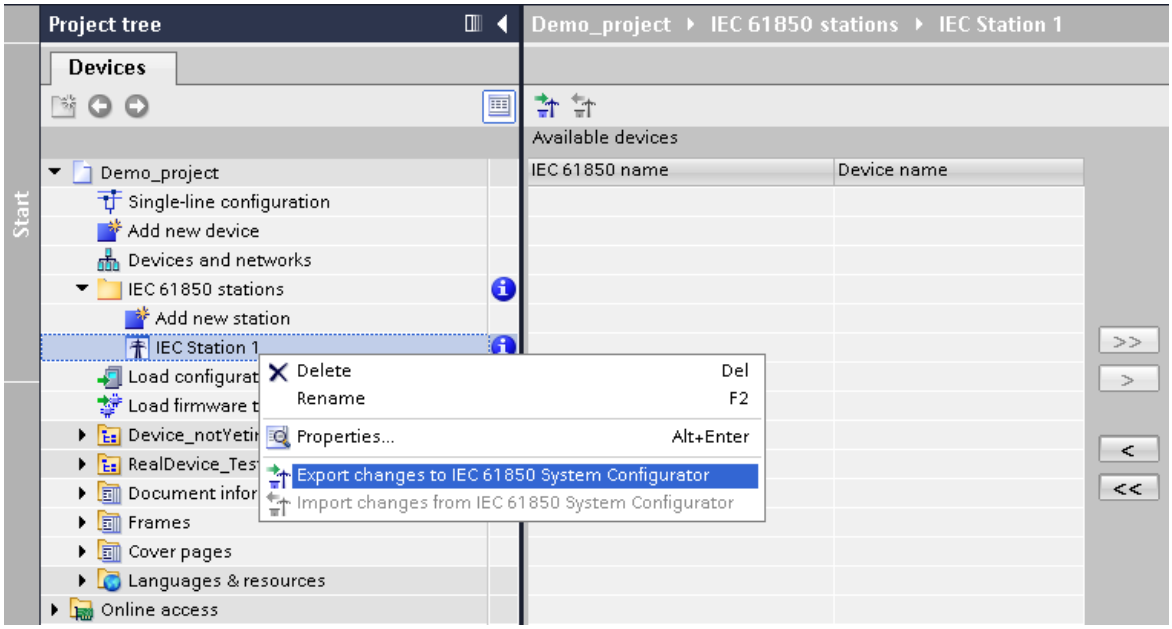
Start from DIGSI 5

To start the IEC 61850 System Configurator from DIGSI 5, proceed as follows:

✧ In the DIGSI 5 window, select the station you want to open and click in the IEC station editor.

- or -

✧ Right-click the station you want to open in the IEC 61850 System Configurator from the project tree and select **Export changes to IEC 61850 System Configurator**.



[sc_DIGSI5, 1, en_US]

Figure 2-2 Starting IEC 61850 System Configurator – DIGSI 5

The IEC 61850 System Configurator window opens with the selected station.

Start from Reydisp Manager

To start the IEC 61850 System Configurator from Reydisp Manager, proceed as follows:

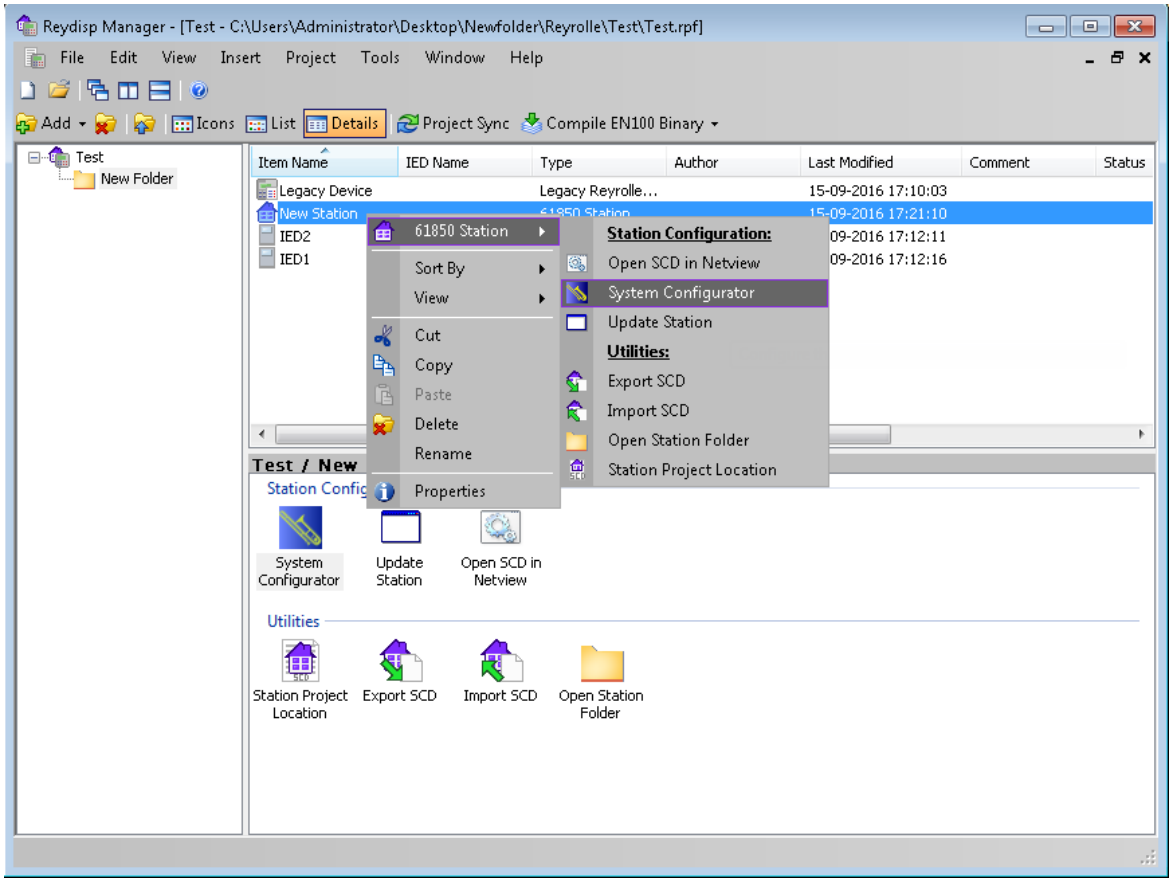
✧ In the Reydisp Manager window, right-click the station you want to open and click **61850 Station > System Configurator**.

- or -

✧ Double-click the station you want to open.

- or -

✧ Double-click **System Configurator** in the **Station Configuration** section.



[sc_Reydisp_Manager, 1, --_--]

Figure 2-3 Reydisp Manager

The IEC 61850 System Configurator window opens, displaying the selected station.

2.2 Creating the IEC Station

To create an IEC Station, proceed as follows:

- ✧ Open the **IEC 61850 System Configurator**.
- ✧ Click **Station** > **New** on the menu bar.

  - or -

- ✧ Click  on the toolbar.

  - or -

- ✧ Press **Ctrl**+**N** on the keyboard.

The **New IEC 61850 station** dialog is displayed.

- ✧ Enter the project name and navigate to the location where you want to create the station and click **Open**.

IEC 61850 Edition choices dialog is displayed.

NOTE

The length of the **Project name** is limited to 100 characters and the length of the **Path** is limited to 140 characters.

- ✧ Select either **Edition 1**, **Edition 2**, or **Edition 2.1** and click **OK**.

The station is created.

NOTE

IEC station can be created from the IED tool directly.

2.3 Opening the IEC Station

To open an IEC Station, proceed as follows:

- ✧ Open the **IEC 61850 System Configurator**.
- ✧ Click **Station** > **Open** in the menu bar.

  - or -

- ✧ Click  in the toolbar.

  - or -

- ✧ Press **Ctrl**+**O** on the keyboard.

Open IEC 61850 station dialog is displayed.

- ✧ Navigate to the station project folder and select the **.scd** file.
- ✧ Click **Open**.

The IEC Station is opened.

It can be started from an IED tool (for example, DIGSI4 and DIGSI5, ReyDisp manager, and so on) with a project or directly from the stand-alone.

NOTE

You can also open an IEC station using the following options:

- Drag and drop the SCD file on to the IEC 61850 System Configurator window.
- Double click the SCD file.
- Open from the IED tools (for example, DIGSI 4, DIGSI 5, and Reyrolle).
- Select the recently used IEC station from the **Station** menu. A maximum number of 5 recent IEC stations that you have worked on are displayed in the **Station** menu.

2.4 Saving the IEC Station

To save the IEC Station, proceed as follows:

✧ Click **Station** > **Save** in the menu bar.

- or -

✧ Click  in the toolbar.

- or -

✧ Press **Ctrl**+**S** on the keyboard.

The IEC station is saved.
It is independent from the IED tool configuration backup and must be archived independently.

2.5 Renaming the IEC Station

To save the station with a different name, proceed as follows:

✧ Click **Station** > **Save as** in the menu bar.

The **IEC 61850 station save as** dialog is displayed.

✧ Navigate to the location where you want to save the station, enter the name to save the station, and click **Open**.

The station is saved with the new name and then this station is opened in the IEC 61850 System Configurator.

2.6 Closing the IEC Station

To close the IEC station, proceed as follows:

✧ Click **Station** > **Close**.

If there are any unsaved changes, a dialog is displayed.

✧ Click **Yes** to save the changes or click **No** to discard the changes.

The IEC station is closed.

2.7 Archiving a Project

To archive a project, proceed as follows:

✧ Click **Station > Archive** in the menu bar.
The **Archive project dialog** is displayed.

✧ Navigate to the location where you want to save the project, enter the name to save the project, and click **Save**.
The project is archived successfully as an .sz file.

NOTE

When an older version of a station is opened, it is automatically archived before it is upgraded to the latest version of the station. It is archived in the **Archive** folder which is located in the project folder. Information about the older version of the station is added to the History section in the SCD file.

2.8 Retrieving a Project

To retrieve a project, proceed as follows:

- ✧ Click **Station > Retrieve** in the menu bar.
  The **Retrieve archived project** is displayed.
- ✧ Navigate to the folder and select the archived project (.sz file).
- ✧ Click **Open**.
  The **Browse For Folder** dialog is displayed.
- ✧ Navigate to the folder and select a folder to retrieve the archived project.
- ✧ Click **OK**.
  The project is retrieved and opened in the IEC 61850 System Configurator.

2.9 Sorting the Column Content

You can sort the content of the column in alphabetically ascending or descending order.

To sort the content of tables, proceed as follows:

✧ Select a column as reference.

✧ To sort the column content in ascending or descending order, click the header of the unsorted column.

The selected column and the rest of the column content is sorted alphabetically in ascending or descending order.

NOTE

You can sort the column content in the following views:

- Devices view
- Network view
- Reports and logs view
- Protocol mapping view

2.10 Filtering the Views

The columns in the GOOSE view, SMV view, Reports and logs view, and Protocol mapping view can be filtered at different levels.
The following filter options are available for the protocol mapping:

- Custom
- None
- Reset All

By default, the filter option is not selected.
To filter the signals based on the IED, proceed as follows:

✧ Click to view the filter options.

✧ Select either **none**, **custom** or a specific IED from the list box in the IED column.

The column is filtered based on the selected filter option.
The **Reset All** filter option resets all the filters in that view.
The **none** filter option clears the filter for the selected column. Selecting the specific device lists items related only to that device and the selected item is displayed as the column header. For custom filter, refer to *Custom Filter, Page 30*.

NOTE

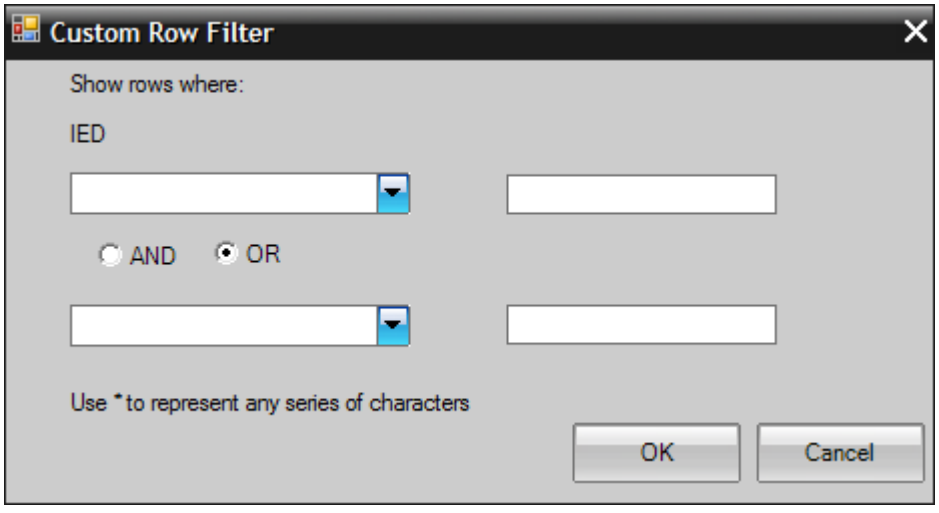
You can filter all the columns (IED, LD, LN, DO, DA, CDC, Description, CASDU, IOA and TI) in the protocol mapping editor as mentioned in the preceding section.

Custom Filter

To customize the filter, proceed as follows:

✧ Select the **custom** filter option from the list box.

The **Custom Row Filter** dialog is displayed.

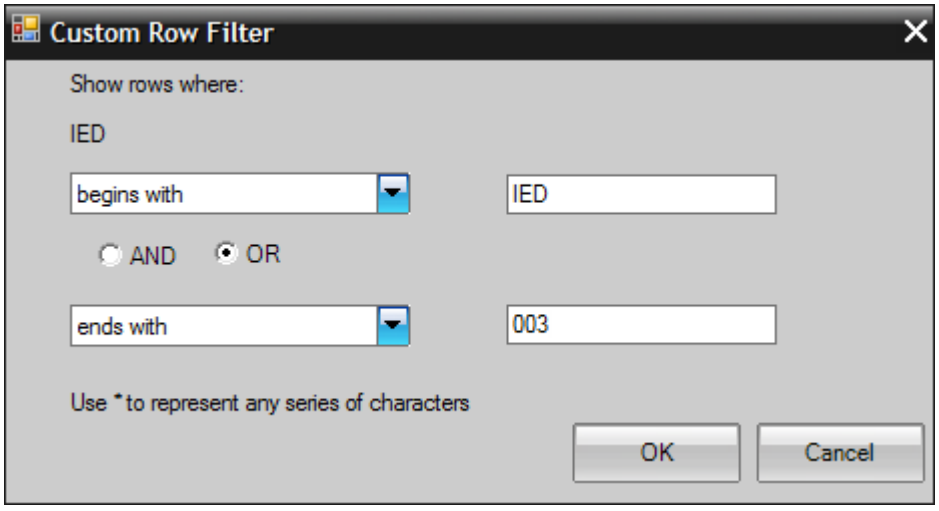


[sc_custom row filter, 2, en_US]
Figure 2-4 Custom Row Filter

✧ Click the list box to select the condition.

✧ Enter the value in the text box for that condition.

You can use **and** or **or** condition to add another condition for the custom filter.



[sc_custom row filter, values, 2, en_US]

Figure 2-5 Sample Custom Row Filter - Condition and Value

NOTE

The following shortcuts can be used while working on custom filters:

- contains: *<text>*
- begins with: <text>*
- ends with: *<text>

✧ Click **OK** to add the filter or click **Cancel** to discard the custom filter.

For additional information about the custom filter conditions and explanation, refer to *8.4.7.4 Custom Filter*.

To filter non-blank columns, proceed as follows:

✧ In the **Custom Row Filter** dialog, select the **does not equal** option from the list box.

✧ Press **Spacebar** on the keyboard to enter a space as the value in the text box.

✧ Click **Ok**.
The non-blank columns will be filtered.

2.11 Devices View

2.11.1 Opening the Devices Editor

To open the **Devices** editor in other cases, proceed as follows:

✧ Click **View** > **Devices** on the menu bar.

- or -

✧ Click **Devices** on the **IEC 61850 System configurator bar**.

- or -

✧ Press **Ctrl**+**1** on the keyboard.

Devices editor is displayed and it consists of the following windows:

- **IEDs**
- **Properties**

For additional information on these windows, refer to *8.4.1.1 Devices Editor*.

2.11.2 Adding the Devices (ICD, IID, and SCD) to the Station

To add devices (ICD, IID, or SCD) to the station, proceed as follows:

✧ Select the IEC station in the **Devices** editor.

✧ Click **Station** > **Import** on the menu bar and select **Add IEC 61850 device(s)** from the submenu option.

- or -

✧ Right-click the station and select **Add IEC 61850 device(s)** from the context menu.

The **Importing IEC 61850 device description(s)** dialog is displayed.

✧ Navigate to the folder and select the **SCD** file or **ICD/IID** file(s).

✧ Click **Open**.

The status report dialog is displayed. If there are no validation errors, the device is successfully added to the station.

NOTE

The SCL edition of the ICD/IID/SCD files has to be lower or belong to the station edition.

NOTE

The ICD files of Client , PC, Router, SNTP, and Switch are available under **ICD** folder in the IEC 61850 System Configurator installation path.
(For example, C:\Program Files (x86)\Siemens Energy\IEC 61850 System Configurator V5.xx\ICD).

NOTE

You can export the IEC 61850 station configuration from DIGSI 5 to the IEC 61850 System Configurator, even if there is an opened instance of the IEC 61850 System Configurator tool.

2.11.3 Updating the Devices

To reimport the devices with its updated SCL, proceed as follows:

✧ Select the IEC Station in the **Devices** editor.

✧ Click **Station** > **Update** on the menu bar and select **Update IEC 61850 device(s)** from the submenu option.

- or -

✧ Right-click the station and select **Update IEC 61850 device(s)** from the context menu.

The **Importing IEC 61850 device description(s)** dialog is displayed.

✧ Navigate to the folder and select the files.

✧ Click **Open**.

The device is updated successfully, if there are no validation errors listed in the status report.

NOTE

If the device is not part of the station and if you try to update that device, **Device not found** warning message is displayed in the status report.

2.11.4 Renaming the Device TEMPLATE

To rename the device imported via ICD named TEMPLATE, proceed as follows:

✧ Select the device from the **Devices** editor.

✧ Double-click the device TEMPLATE and enter a unique IED name.

✧ Press **Enter** or click anywhere outside the box.

The new name for the device TEMPLATE is accepted and is displayed in the IEDs Editor.

NOTE

Special characters are not allowed in the **Name** text box according to IEC 61850-6 scheme.

2.11.5 Removing the Devices

To remove the devices from the station, proceed as follows:

✧ Select the device from the IEC station.

✧ Right-click the device and select **Delete** from the context menu.

- or -

✧ Click **Edit** > **Delete** on the menu bar.

- or -

✧ Click  on the toolbar.

The selected device is removed from the IEC station including its communication links (for example, GOOSE).

NOTE

The IEDs added by the IED tool (DIGSI4 and DIGSI5, ReyDisp manager) can be removed by that IED tool only.

2.11.6 Copying the GOOSE and Reports Datasets across IEDs

NOTE

IEDs are configured as typicals and instantiated several times. It is then useful not to re-engineer all the IEDs manually.

To copy all the GOOSE and reports datasets across IEDs, proceed as follows:

- ✧ Select an IED from the **Devices** editor.
- ✧ Right-click the IED and select the **Copy** option from the context menu.

  - or -

- ✧ Click **Edit** in the menu bar and select the **Copy** option.

  - or -

- ✧ Press **Ctrl+C** on the keyboard.
- ✧ Right-click the IED from the **Devices** editor where you want to paste the GOOSE and reports datasets and select **Paste**.

The GOOSE and reports datasets gets pasted to the IED.

NOTE

The elements (LD, LN, DO, DA) which are not copied to the IED are displayed in the status report. If the dataset cannot be created, either the device does not have the service capability or it already contains the maximum number of datasets allowed.

2.12 Substation View

2.12.1 Overview of Substation Editor

In the Substation editor, you can structure and view the topology of the substations present, if necessary, by adding or deleting a substation and child nodes. You can configure LNodes at any level in the substation using the available devices and specify the relevant properties.

Each substation can have several kinds of child nodes.You can add new substations to the existing structure or delete the existing substations.

2.12.2 Opening the Substation Editor

To open the Substation editor, proceed as follows:

✧ Click **View** > **Substation** on the menu bar.

- or -

✧ Click **Substation** on the **IEC 61850 System configurator bar**.

- or -

✧ Press **Ctrl+2** on the keyboard.

Substation editor is displayed and it consists of the following windows:

- Substation
- Source catalog
- Properties

For additional information on these windows, refer to *8.4.2.1 Substation Editor*.

2.12.3 Inserting and Deleting a Substation

2.12.3.1 Inserting a Substation

To insert a substation, proceed as follows:

✧ Select the IEC 61850 station.

✧ Right-click the station and select **Substation** from the context menu.

A substation is added to the station.

NOTE

The mandatory child nodes, Voltage level and Bay are automatically inserted when a substation is created.

2.12.3.2 Deleting a Substation

To delete a substation from the **Topology** window, proceed as follows:

✧ Select the substation in the **Topology** window.

✧ Right-click the substation and select **Delete** from the context menu.

The **Delete items** dialog is displayed.

✧ Click **Yes** to delete the substation or **No** to abort the operation.

NOTE

The **Delete** option for substation is disabled if there is only one substation available.

2.12.4 Renaming the Substation

To change the name of the substation, proceed as follows:

✧ Select the substation in the **Topology** window.

✧ Enter the name for the substation in the **Name** text box in the **Properties** window.

✧ Press **Enter** on the keyboard or click outside the text box.

NOTE

Special characters are not allowed in the **Name** text box according to IEC 61850-6 scheme.

2.12.5 Adding and Deleting Nodes

Adding Nodes

To add a node for a station in the Substation window, proceed as follows:

✧ Select the substation element.

✧ Right-click the substation element and select the node type from the context menu.

The selected node type is added to the substation element.
The following node types are available for the respective substation element:

Substation Element	Available Node Type
Substation	• PowerTransformer • VoltageLevel
PowerTransformer	Transformer Winding
VoltageLevel	• Bay • PowerTransformer
Transformer Winding	Terminal
Bay	• ConnectivityNode • ConductingEquipment – Circuit Breaker – Disconnector – Voltage Transformer – Current Transformer – Generator – Motor • Function (not allowed in **Edition 1** projects)

Substation Element	Available Node Type
Function	• ConductingEquipment – Circuit Breaker – Disconnector – Voltage Transformer – Current Transformer – Generator – Motor • SubFunction
ConductingEquipment	• Terminal • Subequipment

Deleting Nodes

To delete a node from a station in the **Substation** window, proceed as follows:

✧ Select the node in the **Topology** window.

✧ Click **Edit** on the menu bar and select **Delete** from the menu option.

- or -

✧ Click  from the toolbar.

- or -

✧ Right-click the node and select **Delete** from the context menu.

- or -

✧ Press **Delete** on the keyboard.
The **Delete items dialog** is displayed.

✧ Click **Yes** to delete the node or **No** to abort the operation.

NOTE

The delete option is unavailable if the node is a mandatory element.

2.12.6 Configuring the LNodes

Linking the Logical Node to the LNode

To link the logical node to the LNode, proceed as follows:

✧ Select the logical node in the **Source catalog**.

✧ Hold down the **SHIFT** key and the down arrow to select multiple logical nodes.

✧ Hold down the mouse button and drag the logical node to the target LNode in the **Topology** window.
If insertion is not allowed at this position, the mouse pointer changes to a crossed-out circle.

✧ Release the mouse button at the permissible position

The linked LNode path displays the **IED name** > **LD Name** > **Logical node name**.

NOTE

To link the LNode and logical node in the Topology window, they should belong to the same LN Class.
To add preconfigured LNodes, drag and drop the Logical node on to the conducting equipment.

Unlinking the Logical Node from the LNode

To unlink the logical node from the LNode, proceed as follows:

✧ Select the LNode to be unlinked in the **Topology** window.

✧ Right-click the LNode and select **Unlink** from the context menu.
After unlinking, the path corresponding to the LNode displays as **<Not Connected>**.

Replacing the Existing Configuration

To replace the existing configuration in the **Topology** window, proceed as follows:

✧ Select the logical node in the **Source catalog**.

✧ Hold down the mouse button and drag the logical node to the LNode to be changed in the **Topology** window.
If insertion is not allowed at this position, the mouse pointer changes to a crossed-out circle.

✧ Release the mouse button at a permissible position.

The **Replace configuration** dialog is displayed.

✧ Click **Yes** to replace the existing configuration and **No** to abort the operation.

2.13 Network View

2.13.1 Overview of the Network Editor

In the Network Editor, you can structure the communication network of the IEC 61850 station, if necessary, by adding or deleting a subnet. You can assign existing users to these subnets and specify the addressing and relevant properties.

When you open a station for the first time, the network structure of the station consists of one or more subnets. This contains the access points of all the devices that you assigned to the station as participants, that is, what you see are not the devices, but the access points to these devices. Each device can have several access points, which can be assigned to different subnets. The part of the name of an access point is the device name, which you have assigned within the project. Therefore, it is easy to find the individual devices in the network structure. You can add new subnets to the existing structure or delete the existing subnets.

2.13.2 Opening the Network Editor

To open the Network editor, proceed as follows:

✧ Click **View** > **Network** on the menu bar.

- or -

✧ Click **Network** on the **IEC 61850 System configurator bar**.

- or -

✧ Press **Ctrl**+**2** on the keyboard.

Network editor is displayed and it consists of the following windows:

- **Subnets**
- **Properties**

For additional information on these windows, refer to *8.4.3.1 Network Editor* .

2.13.3 Inserting and Deleting a Subnet

2.13.3.1 Inserting a Subnet

To insert a subnet, proceed as follows:

✧ Select the station in the **Subnets** window.

✧ Click **Insert** on the menu bar and select **Subnet** from the menu option.

- or -

✧ Click  on the toolbar.

- or -

✧ Right-click the station and select **insert Subnet** from the context menu.

This operation adds the subnet to the station.

2.13.3.2 Deleting a Subnet

To delete a subnet from a station in the **Subnets** window, proceed as follows:

✧ Select the subnet in the **Subnets** window.

✧ Click **Edit** on the menu bar and select **Delete** from the menu option.

- or -

✧ Click from the toolbar.

- or -

✧ Right-click the subnet and select **Delete** from the context menu.

- or -

✧ Press **Delete** on the keyboard.

The **Delete items** dialog is displayed.

✧ Click **Yes** to delete the subnet or **No** to abort the operation.

NOTE

Only empty subnets can be deleted.

2.13.4 Moving the Access Point

Most IEDs contain a single access point. Some physical devices like SIPROTEC 5 can support several communication modules with IEC 61850. Access points can be moved from one subnet to another subnet either using the drag and drop or the cut and paste option. Moving access points does not change the IP address of the access point. To allow GOOSE configuration, access points must be in the same network.

To move an access point using drag and drop, proceed as follows:

✧ Select the access point in the **Network** editor.

✧ Drag it onto the **Subnet** for which this access point has to be assigned.

NOTE

The access point with **ServerAt** of the same IED have to be in different subnets.

To move an access point using cut and paste, proceed as follows:

✧ Right-click the access point and select **Cut** from the context menu.

✧ Right-click the subnet to which you want to paste the access point and select **Paste** from the context menu.

2.13.5 Addressing the Access Points

2.13.5.1 Overview

The IP address of an access point must be unique within a subnet. You can enter the IP address manually in the **Properties** window of an access point, or you can use the automatic addressing function with consecutive IP addresses.

2.13.5.2 Manual Addressing

To assign the IP address manually, proceed as follows:

✧ Select the access point in the Network editor.

✧ Enter the IP address in the **Properties** window in the **IP address** field.

The **IP address** and **Standard Gateway** have the x.y.y.x (where, x = 1 to 254 and y = 0 to 254) format, whereas **Subnet mask** has the x.y.y.z (where, x = 1 to 255, y = 0 to 255, and z = 0 to 254) format. However, it must be noted that not every possible combination within the value range is permissible. For all the non-permissible exceptions, an error message is displayed as a tooltip in the **Properties** windows for **IP address**.

NOTE

Gateway can be 0.0.0.0 or blank.

2.13.5.3 Automatic Addressing

To assign the IP address automatically, proceed as follows:

✧ Select the subnet with the access points to be automatically addressed in the Network Editor.

✧ Enter a valid IP address in the **Properties** window as a start value in the **IP start address** field.

NOTE

During automatic addressing, the IP start address is assigned to the access point displayed in the top position within the subnet. All other access points contain IP addresses which are assigned in ascending order from the start address.

✧ Click **Edit** on the menu bar and select **Automatic addressing**.

- or -

✧ Click  on the toolbar.

- or -

✧ Right-click the subnet and select **AutomaticIPaddressing** from the context menu.

- or -

✧ Press **Shift**+**Ctrl**+**A** on the keyboard.

If the access points of the subnet concerned already have valid IP addresses or the access point has an invalid IP address, **Overwriting existing IP addresses** dialog is displayed.

✧ Click **Yes** to overwrite the existing IP address or click **No** to abort the operation.

NOTE

Automatic addressing is not applicable to the devices added through SED import.

2.13.6 Specifying the Timer Server

All the devices must be synchronized to a uniform time base to ensure the timely accurate acquisition and documentation of events. To realize this, you need a reliable time source as well as a mechanism to make this time available to each other. A timer is used as a time source and the mechanism is called as **Network Time Protocol** (NTP).

You can integrate several timers into your Network editor as devices. One of the timers is specified as a first timer (primary timer) with the additional timer as the second timer. If the first timer fails, the second timer becomes active. You can operate your network with only one timer, however, redundancy is no longer ensured.

NOTE

Initially the timer is available in the **New devices** folder. The timer option is enabled in the **Properties** window once it is assigned to a subnet.

To specify the timer in the **Properties** window of the station, proceed as follows:

✧ Select the timer from the **Subnets** window.

✧ In the **Properties** window, set the value to **Yes** for **Use as a timer** parameter in the **Siemens Parameter for SIPROTEC** group. This type of configuration is enabled for EN100 modules only.

To list the timers in the **Properties** window of the IEC 61850 station, proceed as follows:

✧ Select IEC 61850 station.

✧ In the **Properties** window, select one option each for **Primary clock master** and **Second clock master** from **Parameter** group.

If you select the same timer for **First timer** and **Second timer**, **Select a timer for SIPROTEC devices** dialog is displayed. Click **OK** to update the timer to the latest modification.

Following cases are encountered with respect to the number of available timers:

Case 1: No Timer is Available within the Station

A message is displayed in timer boxes as **No timer available** for **Primary clock master** and **No second timer available** for **Second clock master**. No selection is possible in such case.

Case 2: One Timer is Available within the Station

The name of the timer is displayed in the **Primary clock master** box. In the **Second clock master** box, you will receive **No second timer available** message. No selection is possible for the **Second clock master** in such case.

Case 3: Two Timers Available within the Station

You have to determine one of the two timers as the **Primary clock master** and the other timer as the **Second clock master**. Click on one of the two timer boxes if you want to change this assignment. Select the name of the other timer from the list box. If you have changed the assignment for the first timer for instance, the assignment for the second timer is changed automatically and vice versa.

Case 4: More than Two Timers Available within the Station

You have to determine one of the timers as the **Primary clock master** and another timer as the **Second clock master**.

If you want to assign the second clock master timer to the **Primary clock master**, the assignment for the second clock master timer is changed to primary clock master timer automatically and vice versa.

If you want to assign the unassigned timer to any of the clock master, select the timer from the list box.

2.14 GOOSE View

2.14.1 Overview of the GOOSE Communication

Devices often have to exchange data with other devices. In IEC 61850, this cross-communication is referred to as GOOSE: **Generic Object Oriented Substation Event**. GOOSE is a process that transmits event information quickly between various participants.

Siemens GOOSE application is used to display GOOSE messages related to the same functionality in the same folder for a clearer overview and to provide an easy way to configure global parameters between several GOOSE ControlBlocks.

2.14.2 Opening the GOOSE Editor

To open the GOOSE Editor, proceed as follows:

✧ Click **View** > **GOOSE** on the menu bar.

- or -

✧ Click **GOOSE** editor on the **IEC 61850 System configurator bar**.

- or -

✧ Press **Ctrl**+**3** on the keyboard.

GOOSE editor is displayed and it consists of the following windows:

- **GOOSE messages**
- **Source catalog**
- **Destination catalog**
- **Properties**

For additional information on these windows, refer to *8.4.4.1 GOOSE Editor*.

2.14.3 Adding and Deleting the GOOSE Application

Adding a GOOSE Application

To add GOOSE application for a station in the **GOOSE** editor, proceed as follows:

✧ Select the IEC 61850 station.

✧ Click **Insert** > **GOOSE application** on the menu bar.

✧ Click  on the toolbar.

✧ Right-click the station and select **GOOSE application** from the context menu.

A GOOSE application is added to the station.

Deleting a GOOSE Application

To delete GOOSE application from a station in the **GOOSE** editor, perform any of the following:

✧ Select the GOOSE application and click **Edit** > **Delete** from the menu bar.

- or -

✧ Select the GOOSE application and click  on the toolbar.

- or -

✧ Right-click the GOOSE application and select **Delete**.

- or -

✧ Select the GOOSE application and press **Delete** on the keyboard.

Delete items dialog is displayed.

✧ Click **Yes** to delete the GOOSE application or **No** to abort the operation.

NOTE

Some GOOSE applications cannot be deleted, because of the service restrictions or capabilities of certain datasets assigned to them.

2.14.4 Renaming the GOOSE Application

Renaming a GOOSE Application in the GOOSE Message Editor

To rename the GOOSE application in the **GOOSE message** editor, proceed as follows:

✧ Select the GOOSE application you want to rename.

✧ Double-click the GOOSE application.

- or -

✧ Press **F2** on the keyboard.

✧ Enter a new name for the GOOSE application.

✧ Press **Enter** on the keyboard.

The new name for the GOOSE application is applied.

Renaming a GOOSE Application in the Properties Window

To rename a GOOSE application in the **Properties** window, proceed as follows:

✧ Select the GOOSE application that you want to rename in the **GOOSE message** editor.

✧ Enter a new name for the GOOSE application in the **Name** text box of the **Properties** window.

✧ Press **Enter** on the keyboard or click outside the text box.

The new name for the GOOSE application is applied.

NOTE

The **Name** must start with a letter and can only consist of letters, numbers, and underscore (_).

2.14.5 Selecting or Creating a Communication Profile

The communication profile decides at which time interval a GOOSE message is repeated with a spontaneous change or in the cyclical operation. A GOOSE application is assigned a communication profile with a low communication rate by default (**PriorityLow**). For third-party devices, this is set to **PriorityDetailedSettings**.

The following option is available for changing the communication profile:

✧ You can select one of the three predefined communication profiles: **PriorityLow**, **PriorityMedium**, or **PriorityHigh**.

NOTE

Set the communication profiles in a targeted manner. Only select a communication profile with a high communication rate for time-critical events. If you assign a high communication rate to all GOOSE applications together, this can result in the loss of overall system performance.

Selecting a Predefined Communication Profile

- ✧ Select the GOOSE application from the **GOOSE** editor.
- ✧ In the **Properties** window, select the name of the desired communication profile from the **GOOSE parameters** group.

The values for **Minimum monitoring time** and **Maximum monitoring time** are updated accordingly for the following communication profiles:

Communication Profile	Minimum Monitoring Time	Maximum Monitoring Time
Priority Low	10 ms	2000 ms
Priority Medium	4 ms	1000 ms
Priority High	1 ms	500 ms

NOTE

It is possible to use a user-defined communication profile.

NOTE

All GOOSE connections within a GOOSE application use the same communication profile. It is therefore recommended to combine GOOSE connections in different GOOSE applications according to their priority.

By default, all GOOSE datasets within the GOOSE application inherits the global settings. It is however possible to customize it for the each GOOSE control block.

2.14.6 Adding and Deleting the Datasets

Datasets can be added to the GOOSE application and deleted from the GOOSE application.

Adding a Dataset

To add a dataset, proceed as follows:

- ✧ Select a signal from **Source catalog** window.

  - or -

- ✧ Press the **SHIFT** key continuously as well as the down arrow to select multiple signals.
- ✧ Drag and drop the signals to the GOOSE application or station.

NOTE

A GOOSE control block is created automatically with the GOOSE dataset.

NOTE

The maximum permissible dataset size is based on its service capabilities.

Deleting a Dataset

To delete a dataset from a GOOSE application, proceed as follows:

- ✧ Select the dataset from a GOOSE application.
- ✧ Click **Edit** > **Delete** from menu bar.

  - or -

- ✧ Click on the toolbar.

- or -

✧ Right-click the dataset and select **Delete** from the context menu.

- or -

✧ Press **Delete** on the keyboard.

Delete items dialog is displayed.

✧ Click **Yes** to delete the dataset or click **No** to abort the operation.

2.14.7 Renaming the Dataset

Following the insertion, the name of the dataset consists of a hierarchical path name and a consecutively numbered name such as **Dataset_1**, **Dataset_2**, and so on. You can change the path name and the name of the dataset independently.

Changing the Name of the Dataset

To change the name of the dataset, proceed as follows:

✧ Select the dataset from the **GOOSE messages** window.

✧ Enter the name for the dataset in the **Name** text box in the **Properties** window.

NOTE

Special characters are not allowed in the **Name** text box according to IEC 61850-6 scheme.

✧ Press **Enter** on the keyboard or click outside the text box.

The entered name is accepted in the **GOOSE messages** window.

2.14.8 Moving the Dataset

To move the dataset from one GOOSE application to another, proceed as follows:

✧ Select the dataset from the **GOOSE messages** window.

✧ Drag and drop the dataset from one GOOSE application to another GOOSE application.

- or -

✧ Cut the dataset from the GOOSE application. You can perform this operation in any of the following ways:

- Select **Edit** > **Cut** on the menu bar.

- Select  on the toolbar.

- Right-click the dataset and select **Cut** from the context menu.

✧ Select the GOOSE application where you want to move the dataset.

✧ Paste the dataset to the selected GOOSE application. You can perform this operation in any of the following ways:

- Select **Edit** > **Paste** on the menu bar.

- Select  on the toolbar.

- Right-click the GOOSE application where you want to move the dataset and select **Paste** from the context menu.

The dataset is moved to the selected GOOSE application.

2.14.9 Adding a Signal to the Dataset

To add additional signals to the created dataset, proceed as follows:

- ✧ Select additional signals from the **Source catalog** window.
- ✧ Press the **SHIFT** key continuously as well as the down arrow to select multiple signals.
- ✧ Drag and drop the signal to the GOOSE dataset.

NOTE

Drag and drop of a data object to the GOOSE application level creates a new dataset. To improve the bandwidth, drag and drop the data object directly to an existing dataset.

For additional information on changing signal properties, refer to *7.17 GOOSE Link*.

2.14.10 Changing the Properties of a GOOSE Control Block

To change the properties of a GOOSE control block, proceed as follows:

- ✧ Select the Dataset from the **GOOSE** Editor whose properties you want to set.
- ✧ In the **Properties** window, click ... for **Configuration** in the **Parameter** group.

Configuration dialog is displayed.

- ✧ Change the settings to meet your requirements.

For additional information on changing the configuration of the Dataset, refer to *7.16 Dataset*.

NOTE

For inherited attributes that have been changed, an information is displayed that there is a difference from the GOOSE application.

2.14.11 Selecting or Deselecting a Dataset for the Subnet

Each subnet is displayed as a column in the **GOOSE** editor. You can select on which subnet the IED should send the GOOSE telegram. The available options depend on which subnet the IED access point is configured. You can select several subnets if the same GOOSE telegram is available on several communication modules.

To perform this, the access point of the IED has to be connected with the concerned subnet.

- In the **Network** view, the Ethernet interface is connected with the subnet concerned.
- At least one GOOSE application exists in the GOOSE editor.

Selecting or Deselecting a Dataset for a Subnet

- ✧ Open the GOOSE editor that contains the dataset in **GOOSE messages** window.
- ✧ If you want to select the dataset for a subnet, select the check box in the cell linking the dataset line and the subnet column.

  By default, the subnet used by the first access point of the IED is selected.
- ✧ If you want to deselect the dataset from a subnet, clear the check box in the cell linking the dataset line and subnet column.

2.14.12 Copying a GOOSE Dataset across IEDs

NOTE

IEDs are usually configured as typicals and instantiated several times. It is then useful not to re-engineer all the IEDs manually.

To copy the GOOSE dataset across IEDs, proceed as follows:

- ✧ Select the GOOSE dataset in the **GOOSE** editor.
- ✧ Right-click the dataset and select **Copy** from the context menu.

  - or -
- ✧ Click **Edit** on the menu bar and select **Copy** option.

  - or -
- ✧ Press **Ctrl**+**C** on the keyboard.
- ✧ Right-click the GOOSE application in the **GOOSE messages** window or the device in the **Source catalog** where you want to paste the dataset and select **Paste GOOSE Configuration**.

The **Paste GOOSE Configuration** dialog is displayed.

- ✧ Select the **Target IED** and the **Logical Device (LD)** correspondingly from the list box.

NOTE

The **Target IED** is displayed in the **Paste GOOSE Configuration** dialog, if you paste the dataset in the **Source catalog**.

- ✧ Click **Paste**.

NOTE

The GOOSE control blocks are copied and the MAC addresses are incremented.

2.14.13 Copying all GOOSE Datasets across IEDs

NOTE

IEDs are configured as typicals and instantiated several times. It is then useful not to re-engineer all the IEDs manually.

To copy all the GOOSE datasets across IEDs, proceed as follows:

- ✧ Select an IED from the **Source catalog**.
- ✧ Right-click the IED and select the **Copy** option from the context menu.

  - or -
- ✧ Click **Edit** in the menu bar and select the **Copy** option.

  - or -
- ✧ Press **Ctrl+C** on the keyboard.
- ✧ Right-click the IED from the **Source catalog** where you want to paste the GOOSE datasets and select **Paste**.

The GOOSE datasets get pasted to the IED.

2.14.14 Generating the GOOSE Connection

A GOOSE link consists of a signal as the source and at least a Logical node or a Data object as the destination. Links are always created within GOOSE applications.

For linking a source signal to a target node, the following rules apply:

- You can connect one source signal to several destination nodes.
- A signal can only be used in precisely one GOOSE application as a source signal.
- The source signal and the destination node must always be located on different devices. You cannot connect a source signal to a destination node from the same device.

The links are also grouped into datasets within a GOOSE application.

You can connect a source signal to a destination node manually in the GOOSE editor by drag and drop if the CDC (Common Data Class) matches. This is applicable only to EN100. Other devices are mapped at LN level and thus no CDC check is performed. The mapping is then done at the data attribute group level which usually consists of the following:

- Status stVal and quality q
- Selected position stSled and quality q
- General trip and quality q
- Measurement mag.f and quality q

NOTE

The field Name (ldName) is enabled for Edition-2 stations if the IED defines the appropriate service capabilities.

When the IED publisher uses the ldName for the published dataset, the GOOSE subscriptions can be configured based on the service capabilities of the IED subscriber.

To connect a source signal to a destination signal manually, proceed as follows:

✧ Select a destination signal in the **Destination catalog**.

✧ Hold down the mouse button and drag the selection onto the line containing the source signal in the **GOOSE** editor.

If insertion is not allowed at this position, the mouse pointer changes to a crossed-out circle and the corresponding message is displayed in the tooltip.

NOTE

For devices with EN100 and later binding, insertion is allowed at DA group level and for other devices, insertion is allowed at DO level and dataset level.

If the signal is inserted at dataset level, then the selected destination signal will be connected for all the source signals of the dataset.

To subscribe the SIPROTEC 5 or Edition 2.1 later binding data object, both the publisher and the subscriber must have the same basic type attribute in the data object.

✧ Release the mouse button at a permissible position.

The selected destination signals are connected to the source signals.

NOTE

If the selected destination signal cannot be connected to the source signal or if it has already been connected, change the selection.

NOTE

GOOSE links of subscriber type are represented by and GOOSE links of publisher type are represented by in the **GOOSE messages** window.

NOTE

To support the plug and play feature, the destination signals will not be deleted if the configured destination signals do not have a publisher IED in the station. If you want to delete the configured destination signal, click the button to remove it from the device.

When the publisher IED is imported to the station, the configured destination signals will be automatically mapped to the publisher configuration.

2.14.15 Copying the GOOSE Subscribers across IEDs

NOTE

Central functions may require several IEDs to subscribe to the same GOOSE signals.

To copy all the **GOOSE** subscriptions across IEDs, proceed as follows:

- ✧ Select an IED/LD/LN from the **Destination catalog**.
- ✧ Right-click the IED/LD/LN and select the **Copy** option from the context menu.

  - or -
- ✧ Click **Edit** in the menu bar and select the **Copy** option.

  - or -
- ✧ Press **Ctrl+C** on the keyboard.
- ✧ Right-click the IED/LD/LN from the **Destination catalog** where you want to paste the GOOSE subscriptions and select **Paste**.

The GOOSE subscriptions get pasted to the IED.

NOTE

You can copy and paste only at the same level. For example, if you copy an IED, it can only be pasted onto another IED.

While copying, all the sublevels below the copied IED/LD/LN are also copied.

If the subscribers are copied from SIPROTEC 5 or third-party devices, they cannot be pasted to a SIPROTEC 4 device.

If a signal is not pasted, it is displayed in the reporter window.

Later binding subscribers cannot be copied.

2.14.16 Changing the GOOSE Connection

Various options are available for changing an existing GOOSE connection in the **GOOSE** editor.

- You can connect the same source signal to multiple destination nodes.
- You can replace the current destination node with another destination node in the case of a source signal that has already been connected.

Connecting a Source Signal to an Additional Destination Node

✧ Select the new destination node in the **Destination catalog**.

✧ Hold down the mouse button and drag the destination node to the GOOSE connection to be changed in the **GOOSE messages** window.

If insertion is not allowed at this position, the mouse pointer changes to a crossed-out circle.

✧ Release the mouse button at a permissible position.

The selected destination node is also connected to the source signal.

Replacing Existing Destination Nodes with a Different Node

✧ Select the new destination node in the **Destination catalog**.

✧ Hold down the mouse button and drag the destination node to the GOOSE connection to be changed in the **GOOSE messages** window.

If insertion is not allowed at this position, the mouse pointer changes to a crossed-out circle.

✧ Release the mouse button at a permissible position.

A confirmation prompt is displayed.

✧ Click **Yes**.

The selected destination node replaces the existing node.

NOTE

If you click **No** in the confirmation prompt, the destination node is added to the source signal.

Deleting a GOOSE Connection

To delete a GOOSE connection from a dataset, proceed as follows:

✧ Select the GOOSE connection from the dataset.

✧ Click **Edit** > **Delete** from the menu bar.

- or -

✧ Click  in the toolbar.

- or -

✧ Right-click the GOOSE connection and select **Delete** from the context menu.

- or -

✧ Press **Delete** on the keyboard.

The **Delete items** dialog is displayed.

✧ Click **Yes** to delete the GOOSE connection or click **No** to cancel the operation.

NOTE

Once the destination signal is configured, the corresponding signal is marked with a red cross () in the **Destination catalog** indicating that it cannot be configured as a destination signal again.

NOTE

Only the devices with GOOSE capabilities are displayed in the catalogs.

NOTE

If you delete a configured destination node for a later binding device, its predefined data objects and data attributes are also deleted. To restore the predefined configuration, update the device.

2.14.17 Creating a GOOSE Configuration via a Predefined Configuration

To create a GOOSE configuration via a predefined configuration, proceed as follows:

- ✧ Select a station from the **GOOSE messages** Editor.
- ✧ Right-click the station and select **GOOSE Application from Template** > **VoltageControlParallelMaster-Follower** from the context menu.
  The GOOSE configuration is created in the station.
  The configuration is created from the predefined XML file and from the substation configuration.

To create a substation configuration, proceed as follows:

- ✧ In the **Substation** view, create a substation.
  For more information on creating a substation, refer to *2.12.3.1 Inserting a Substation*.
- ✧ Right-click the **Bay** node and select **Function** from the context menu.
  A function is created under the bay node.
- ✧ You can double-click the newly created function and rename it to **VoltageControlParallel**.
- ✧ Drag and drop the **ATCC** LN from the **Source catalog** to the newly created function.
  The IED from which the ATCC LN was configured, will become a publisher.
- ✧ Right-click the newly created function and select **Sub Function** from the context menu.
  A subfunction is created under the function.
- ✧ If you want, you can double-click the newly created subfunction and rename it to **Proxies**.
- ✧ Drag and drop the **ATCC** LN from the **Source catalog** to the newly created subfunction.
  The IED from which the ATCC LN was configured, will become a subscriber.

To create a predefined substation configuration, proceed as follows:

- ✧ In the **Substation** view, select any node.
- ✧ Right-click the selected node and select **Templates** > **<Template name>** from the context menu.
  The respective configuration will be created according to the predefined XML file under the selected node.
- ✧ Drag and drop the **ATCC** LN from the **Source catalog** to the function.
  The IED from which the ATCC LN was configured, will become a publisher.
- ✧ Drag and drop the **ATCC** LN from the **Source catalog** to the subfunction.
  The IED from which the ATCC LN was configured, will become a subscriber.

2.14.18 Reassigning the Virtual MAC Address

To reassign virtual MAC address, proceed as follows:

- ✧ Select an IEC 61850 station from **GOOSE messages** editor.
- ✧ Right-click the **IEC 61850 station** and select **Reassigning virtual MAC addresses** from the context menu.

  - or -

- ✧ Click  on the toolbar.

  - or -

✧ Click **Edit** menu and select **Reassigning virtual MAC addresses** from the menu option.

Overwrite existing MAC addresses dialog is displayed.

✧ Click **Yes** to reassign the virtual MAC address for all GOOSE messages of the station or click **No** to abort the operation and then click **OK**.

NOTE

Reassigning virtual MAC address allows all the addresses to be unique and changes the MAC address for other station devices. It also increases the performance at GOOSE subscriber side.

NOTE

Reassigning virtual MAC address is not applicable for devices imported through **SED**.

2.14.19 Selecting the Dataset for SED Export

With files in SED format (System Exchange Description), you can exchange information among several IEC 61850 stations. If a dataset and the signals contained within it should be part of an SED export, select the dataset for the SED export.

✧ Select the dataset from the GOOSE application in the **GOOSE** editor.

✧ Select **Yes** from the list box for **Include in SED export** in the **Parameter** group in the **Properties** window.

The dataset is included in the export file during an SED export.

NOTE

An Edition 2 station can export an Edition 1 or 2 SED file, but an Edition 1 station can only export an Edition 1 SED file.

2.14.20 GOOSE Supervision

IEC 61850-7-4 Edition 2 introduced the LN (logical node) LGOS to analyze the subscription state of a published GOOSE indication.

Configuring GOOSE Supervision while Creating the Subscriber

To create the GOOSE supervision while configuring the subscriber device with LGOS capability, proceed as follows:

✧ Select a destination signal in the **Destination catalog** in the GOOSE editor.

✧ Drag and drop the selected destination signal onto the line containing the source signal in the GOOSE editor.

The Subscriber device is configured with the GOOSE supervision reference under the available free LN LGOS.

✧ Select the GOOSE link.

The supervision information is displayed in the properties of the GOOSE link. Under **GOOSE Supervision**, the **Hierarchical path** displays the supervision path in the following order:

Devicename/LDInst/LNPrefix+LGOS+LNInst

Properties	
Identification	
Name	DPC
Type	GOOSE link
Hierarchical path	IED_116_7SL/UD1_FUD2/USER1/DPC
Parameter	
FC/DA mapping	ST [stVal, q]
GOOSE Supervision	
Hierarchical path	IED2/System/LGOS1

[sc_iec_gooselink_properties, 1, en_US]

The configured LGOS is marked with a red cross in the destination catalog. Selecting the marked LGOS, you can view the **Supervised GSEControl** and **Supervised dataset** values for the configured subscriber device in the properties of the **Supervised GOOSE** table.

NOTE

If no free LGOS is available, you can create a new LGOS for SIP5 devices up to the maximum allowed capability. For third-party devices, an automatic creation of a new LGOS logical node is not possible.

Configuring GOOSE Supervision at Station Level

To create the GOOSE supervision for all configured subscription devices with LGOS capability, proceed as follows:

✧ Open the GOOSE editor.

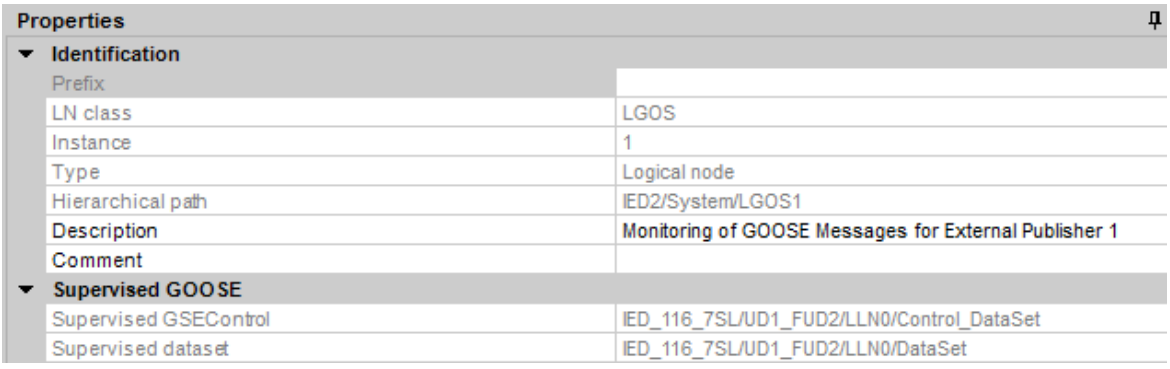
✧ Right-click the station and select **Create Supervision** from the context menu.

The GOOSE supervision is configured for all GOOSE links with LGOS capability. Selecting the Dataset, the supervision path under **GOOSE Supervision** is displayed in the **Table with IED and GOOSE supervision path** in the properties.

Properties	
Identification	
Name	DataSet
Type	Dataset
Hierarchical path	IED2/System/LLN0/DataSet
Parameter	
Configuration	<standard>
Include in SED export	No
Table with IED and GOOSE supervision path	
IED_107_6MD	Not configured
IED1	IED1/Master/LGOS1
Sub	Sub/Application/LGOS1

[sc_iec_station_properties, 1, en_US]

The used LGOS is marked with a red cross in the **Destination catalog**. Selecting this marked LGOS, you can view the **Supervised GSEControl** and **Supervised dataset** values for the configured subscriber device in the properties of the **Supervised GOOSE** table.



[sc_iec_LGOS_properties, 1, en_US]

NOTE

If no free LGOS is available, you can create a new LGOS for SIP5 devices up to the maximum allowed capability. For third-party devices, an automatic creation of a new LN LGOS is not possible.

A warning message is displayed in the **Report** window for the subscription without supervision capability.

Modifying GOOSE Supervision

To modify the configured GOOSE Supervision LGOS, proceed as follows:

✧ Open the GOOSE editor.

✧ Select the GOOSE link.

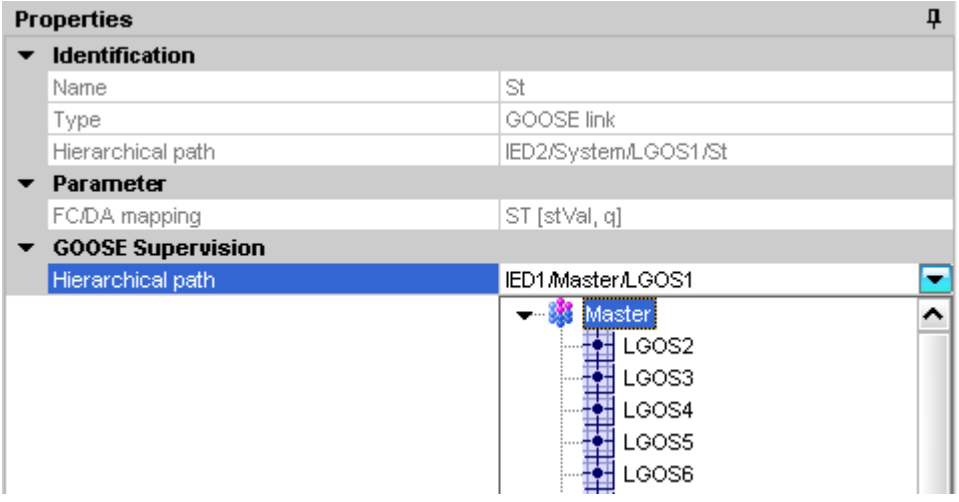
- or -

✧ Select the dataset.

The supervision information is displayed in the properties of the GOOSE link or the dataset.

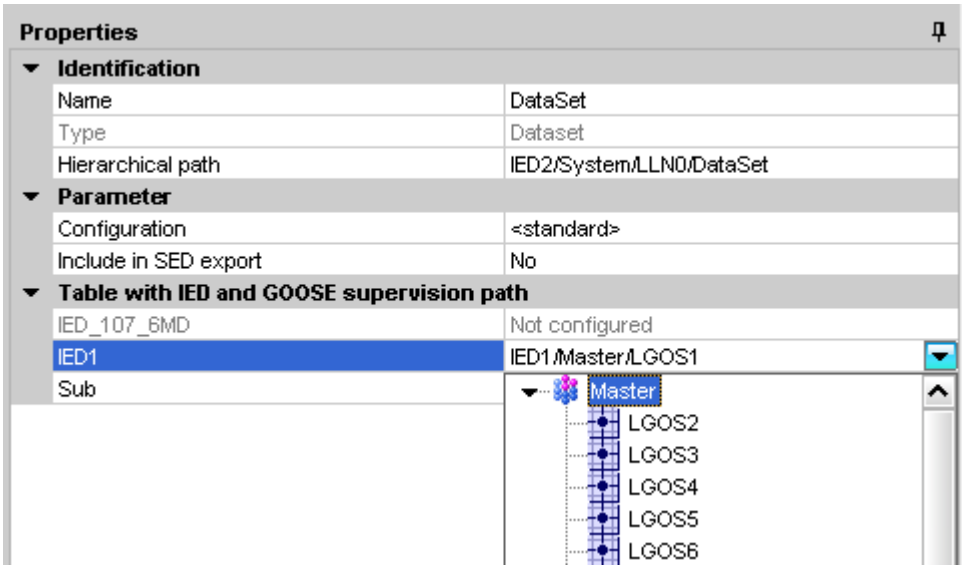
Selecting GOOSE link, the **Hierarchical path** under **GOOSE Supervision** displays the supervision path in the following order:

Devicename/LDInst/LNPrefix+LGOS+LNInst



[sc_iec_LGOS_modify_GOOSElink, 1, en_US]

Selecting the dataset, the supervision path under **GOOSE Supervision** is displayed under **Table with IED and GOOSE supervision path** in the properties.



[sc_iec_LGOS_modify_dataset, 1, en_US]

✧ Open the list box for the **Hierarchical path** under **GOOSE Supervision** in the properties of the GOOSE link to view and select the available LGOS.

The GOOSE supervision is configured to the newly selected LGOS and the old LGOS supervision is set to free.

Unlinking GOOSE Supervision for a GOOSE Link

To unlink the GOOSE supervision for a subscriber, proceed as follows:

✧ Open the GOOSE editor.

✧ Right-click the GOOSE link.

✧ Select the option **Unlink Supervision** from the context menu.

✧ Click **Yes**.

The GOOSE supervision is removed for the subscriber device. The indication **Not configured** is displayed in the text box for the **Hierarchical path** under GOOSE Supervision. The red cross is removed for the respective LGOS LN in the Destination catalog.

NOTE

The option **Unlink Supervision** is not available for the GOOSE link for the subscriber device without LGOS capability or if the LGOS is not configured.

Unlinking GOOSE Supervision for a Dataset

Unlink the GOOSE supervision for a subscriber, proceed as follows:

✧ Open the GOOSE editor.

✧ Right-click the dataset.

✧ Select the option **Unlink Supervision** from the context menu.

✧ Click **Yes**.

The GOOSE supervision is removed for all subscribers. The indication **Not configured** is displayed in the text box for all parameters under **Table with IED and GOOSE supervision path** in the properties. The red cross is removed for the respective LGOS LNs in the Destination catalog.

NOTE

The option **Unlink Supervision** is not available for the dataset even if one of the subscriber devices has the LGOS capability or if the LGOS is configured.

2.15 SMV View

2.15.1 Overview of Sample Value Communication

IEC 61850 uses the sampled value (SMV) to transmit the sampled measured values between the merging unit and the bay devices.

2.15.2 Opening the SMV Editor

To open the **SMV** editor, proceed as follows:

✧ Click **View** > **SMV** on the menu bar.

- or -

✧ Click **SMV** on the **IEC 61850 System configurator bar**.

- or -

✧ Press **Ctrl**+**4** on the keyboard.

SMV editor is displayed and it consists of the following windows:

- **SMV messages**
- **Source catalog**
- **Destination catalog**
- **Properties**

For additional information on these windows, refer to *8.4.5.1 SMV Editor*.

2.15.3 Adding and Deleting the SMV Application

Adding an SMV Application

To add an SMV application for a station in the **SMV** Editor, proceed as follows:

✧ Select the IEC 61850 station.

✧ Click **Insert** > **SMV application** from the menu bar.

✧ Click  in the toolbar.

✧ Right-click the station and select **SMV application** from the context menu.

An SMV application is added to the station.

Deleting an SMV Application

To delete an SMV application from a station in the **SMV** Editor, proceed as follows:

✧ Select the SMV application and click **Edit** > **Delete** from the menu bar.

- or -

✧ Select the SMV application and click  in the toolbar.

- or -

✧ Right-click the SMV application and select **Delete** from the context menu.

- or -

✧ Select the SMV application and press **Delete** on the keyboard.

The **Delete items** dialog is displayed.

✧ Click **Yes** to delete the SMV application or **No** to cancel the operation.

NOTE

An SMV application cannot be deleted, if any dataset assigned to it has service capabilities enabled.

2.15.4 Renaming the SMV Application

To rename the SMV application in the SMV messages window, proceed as follows:

✧ Select the SMV application you want to rename.

✧ Double-click the SMV application.

- or -

✧ Press **F2** on the keyboard.

✧ Enter a new name for the SMV application.

✧ Press **Enter** on the keyboard.

The new name for the SMV application is applied.

Renaming the SMV Application in the Properties Window

To rename the SMV application in the Properties window, proceed as follows:

✧ Select the SMV application in the **SMV messages** window that you want to rename.

✧ Enter a new name for the SMV application in the **Name** text box of the **Properties** window.

✧ Press **Enter** on the keyboard or click outside the text box.

The new name for the SMV application is applied.

NOTE

The **Name** must start with a letter and can only consist of letters, numbers, and underscore (_).

2.15.5 Adding and Deleting the Datasets

Datasets can be added to the SMV application and deleted from the SMV application.

Adding a Dataset

To add a dataset, proceed as follows:

✧ Select a signal from the **Source catalog** window.

✧ Drag and drop the signals on to the SMV application or station.

NOTE

An SMV control block is created automatically with the SMV dataset.

NOTE

The maximum number of datasets and SMV control blocks which can be created is defined by the service capabilities of the IED.

Deleting a Dataset

To delete a dataset from an SMV application, proceed as follows:

✧ Select the dataset from an SMV application.

✧ Click **Edit** > **Delete** from the menu bar.

- or -

✧ Click  on the toolbar.

- or -

✧ Right-click the dataset and select **Delete** from the context menu.

- or -

✧ Press **Delete** on the keyboard.

The **Delete items** dialog is displayed.

✧ Click **Yes** to delete the dataset or click **No** to cancel the operation.

2.15.6 Renaming the Dataset

To rename the dataset, proceed as follows:

✧ Select the dataset from the **SMV messages** window.

✧ Enter the name for the dataset in the **Name** text box in the **Properties** window.

NOTE

Special characters are not allowed in the **Name** text box according to IEC 61850-6 scheme.

✧ Press **Enter** on the keyboard or click outside the text box.

The entered name is accepted in the **SMV messages** window.

2.15.7 Moving the Dataset

To move the dataset from one SMV application to another, proceed as follows:

✧ Select the dataset from the **SMV messages** window.

✧ Drag and drop the dataset from one SMV application to another SMV application.

- or -

✧ Cut the dataset from the SMV application. You can perform this operation in any of the following ways:
- Select **Edit** > **Cut** from the menu bar.
- Select  in the toolbar.
- Right-click the dataset and select **Cut** from the context menu.

✧ Select the SMV application where you want to paste the dataset.

✧ Paste the dataset to the selected SMV application. You can perform this operation in any of the following ways:
- Select **Edit** > **Paste** from the menu bar.
- Select  in the toolbar.
- Right-click the SMV application where you want to paste the dataset and select **Paste** from the context menu.

The dataset is moved to the selected SMV application.

2.15.8 Adding a Signal to the Dataset

To add signals to the created dataset, proceed as follows:

- ✧ Select signals from the **Source catalog** window.
- ✧ Press the **SHIFT** key continuously as well as the down arrow to select multiple signals.

  - or -
- ✧ Hold **Ctrl** and select the desired signals from the **Source catalog** window.
- ✧ Drag and drop the signal to the SMV dataset.

NOTE

Dragging and dropping of a data object to the SMV application level creates a new dataset. To improve the bandwidth, drag and drop the data object directly to an existing dataset.

For additional information on changing signal properties, refer to *7.17 GOOSE Link*.

2.15.9 Changing the Properties of an SMV Control Block

To change the properties of an SMV control block, proceed as follows:

- ✧ Select the Dataset from the **SMV** editor whose properties you want to set.
- ✧ In the **Properties** window, click ... for **Configuration** in the **Parameter** group.

Configuration dialog is displayed.

- ✧ Change the settings to meet your requirements.

For additional information on changing the configuration of the Dataset, refer to *7.16 Dataset*

2.15.10 Selecting or Deselecting a Dataset for a Subnet

In the SMV editor, there is an SMV messages window containing a column with the name of the subnet for every subnet that has been assigned within the Network view. Each column contains check box for each dataset. With this check box, you specify whether a dataset and the signals contained within it should be transmitted over the subnet. Only complete datasets can be selected or deselected and not individual signals. If the check box is selected, the dataset is transmitted via the subnet. If the check box is cleared, the dataset is not transmitted via the subnet.

So to select a subnet for a dataset, the following prerequisites must be fulfilled:

- In the **Network** view, the Ethernet interface is connected with the subnet concerned.
- At least one SMV application exists in the SMV editor.

Selecting or Deselecting a Dataset for a Subnet

- ✧ Open the SMV editor that contains the dataset in **SMV messages** window.
- ✧ Select the check box in the cell linking the dataset line and the subnet column, to select the dataset for a subnet,

By default, the subnet used by the first access point of the IED is selected.

- ✧ If you want to deselect the dataset from a subnet, clear the check box in the cell linking the dataset line and subnet column.

2.15.11 Generating the SMV Connection

An SMV link consists of a signal as the source and at least a Logical node or a Data object as the destination. Links are always created within SMV applications.

For linking a source signal to a target node, the following rules apply:

- You can connect one source signal to several destination nodes.
- A signal can only be used in precisely one SMV application as a source signal.
- The source signal and the destination node must always be located on different devices. You cannot connect a source signal to a destination node from the same device.
- The access point of the source and the destination devices should be in the same subnetwork.

The links are also grouped into datasets within an SMV application.

You can connect a source signal to a destination node manually in the SMV Editor by drag and drop if the CDC (Common Data Class) matches. Other devices are mapped at LN level and thus no CDC check is performed. The mapping is then done at the data attribute group level which usually consists of the sampled value **instMag.f** and of the quality **q**.

NOTE

When the IED publisher uses the ldName for the published dataset, the SMV subscriptions can be configured based on the service capabilities of the IED subscriber.

To connect a source signal to a destination signal manually, proceed as follows:

✧ Select a destination signal in the **Destination catalog**.

✧ Drag the selected destination signal onto the line containing the source signal in the **SMV** editor.

If insertion is not allowed at this position, the mouse pointer changes to a crossed-out circle and the corresponding message is displayed in the tooltip.

NOTE

For devices with later binding, insertion is allowed at data attribute group level and for other devices, insertion is allowed at data object level and at dataset level.

✧ Release the mouse button at a permissible position.

The selected destination signals are connected to the source signals.

NOTE

If the selected destination signal cannot be connected to the source signal or if it has already been connected, select another signal.

NOTE

SMV links of subscriber type are represented by  and SMV links of publisher type are represented by  in the **SMV messages** window.

NOTE

To support the plug and play feature, the destination signals will not be deleted if the configured destination signals do not have a publisher IED in the station. If you want to delete the configured destination signal, click the  button to remove it from the device.

When the publisher IED is imported to the station, the configured destination signals will be automatically mapped to the publisher configuration.

2.15.12 Changing the SMV Connection

Various options are available for changing an existing SMV connection in the SMV editor.

- You can connect the same source signal to multiple destination nodes.
- You can replace the current destination node with another destination node in the case of a source signal that has already been connected.

Connecting a Source Signal to an Additional Destination Node

✧ Select the new destination node in the **Destination catalog**.

✧ Hold down the mouse button and drag the destination node to the SMV connection to be changed in the **SMV messages** window.

If insertion is not allowed at this position, the mouse pointer changes to a crossed-out circle.

✧ Release the mouse button at a permissible position.

The selected destination node is also connected to the source signal.

Replacing Existing Destination Nodes with a Different Node

✧ Select the new destination node in the **Destination catalog**.

✧ Hold down the mouse button and drag the destination node to the SMV connection to be changed in the **SMV messages** window.

If insertion is not allowed at this position, the mouse pointer changes to a crossed-out circle.

✧ Release the mouse button at a permissible position.

A confirmation prompt is displayed.

✧ Click **Yes**.

The selected destination node replaces the existing node.

NOTE

If you click **No** on the confirmation prompt, the destination node is added to the source signal.

NOTE

Once the destination data-object signal is configured, the corresponding signal is marked with a crossed-out symbol in the **Destination catalog** indicating that the connection is established and that it cannot be configured as a destination signal again.

2.16 Reports and Logs View

2.16.1 Overview of Reports and Logs

Devices support data transmission between server and client in the form of reports and logs.

A report is comparable to indications list. Changes to indications or measured values, for example, by raising or clearing protection trigger are immediately transmitted from the server to the client. Therefore, the client does not have to make cyclical queries in the server as is the case in serial protocols. Instead, the client is automatically informed about an event.

You can use Report and logs Editor to add datasets. Datasets group individual signals together. The signals combined in datasets can subsequently be assigned to various report control blocks. It is possible to assign one dataset to several report control blocks.

NOTE

This editor is for the use of static reporting. By default, dynamic reporting is commonly used in Siemens portfolio. This does not require any engineering in **Reports and Logs** editor.

2.16.2 Opening the Reports and Logs Editor

To open the **Reports and logs** editor, proceed as follows:

✧ Click **View** > **Reports and logs** on the menu bar.

- or -

✧ Click **Reports and logs** editor on the **IEC 61850 System Configurator**.

- or -

✧ Press **Ctrl**+**5** on the keyboard.

Reports and logs editor is displayed and it consists of the following windows:

- **Applications**
- **Dataset content**
- **Report and Log control blocks**
- **Source catalog**
- **Clients**
- **Properties**

For additional information on these windows, refer to *8.4.6.1 Reports and Logs Editor*.

2.16.3 Adding and Deleting the Datasets

Adding a Dataset

✧ Select a device in **Applications** window in the **Reports and logs** editor.

✧ Click **Insert** > **Dataset** on the menu bar.

- or -

✧ Click  on the toolbar.

- or -

✧ Right-click the device and select **insert dataset** from the context menu.

This inserts the empty dataset to the device.

Deleting a Dataset

- ✧ Select the dataset from **Applications** window in the **Reports and logs** editor.
- ✧ Click **Edit** > **Delete** on the menu bar.

  - or -

- ✧ Click  on the toolbar.

  - or -

- ✧ Right-click the dataset and select **Delete** from the context menu.

  - or -

- ✧ Press **Delete** on the keyboard.

Delete items dialog is displayed.

- ✧ Click **Yes** to delete the selected dataset or click **No** to abort this operation.

2.16.4 Renaming the Dataset

Following the insertion, the name of a dataset consists of a hierarchical path name and a consecutively numbered name such as Dataset_1,Dataset_2, and so on. You can change the path name and the name of the dataset independently.

Changing the Hierarchical Path

To change the hierarchical path for the dataset, proceed as follows:

- ✧ Select the dataset in the **Applications** window in **Reports and logs** editor.
- ✧ Select the desired path from the **Hierarchical path** list box.

To do this, open a logical device (LD) within the list box and then double-click the name of a logical node (LLN0).

The selected path is accepted in the **Applications** window.

Changing the Name of a Dataset

To change the name of a dataset, proceed as follows:

- ✧ Select the dataset in the **Applications** window in **Reports and logs** editor.
- ✧ Enter the name for the dataset in the **Name** text box in the **Properties** window.
- ✧ Press **Enter** on the keyboard or click outside the text box.

The entered name is accepted in the **Reports and logs** editor.

NOTE

Special characters are not allowed in the **Name** text box according to IEC 61850-6 scheme.

2.16.5 Adding a Signal to the Dataset

Datasets group individual signals. You can add the same signal to several different datasets. However, you cannot add a signal to a dataset more than once.

To add a signal using drag and drop option, proceed as follows:

- ✧ Select a signal from the **Source catalog**.

✧ Hold down the mouse button and drag the selection to the name of the dataset in the **Applications** window or on to the **Dataset content** window.

NOTE

If you want to drag the signal from **Source catalog** to **Dataset content** window, select the dataset from the **Applications** window before you perform this action.

For additional information on property values of a dataset, refer to *7.16 Dataset*.

2.16.6 Adding or Deleting a Report Control Block

To generate and send a report at runtime, add a report control block for the datasets.

Adding a Report Control Block

To add a report control block, proceed as follows:

✧ Select a dataset under a device which has the **Insert report** button enabled from the **Project tree** window in the **Reports and logs** Editor.

✧ Right-click the selected dataset or the **Dataset content** window or the **Report and Log control blocks** window and select **Insert report** from the context menu.

- or -

✧ Click on the toolbar.

- or -

✧ Click **Insert > Insert report** from the menu bar.

A new report is configured according to the selected dataset and added to the **Report and Log control blocks** window. The name consists of a hierarchical path name and a consecutively numbered default name.

To use the signals in more than one client, several Report Control Blocks are required. The report control blocks can be new or you can instantiate it by setting the maximum value in the **Supported clients** property field.

Deleting a Report Control Block

To delete report control block from **Report and Log control blocks**, proceed as follows:

✧ Select the report control block to be deleted from **Report and Log control blocks** window.

- or -

✧ Right-click the selected report control block and select **Delete** from the context menu.

✧ Click **Edit** > **Delete** from the menu bar.

- or -

✧ Click on the toolbar.

- or -

✧ Press **Delete** on the keyboard.

Delete items dialog is displayed.

✧ Click **Yes** to delete the report control block or click **No** to cancel this operation.

2.16.7 Adding or Deleting a Log Control Block

To generate and send a log at runtime, add a log control block for the datasets.

Adding a Log Control Block

To add a log control block, proceed as follows:

- ✧ In **Reports and logs** editor, in the **Project tree**, select a dataset under a device which has the **Insert log** button enabled.
- ✧ Right-click the selected dataset and select **Insert log** from the context menu.

  - or -
- ✧ Right-click in the **Dataset content** window and select **Insert log** from the context menu.

  - or -
- ✧ Right-click in the **Report and Log control blocks** window and select **Insert log** from the context menu.

  - or -
- ✧ Click  in the toolbar.

  - or -
- ✧ Click **Insert > Insert log** from the menu bar.

A log is configured according to the selected dataset and displayed in the **Report and Log control blocks** window. The name consists of a hierarchical path name and a consecutively numbered default name.

NOTE

You cannot create a log control block in the following cases:

- If the *ConfLogcontrol* or the maximum attribute is not present in the service section.
- If the *ConfLogcontrol* maximum is 0 in the service section.
- If the log control block has reached its maximum count.

Deleting a Log Control Block

To delete a log control block from the **Report and Log control blocks**, proceed as follows:

- ✧ Select the log control block to be deleted from the **Report and Log control blocks** window.
- ✧ Click **Edit** > **Delete** from the menu bar.

  - or -
- ✧ Click  in the toolbar.

  - or -
- ✧ Right-click the log control block that you want to delete and select **Delete** from the context menu.

  - or -
- ✧ Press **Delete** on the keyboard.

The **Delete items** dialog is displayed.

- ✧ Click **Yes** to delete the log control block or click **No** to cancel this operation.

2.16.8 Changing the Properties of a Report

To change the properties of a report, proceed as follows:

- ✧ Select the report control block whose properties you want to change in the **Reports and Log control blocks** window.
- ✧ Select the properties required for sending a report in the **Trigger options** group in **Properties** window.

For additional information on selecting trigger options and optional fields for sending a Report, refer to *7.23 Report Control Blocks*.

2.16.9 Changing the Properties of a Log

To change the properties of a log, proceed as follows:

- ✧ Select the log control block whose properties you want to change in the **Reports and Log control blocks** window.
- ✧ Select the properties required for sending a log in the **Trigger options** group in the **Properties** window.

For additional information on selecting trigger options and optional fields for sending a log, refer to *7.24 Log Control Blocks*.

2.16.10 Set Parameter Report as Buffered or Unbuffered

The IEC 61850 distinguishes between buffered reports and unbuffered reports. For a buffered report, if the connection between the server and client is interrupted, changes of indications are saved in the device. Once the connection is restored, these indications are transmitted to the client with a time stamp.

For an unbuffered report, the changes are lost if the connection is lost. If there is a constant connection between the client and server, both behaviors appear identical from the user view.

You select as an option in **Properties** window whether a report is buffered or unbuffered in the applicable report control block. After inserting a new report control block, the buffered option is set to **No** by default.

To activate the buffer option in the **Properties** window, proceed as follows:

- ✧ Select the report from the **Report and Log control blocks** for which you want to activate the buffer option.
- ✧ Select **Yes** for the **Buffer indications** in **Parameter** group in the **Properties** window.

The **Identify information report as buffered** dialog is displayed for the devices dependent on the services section.

- ✧ Click **OK**.
- ✧ Enter the buffering time in ms for **Buffer time**.
- ✧ Press **Enter** or click outside the entry field.

If the value entered is permissible, it is accepted. If the entered value is outside the permissible value range, an error message is displayed. In this case, correct your input.

2.16.11 Adding the Clients to the Report Control Block

To add clients to the report control blocks, proceed as follows:

- ✧ Select the **Reports and logs** editor.
- ✧ Select the dataset from the **Applications** window.
- ✧ Select the logical node from the **Clients** window.
- ✧ Drag and drop the logical node on to the report control in the **Report and Log control blocks** window.

This operation adds the client to the report control.

2.16.12 Copying all the Reports and Datasets across IEDs

NOTE

IEDs are configured as typicals and instantiated several times. It is then useful not to re-engineer all the IEDs manually.

To copy all the reports and datasets across IEDs, proceed as follows:

- ✧ Select an IED from the **Project tree**.
- ✧ Right-click the IED and select the **Copy** option from the context menu.

  - or -

- ✧ Click **Edit** in the menu bar and select the **Copy** option.

  - or -

- ✧ Press **Ctrl+C** on the keyboard.
- ✧ Right-click the IED from the **Project tree** where you want to paste the report datasets and select **Paste**.

All the reports and the associated datasets get pasted to the IED.

2.17 Protocol Mapping View

2.17.1 Overview of Protocol Mapping

The IEC 61850 standard is extended in IEC 61850-80-1 by the assignment of IEC 61850 data model to IEC 60870-5-104. The mapping is done in the IEC 61850 System Configurator.

2.17.2 Opening the Protocol Mapping Editor

To open the **Protocol mapping** editor, proceed as follows:

- ✧ Click **View** > **Protocol mapping** on the menu bar.

  - or -

- ✧ Click **Protocol mapping** on the **IEC 61850 System configurator bar**.

  - or -

- ✧ Press **Ctrl**+**6** on the keyboard.

Protocol mapping editor is displayed along with its elements.
For additional information on the elements of Protocol Mapping editor, refer to *8.4.7.3 Protocol Mapping*.

NOTE

If the IED has the signals that are part of static dataset or dynamic reporting with subset of SICAM, only those signals are displayed in the **Protocol mapping** window.

2.17.3 Inserting and Deleting the Address

Inserting the T104 Mapping Address

You can insert the T104 address for the data attribute in the protocol mapping window.
To insert the T104 address, proceed as follows:

- ✧ Select a row or multiple rows for which you need to add the address in the **Protocol mapping** editor.
- ✧ Click **Edit** > **Insert T104 Address** on the menu bar.

  - or -

- ✧ Click  on the toolbar

  - or -

- ✧ Right-click a selected row and select **Insert T104 Address** from the context menu.

This operation adds the T104 mapping address for that data attribute.
The default values for T104 mapping address are as follows:

Elements	Default Value
Casdu	1
CASDU1	1
CASDU2	0
IOA	No default value.
IOA1	The IOA1, IOA2, and IOA3 value depends on the IOA value.
IOA2	
IOA3	
Ti	No default value. The Ti value depends on the CDC and DA type.

NOTE

The appropriate T104 address cells (**Casdu**, **IOA**, **Ti**, **CASDU1**, **CASDU2**, **IOA1**, **IOA2**, and **IOA3**) are editable.

Deleting the T104 Mapping Address

You can delete the T104 address for the data attribute in the protocol mapping window.

To delete the T104 address, proceed as follows:

- ✧ Select a row or multiple rows with T104 address that you want to delete from the **Protocol mapping** editor.
- ✧ Click **Edit** > **Delete T104 Address** on the menu bar.

  - or -

- ✧ Click  on the toolbar.

  - or -

- ✧ Right-click a selected row with T104 address and select **Delete T104 Address** from the context menu.
  The **Delete items** dialog is displayed.
- ✧ Click **Yes** to delete the rows or **No** to abort the operation.

2.17.4 Inserting T104 Mapping Address in Bulk

NOTE

You can insert the T104 mapping address either with the same value or with the given value.

Inserting T104 Mapping Address with the Same Value

To insert the T104 mapping address in multiple cells in **CASDU** and **IOA** columns with the same value, proceed as follows:

- ✧ Select the continuous cells in the **CASDU** (also CASDU1 and CASDU2) or **IOA** (also IOA1, IOA2, and IOA3) column.
- ✧ Right-click the cell and select **Fill in with the same value** from the context menu.

The selected cells are filled with the 1st cell value.

Inserting T104 Mapping Address with the Given Value

To insert the T104 mapping address in multiple cells in **CASDU** and **IOA** columns with the given value, proceed as follows:

- ✧ Select the continuous cells in the **CASDU** (also CASDU1 and CASDU2) or **IOA** (also IOA1, IOA2, and IOA3) column.
- ✧ Right-click the cell and select **Fill in with given value** from the context menu.

The **Set given value** dialog is displayed.

- ✧ Enter the value and click **Apply**.

The cells are filled with the given value.

NOTE

The value range for any cell in CASDU is between **0** and **65535**.
The value range for any cell in IOA is between **0** and **16777215**.
The value range for any cell in CASDU1, CASDU2, IOA1, IOA2, and IOA3 is between **0** and **255**.

2.17.5 Incrementing the T104 Mapping Address Automatically

To autoincrement the T104 mapping address, proceed as follows:

✧ Select the continuous cells in the **CASDU** (also CASDU1 and CASDU2) or **IOA** (also IOA1, IOA2, and IOA3) column.

✧ Right-click the cell and select **Auto increment** from the context menu.

The **Set autoincrement value** dialog is displayed.

✧ Enter the **Start value** and **Increment value**.

The first cell is filled with the start value. The following cells takes the value of the previous cell incremented by the given increment value. This is applicable for all the cells in the selection.

NOTE

If the value exceeds the range, the subsequent cells are not populated.

2.18 Adjusting the View of Editor

2.18.1 Modifying the Window Size

You can adjust the size of all the windows that are part of the editor.
To modify the size of the window, proceed as follows:

- ✧ Move the mouse pointer until you reach the separating line.
- ✧ Click the Separating line and with the mouse button pressed, drag it to the left or right.
- ✧ Release the mouse button when you reach the desired width or length.

2.18.2 Showing or Hiding the Windows

To hide the window in editor, proceed as follows:

- ✧ Click the pin on the right top corner of the window.

The window is minimized.

- ✧ To view the window, click the minimized window and click the pin in the right top corner of the window.

NOTE

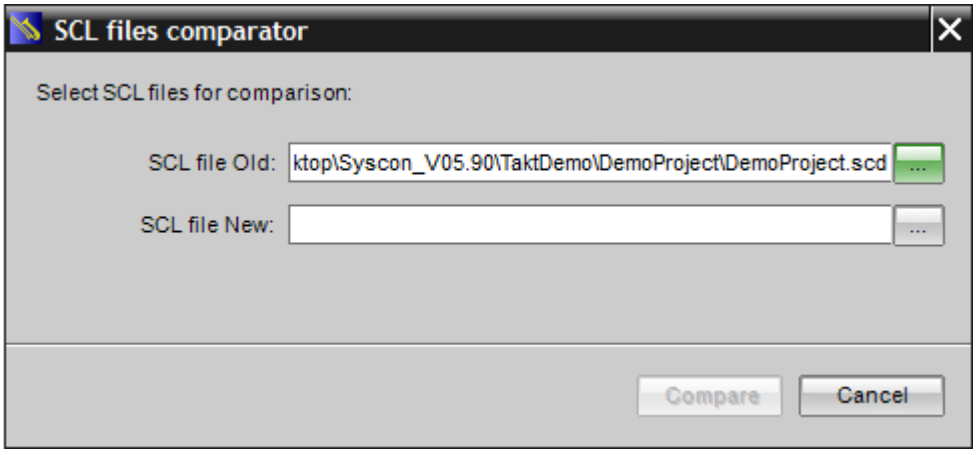
The settings are saved in the project and they are used when the project is opened again.

2.19 SCL-Files Comparator

This feature is used to compare SCL files and IEC 61850 project archives, to analyze the differences between them.

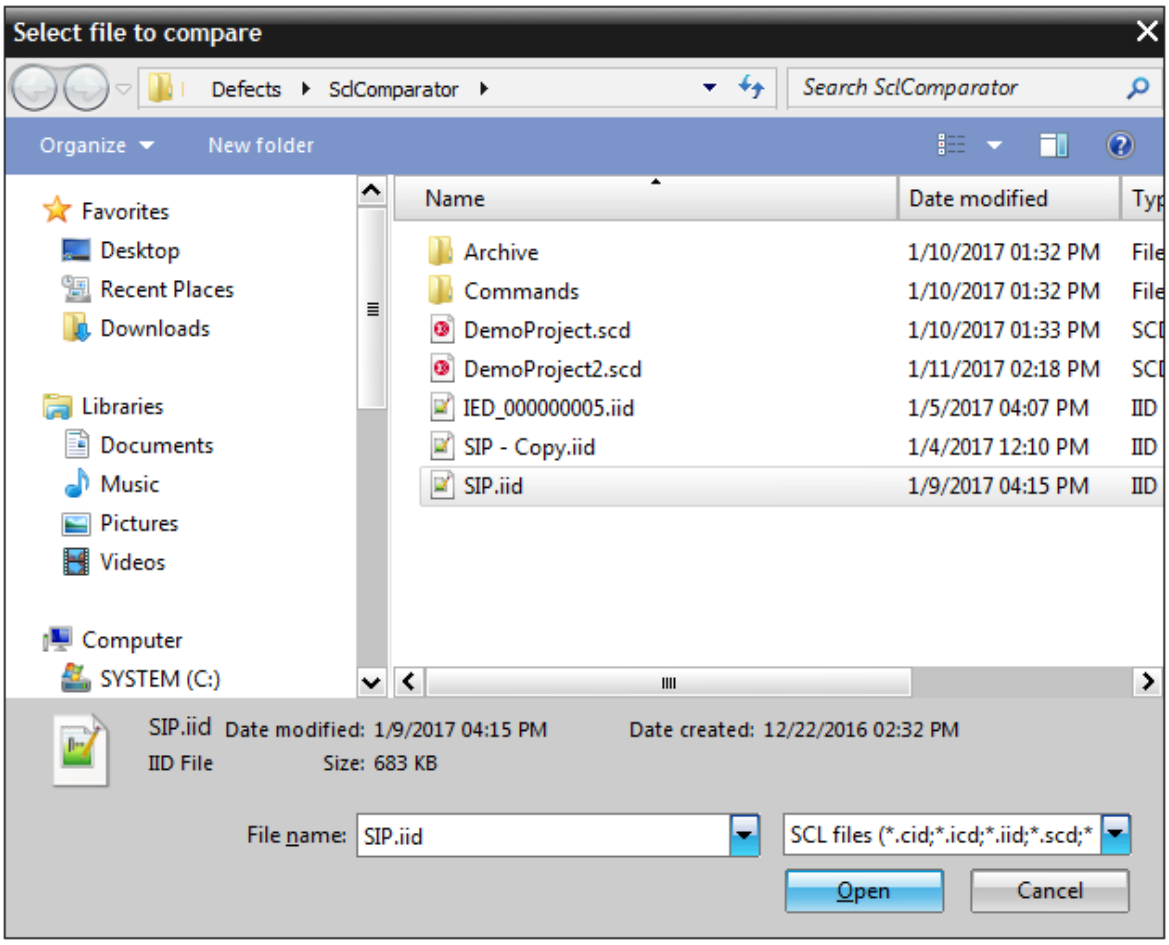
To compare the 2 files, proceed as follows:

✧ Click **Tools** > **SCL files comparator** in the menu bar.
The **SCL files comparator** dialog is displayed.
If a project is already opened, its SCD path is displayed in the **SCL file Old** field.



[sc_SCL_comp, 2, en_US]
Figure 2-6 SCL Comparator - Open Project

✧ Click ... .
The **Select file to compare** dialog is displayed.



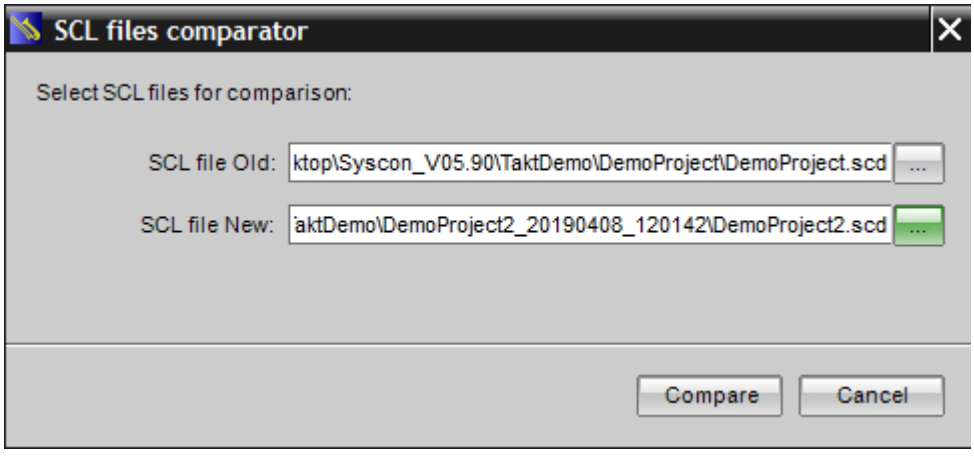
[sc_SCL_Select_file, 1, en_US]

Figure 2-7 SCL-File Select

✧ Navigate to the desired location and select the file.
The supported file types are ***.cid, *.icd, *.iid, *.scd, *.sed, *ssd**, and ***.sz**

✧ Click **Open**.
The file name is displayed in the **SCL file Old** field.

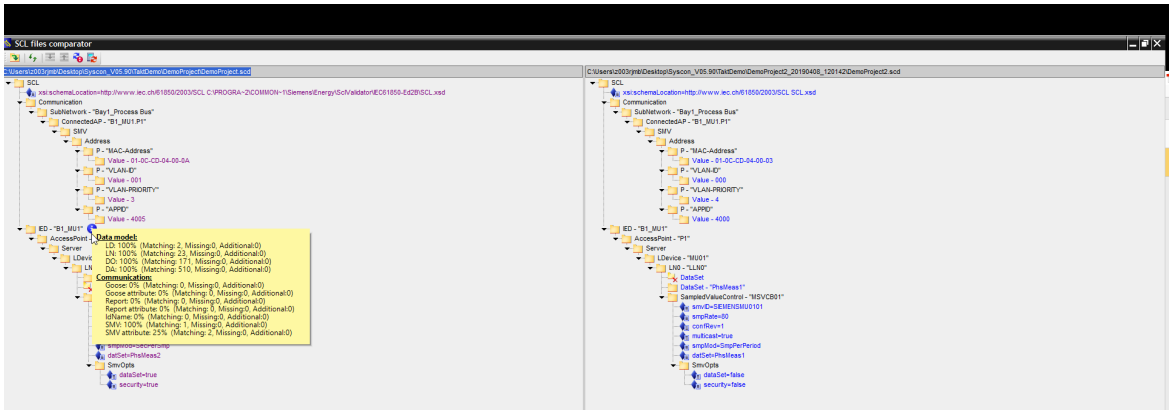
✧ Repeat these steps for the file in the **SCL file New** field.



[sc_SCL_Compare, 2, en_US]

Figure 2-8 SCL Comparator

✧ Click **Compare**.
The **SCL files comparator** window is displayed.



[sc_SCL_Result, 3, en_US]
Figure 2-9 SCL-File Comparison

The **SCL files comparator** window displays the comparison result between the 2 SCL files, side by side.

SCL-Files Comparator Window Toolbar

The toolbar contains commands that are frequently required for your work.

Field/Icons	Name	Description
	Open	Opens the **SCL files comparator** dialog
	Refresh	Refreshs the window, to display the changes made in the files
	Expand all	Expands the selected node
	Collapse all	Collapses the selected node
	Client update	Displays the comparison result of devices that require updates in SICAM
	Subscriber update	Displays the comparison result of subscriber devices that require updates

SCL-Files Comparator Window Indicators

The different indicators are used to indicate the difference between the 2 compared files.

Indicator	Description
	Attribute modified
	Attribute added/Attribute deleted
No icon	Content modified
	Node added/Node deleted
	Nodes in sync

Indicator	Description
	The tooltip of this icon displays the compliance percentage between the 2 SCL files. It also displays the **Matching**, **Missing**, and **Added** data models (LN, LD, DO, DA) and the following communications of the IEDs: • GOOSE • GOOSE attributes • SMV • SMV attributes • Report • Report attributes • LD name
	SICAM client update required
	Subscriber device update required
	SICAM client update recommended

3 Export and Import

NOTE

Save the station before starting any exports.

3.1 Exporting Data

3.1.1 Exporting IEC 61850 Documentation as XML Data

To export IEC 61850 documentation as an XML data, proceed as follows:

✧ Click **Station** > **Export** from the menu bar and select **IEC 61850 documentation as XML file** from the submenu options.

- or -

✧ Press **Ctrl**+**M** on the keyboard.

The **Documentation-IEC61850-Station** dialog is displayed.

✧ Navigate to the location and enter the name for the XML file.

✧ Click **Save**.

The station information is saved as an XML file in the preferred location and can be opened by any Web browser.

NOTE

Keep the XSLT and the CSS file in the same location as the XML file to display them in the Web browser.

3.1.2 Exporting IEC 61850 Station (SCD, SED, SSD)

To export the IEC 61850 station, proceed as follows:

✧ Click **Station** > **Export** from the menu bar and select **IEC 61850 station** from the submenu options. The **Export IEC Station** dialog is displayed.

✧ Enter a **File name**.

✧ Click ..., browse, and select a **File path**.

✧ Select a **File type** from the list box.

NOTE

To export an IEC station as a configured communication description, refer to *3.1.4 Exporting a Configured Communication Description* .

✧ Select the **SCL schema** (SCL 2003, SCL 2007B, SCL 2007B4) from the list box.

NOTE

The default SCL schema is based on the station edition.

✧ You can enter a comment for future reference, in the **Comment** field.

✧ Click **Export**.

The station is exported to the preferred location.

The exported SCD file can be imported to other applications like SICAM PAS.

NOTE

Edition 1 and Edition 2 SCD files can be exported from the Edition 2.1 station to support backward compatibility of mixed substations.

Exporting IEC 61850 Station with an Alternative Text

When you export the station with an alternative text, the source language is English because of non-cyrillic alphabets, which are potentially not supported by some of the IEC 61850 clients.

To export the IEC 61850 station with an alternative text, proceed as follows:

✧ Click **Station** > **Export** from the menu bar and select **IEC 61850 station with alternative text** from the submenu options.

The **Export IEC 61850 station** dialog is displayed.

✧ Navigate to the location and enter the file name for the station.

✧ Click **Save**.

The station is exported in the English language and to the preferred location.

NOTE

This feature is available only in Russian and Chinese in DIGSI 4 and if it is activated in DIGSI 5.

3.1.3 Exporting IEC 61850 Device Configuration (CID, ICD, IID)

To export the device configuration, proceed as follows:

✧ Select one or multiple devices from the **Devices** editor.

✧ Click **Station** > **Export** on the menu bar and select **Export IEC 61850 device configuration** from the submenu options.

- or -

✧ Right-click a selected device and select **Export IEC 61850 device configuration** from the context menu.

- or -

✧ Press **Ctrl**+**G** on the keyboard.

The **Export IEC Station** dialog is displayed.

✧ Enter a **File name**.

✧ Click ..., browse, and select a **File path**.

✧ Select a **File type** from the list box.

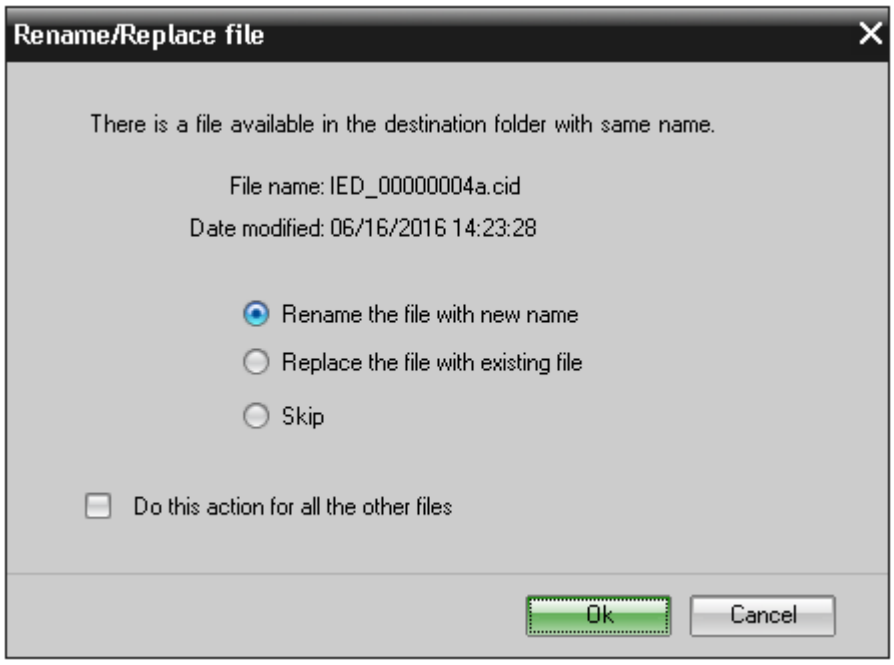
✧ Select the **SCL schema** (SCL 2003, SCL 2007B, SCL 2007B4) from the list box.

NOTE

The default SCL schema is based on the project edition.

✧ You can enter a comment for future reference, in the **Comment** field. The comment can be viewed in the **HiItem** section in the **History** of the SCD file.

While exporting the files, if a duplicate of a file is already available in the destination folder, the **Rename/ Replace file** dialog is displayed.



[sc_Replace_File, 1, en_US]
Figure 3-1 Replace File

You can select whether you want to rename the file, replace the existing file, or skip the file.

NOTE

If multiple files have the same name, they cannot be renamed. Instead, a suffix **_1** is added to the file name.

✧ Select the option **Do this action for all other files** to repeat the selected action for the rest of the files.

✧ Click **OK**.

The device configuration is exported to the preferred location.

3.1.4 Exporting a Configured Communication Description

A **Configured Communication Description** file contains the following configured elements:

- Substation
- Description
- GOOSE engineering
- Reports and logs engineering
- Protocol mapping for IEC 60870-5-104
- Process bus engineering

The file also contains the needed IEDs with required data type templates and logical node type definitions.
To export the IEC 61850 station via a Configured Communication Description file, proceed as follows:

✧ Click **Station** > **Export** from the menu bar and select **IEC 61850 station** from the submenu options. The **Export IEC Station** dialog is displayed.

✧ Enter a **File name**.

✧ Click ..., browse, and select a **File path**.

✧ Select **Configured Communication Description** for the **File type**.

✧ Select the **SCL schema** (SCL 2003, SCL 2007B, SCL 2007B4) from the list box.

✧ You can enter a comment for future reference, in the **Comment** field.

✧ Click **Export**.
The Configured Communication Description file is exported to the entered location.

3.1.5 Exporting Simulation List for SICAM PTS

To export simulation list for SICAM PTS as a CSV file, proceed as follows:

✧ Click **Station > Export** in the menu bar and select **Simulation list for SICAM PTS as CSV file** from the submenu options.

The **Exporting SICAM PTS Telegram File** dialog is displayed.

✧ Navigate to the location and enter the name for the CSV file.

✧ Click **Save**.

The station information is saved as a CSV file in the preferred location and can be imported to SICAM PTS.

CDC Default Values

Name	Default Values
SPS	1
DPS	2
INS	Starts with 1 and increments by 1
ENS	Ignore
ACT	1
ACD	1
MV (i)	Starts with 1 and increments by 1
MV (f)	Starts with 2 and increments by 0.01
CMV (i)	Starts with 1 and increments by 1
CMV (f)	Starts with 2 and increments by 0.01
SAV	Ignore
SPC	1
DPC	2
INC	Starts with 1 and increments by 1
ENC	Ignore
BSC	Ignore
ISC	1
BCR	Ignore
ASG	Ignore
ING	Ignore
APC (i)	Starts with 1 and increments by 1
APC (f)	Starts with 2 and increments by 0.01
BAC (i)	Starts with 1 and increments by 1
BAC (f)	Starts with 2 and increments by 0.01
SEC	Ignore
WYE	Down to SDO
DEL	Down to SDO
SEQ	Down to SDO

3.2 Importing Data

3.2.1 Importing SCD, SED, or SSD files

To import SCD, SED, or SSD files to IEC 61850 System Configurator, proceed as follows:

✧ Click **Station** > **Import** on the menu bar and select **IEC 61850 station** from the context menu.

✧ Click **Yes** to save the station in the IEDs editor or click **No** to proceed without saving.

The **Import IEC 61850-Station** dialog is displayed.

✧ Browse for the location and select the SCD, SED, or SSD file to import and click **Open**.

The IEC 61850 station is imported successfully.

NOTE

The station edition should be higher or equal to the edition of the SCL files. Edition 1 and Edition 2.1 of an SED file can be imported to a station Edition 2, but an Edition 2 and Edition 2.1 of an SED file cannot be imported to a station Edition 1 because the SED functionality do not exist in Edition 1.

Creating or modifying a dataset and configuring the destination is dependent on the SED engineering rights. It is recommended to use the master project to change published indications.

3.2.2 Adding Devices using Import

To add devices (ICD, IID, or SCD) to the station using Import option, refer to *2.11.2 Adding the Devices (ICD, IID, and SCD) to the Station*.

3.2.3 Updating Devices using Import

To reimport the device with its updated SCL, refer to *2.11.3 Updating the Devices*.

3.2.4 Adding Substation using SSD Import

To add substation (SSD) to the IEC 61850 System Configurator, proceed as follows:

✧ Open the **IEC 61850 System Configurator** and select the station.

✧ Click **Station** > **Import** on the menu bar and select **IEC 61850 station** from the context menu.

If the station in the IEDs editor is not saved, a **Save** dialog is displayed.

✧ Click **Yes** to save the station in the IEDs editor or click **No** to proceed without saving.

The **Import IEC 61850-Station** dialog is displayed.

✧ Browse for the location and select the SSD file to import and click **Open**.

The substation is imported successfully.

NOTE

If the substation is already a part of the station, **Substation already exists** warning message is displayed in the status report.

3.2.5 Updating Substation using SSD

To reimport the substation with its updated SCL, proceed as follows:

✧ Open the IEC 61850 System Configurator and select the IEC Station.

- ✧ Click **Station** > **Import** on the menu bar and select **Update Substation (SSD)** from the submenu option.

  - or -

- ✧ Right-click the station and select **Update Substation (SSD)** from the context menu.

  - or -

- ✧ The **Update Substation(s)** dialog is displayed.
- ✧ Navigate to the SSD that you want to update and select that SSD.
- ✧ Click **Open**.

The substation is updated successfully, if there are no violations listed in the status report.

NOTE

If the substation is not part of the station and if you try to update that substation, **Substation does not exist** warning message is displayed in the status report.

3.2.6 SICAM SPE file

To import SCD or SED file to the IEC 61850 System Configurator, proceed as follows:

- ✧ Click **Station** > **Import** on the menu bar and select **SICAM SPE File** from the context menu.
- ✧ Browse for the location and select the SPE file to import and click **Open**.

The dynamic report configuration is imported successfully to the station devices.

3.2.7 Import Configuration

To update the configuration from the SSD file to the station, proceed as follows:

- ✧ Select the IEC station in the **Devices** editor.
- ✧ Right-click the station and select **Import Configuration** from the context menu.

The **Import configurations** dialog is displayed.

- ✧ Navigate to the folder and select the SSD file.
- ✧ Click **Open**.

The status report dialog is displayed. If there are no validation errors, the device updates the substation, GOOSE engineering, and the reports and logs engineering to the station.

NOTE

Only the device with a matching IP address can be updated with the SSD configuration.

4 IED Logs Collection

4.1 Overview

The IED log collection feature is used to check, monitor, and collect logs of an IED configured in the IEC 61850 network topology (for example, SIPROTEC, Reyrolle, SICAM) and of an external switch (for example, RuggedCom, Scalance) using SNMP and/or HTTP.

Prerequisite for IED Log Collection

The network settings of the Ethernet card must be configured to communicate with IEDs.

Prerequisite for IED Log Collection via SNMP

The IEDs must support SNMP v1, v2, or v3. They should be configured to accept SNMP requests from the PC on which the IEC 61850 System Configurator is running.

Configuration of RuggedCom ROS IEDs:

```
# SNMP Access,,,,,
snmpV3AccessCfg,,,,,
Group,SecurityModel,SecurityLevel,ReadViewName,WriteViewName,NotifyViewName
privategroup,snmpV2c,noAuthNoPriv,allOfMib,v1Mib,allOfMib
publicgroup,snmpV2c,noAuthNoPriv,allOfMib,noView,noView


# SNMP Users,,,,,
snmpV3UsersCfg,,,,,
Name,IP Address,Auth Protocol,Priv Protocol,Auth Key,Priv Key
private,,noAuth,noPriv,AF942EA1603201808E0138E133D850639FD4F180F632FBE5E3C057AD9
C18E100,AF942EA1603201808E01
38E133D850639FD4F180F632FBE5E3C057AD9C18E100
public,,noAuth,noPriv,AF942EA1603201808E0138E133D850639FD4F180F632FBE5E3C057AD9C
18E100,AF942EA1603201808E013
8E133D850639FD4F180F632FBE5E3C057AD9C18E100


# SNMP Security to Group Maps,,
vacmSecurityToGroupCfg,,
SecurityModel,Name,Group
snmpV2c,private,privategroup
snmpV2c,public,publicgroup
```

Prerequisite for IED Log Collection via HTTP

HTML logs are collected based on a predefined set of Internet pages, known for Siemens products, and typically used for diagnostics:

Internet Pages	Description
home	Contains operational information and internal error messages
printf	Shows information of system behavior being produced from operation time
fehler	Contains internal error messages
fecst	Shows relevant information of Ethernet
sntp	Contains information about the settings and about the condition of the time synchronization
rstp	Contains information about the settings and about the condition of the network redundancy
dnp	Contains information about the settings and about the condition of the DNP protocol
startuplog	Contains information about the run-up behavior and about the configuration settings respecting network and GOOSE parameters

Internet Pages	Description
seclog	Contains information about Client-Server connection and DIGSI accesses
gooseoplog	Contains information about GOOSE operations
hsrprp	Contains information about the settings and about the conditions of the HSR and of the PRP protocols
modstatus	Contains information about firmware update
memstatistic	Contains information about memory statistics
health	Contains information on the state of the modules and protocols
module	Contains information about module configuration
network	Contains information about network configuration and status
iec61850	Contains information about IEC 61850 configuration and status
goose	Contains information about GOOSE operations
SUP_1	Contains diagnostic data about SUP serial
Modbus	Contains information about Modbus configuration and status
IEC60870-5-104	Contains information about the configuration and status of IEC 60870-5-104
prp	Contains diagnostic data about PRP
hsr	Contains diagnostic data about HSR
DNP30_1	Contains information about configuration and status of DNP
T103_1	Contains information about configuration and status of IEC 103

4.2 Collecting the Diagnostic Logs for Devices Available in the Station

NOTE

Save the station before collecting the diagnostic logs.

To collect the diagnostic logs from the devices available in the station via **NetView**, proceed as follows:

✧ Click **Tools** > **Collect device logs** > **Diagnostic logs** in the menu bar.

- or -

✧ In the **Network** view, right-click the station and select **Collect diagnostic logs** from the context menu.

A default browser and a command prompt window open.

The diagnostic logs are collected from the devices that are present in the station and are stored in the project location (<Project Folder>\Logs\Diagnostic_YYMMDD_HHmmss\Logs\<Device Type>).

NOTE

You can find the location of the collected diagnostic logs in the status report.
You can find the names of the not collected diagnostic logs in the **ErrorLog_HTML_download.txt** file in the following location:
<Project Folder>\Logs\Diagnostic_YYMMDD_HHmmss

✧ To stop the collection of the diagnostic logs by **NetView**, close the command prompt window.

4.3 Collecting the Diagnostic Logs for Devices Not Available in the Station

To collect the diagnostic logs from the external devices not available in the station via **NetView**, proceed as follows:

✧ Click **Tools** > **Collect device logs** > **Diagnostic logs for external devices**.
The **Collect device logs** dialog is displayed.

✧ Navigate to the desired location and select the desired TXT file.

NOTE

For each device, a separate line must be entered in the TXT file. Each line must follow one of the following structures:

- *IP;name;gateway;subnetmask;model;manufacturer;type;access point name*
- *IP;;;;;;*
- *IP*

Access points are written in the TXT file for SIPROTEC 5 firmware V7.00 and higher, for versions older than V6.20, this field is empty.

To make sure that all the values of the switches are displayed in the output HTML pages, replace **type** with **switch** on each line where a switch is parameterized.

✧ Click **Open**.
A default browser and a command prompt window open.

The diagnostic logs configured in the selected TXT file are collected from the devices.
The diagnostic logs are collected and stored in the same location as the selected TXT file (<TXT file location>\Diagnostic_YYMMDD_HHmmss).

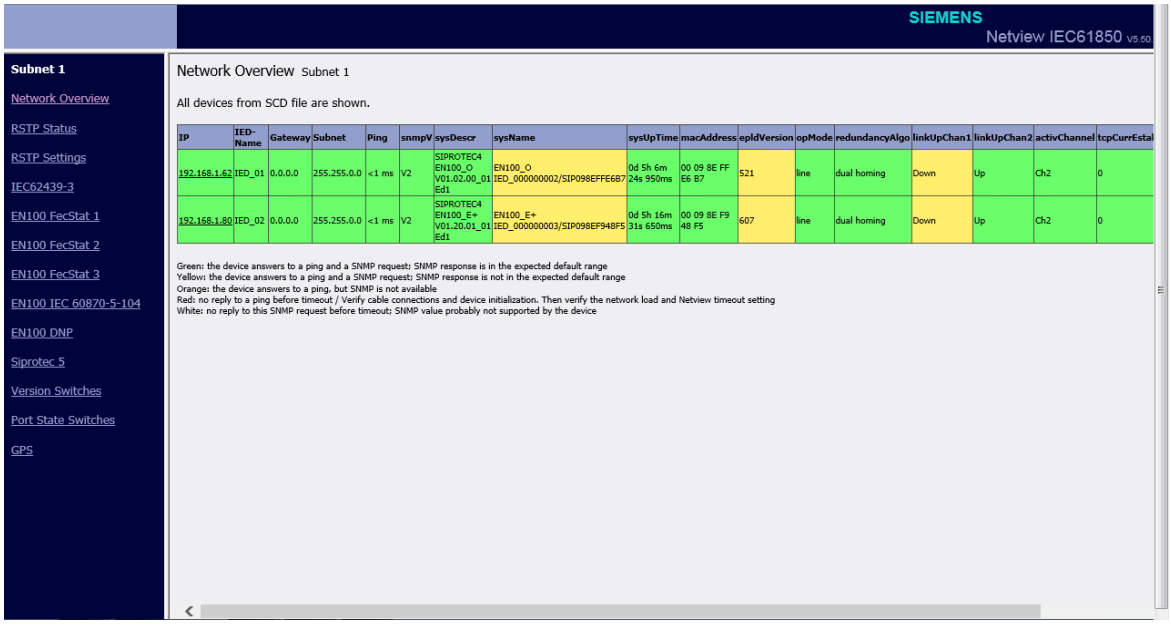
NOTE

You can find the location of the collected diagnostic logs in the status report.

✧ To stop the collection of the diagnostic logs by **NetView**, close the command prompt window.

4.4 Display of Collected Data

The **NetView** Internet page contains the polled SNMP values, which can be viewed via the default Web browser.



[sc_Netview, 2, en_US]

Figure 4-1 NetView

On the left side of the HTML page, you can find a navigation bar. This bar contains links to pages belonging to the different **Subnets**.

On the right side of the HTML page, you can find the following:

- The HTML pages with the SNMP values of the different IEDs are displayed. The IEDs are sorted in ascending order according to their IP address.
- A legend providing the meaning of the different colors used to identify the possible issues of the IEDs, for example, IP IED not pingable, no SNMP answer.

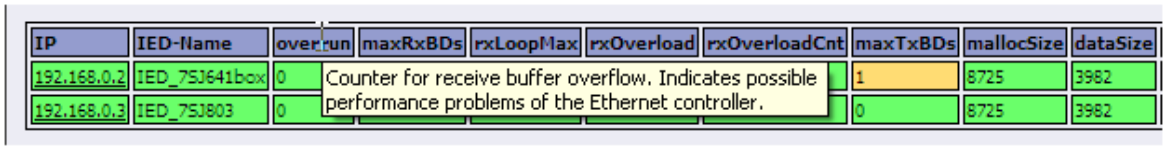
NOTE

Due to the settings of the JavaScript and Cookies of the Web browser, the layout of the HTML pages will vary.

NOTE

If the number of IEDs is too much for the current hardware configuration, you can delete some of the IEDs or collect the data on a more powerful hardware configuration.

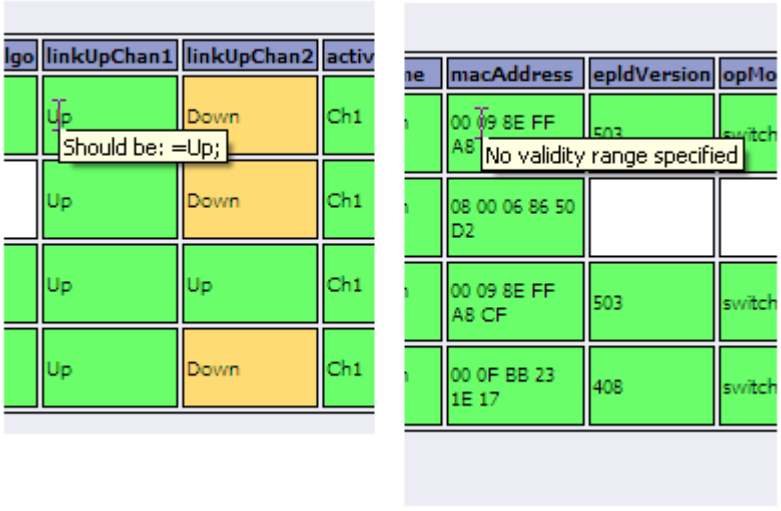
You can place your mouse pointer over a column heading to get a more detailed description of certain SNMP variable points.



[sc_Netview_counter, 1, en_US]

Figure 4-2 Column Tooltip

For some SNMP variables, certain limits are defined. If no limit is defined for a variable or if its value is within the defined limit, the cell is displayed in green color. If a value is not within the defined limit, the cell is displayed in yellow color. You can place your mouse pointer over a cell to see if it has a defined limit or what the defined limit is.

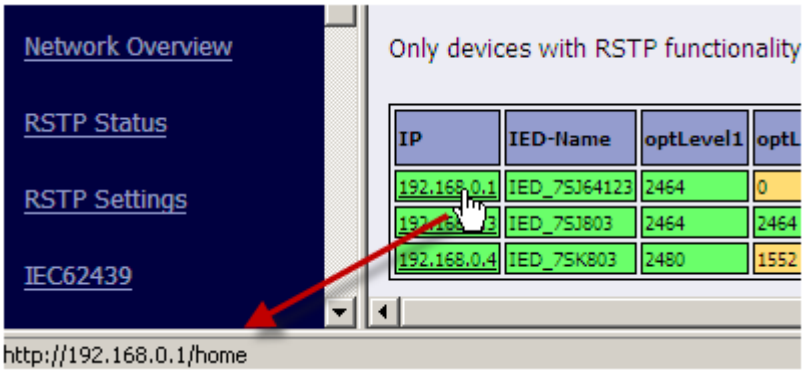


[sc_Netview_Limit, 1, en_US]

Figure 4-3 SNMP Limits

Accessing the Listed IEDs

You can access the listed IEDs via the IP address of the SIPROTEC IEDs. For SIPROTEC IEDs, it is a hyperlink to the homepage of the corresponding IED. For non-SIPROTEC IEDs, it is just a hyperlink to the IP of the IED.

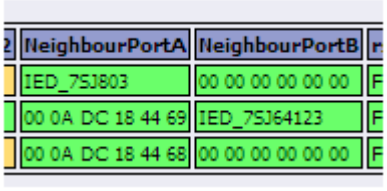


[sc_Netview_Hyperlink, 1, en_US]

Figure 4-4 IP-Address Hyperlink

RSTP Status

On the **RSTP Status** page, the columns **NeighbourPortA** and **NeighbourPortB** display the **IED-Name** of the IEDs instead of the **macAddress**.



[sc_Netview_MAC_add, 1, en_US]

Figure 4-5 IED-Name Instead of macAddress

The **sysName** is marked in yellow if the **IED-Name** of the IED is not part of the **sysName**.

As SNMPv1 is less secure than SNMPv2 and SNMPv3, the **snmpV** is marked yellow if the IED can only communicate with SNMPv1.

IP	IED-Name	Gateway	Subnet	snmpV	sysDescr	sysName	sysUpTime	macAddress	epldVersion
192.168.0.1	IED_7SJ64123	192.168.0.254	255.255.255.0	Ver1	SIPROTEC4 EN100_O V04.07.01_01	EN100_O IED_7SJ641/SIP098EFFA8CD	7d 5h 40m 38s 250ms	00 09 8E FF A8 CD	503

[sc_Netview_Mark_Yellow, 1, en_US]

Figure 4-6 IED Marked Yellow

4.5 Advanced Features

- Conversion of an SCD file to an editable TXT file as input for **NetView**

  When an SCD file is used, a new file **inputfileToTxt.txt** will be created and stored in the output directory. It contains all the information stored in the SCD file and is needed to run the function again after editing the TXT file.

- Saving and restoring the current scroll position

  For each page, the current scroll position (horizontally and vertically) is saved in a cookie. If you reload or revisit the page, the last scroll position is recalled via JavaScript.

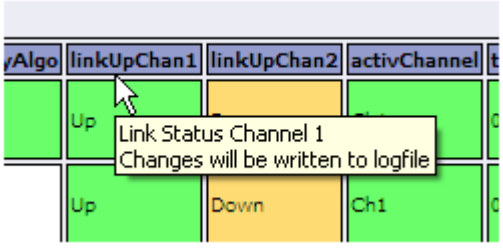
  If the cookies and/or JavaScript is not activated in your Web browser, this feature will not work. At each reload, the page will be displayed from the top.

- Creation of a log file with changed values between 2 SNMP polling cycles

  A log file is created when certain SNMP-requested values change during the execution of the application. A log is created containing the changes made to the preconfigured SNMP variables. The values which are not equivalent to the values in the polling request are listed as displayed in the following table.

IP	IEDName	OID	DateNew	TimeNew	ValueNew	DateOld	TimeOld	ValueOld
192.168.0.93	G7SJ6236	linkUp-Chan1	12.07.2011	15:55:21	1	12.07.2011	15:54:30	2
192.168.0.93	G7SJ6236	linkUp-Chan1	12.07.2011	15:56:03	2	12.07.2011	15:55:21	1

Attributes frequently changing (for example time stamp, number of IP packets) are not logged. To check whether an attribute is logged or not, place your mouse pointer over the heading of a column in the HTML output of **NetView**.



[sc_Netview_Help_Msg, 1, en_US]

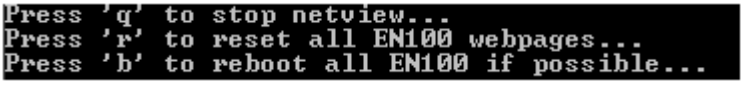
Figure 4-7 Tooltip for Log File

The log file is stored in the output directory as a comma-separated value file (**CSV**). If the log file reaches more than 65 000 lines, additional log files are created (for example log1.csv, log2.csv) in the output directory.

NOTE

Depending on the language of your operating system, either **,** (comma, English operating system) or **;** (semicolon, German operating system) is used to separate the values in the log file.

- Creation of a log file with errors which occurred while downloading HTML diagnostic pages
- Possibility to reboot or reset all EN100 Internet pages



[sc_Netview_EN100, 1, en_US]

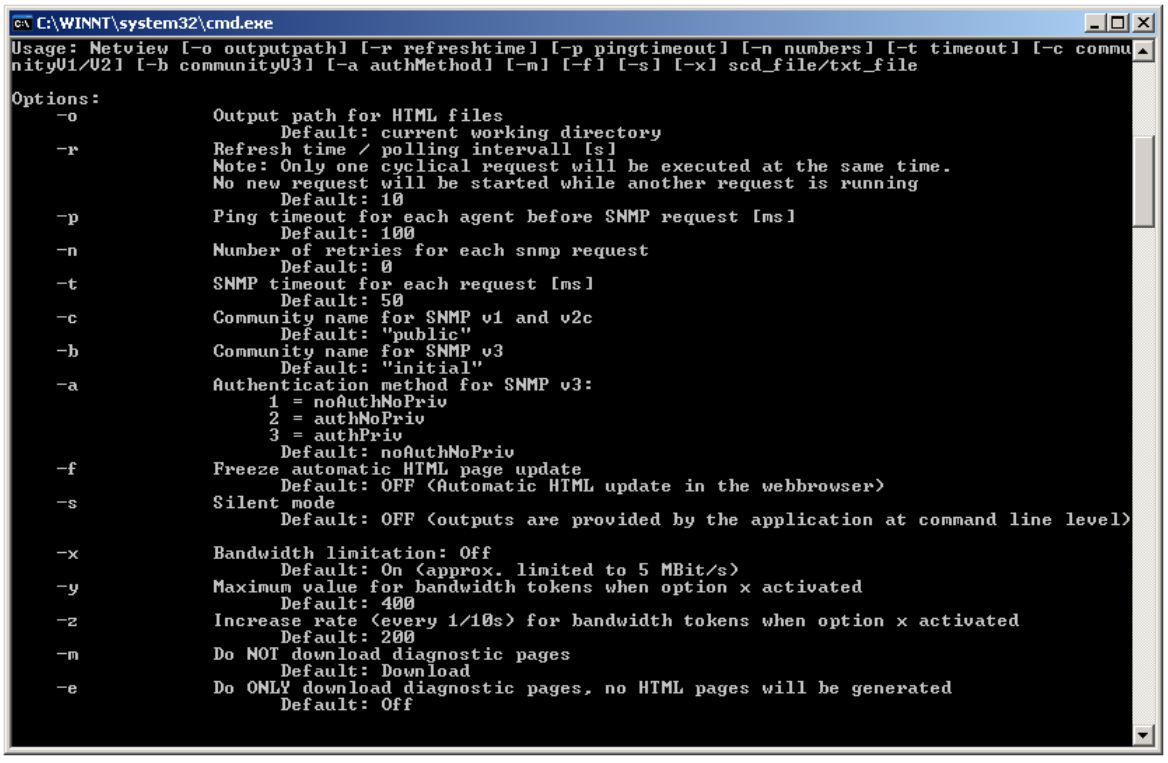
Figure 4-8 Reboot or Reset of EN100 Internet pages

NetView Command-Line Options

To get an online help message with all optional commands to pass to the application, proceed as follows:

- Open a command-line window.

Type **NetviewCS.exe –h** and press **Enter**.
All the optional commands to pass to the application will be displayed in the command-line window.



[sc_Netview_Cmds, 1, en_US]

Figure 4-9 Command-Line Options

4.6 Advanced Settings

To configure NetView, proceed as follows:

- ✧ Navigate to the **NetView** folder in the installation path
  (for example: C:\Program Files (x86)\Siemens Energy\IEC 61850 System Configurator V5.xx\Configurator \NetView).
- ✧ Right-click the **NetView.exe.config** file and open it with a text editor (for example, Notepad).
- ✧ Edit the **RefreshTime** value and the **ConnectionTimeOut** value as desired.
  RefreshTime is the interval after which the diagnostic logs are collected. It is measured in seconds.
  ConnectionTimeOut is the period after which the IEC 61850 station stops trying to connect with **NetView**. It is measured in milliseconds.
- ✧ Save your changes and close the text editor.

The **NetView.exe.config** file contains a **key** and a corresponding **value**. The **key** contains the name of the page, which has to be downloaded from the device. The **value** contains the name, which will be given to the downloaded page.

4.7 Integration of IEC Browser

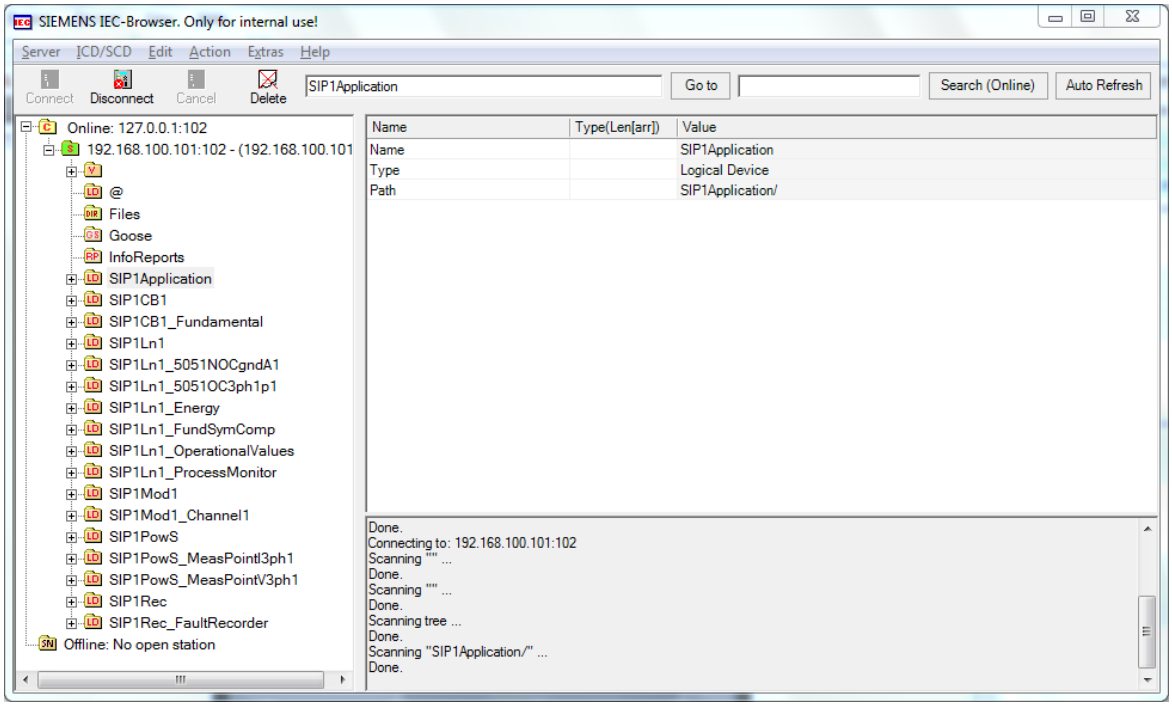
The IEC browser is a tool used to view the IEC 61850-compliant servers over a TCP/IP connection. The IEC browser consists of a tree structure of 2 folders, namely **Online** and **Offline**.

For more information on the IEC browser, refer to the online help by pressing **F1** while working with the IEC browser.

4.7.1 Displaying IEC Data

To view the IEC data of the devices available in the station via the IEC browser, proceed as follows:

✧ Click **Tools** > **Display IEC data** in the menu bar.
The **Siemens IEC-Browser** dialog is displayed.



[sc_iec_browser, 1, --_--]

Figure 4-10 IEC Browser

The dialog displays an online mode of the tree structure of the devices in the station connected to a server.

To view the online IEC data, proceed as follows:

✧ In the **Network** view, you can select multiple access points which are connected to the server.

✧ Right-click one of the selected access points and select **View online data** from the context menu. For each device selected, a **Siemens IEC-Browser** dialog is displayed with the online data for each access point.

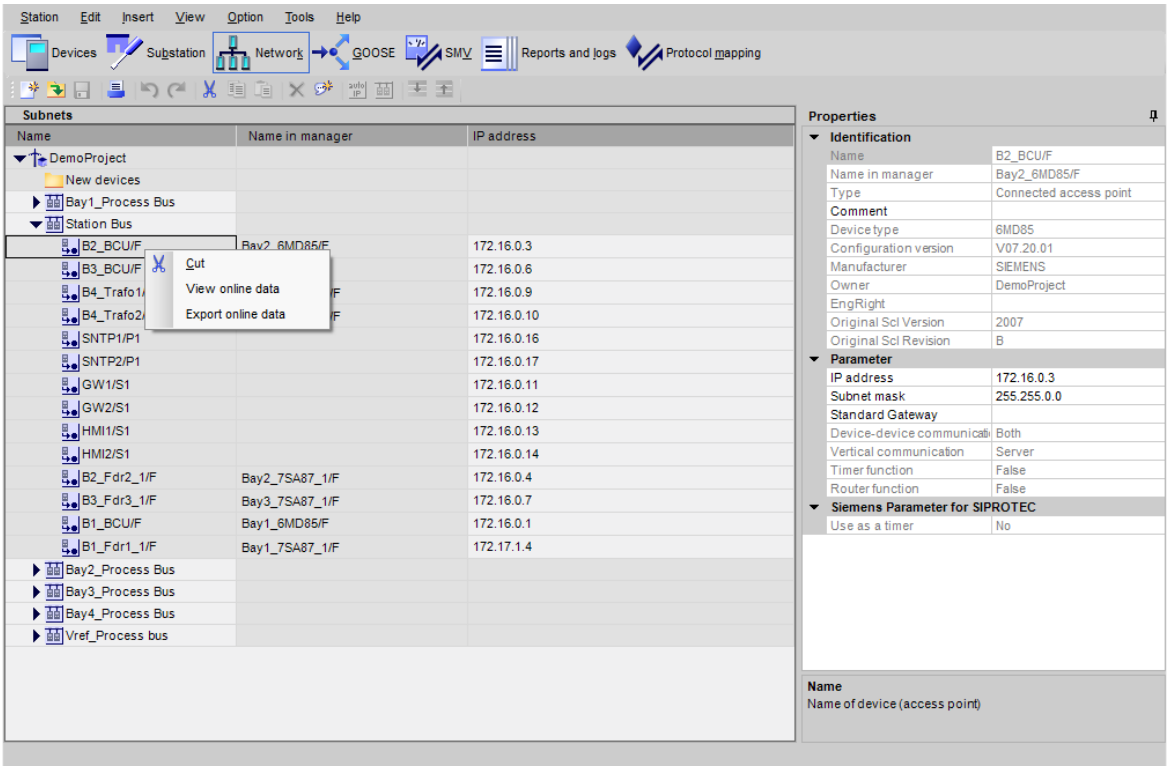
4.7.2 Exporting Online Data

To create a snapshot of the current device data, proceed as follows:

✧ In the **Network** view, select the station.

- or -

✧ Select multiple access points from the station.



[sc_iec_browser_acesspoint, 1, en_US]

Figure 4-11 Selecting Access Point in the IEC Browser

✧ Right-click the selected station or one of the selected access points and select **Export online data** from the context menu.

The **Siemens IEC-Browser** dialog is displayed. A snapshot of the current device data is saved as a CSV file and is stored in the project folder (<Project Folder>\Logs\IECData).

NOTE

The **Export online data** and **View online data** context-menu options are enabled only for devices for which a **Server** or a **ServerAT** is configured.

4.7.3 Exporting Asset Information

To export an XML file which contains the asset information, proceed as follows:

✧ In the **Device** view, right-click a station and select **Export asset information** from the context menu.

The **AssetManagement** folder is displayed with the newly created XML file.

The XML file (<station name>_yyyyMMdd_HHmmss.xml) is created and stored in the project folder (<Project Folder>\Logs\AssetManagement).

NOTE

XML files which are not created and IEDs files are not available are displayed in the reporting dialog.

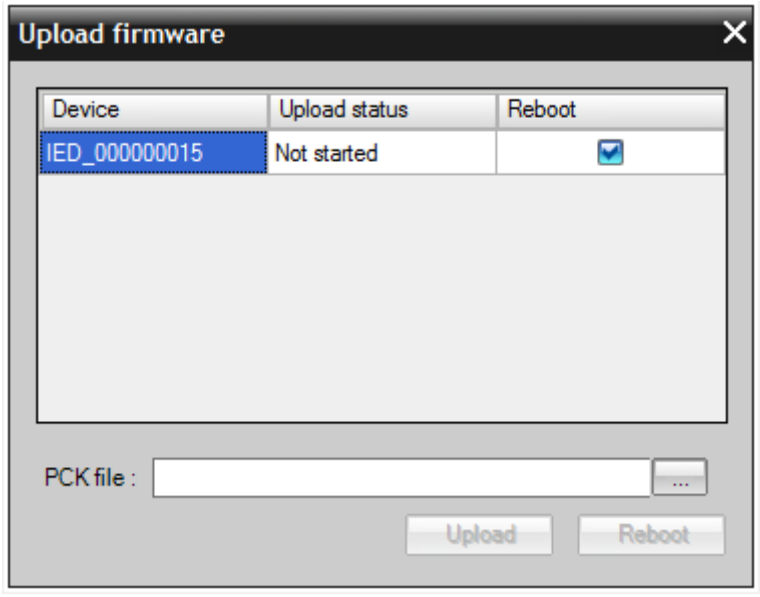
5 Uploading Firmware

NOTE

This feature is available only for EN100 V4.09 to V4.29 modules.

Use the NetView diagnostic logs to find the current firmware version of the device.
For more information on NetView, refer to *4 IED Logs Collection*.

- Select a device or multiple devices.
- Right-click a selected device and select **Upload firmware** from the context menu.
  The **Upload firmware** window opens.



[sc_Firmware_Update, 1, en_US]

Figure 5-1 Firmware Upload

- Click ... to select a PCK file.
- Navigate to the desired location and select the **Pck** file.
- Click **Open**.
  The **Pck** is selected and displayed in the **Pck file** field.
- Click **Upload**.
  The **Pck** file starts uploading the firmware information to the devices.
  The upload status of each device is displayed in the **Upload status** column.
  The **Reboot** option is enabled only after the firmware is uploaded to all the devices.

- Select the devices in the **Reboot** column and click **Reboot**.
  The firmware for the selected devices is upgraded.
  Once the new firmware is uploaded to a device, reboot to complete the firmware-upgrade process.

NOTE

The status report displays the parameters (for example, IP address) displayed in the EN100 firmware upload dialog.

6 Print

6.1 Print Setup

Before you print an overview of the **Devices**, **Network**, **GOOSE**, **SMV**, **Report and logs** or **Protocol mapping**, set up the printer. Specify the printer to be used and other printer-specific settings. To do this, proceed as follows:

✧ Click **Station** > **Print** in the menu bar or press **Ctrl**+**P** on the keyboard.

Print dialog is displayed.

✧ Select the name of the printer to be used for printout from the **Name** list box.

✧ Click **Properties**.

The printer-specific dialog for setting various printer parameters is displayed.

Adapt the values to your requirements if necessary and close the dialog. This is an optional step.

✧ Select the **Number of copies** of each screen page that are to be printed in the **Copies** box.

✧ Click **OK** to save the settings.

6.2 Print Preview

Before printing, you can check the expected print results using the print preview.

Opening the Print Preview Window

To open the print preview window, click **Station** > **Print preview**. The tree structure for **Devices**, **Network**, **GOOSE**, **SMV**, **Reports and logs**, or **Protocol mapping** is displayed depending on the current workspace.

Changing the Display Mode

With  button in the toolbar, you can select the display mode of the existing pages.

For example, 1, 2*2, 3*3, or 4*4 pages can be displayed simultaneously.

Changing the Display Scale

Select  in the toolbar. A list box is displayed from which you can select a defined degree of scaling. The Auto setting causes the scaling of the displayed pages to adapt to the current window size.

NOTE

Magnify the view and **Shrink the view** has no influence on the print results.

Closing the Print Preview

Click **Exit** in the toolbar or click **Close**.

Printing the Views

To print the views, select the view and click  on the toolbar. During printing, the settings you have specified during the printer setup are used.

6.3 Printing the Displayed Information

To print the displayed information, proceed as follows:

✧ Select the view. For example, **Devices**, **Network**, **GOOSE**, **SMV**, **Report and logs** or **Protocol mapping**.

If the displayed information is to be printed without further checking, perform any of the following:

✧ Click **Station** > **Print** on the menu bar.

- or -

✧ Click  on the toolbar.

- or -

✧ Press **Ctrl**+**P** on the keyboard.

The **Print** dialog is displayed.

✧ Click **OK**.

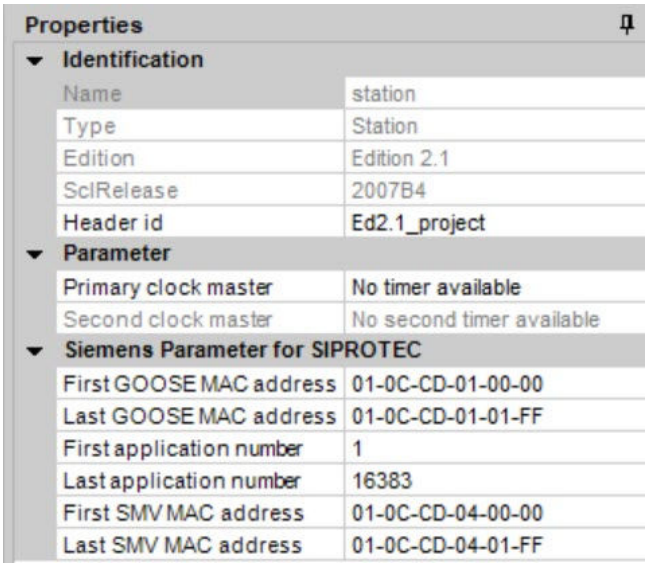
The view is printed.

7 Properties

NOTE

The description of the devices added through IED tool (for example, DIGSI4 and DIGSI5) is not editable.

7.1 Station



[sc_station, properties, 4, en_US]

Figure 7-1 Properties Window for IEC 61850 Station

Group: Identification

Property	Description
Name	This field represents the name, which you have assigned to the station within your DIGSI project. This name is identical to the name displayed in the tree structure of the **Subnets** window. You can change this name only in the DIGSI Manager.
Type	The type **Station** cannot be changed.
Edition	This field represents the edition selected for this IEC 61850 station.
SclRelease	This field is the combination of version, revision, and release of the SCL file.
Header id	This field represents the header ID of an SCD file. The SCD header ID is used within an SED file to identify the owner project of an IED.

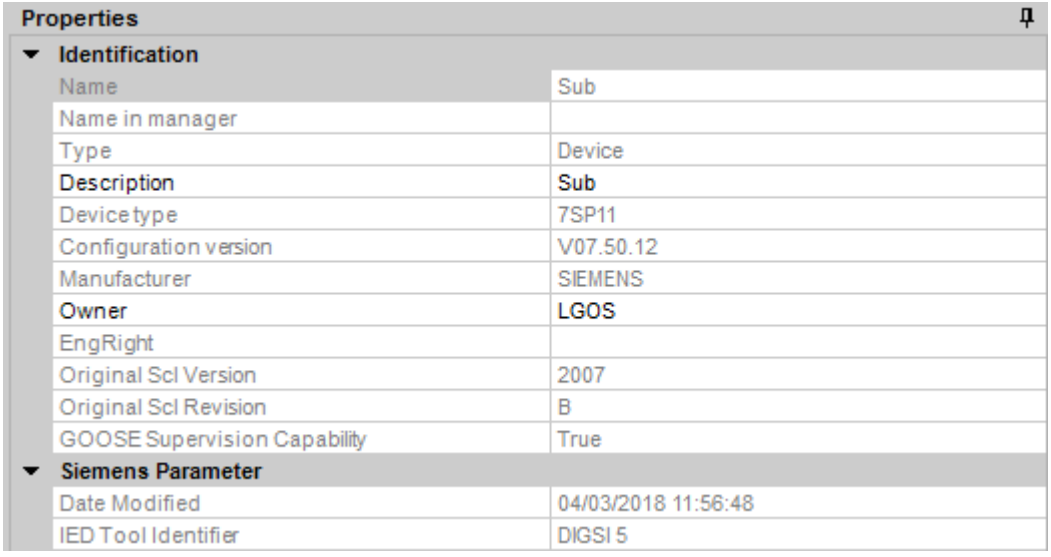
Group: Parameter

Property	Description
Primary clock master	This field represents the name of the timer, which is currently configured as the first timer. By clicking the arrow button on the right border, you open a list box to select another timer as the first one. The entry in this field is also influenced by the number of timers within a station and the selection of the second timer. If no timer is available within the station, the entry **No timer available** is displayed in this field.
Secondary clock master	This field represents the name of the timer, which is currently configured as the second timer. By clicking the arrow button on the right border, you open a list box where you can select another time as the second one. The entry in this field is also influenced by the number of timers within a station and the selection of the first timer. If there is no timer or no second timer is available within the station, the entry **No timer available** or **No second timer available** is displayed in the field.

Group: Siemens Parameter for SIPROTEC

Property	Description
First GOOSE MAC address	This field represents the starting address of the GOOSE MAC Address. This is the lowest MAC address that the GOOSE application in the station will have with automatic incrementation of MAC addresses.
Last GOOSE MAC address	This field represents the end address of the GOOSE MAC address. This is the highest MAC address that the GOOSE application in the station will have with automatic incrementation of MAC addresses.
First application number	This field represents the start of GOOSE application number. This is the lowest application ID that the GOOSE application in the station can have.
Last application number	This field represents the end of GOOSE application number. This is the highest application ID that the GOOSE application in the station can have.
First SMV MAC address	This field represents the starting address of the SMV MAC Address. This is the lowest MAC address that the SMV application in the station will have with automatic incrementation of MAC addresses.
Last SMV MAC address	This field represents the end address of the SMV MAC address. This is the highest MAC address that the SMV application in the station will have with automatic incrementation of MAC addresses.

7.2 Devices



[sc_devices, properties, 6, en_US]

Figure 7-2 Properties Window for Device

Group: Identification

Property	Description
Name	This field represents the name of the access point, including the corresponding device.
Name in manager	The displayed device name corresponds to the name that is assigned to the device in the DIGSI project.
Type	This field indicates the type of the access point. The type cannot be changed.
Description	This field represents the description of the device.
Device type	This field represents the type of the device. For example, 7SJ6.
Configuration version	This field represents the version of the device.
Manufacturer	This field represents the device manufacturer.
Owner	This field represents the owner project of this IED that is the Header id of the SCD file of the project, which has the right to use the IED tool for this IED.
EngRight	This field represents the engineering right transferred by an SED file (only **fix**, **dataflow**) or the current state in an SCD file.
Original Scl Version	This field represents the original SCL schema version of the IED.
Original Scl Revision	This field represents the original SCL schema revision of the IED.
GOOSE Supervision Capability	This field indicates whether the GOOSE supervision for the device is enabled or not. If the value is set to **True**, it indicates that the GOOSE supervision capability is enabled for the device. If the value is set to **False**, it indicates that the GOOSE supervision capability is not enabled for the device.

Group: Siemens Parameter

Property	Description
Date Modified	This field represents the last time stamp in UTC format about when the IEC 61850 was edited. It is displayed in MMDDYYYY HH:MM:SS.
IED Tool Identifier	This field represents the IED tool with which the device was configured.

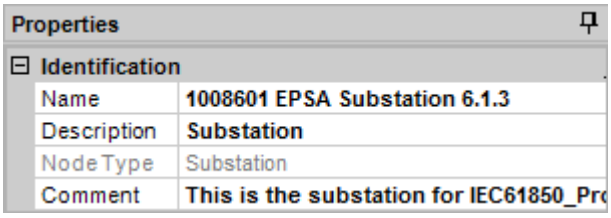
NOTE

The **Owner** attribute is editable for devices added to the station through SED import, which are not part of this station.

NOTE

The description for the devices added through the IED tool (for example, DIGSI4 and DIGSI5) has to be edited in the IED tool.

7.3 Substation



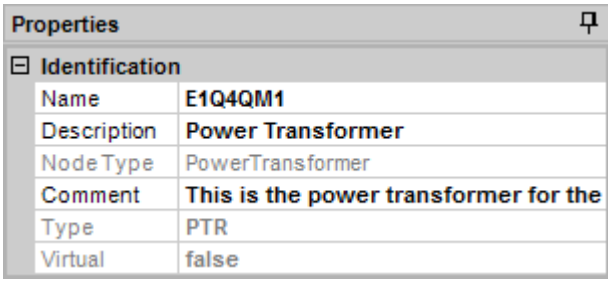
[sc_Substation, 1, en_US]

Figure 7-3 Properties Window for Substation

Group: Identification

Property	Description
Name	This field represents the name of the substation.
Description	This field represents the description of the substation.
Node Type	This field represents the node type of the selected element in the **Topology**. The **Node Type** cannot be changed.
Comment	This field is reserved for a multiline comment. Click inside the box and click the arrow button on the right border. A list box is displayed where you can view and edit the entire text for substation.

7.4 Power Transformer



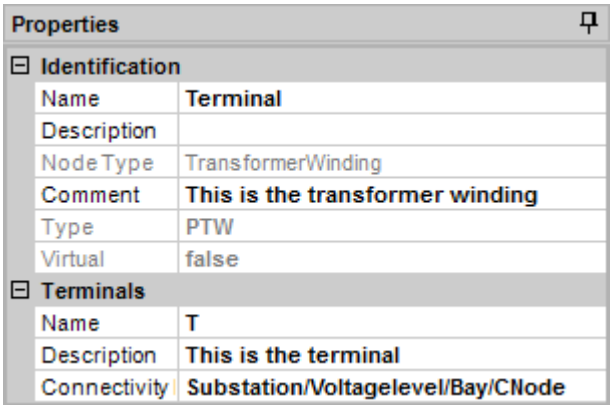
[sc_Power transformer, 1, en_US]

Figure 7-4 Properties Window for Power Transformer

Group: Identification

Property	Description
Name	This field represents the name of the power transformer.
Description	This field represents the description of the power transformer.
Node Type	This field represents the node type of the selected element in the **Topology**. The **Node Type** cannot be changed.
Comment	This field is reserved for a multiline comment. Click inside the box and click the arrow button on the right border. A list box is displayed where you can view and edit the entire text for Power Transformer.
Type	This field represents the type of power transformer used. The **Type** cannot be changed.
Virtual	This field indicates whether the subequipment (for example phase CT) exists. If the value is set to **false**, the subequipment exists in the station. If the value is set to **true**, the subequipment does not exists in the station, but its values are calculated.

7.5 Transformer Winding



[sc_Transformer winding, 1, en_US]

Figure 7-5 Properties Window for Transformer Winding

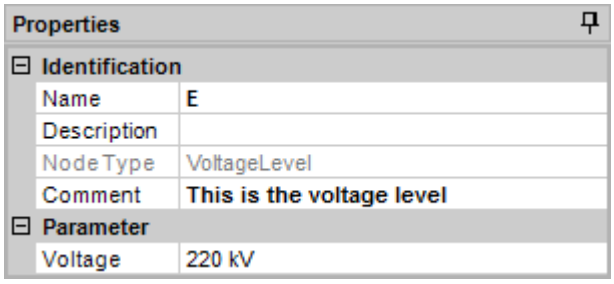
Group: Identification

Property	Description
Name	This field represents the name of the transformer winding.
Description	This field represents the description of the transformer winding.
Node Type	This field represents the node type of the selected element in the **Topology**. The **Node Type** cannot be changed.
Comment	This field is reserved for a multiline comment. Click inside the box and click the arrow button on the right border. A list box is displayed where you can view and edit the entire text for transformer winding.
Type	This field represents the type of transformer winding used. The **Type** cannot be changed.
Virtual	This field indicates whether the subequipment (for example phase CT) exists. If the value is set to **false**, the subequipment exists in the station. If the value is set to **true**, the subequipment does not exists in the station, but its values are calculated.

Group: Terminals

Property	Description
Name	This field represents the name of the terminal.
Description	This field represents the description of the terminal.
Connectivity Node	This field represents the referenced connectivity node of the terminal. The connectivity node has to be in the following format: **SubstationName/VoltageLevelName/BayName/ConnectivityNodeName**.

7.6 Voltage Level



[sc_Voltage level, 1, en_US]

Figure 7-6 Properties Window for Voltage Level

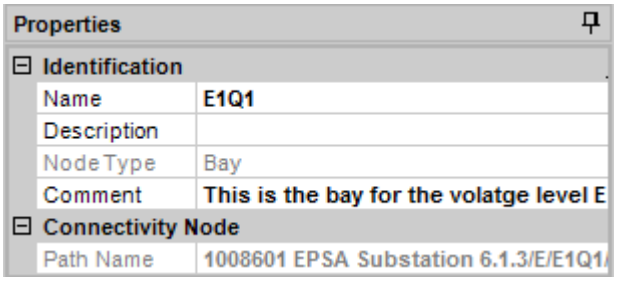
Group: Identification

Property	Description
Name	This field represents the name of the voltage level.
Description	This field represents the description of the voltage level.
Node Type	This field represents the node type of the selected element in the **Topology**. The **Node Type** cannot be changed.
Comment	This field is reserved for a multiline comment. Click inside the box and click the arrow button on the right border. A list box is displayed where you can view and edit the entire text for voltage level.

Group: Parameter

Property	Description
Voltage	This field represents the voltage of the voltage level. This property is editable. By clicking the arrow button on the right border, you open a text box where you can view and edit the value and the units.

7.7 Bay



[sc_Bay, 1, en_US]

Figure 7-7 Properties Window for Bay

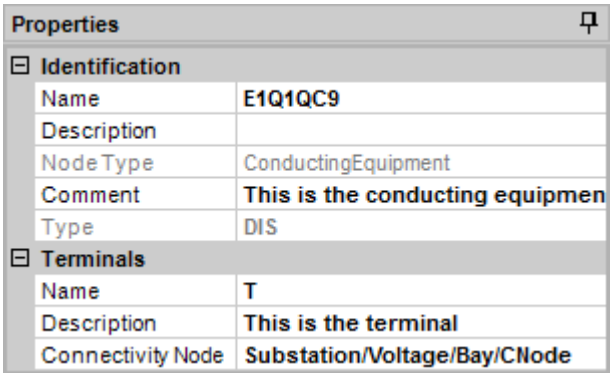
Group: Identification

Property	Description
Name	This field represents the name of the bay.
Description	This field represents the description of the bay.
Node Type	This field represents the node type of the selected element in the **Topology**. The **Node Type** cannot be changed.
Comment	This field is reserved for a multiline comment. Click inside the box and click the arrow button on the right border. A list box is displayed where you can view and edit the entire text for Bay.

Group: Connectivity Node

Property	Description
Path Name	This field represents the **Connectivity Node** path present under the Bay.

7.8 Conducting Equipment



[sc_Conducting equipment, 1, en_US]

Figure 7-8 Properties Window for Conducting Equipment

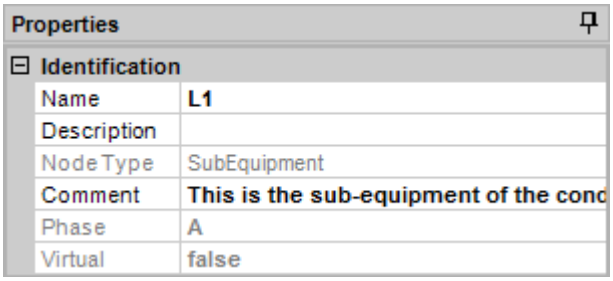
Group: Identification

Property	Description
Name	This field represents the name of the conducting equipment.
Description	This field represents the description of the conducting equipment.
Node Type	This field represents the node type of the selected element in the **Topology**. The **Node Type** cannot be changed.
Comment	This field is reserved for a multiline comment. Click inside the box and click the arrow button on the right border. A list box is displayed where you can view and edit the entire text for conducting equipment.
Type	This field represents the type of conducting equipment used. The **Type** cannot be changed.

Group: Terminals

Property	Description
Name	This field represents the name of the terminal.
Description	This field represents the description of the terminal.
Connectivity Node	This field represents the referenced connectivity node of the terminal. The connectivity node has to be in the following format: **SubstationName/VoltageLevelName/BayName/ConnectivityNodeName**.

7.9 Sub-equipment



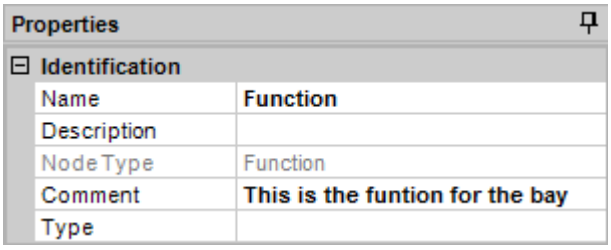
[sc_Subequipment, 1, en_US]

Figure 7-9 Properties Window for Sub-equipment

Group: Identification

Property	Description
Name	This field represents the name of the sub-equipment.
Description	This field represents the description of the sub-equipment.
Node Type	This field represents the node type of the selected element in the **Topology**.
Comment	This field is reserved for a multiline comment. Click inside the box and click the arrow button on the right border. A list box is displayed where you can view and edit the entire text.
Phase	This field represents the phase to which the subequipment belongs. For example, A, B, C, N (neutral), all (all three phases), none (default, not phase-related).
Virtual	This field indicates whether the subequipment (for example phase CT) exists. If the value is set to **false**, the subequipment exists in the station. If the value is set to **true**, the subequipment does not exists in the station, but its values are calculated.

7.10 Function



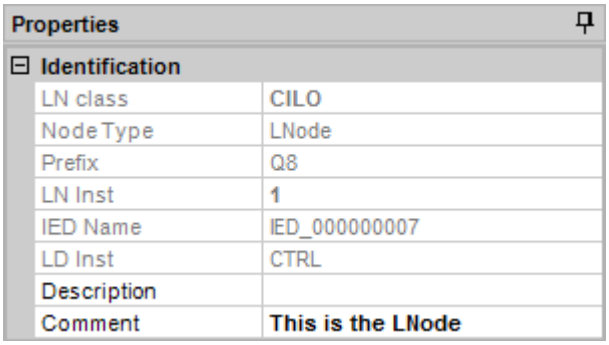
[sc_Function, 1, en_US]

Figure 7-10 Properties Window for Function

Group: Identification

Property	Description
Name	This field represents the name of the function.
Description	This field represents the description of the function.
Node Type	This field represents the node type of the selected element in the **Topology**. The **Node Type** cannot be changed.
Comment	This field is reserved for a multiline comment. Click inside the box and click the arrow button on the right border. A list box is displayed where you can view and edit the entire text.
Type	This field represents the type of function used. The **Type** can be edited.

7.11 LNode



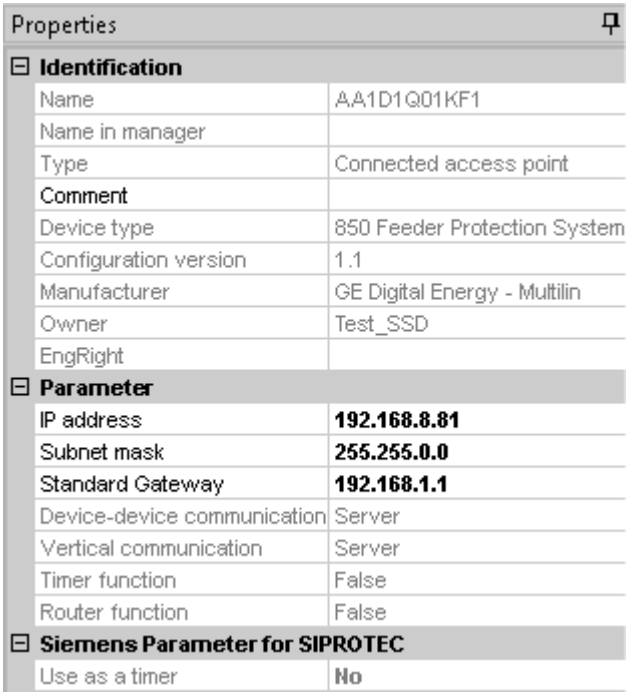
[sc_LNode, 1, en_US]

Figure 7-11 Properties Window for LNode

Group: Identification

Property	Description
Node Type	This field represents the node type of the selected element in the **Topology**.
Prefix	This field represents the prefix of the name of the LNode. The whole name of the LNode consists of three parts namely Prefix, Group, and Instance.
LN class	This field represents the class of the LNode.
LN Inst	This field represents the instance number of the LNode.
IED Name	This field represents the name of the device to which the LNode is configured.
LD Inst	This field represents the instance name of the logical device to which the LNode is configured. For example, **CTRL**, **DR**, **MEAS**, and **PROT**.
Description	This field represents the description of the LNode.
Comment	This field is reserved for a multiline comment. Click inside the box and click the arrow button on the right border. A list box is displayed where you can view and edit the entire text.

7.12 Access Point



[sc_accesspoint, properties, 3, en_US]

Figure 7-12 Properties Window for Access Point

Group: Identification

Property	Description
Name	This field represents the name of the access point, including the corresponding device.
Name in manager	The displayed device name corresponds to the name that is assigned to the device in the DIGSI project.
Type	Type of the access point. The type cannot be changed.
Comment	This field is reserved for a multiline description of the access point. By clicking the arrow button on the right border, you open a list box where you can view and edit the entire text.
Device type	This field represents the type of the device. For example, 7SJ6.
Configuration version	This field represents the version of the device.
Manufacturer	This field represents the device manufacturer.
Owner	This field represents the owner project of this IED that is the Header id of the SCD file of the project, which has the right to use the IED tool for this IED.
EngRight	This field represents the engineering right transferred by an SED file (only **fix**, **dataflow**) or the current state in an SCD file.

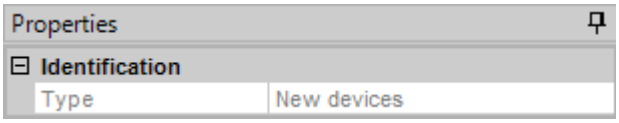
Group: Parameter

Property	Description
IP address	This field represents the current IP address of the access point. You can edit this address manually. The IP address and the standard gateway have the format x.y.y.x (where x = 1 to 254, y = 0 to 254), subnet masks have the format x.y.y.z (where x = 1 to 255, y = 0 to 255, z = 0 to 254). However, it must be observed that not every possible combination is permitted within the value range. Non-permissible exceptions are automatically rejected by the IEC 61850 System Configurator with a corresponding message. The field display is updated as soon as the Automatic addressing function is used.
Subnet mask	The subnet mask allows two nodes communicating with each other to recognize whether they are in the same or in different subnets. This however requires that the IP addresses have been assigned consistently. The preset subnet mask 255.255.255.0 can usually be retained for operation with only one subnet. However, the preset value can also be changed. The IP address and the standard gateway have the format x.y.y.x (where, x = 1 to 254, y = 0 to 254), subnet masks have the format x.y.y.z (where, x = 1 to 255, y = 0 to 255, z = 0 to 254).
Standard Gateway	The standard gateway is the transition from one subnet to another defined as the standard. Such a transition is handled as a usual node and is therefore also identified by a unique IP address. If nodes with a router function are available within the network, their IP addresses are listed in a list box. You can open this box by clicking the arrow button on the right border of the input field. You can also enter an IP address manually in this field. The IP address and the standard gateway have the format x.y.y.x (where, x = 1 to 254, y = 0 to 254), subnet masks have the format x.y.y.z (where, x = 1 to 255, y = 0 to 255, z = 0 to 254). However, it must be observed that not every possible combination is permitted within the value range. Not permissible exceptions are automatically rejected by the IEC 61850 System Configurator with a corresponding message.
Device-device communication	This field represents the GOOSE capability of the device. The values for this property can be **None**, **Client**, **Server**, or **Both**.
Vertical communication	This field represents whether the device allows a vertical communication with other devices. The display of data objects is correspondingly adjusted in the **GOOSE**, **SMV**, and **Reports and logs** view in the **Source catalog** and the **Destination catalog**.
Timer function	This field represents whether the device can be used as a timer. The property values are either **True** or **False**.
Router function	This field represents whether the device can be used as a router. The property values are either **True** or **False**.

Group: Siemens Parameter for SIPROTEC

Property	Description
Use as a timer	This field represents whether a timer is configured as the first or the second timer, or is not used if two or more timers are available within a station. This property is not relevant for devices without a timer functionality. The entry function **No** is displayed for such devices. By clicking the arrow button on the right border, you can open a list box to specify the timer status. The number of possible options depends on the number of timers within a station: One timer: option Yes (first timer) Two timers: additional option Yes (second timer) At least three timers: additional option No. If you change any setting, the IEC 61850 System Configurator automatically adjusts the status of other timers.
Message buffering	This is applicable for EN100 devices only. Here you can specify the memory requirements for message buffers. Dynamic reporting requires additional memory. Select **Only static reporting** if you configure the reporting exclusively in the IEC 61850 System Configurator. The memory requirements for message buffers are optimized. Select **Dynamic and static reporting** if the plant is connected to a control system that supports dynamic reporting, such as SICAM PAS.

7.13 New Devices Folder



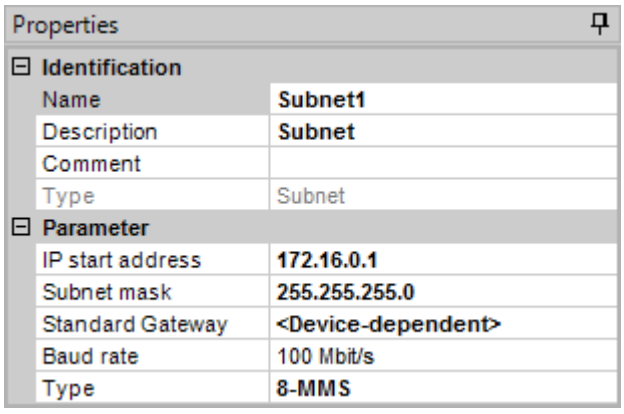
[sc_new devices, 2, en_US]

Figure 7-13 Properties Window for New Devices Folder

Group: Identification

Properties	Description
Type	This field represents the name of the folder. Name of the folder cannot be changed.

7.14 Subnet



[sc_subnet, properties, 2, en_US]

Figure 7-14 Properties Window for Subnet

Group: Identification

Property	Description
Name	The IEC 61850 System Configurator assigns the word Subnet as the name in connection with consecutive numbering. You may change the preset name in this field. The name entered in this field is applied to the tree structure in the **Subnets** window.
Description	Enter a short single-line description in this field. This is optional.
Comment	This field is reserved for a multiline description. By clicking the arrow button on the right border, you open a list box where you can view and edit the entire text.
Type	The type **Subnet** cannot be changed.

Group: Parameter

Property	Description
IP start address	Enables you to use the function of automatic addressing of all access points within the current subnet by entering a valid IP address as start value in this field. The IP address and the **Standard Gateway** have the format x.y.y.x (where x = 1 to 254, y = 0 to 254), subnet masks have the format x.y.y.z (where x = 1 to 255, y = 0 to 255, z = 0 to 254). However, it must be observed that not every possible combination is permitted within the value range. Non-permissible exceptions are automatically rejected by the IEC 61850 System Configurator with a corresponding message. During the automatic addressing, this **IP start address** is assigned to an access point displayed at the highest level within the subnet. All other access points are assigned IP addresses, which are allocated in ascending order starting from the start address.
Subnet mask	The subnet mask allows two nodes communicating with each other to recognize whether they are in the same subnet or in the different subnet. This however requires that the IP addresses have been assigned consistently. The preset subnet mask 255.255.255.0 can usually be retained for operation with only one subnet. However, the preset value can also be changed. The IP address and the standard gateway have the format x.y.y.x (where x = 1 to 254, y = 0 to 254), subnet masks have the format x.y.y.z (where x = 1 to 255, y = 0 to 255, z = 0 to 254). The entry **Device-dependent** indicates that devices with different subnet masks are used in this subnet. If you try to select one subnet mask for all devices, a warning is displayed by the IEC 61850 System Configurator. Confirming this warning with **OK** overwrites the settings of all devices of the subnet with the subnet mask.
Standard Gateway	The **Standard gateway** is the transition from one subnet to another defined as the standard. Such a transition is handled as a usual node and is therefore identified by a unique IP address. If nodes with a router function are available within the network, their IP addresses are listed in a list box. You can open this box by clicking the arrow button on the right border of the input box. You can also enter an IP address manually in this field. The IP address and the standard gateway have the format x.y.y.x (where x = 1 to 254, y = 0 to 254), subnet masks have the format x.y.y.z (where x = 1 to 255, y = 0 to 255, z = 0 to 254). However, it must be observed that not every possible combination is permitted within the value range. Non-permissible exceptions are automatically rejected by the IEC 61850 System Configurator with a corresponding message. The entry **Device-dependent** indicates that different standard gateways are used in this subnet. If you try to select one standard gateway for all devices, a warning is displayed by the IEC 61850 System Configurator. Confirming this warning with **OK** overwrites the settings of all devices of the subnetwork with the standard gateway.
Baud rate	This field represents the data transmission rate on the bus. The factory-preset value of 100 Mbit/s should not be changed, since no higher transmission rate is possible in connection with IEC 61850 at the moment.
Type	This field describes the type of the bus protocol. The factory default is MMS/TCP. You cannot use any other bus protocol at the moment, which is why you should not change this value.

Group: Estimated bandwidth

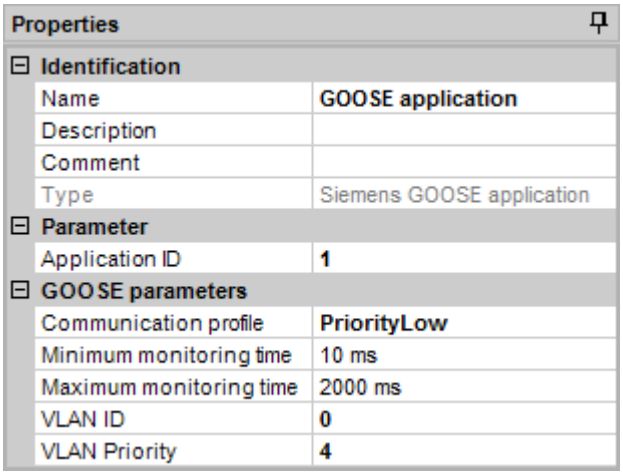
Property	Description
GOOSE bandwidth	For any subnetwork, GOOSE bandwidth displays an estimation of the consumed GOOSE information capacity in metric multiples of bits per second.
SMV bandwidth	For any subnetwork, SMV bandwidth displays an estimation of the consumed SMV information capacity in metric multiples of bits per second.

NOTE

By default, the unit for GOOSE bandwidth and SMV bandwidth is Mbits/s.

If the baud rate is set for the subnetwork, the unit for the bandwidth is same as that of the baud rate. In this case, the bandwidth also displays the percentage of the set baud rate.

7.15 Application



[sc_goose application, 2, en_US]

Figure 7-15 Properties Window for GOOSE Application

Group: Identification

Property	Description
Name	The IEC 61850 System Configurator assigns the word GOOSE Application as the name in connection with consecutive numbering. You may change the current name in this field.
Description	Enter a short single-line description in this field, if necessary.
Comment	This field is reserved for a multiline description. Click inside the box to enter the text or to edit it.
Type	The displayed type (for example, **Siemens GOOSE application**) cannot be changed.

GOOSE application have the following additional properties when compared to SMV application:

Group: Parameter

Property	Description
Application ID	This field represents a number as the unique marking of the GOOSE application. You can change this number. When you change the value, ensure the uniqueness of the number. If the Application ID is not unique, a warning message, **Elements of type 'ApplicationID' have to be unique** is displayed in the reporter window.

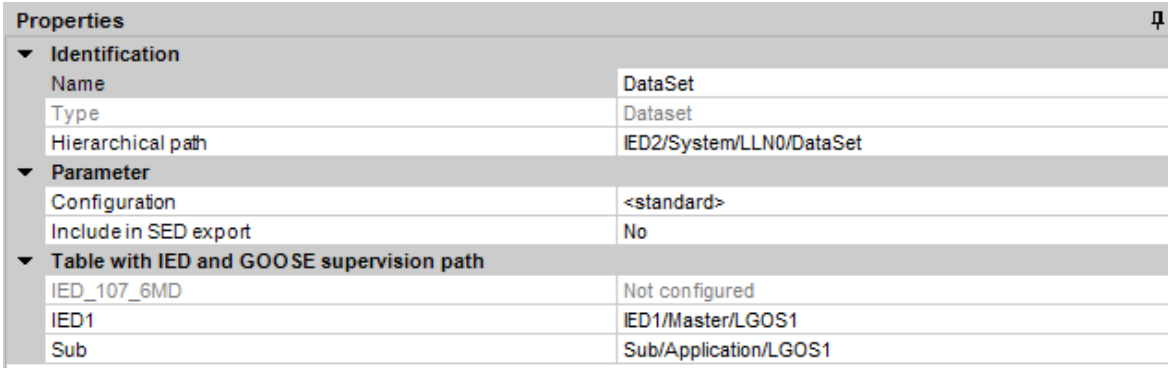
Group: GOOSE Parameters

Property	Description
Communication profile	With this list box, you select a communication profile. A communication profile is a group of settings with which you can set the resending of GOOSE messages. The following settings are part of this group: • Minimum monitoring time • Maximum monitoring time • VLAN ID • VLAN Priority You can select one of the three standard profiles **PriorityLow**, **Priority-Medium**, or **PriorityHigh**. Alternately, you can set the four parameters stated directly and store a combination of settings from the communication profile. If you select a communication profile, the preceding four parameters are automatically updated to the values defined in the profile.
Minimum monitoring time	This field represents a value for the minimum time in milliseconds. If a value or the status of a value has changed spontaneously within a GOOSE frame, the frame will be transmitted again after expiry of this time.
Maximum monitoring time	This field represents a value for the maximum time in milliseconds. The maximum time is the distance between two telegram communications in the stationary condition. The interruption of the communication can then be detected by the recipient.
VLAN ID	This field represents the number of the virtual LAN (VLAN) in the network. Enter another value for the VLAN number if necessary.
VLAN Priority	This field gives the priority of the GOOSE message within the VLAN. Enter another value for the priority if necessary. The least VLAN priority and the highest VLAN priority is **0** and **7** respectively.

NOTE

For **SMV** editor, only **Name**, **Description**, and **Comment** properties are applicable.

7.16 Dataset



[sc_iec_station_properties, 1, en_US]

Figure 7-16 Properties Window for Dataset

Here, you can edit the property values of a Dataset.

Group	Property	Description
Identification	Name	This field represents the current name of the dataset. Enter another name for the dataset if necessary. If you modify the name in the entry field, the modified name is displayed in all the windows that contain this dataset.
	Type	Type **Dataset** cannot be changed.
	Hierarchical Path	This list box is used to modify the current hierarchical path of the dataset. The hierarchical path is equivalent to the path in the **Source catalog** tree. This path consists of the IEC 61850 name of the device, the name of the logical device (LD) and the name of the logical node (LN).
Parameter	Configuration	This field represents the number of GSE controls of the dataset and further setting options. Click the button on the right border. Configuration window for dataset is displayed. For more information on configuring a dataset, refer to *2.14.10 Changing the Properties of a GOOSE Control Block*.
	Include in SED export	This field is displayed only for GOOSE. If you select **Yes**, the dataset is added to the other project data on SED export. All the information contained in the dataset is exported in an SED format. If you select **No**, the dataset is not added to other project data on SED export.
	Subset for SICAM	This field is displayed only for Reports and logs. If you select **Yes**, SICAM imports only the information in the marked dataset. If you select **No** (standard mode), SICAM always imports the complete information.
Table with IED and GOOSE supervision path	Device name	This field displays the overview of all configured GOOSE supervision for the selected GSE control block. The text **Not configured** is displayed for the device if the GOOSE supervision is not enabled.

GOOSE Control Block Attributes

Here, you can edit the attributes of GOOSE control block.

Attribute		Description
Name		This field represents the name of the GOOSE control block. This field can be edited.
Application ID		This field represents an integer value as the unique marking of the GOOSE application. This value can be changed. The application ID is displayed as a decimal value, but saved as a hexadecimal value in the SCL file according to IEC 61850-6. When you change the value, ensure the uniqueness of the number. If the Application ID is not unique, a warning message **Elements of type 'ApplicationID' have to be unique** is displayed in the reporter window.
MAC address		This field represents the recommended multicast addressing to increase the overall performance of the multicast message reception (MAC hardware performing the filtering). This value can be changed. When you change the value, ensure the uniqueness of the address. If the MAC address is not unique, a warning message **Elements of type 'Mac Address' have to be unique** is displayed in the reporter window.
Config revision		This field represents the number of times that the configuration of the dataset is changed.
Monitoring time	minimum	This field represents the first retransmission time in milliseconds after a spontaneous change of a signal within a GOOSE dataset.
	maximum	This field represents the maximum time in milliseconds for the two telegram communications in the stationary condition. The interruption of the communication is ascertained by the recipient after twice the time set in this field.
VLAN	ID	This field represents the number of the virtual LAN (VLAN) in the network. You can enter another value for the VLAN number if necessary. The VLAN number is part of the communication profile. The VLAN ID is displayed as a decimal value, but saved as a hexadecimal value in the SCL file according to IEC 61850-6.
	Priority	This field represents the priority of the GOOSE message within the VLAN. You can enter another value for the priority if necessary. The VLAN-Priority is part of the communication profile. The VLAN-Priority is displayed as a decimal value, but saved as a hexadecimal value in the SCL file according to IEC 61850-6.

NOTE

The SCD file is corrupted if the station has errors. For example, a GOOSE control block with the same name.

SMV Control Block Attributes

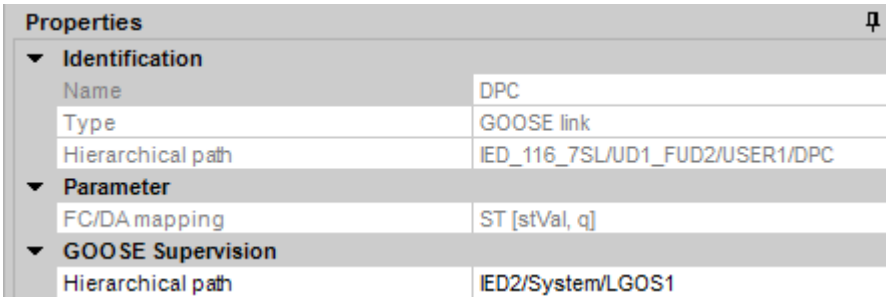
Here, you can edit the attributes of SMV control block.

Attribute		Description
Name		This field represents the name of the multicast sample value control block.
Application ID/SMV ID		This field represents the integer value/string as the unique marker of the SMV application. The application ID/SMV ID is displayed as a decimal value, but saved as a hexadecimal value in the SCL file according to IEC 61850-6. When you change the value, ensure the uniqueness of the number. If the Application ID is not unique, a warning message **Elements of type 'SmvID' have to be unique** is displayed in the reporter window.
Config revision		The field represents the number of times that the configuration of the dataset is changed. On any configuration changes, the value is incremented by 10 000 to distinguish this from the online configuration changes where the value is incremented by 1.
MAC address		This field represents the recommended multicast addressing to increase the overall performance of the multicast message reception (MAC hardware performing the filtering). This value can be changed. When you change the value, ensure the uniqueness of the address. If the MAC address is not unique, a warning message **Elements of type 'Mac Address' have to be unique** is displayed in the reporter window.
VLAN	ID	This field represents the number of the virtual LAN (VLAN) in the network. You can enter another value for the VLAN number if necessary. The VLAN number is part of the communication profile. The VLAN ID is displayed as a decimal value, but saved as a hexadecimal value in the SCL file according to IEC 61850-6.
	Priority	This field represents the priority of the SMV message within the VLAN. You can enter another value for the priority if necessary. The VLAN priority is part of the communication profile. The VLAN priority is displayed as a decimal value, but saved as a hexadecimal value in the SCL file according to IEC 61850-6.
smpRate		This field represents the sample rate. The unit of the value depends on the value of the **smpMod**.
nofASDU		This field represents the total number of Application Service Data Units.
smpMod		This field represents if the sample rate is defined in any of the following units. • samples per nominal period • samples per second • seconds per sample If none of the mentioned units are specified, the default value, samples per period is considered.
SMV options	refreshTime	This field represents the boolean value and if it is set to **true**, the **refreshTime** attribute (time of refresh activity) is included in the SMV telegram.
	sampleRate	This field represents the boolean value and if it is set to **true**, the **smpRate** and **smpMode** from the instance of MSVCB is included in the SMV telegram.
	dataSet	This field represents the name of the dataset.
	security	This field represents the boolean value and if it is set to **true**, the security attribute (reserved for digital authentication) is included in the SMV telegram.
multicast		This field represents the boolean value and if it is set to **true**, the transmission of the sampled value uses multicast.

NOTE

The SCD file is corrupted if the station has errors. For example, a dataset or SMV control block with the same name.

7.17 GOOSE Link



[sc_iec_gooselink_properties, 1, en_US]

Figure 7-17 Properties Window for GOOSE Link

Group: Identification

Property	Description
Name	This field represents the name of the source object. This name cannot be changed.
Type	For **GOOSE** editor, the type **GOOSE link** cannot be changed.
Hierarchical path	This field represents the hierarchical path of the GOOSE link. This path consists of the following: • IEC 61850 name of the device • Name of the logical device (LD) • Name of the logical node (LN) This path cannot be changed.

Property	Description
FC/DA mapping	This field represents the FC/DA mapping of the source object. To change the mapping, select the values from the list box and click outside the field. With the FC/DA mapping option, you decide which data attributes of a data object are to be included in the dataset. Check box is available at FC as well as DA level. You can select or clear the individual data attributes (DA Group) or entire functional groups of the data attributes (FC Group).

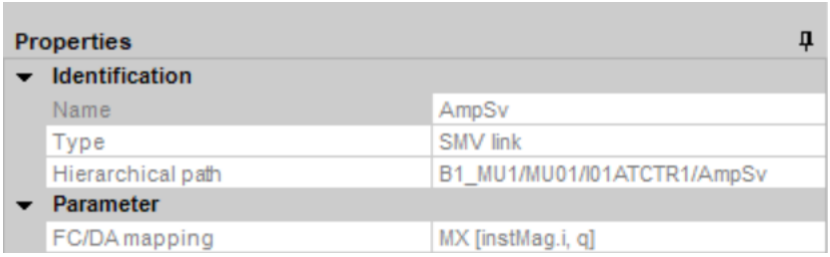
NOTE

The **FC/DA mapping** can be changed only when the destination signal is not configured to the source signal. If the destination signal is configured, the **FC/DA mapping** option in the **Properties** window under the **Parameter** group is disabled.

Group: GOOSE Supervision

Property	Description
Hierarchical path	This list box is used to represent and modify the configured GOOSE supervision path. This path consists of the IEC 61850 name of the device, the name of the logical device (LD), and the name of the configured LGOS logical node (LGOS LN).

7.18 SMV Link



[sc_iec_smvlink_properties, 1, en_US]

Figure 7-18 Properties Window for SMV Link

Group: Identification

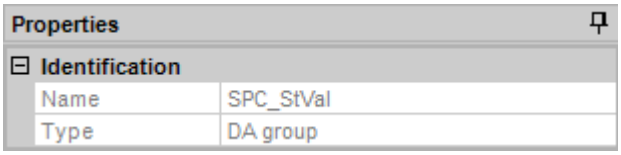
Property	Description
Name	This field represents the name of the source object. This name cannot be changed.
Type	For the **SMV** editor, the type **SMV link** cannot be changed.
Hierarchical path	This field represents the hierarchical path of the SMV link. This path consists of the following: • IEC 61850 name of the device • Name of the logical device (LD) • Name of the logical node (LN) This path cannot be changed.

Property	Description
FC/DA mapping	This field represents the FC/DA mapping of the source object. To change the mapping, select the values from the list box and click outside the field. With the FC/DA mapping option, you decide which data attributes of a data object are to be included in the dataset. The check box is available at the FC level as well as at the DA level.

NOTE

The **FC/DA mapping** can be changed only when the destination signal is not configured to the source signal. If the destination signal is configured, the **FC/DA mapping** option in the **Properties** window under the **Parameter** group is disabled.

7.19 DA Group



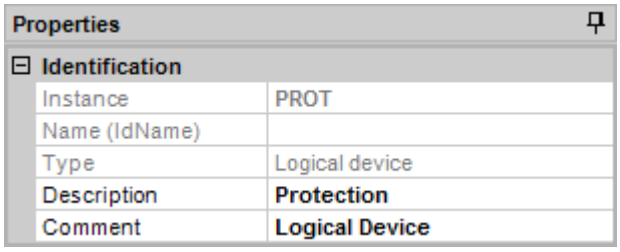
[sc_da group, 2, en_US]

Figure 7-19 Properties Window for DA Group

Group: Identification

Property	Description
Name	This field represents the name of the DA group.
Type	Type **DA group** cannot be changed.

7.20 Logical Device



[sc_source catalogue ld, 3, en_US]

Figure 7-20 Properties Window for Logical Device

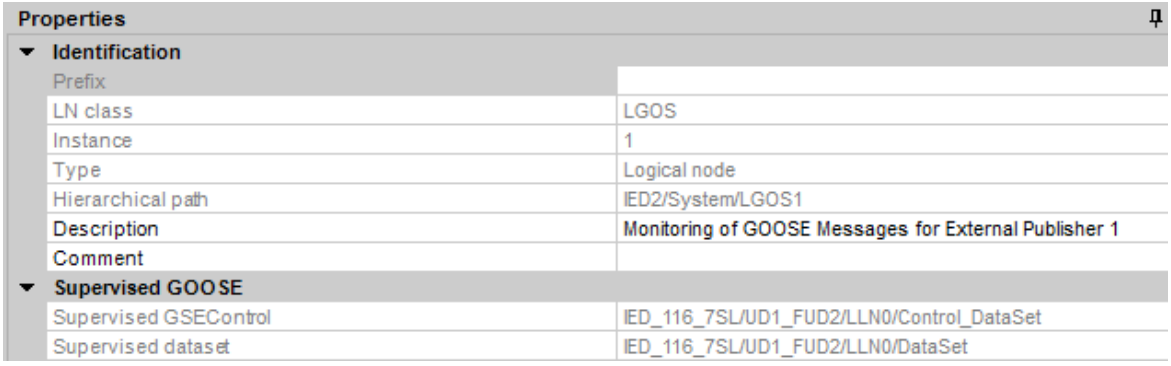
Group: Identification

Property	Description
Instance	This field represents the instance name of the logical device. For example, **CTRL**, **DR**, **MEAS**, and **PROT**.
Name (IdName)	This is the name of the logical device. You can enter a name for the logical device in this entry field, which is transmitted when communicating with other devices. This name must be in accordance with the IEC 61850-7-1 and IEC 61850-7-2 standard and it must be unique within the subnetwork. You can edit the IED, if it is Edition 2 and its service capabilities allow it. If the IdName is not unique, an appropriate error message is displayed in the tooltip. The IdName must not contain more than 64 characters. If there is no name added for IdName, a unique communication name is automatically used. This communication name consists of the device name and the instance of the logical device.
Type	Type **Logical device** cannot be changed.
Description	This field represents the description of the logical device. For example, **Control**, **Disturb Rec**, **Measurement**, and **Protection**.
Comment	This field is reserved for a multiline description. Click inside the box and click the arrow button on the right border. A list box is displayed where you can view and edit the entire text for logical device.

NOTE

The description for the devices added through the IED tool (for example, DIGSI4 and DIGSI5) is not editable.

7.21 Logical Node



[sc_iec_LGOS_properties, 1, en_US]

Figure 7-21 Properties Window for Logical Node

Group: Identification

Property	Description
Prefix	This field represents the prefix of the name of the logical node. The whole name of the logical node consists of three parts namely Prefix, Group, and Instance.
LN class	This field represents the class of the logical node.
Instance	This field represents the instance number of the logical node.
Type	Type **Logical node** cannot be changed.
Hierarchical path	This field represents the hierarchical path of the logical node. This path consists of the IEC 61850 name of the device, the name of the logical device (LD), and the name of the logical node (LN).
Description	This field represents the description of the logical node. Description can be edited only for the IEDs that are imported manually.
Comment	This field is reserved for a multiline description. Click inside the box and click the arrow button on the right border. A list box is displayed where you can view and edit the entire text for logical node.

Group: Supervised GOOSE

NOTE

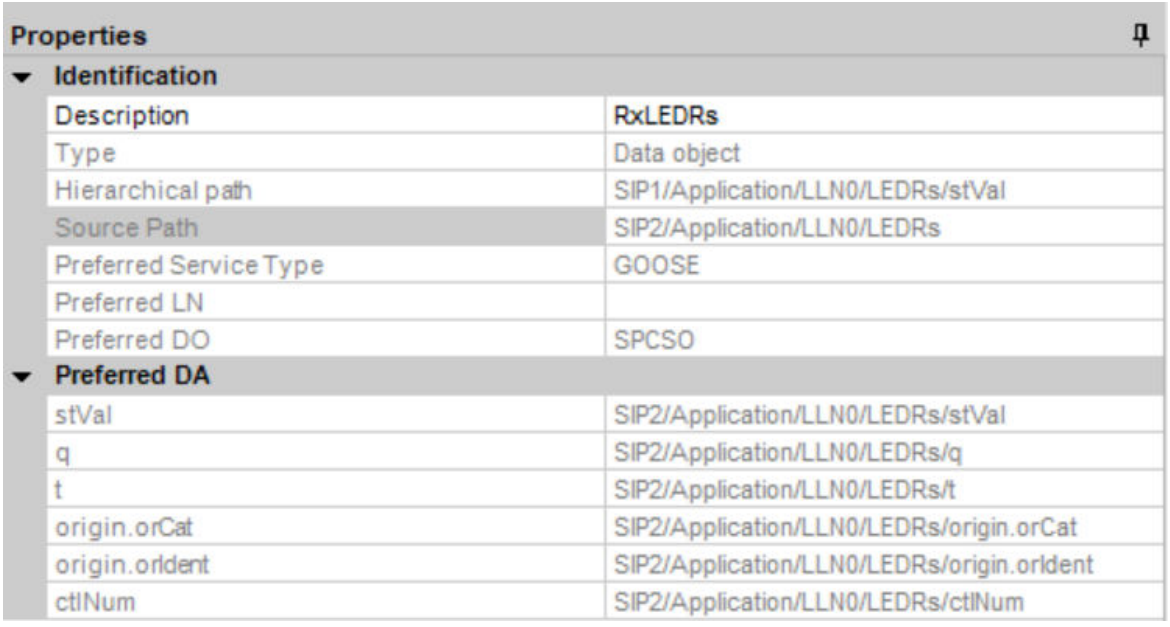
This property is available and displayed only for LN LGOS.

Property	Description
Supervised GSEControl	This field represents the supervised GSE control path of the LGOS logical node (LN LGOS). The text **Not configured** is displayed if the GOOSE supervision is not enabled.
Supervised dataset	This field represents the supervised dataset path of the LGOS logical node (LN LGOS). The text **Not configured** is displayed if the GOOSE supervision is not enabled.

NOTE

The description for the devices added through the IED tool (for example, DIGSI4 and DIGSI5) is not editable.

7.22 Data Object



[sc_source catalogue do, 3, en_US]

Figure 7-22 Properties Window for Data Object

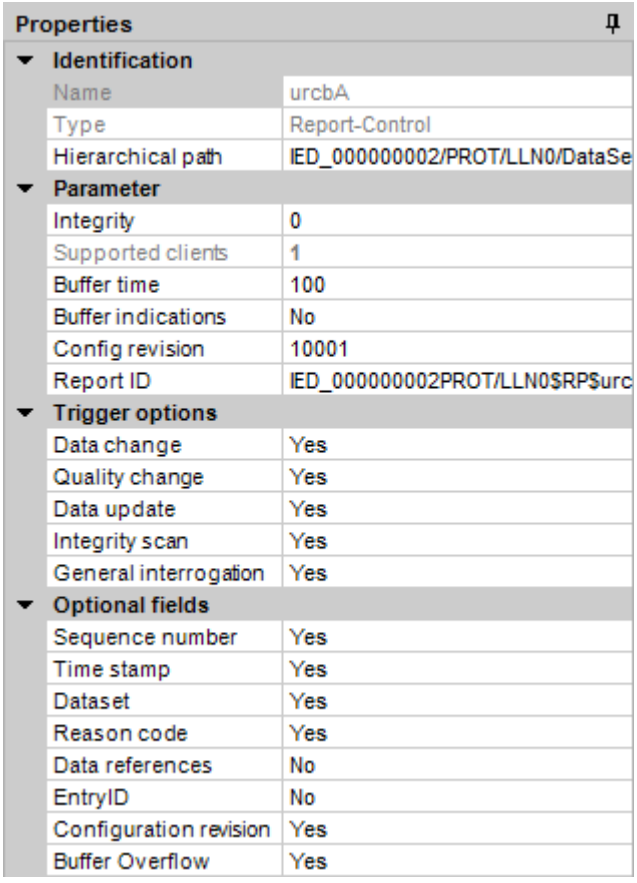
NOTE

The source path is displayed only for the Destination catalog.

Group: Identification

Property	Description
Name	This field represents the current name of the data object.
Type	Type **Data object** cannot be changed.
Hierarchical path	This list box displays the current hierarchical path of the data object. This path consists of the IEC 61850 name of the device, the name of the logical device (LD), the name of the logical node (LN), and the name of the data object.
Source Path	This field represents the path of the configured publisher. This path consists of the IEC 61850 name of the device, the name of the logical device (LD), the name of the logical node (LN), and the name of the data object.
Preferred Service Type	Preconfigured service type indicating a expected service for the data-flow configuration.
Preferred LN	Preconfigured LN class indicating an expected publisher LN class containing the data object indicated by the preferred DO.
Preferred DO	Preconfigured DO name to indicate the expected publisher and DO name and CDC.
Preferred DA	Preconfigured attribute indicating the expected publisher attribute. If configured, any bound attribute must match the data type specified by the preferred DO, CDC, and preferred DA value.

7.23 Report Control Blocks



[sc_report control, 3, en_US]

Figure 7-23 Properties Window for Report Control Blocks

Group: Identification

Property	Description
Name	This field represents the current name of the report control block. If you change the name, the name in the IEC 61850 reports and logs window also changes.
Type	Type **Report-Control** cannot be changed.
Hierarchical path	This list box is used to change the current hierarchical name of the report control block and its datasets. This path consists of the IEC 61850 name of the device, the name of the logical device (LD), and the name of the logical node (LN). The preferred LN is LLN0.

Group: Parameter

Property	Description
Integrity	This field represents the time period in milliseconds for generating an integrity report. An integrity report consists of the values of all members of the related dataset. Ensure that the **Trigger options** property, **Period** is set to **Yes**.
Supported clients	This field represents the total number of clients that can connect to this report control block.

Property	Description
Buffer time	This entry field contains a value for the buffering time in milliseconds. The buffering time specifies how long the device buffers the data before transmitting it to the client.
Buffer indications	If you select **Yes**, the device stores all datasets of the report in the event of connection failure. When the connection is resumed, the device transmits the report to the client and deletes the buffered data.
Config revision	This field contains the configuration number of the report control block. After creating a new report control clock, the number is equal to 1. Then the number is incremented with each change to the configuration of the report control block. You can also modify the configuration number manually. To do this, enter an integer value into the field. In this way, you overwrite the internally assigned configuration number.
Report ID	This field contains a unique name for the report control block. It is the default hierarchical path of the report control block.

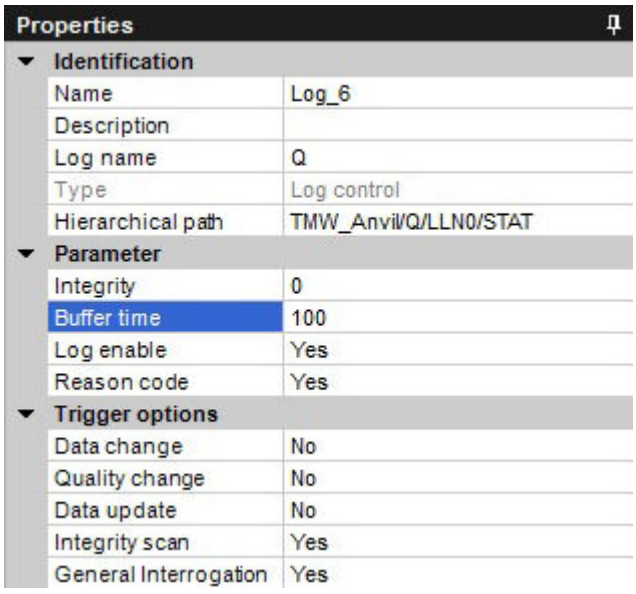
Group: Trigger Options

Property	Description
Data change	If you select **Yes**, a data modification causes a report to be transmitted.
Quality change	If you select **Yes**, a quality modification causes a report to be transmitted.
Data update	If you select **Yes**, a data update causes a report to be transmitted. Unlike the **Data change** option, the report is also transmitted if the data have remained the same but have been regenerated or refetched.
Period	If you select **Yes**, the device periodically transmits the dataset after expiration of the integrity period.
General interrogation	If you select **Yes**, a single general interrogation is performed after activation of the reporting. This option is available only for **Edition 2**.

Group: Optional Fields

Property	Description
Sequence numbering	If you select **Yes**, the report is transmitted with its sequence number.
Time stamp	If you select **Yes**, the report is transmitted with its timestamp.
Dataset	If you select **Yes**, the report is transmitted with its dataset name.
Reason for inclusion	If you select **Yes**, the report is transmitted with its reason for inclusion.
Data references	If you select **Yes**, the report is transmitted with its data references.
Entry ID	If you select **Yes**, the report is transmitted with its entry ID.
Config references	If you select **Yes**, the report is transmitted with its config references.
Buffer Overflow	If you select **Yes**, the report is transmitted with its buffer overflow. The buffer overflow is available only for **Edition 2**.

7.24 Log Control Blocks



[sc_log control, 1, en_US]

Figure 7-24 Properties Window for Log Control Blocks

Group: Identification

Property	Description
Name	This field represents the current name of the log control block. If you change the name, the name in the IEC 61850 reports and logs window also changes.
Description	This field specifies the description of the log.
Log Name	This field represents the relative name of the log within its configured or corresponding LN.
Type	The type **Log control** cannot be changed.
Hierarchical path	This list box is used to change the current hierarchical name of the log control block. This path consists of the IEC 61850 name of the device, the name of the logical device (LD), and the name of the logical node (LN).

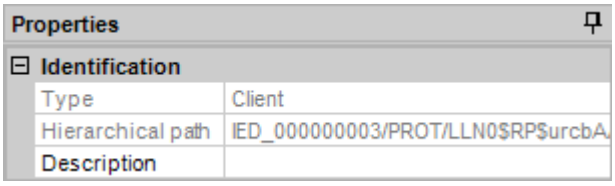
Group: Parameter

Property	Description
Integrity	This field represents the time range in milliseconds for generating an integrity report. An integrity report consists of the values of all members of the related dataset. Ensure that the **Trigger options** property, **Period** is set to **1**.
Buffer time	This field contains a value for the buffering time in milliseconds. The buffering time specifies how long the device buffers the data before transmitting it to the subscribers (client).
Log enable	This field indicates the logging status. If the value is set to **Yes**, remote logging is disabled. If the value is set to **No**, remote logging is enabled.
Reason code	If the value is set to **Yes**, the reason code for the event trigger is included in the log.

Group: Trigger Options

Property	Description
Data change	If you select **Yes**, a data modification causes a log to be transmitted.
Quality change	If you select **Yes**, a quality modification causes a log to be transmitted.
Data update	If you select **Yes**, a data update causes a log to be transmitted. Unlike the **Data change** option, the log is also transmitted if the data have remained the same but have been regenerated or refetched.
Integrity scan	If you select **Yes**, an integrity scan causes a log to be transmitted.
General interrogation	If you select **Yes**, the device periodically transmits the dataset after the integrity scan.

7.25 Client



[sc_clients report, 3, en_US]

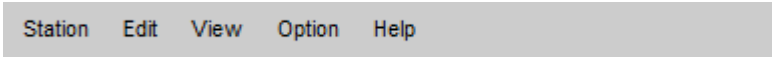
Figure 7-25 Properties Window for Client

Group: Identification

Property	Description
Type	Type **Client** cannot be changed.
Hierarchical path	This list box displays the current hierarchical name of the client. This path consists of the IEC 61850 name of the device, the name of the logical device (LD), and the name of the logical node (LN).
Description	This column specifies the description of the client.

8 User Interface

8.1 Menu Bar



[sc_menubar, 2, en_US]

Figure 8-1 Menu Bar

The menu bar contains commands that are frequently required for your work.

8.1.1 Station Menu

The **Station** menu performs all the station operation for IEC 61850 System Configurator.

Field	Description
New	This option is used to create a new IEC station in the IEC 61850 System Configurator. For additional information on creating a new station, refer to *2.2 Creating the IEC Station*.
Open	This option is used to open the SCD as IEC station in the IEC 61850 System Configurator. For additional information on opening the station, refer to *2.3 Opening the IEC Station*.
Close	This option is used to close the IEC station in the IEC 61850 System Configurator. For additional information on closing the station, refer to *2.6 Closing the IEC Station*.
Save	This option is used to save all the data of an IEC 61850 station in the IEC 61850 System Configurator. The name and path of this file are automatically assigned. For additional information on saving the IEC station, refer to *2.4 Saving the IEC Station*.
Save as	This option is used to save all the data of an IEC station in the IEC 61850 System Configurator to a different location. For additional information on saving the station in the different location and with the different name, refer to *2.4 Saving the IEC Station*.
Import	This option is used to import the station, add IEC 61850 devices, and update the IEC 61850 devices. For additional information on import, refer to *1 Introduction*.
Export	This option is used to export the documentation as an XML file, the IEC 61850 station, IEC 61850 station with alternative text, and IEC 61850 device configuration. For additional information on export, refer to *1 Introduction*.
Update	This option is used to reimport the devices with the updated SCL file. For additional information on update, refer to *2.11.3 Updating the Devices*.
Collect logs	This option is used to collect diagnostic logs from the devices. For additional information on collecting diagnostic logs, refer to *4.2 Collecting the Diagnostic Logs for Devices Available in the Station*.
Archive	This option is used to archive the current project. For additional information on archiving a project, refer to *2.7 Archiving a Project*.
Retrieve	This option is used to retrieve an archive project. For additional information on retrieving a project, refer to *2.8 Retrieving a Project*.
Print	This option is used to print the current view. For additional information on print, refer to *6.3 Printing the Displayed Information*

Field	Description
Print preview	This option is used to display the objects as it is printed. In print preview, you cannot edit the objects. For additional information on print, refer to *6.2 Print Preview*
Exit	This option is used to close all the windows of IEC 61850 System Configurator and exit the IEC 61850 System Configurator. You can also press **Alt**+**F4** on the keyboard.

NOTE

Import and **Export** menu options are enabled only for the **Devices** view.

8.1.2 Edit Menu

The **Edit** menu options are based on the selection in the IEC 61850 System configurator bar.

Field	Description
Undo	This option is used to undo the last editing step. This option is enabled as soon as you have carried out at least one action that can be undone. You can also press **Ctrl**+**Z** on the keyboard to undo the last editing step.
Redo	This option restores the last undone editing step. This button is active as soon as you have undone at least one editing step. You can also press **Ctrl**+**Y** on the keyboard to restore the last undone editing step.
Cut	This option copies a marked element or a value to the clipboard. The element or value is deleted at the actual position as soon as you insert the element or value at another location with the Paste command. This option is active as soon as a suitable element or value is marked. You can also press **Ctrl**+**X** on the keyboard to copy an element or a value to the clipboard.
Copy	This option copies a marked element or value to the clipboard. With the Paste command, you insert the copy of the element or value at another location without deleting the original object. This option is enabled as soon as a suitable element or value is marked. You can also press **Ctrl**+**C** on the keyboard to copy the marked element or value to the clipboard.
Paste	This option inserts the content of the clipboard at another permissible location. The option is enabled if at least one element or value is located in the clipboard. You can also press **Ctrl**+**V** on the keyboard to insert the content of the clipboard at another permissible location.
Delete	This option deletes the marked elements or values. This option is active as soon as a suitable element or value is marked. You can also press Delete on the keyboard to delete the marked element or value.
Insert Comment	This option is used to enter a name and a comment. This comment can be viewed in the **HiItem** section in the **History** of the SCD file. This information can be used for future reference of who made which configuration changes. You can also press **Ctrl**+**Shift**+**I** on the keyboard to view the **Insert comment** dialog.
Automatic IP addressing	This option assigns consecutive IP addresses to all access points within the selected subnet. The address range starts with the IP start address which is entered in the subnet **Properties** window. This option is active if a subnet is selected. The IEC 61850 System Configurator issues a warning before existing IP addresses are over-written. Confirming this warning with OK overwrites the IP addresses of all access points within the subnet.

Field	Description
Reassigning virtual MAC address	This option reassigns the IP address to all the GOOSE messages of the station. The starting point of the address is same as the address entered in the **Properties** window of the station.

8.1.3 Insert Menu

The **Insert** menu options are available only for **Network**, **GOOSE**, and **Reports and logs** editors.

Field	Description
SubNetwork	This is used to insert a Subnet type element into the network structure. This option is enabled after the IEC 61850 Station is selected.
GOOSE application	This is used to insert a GOOSE application. This option is enabled after the IEC 61850 station is selected.
Dataset	This is used to insert a dataset. This option is enabled after the device is selected in the Applications window.
Report	This is used to insert a report to a particular dataset. This option is enabled after dataset is selected.

8.1.4 View Menu

The **View** menu options are based on the selection in the **IEC 61850 System configurator bar**.

Field	Description
Devices	This option is used to open the Devices editor in the IEC 61850 System Configurator.
Substation	This option is used to open the Substation editor in the IEC 61850 System Configurator.
Network	This option is used to open the Network editor in the IEC 61850 System Configurator.
GOOSE	This option is used to open the GOOSE editor in the IEC 61850 System Configurator.
SMV	This option is used to open the SMV editor in the IEC 61850 System Configurator.
Reports and logs	This option is used to open the Reports and logs editor in the IEC 61850 System Configurator.
Protocol mapping	This option is used to open the Protocol mapping editor in the IEC 61850 System Configurator.
IEC 61850 System configurator bar	This option is used to view or hide the IEC 61850 System configurator bar. For additional information on IEC 61850 System configurator bar, refer to *8.2 IEC 61850 System Configurator Bar (Navigation Bar)*.
Toolbar	This option is used to view or hide the toolbar in the IEC 61850 System Configurator. For additional information on Toolbar, refer to *8.3 Toolbar*.
Status bar	This option is used to view or hide the status bar.
Report	This option is used to view the report dialog. This dialog consists of the following: information about every action, indications about IEC 61850 update, indications about Open IEC 61850 System Configurator, indications about IEC 61850, indications about import device (XML), action for IEC 61850 System Configurator and messages for modem status indications.
Applications	This option is used to view or hide the Application window. For additional information on Application window, refer to *8.4.6.2 Project Tree*.
Properties	This option is used to view or hide the **Properties** window.

Field	Description
Sources	This option is used to view or hide the Source catalog. For additional information on Source catalog, refer to *8.4.4.3 Source Catalog*.
Destinations	This option is used to view or hide the Destination catalog. For additional information on Destination catalog, refer to *8.4.4.4 Destination Catalog*.
Clients	This option is used to view or hide Clients window. For additional information on **Clients** window, refer to *8.4.6.6 Clients*.
Restore standard	This option is used to align all the windows in a standard way (default). Once this operation is performed, the settings are saved in the project and is used when the IEC 61850 System Configurator is opened again. To modify the window size, refer to *2.18.1 Modifying the Window Size*.

8.1.5 Option Menu

The IEC 61850 System Configurator user interface is available in various languages. You can select one of these languages as the user interface language. The designations of all device-independent operating elements and information are then displayed in the selected language.

NOTE

If the IEC 61850 System Configurator is opened via the IED tool, the language option is disabled, it will have the same language as the IED tool.

8.1.6 Tools Menu

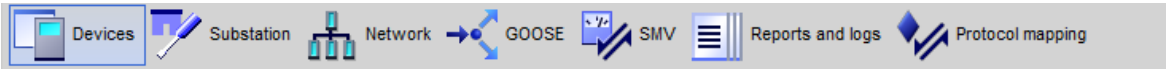
The **Tools** menu options are based on the selection in the IEC 61850 System configurator bar.

Field	Description
SCL files comparator	This option opens the SCL files comparator, which is used to compare SCL files and IEC 61850 project archives, to analyze the differences between them.
Collect device logs	This option opens NetView, which is used to collect the diagnostic logs from the devices which are available and not available in the station via a TXT file.
Display IEC data	This option opens the IEC browser, it is a tool used to view and export IEC data.

8.1.7 Help Menu

Field	Description
Help topics	This option is used to view the help topics. This option is not available now and it behaves similar to **Using help** option.
About	This option displays the information about IEC 61850 System Configurator. For example, Version of the application, Revision, Copyright, and License.
Check for new version	This option is used to check if the version of the application is up-to-date. If the version is not up-to-date, click the link to download the latest version of the application.

8.2 IEC 61850 System Configurator Bar (Navigation Bar)



[sc_system configurator bar, 3, en_US]

Figure 8-2 IEC 61850 System Configurator Bar

Tabs	Description
Devices	Click **Devices** in the IEC 61850 System configurator bar to display the Devices editor.
Substation	Click **Substation** in the IEC 61850 System configurator bar to display the Substation editor.
Network	Click **Network** in the IEC 61850 System configurator bar to display the Network editor.
GOOSE	Click **GOOSE** in the IEC 61850 System configurator bar to display the GOOSE editor.
SMV	Click **SMV** in the IEC 61850 System configurator bar to display the SMV editor.
Reports and logs	Click **Reports and logs** in the IEC 61850 System configurator bar to display the Reports and logs editor.
Protocol mapping	Click **Protocol mapping** in the IEC 61850 System configurator bar to display the Protocol mapping editor.

8.3 Toolbar

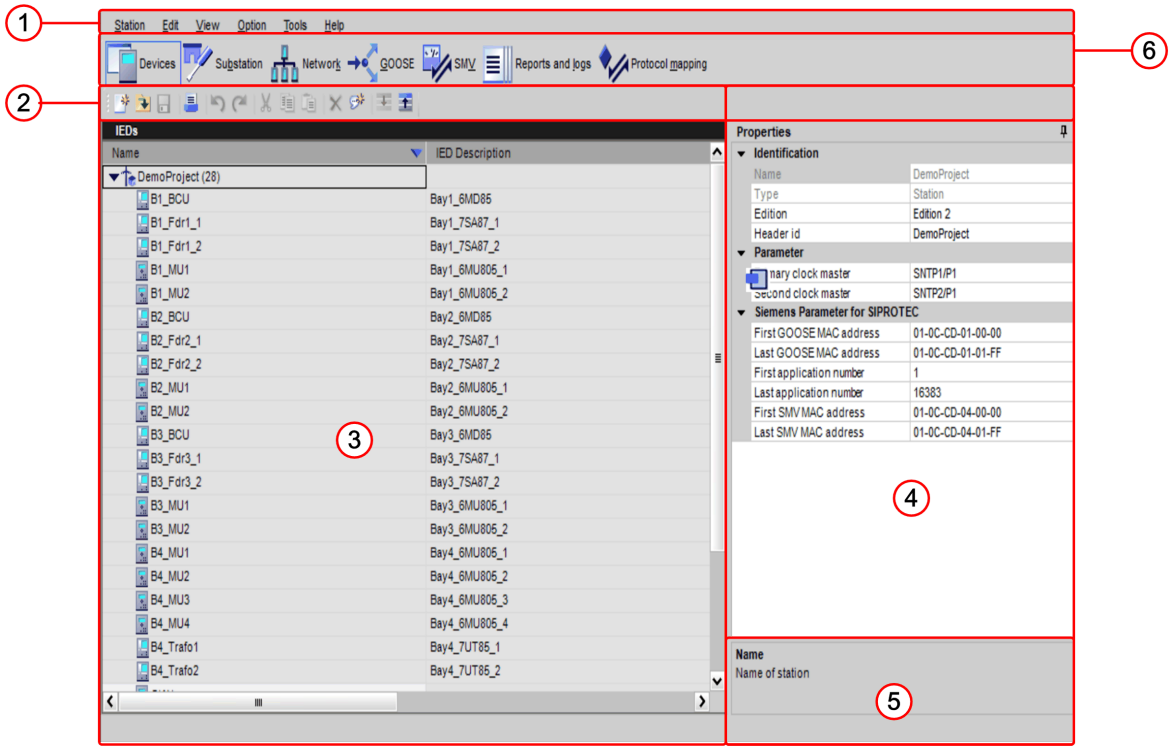
Name	Field/Icons	Description
New		Allows you to create a new IEC 61850 station in the **IEC 61850 System Configurator**.
Open		Allows you to open the saved IEC 61850 station.
Save		Allows you to save all data of an IEC 61850 station in a station description file. The name and path of this file are automatically assigned.
Print		Allows you to print the current view. View can be **Network**, **GOOSE** or **Reports and logs**.
Undo		Allows you to undo the last editing step. This button is active as soon as you have carried out at least one action that can be undone.
Redo		Allows you to restore the last undone editing step. This button is active as soon as you have undone at least one editing step.
Cut		Allows you to copy a marked element or value to the clipboard. The element or value is deleted at the actual position as soon as you insert the element or value at another location with the **Paste** command. This button is active as soon as a suitable element or value is marked.
Paste		Allows you to insert the content of the clipboard at another permissible location. This button is active as soon as at least one element or value is located in the clipboard.
Delete		Allows you to delete marked elements or values. This button is active as soon as a suitable element or value is marked.
Insert Comment		Allows you to insert a comment, for your future reference of who made which configuration changes.
Automatic IP Addressing		Allows you to assign consecutive IP addresses to all access points within the selected subnet. The address range starts with the IP start address, which is entered in the Subnet Properties. This button is active if a subnet is selected. The IEC 61850 System Configurator issues a warning before existing IP addresses are overwritten. Confirming this warning with **OK** overwrites the IP addresses of all access points within the subnet.
SubNetwork		Allows you to insert a subnet type element into the network structure. This button is activated after the icon for the IEC 61850 station is selected.
GOOSE application		Allows you to insert a new GOOSE application in the GOOSE editor. This button is activated after the icon for the IEC 61850 station is selected.
Reassigning virtual MAC addresses		Allows you to reassign the virtual MAC address.
Expand		Allows you to maximize the view of the tree structure for the selected access point. All levels from the access point to the data objects are displayed thus. This button is activated if a maximized view is possible.
Collapse		Allows you to minimize the view of the tree structure to the highest level. As a result of this, only the names of access points are displayed. This button is activated if the view can be minimized.

Name	Field/Icons	Description
Dataset		Allows you to insert the dataset in the Reports and logs editor.
Report		Allows you to insert a report control block for the datasets.
Insert T104 Address		Allows you to insert T104 address in the **Protocol mapping** window.

8.4 Editors

8.4.1 Devices

8.4.1.1 Devices Editor

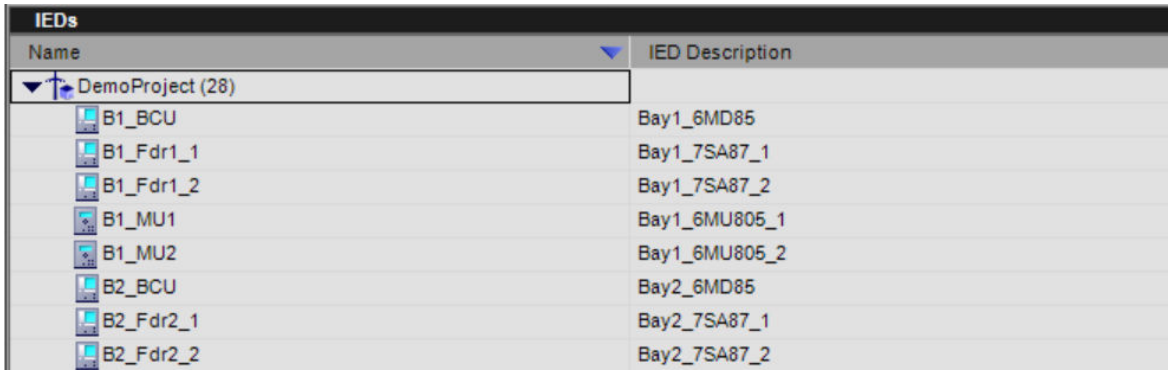


[le_devices editor, 4, en_US]

Figure 8-3 Devices Editor

(1) Menu bar
(2) Toolbar
(3) IEDs
(4) Properties
(5) Description Pane
(6) IEC 61850 System configurator bar

8.4.1.2 IEDs



[sc_IEDs, 4, en_US]

Figure 8-4 IEDs – Editor of the Devices

The **IEDs** window consists of the following elements:

Element	Description
Name	This column represents the name of the IED in that station.
IED Description	This column represents the names of associated devices for all access points in the manner in which they were named in the DIGSI Manager.

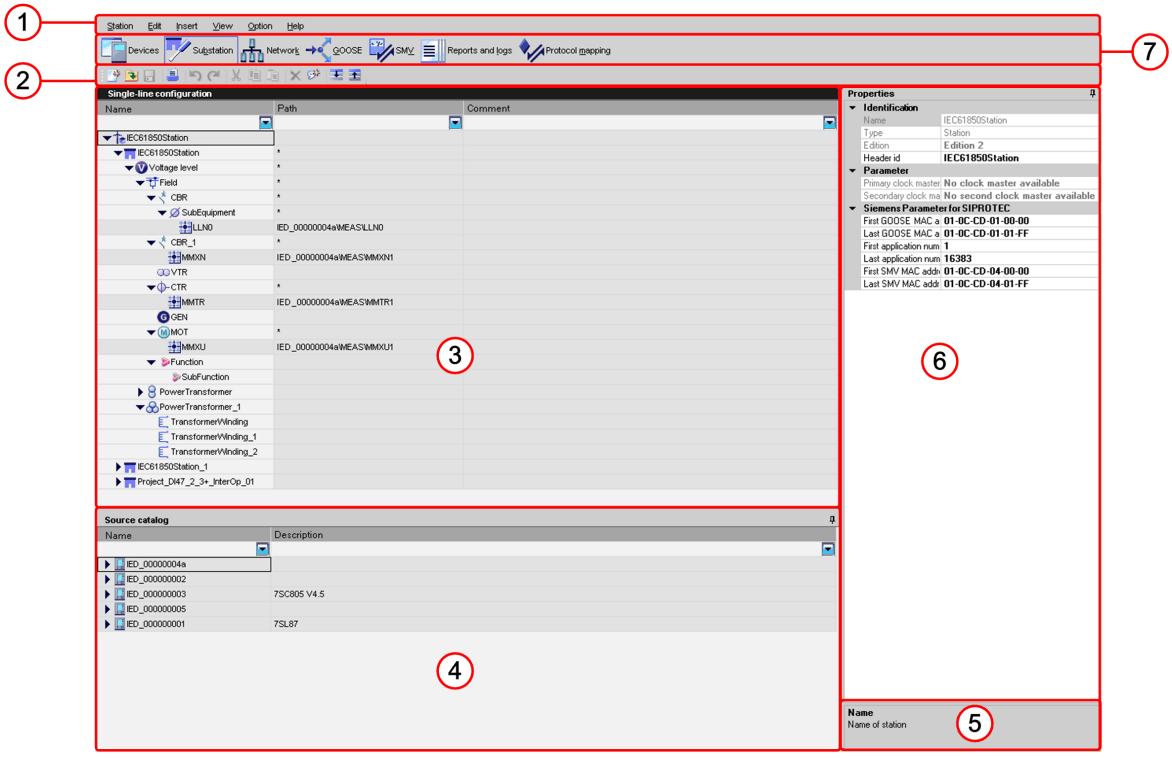
8.4.1.3 Properties

This window shows features and related values of the element, which you have selected in the **Devices** window. For some features the values can be changed, while for others they are only displayed.

- For additional information on the elements of IEC 61850 station, refer to *7.1 Station*.
- For additional information on the elements of IEDs, refer to *7.2 Devices*.

8.4.2 Substation

8.4.2.1 Substation Editor

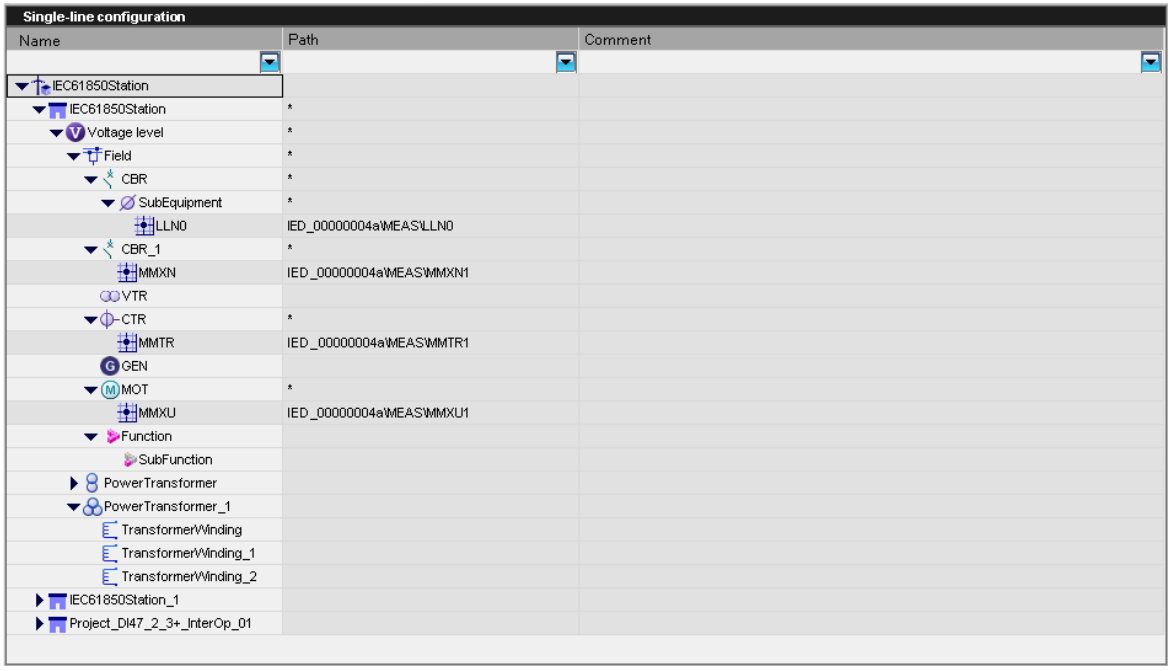


[le_substation editor, 2, en_US]

Figure 8-5 Substation Editor

(1) Menu bar
(2) Toolbar
(3) Single-line configuration
(4) Source catalog
(5) Description Pane
(6) Properties
(7) IEC 61850 System configurator bar

8.4.2.2 Single-line Configuration



[sc_Substation, topology, 2, en_US]

Figure 8-6 Single-line Configuration - Topology

The **Single-line configuration** window consists of the following elements for the **Topology** tab:

Elements	Description
Name	This field represents the name of the nodes in the topology.
Path	This field displays the path of configured LNodes in the format **IEDName/LogicalDevice/LogicalNode**. For the LNodes that are not configured, it displays **<Not Connected>**. For all the other nodes, it displays ***** if the node or its child nodes have configured LNodes under them.
Comment	This field displays the multiline comment that you enter in the properties window.

8.4.2.3 Source Catalog

[sc_Source catalogue, substation, 3, en_US]

Figure 8-7 Source Catalog

The Source catalog window consists of the following elements:

Element	Description
Name	This column specifies the data objects with icons and names in the form of a hierarchical tree structure. The highest level is represented by the IEDs available in the station. Each IED is functionally subdivided into several logical devices and each logical device is subdivided into logical nodes.
Description	This column specifies the corresponding description of source objects.

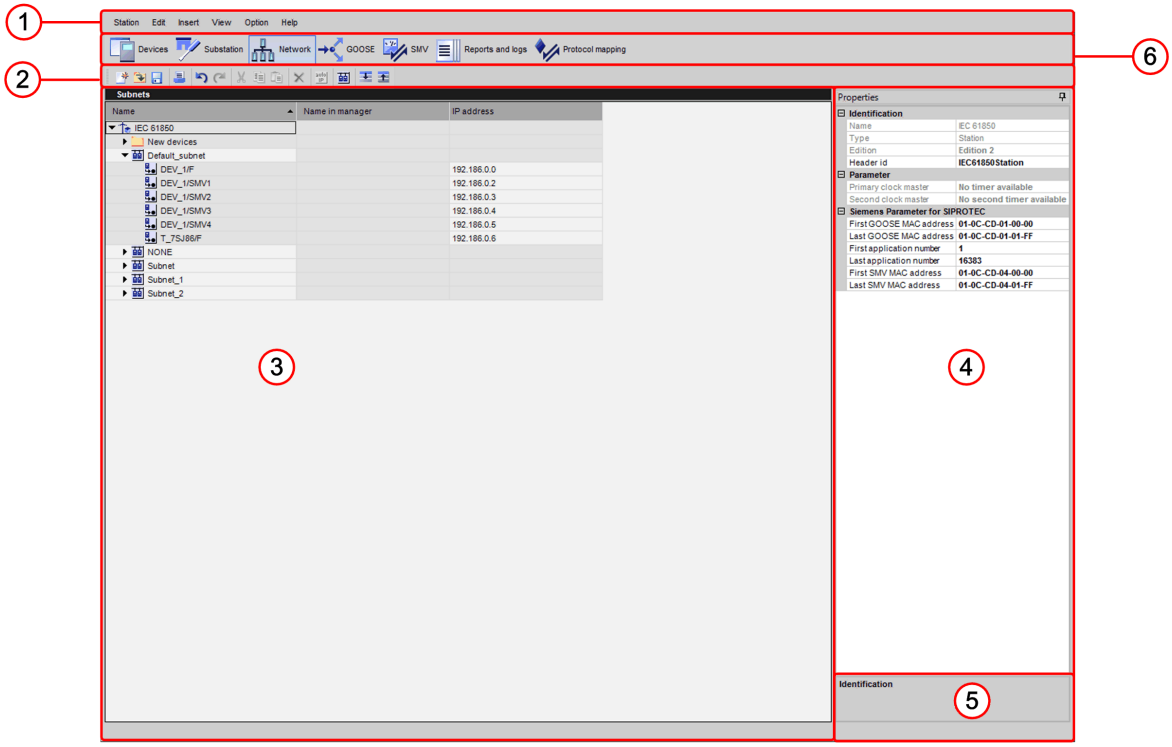
8.4.2.4 Properties

This window shows features and related values of the element, which you have selected in the **Substation** window. For some features the value can be changed, while for others they are only displayed.

- For additional information on the elements of IEC 61850 station, refer to *7.1 Station*.
- For additional information on the elements of the substation, refer to *7.3 Substation*.
- For additional information on the elements of the power transformer, refer to *7.4 Power Transformer*.
- For additional information on the elements of the transformer winding, refer to *7.5 Transformer Winding*.
- For additional information on the elements of the voltage level, refer to *7.6 Voltage Level*.
- For additional information on the elements of the bay, refer to *7.7 Bay*
- For additional information on the elements of the conducting equipment, refer to *7.8 Conducting Equipment*.
- For additional information on the elements of the subequipment, refer to *7.9 Sub-equipment*.
- For additional information on the elements of the function, refer to *7.10 Function*.
- For additional information on the elements of the LNode, refer to *7.11 LNode*.

8.4.3 Network

8.4.3.1 Network Editor



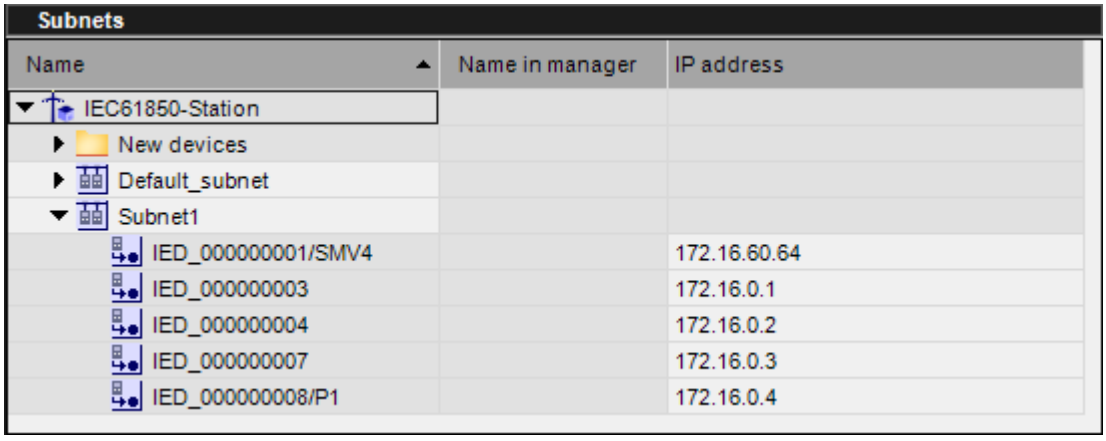
[le_network editor, 3, en_US]

Figure 8-8 Network Editor

(1) Menu Bar
(2) Toolbar
(3) Subnets
(4) Properties
(5) Description Pane
(6) IEC 61850 System configurator bar

8.4.3.2 Subnets

This window shows you the current network structure. You can add new subnets or delete the existing ones. The access points of the existing users can be distributed among the individual subnets with drag and drop (mouse) or cut and paste (mouse and keyboard or mouse or keyboard).



[sc_subnets, 2, en_US]

Figure 8-9 Subnets - Network Editor

The **Subnets** window consists of the following elements:

Element	Description
Name	This column specifies the network structure with icons and names in the form of a hierarchical tree structure. At the top of the tree structure, there is an icon for the IEC 61850 station. This icon is followed by the subnets, which contain the access points of the individual users. A level of the structure can be displayed or hidden by clicking on the corresponding arrow head. The displayed designations correspond to the names currently entered in the **Properties** window.
Name in manager	This column specifies the names of associated devices for all access points in the manner in which they were named in the DIGSI Manager.
IP address	This column specifies the IP addresses of access points currently visible in the network structure. The IP addresses correspond to those specified in the **Properties** window.

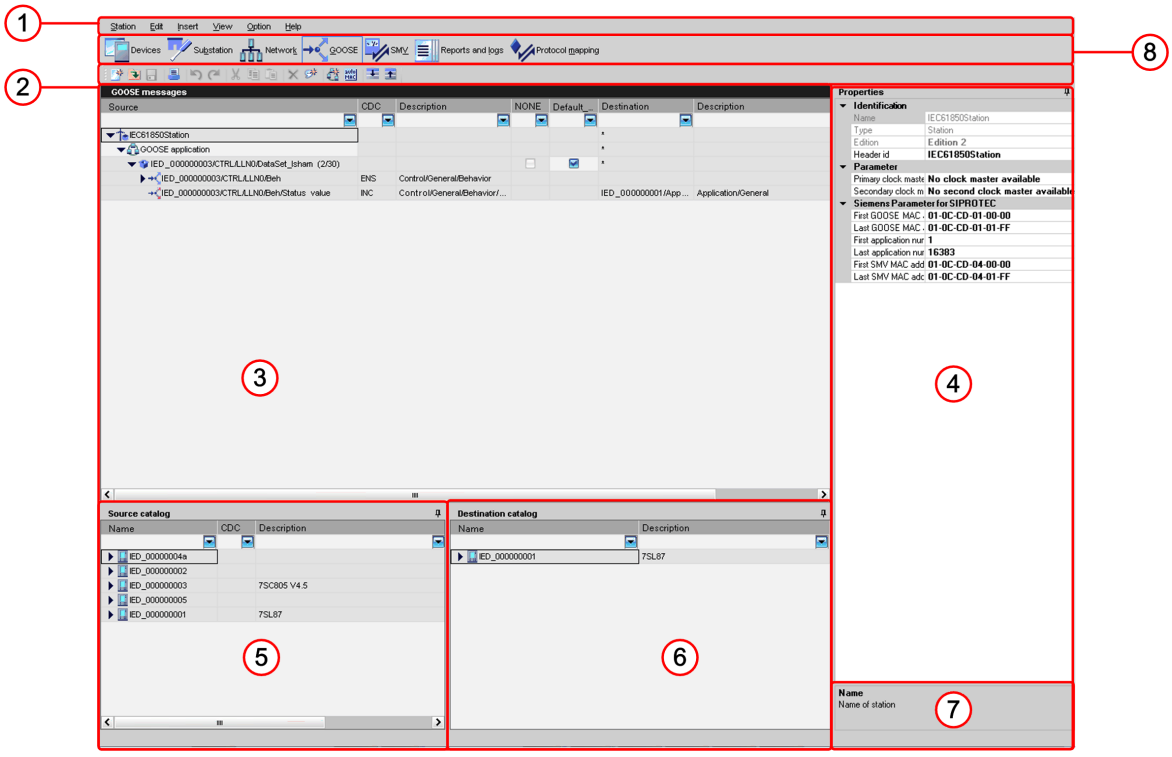
8.4.3.3 Properties

This window shows features and related values of the element which you have selected in the **Network** window. For some features the values can be changed, while for others they are only displayed.

- For additional information on the elements of IEC 61850 station, refer to *7.1 Station*.
- For additional information on the elements of New Devices, refer to *7.13 New Devices Folder*.
- For additional information on the elements of the Subnet Folder, refer to *7.14 Subnet*.
- For additional information on the elements of the Device, refer to *7.12 Access Point*.

8.4.4 GOOSE

8.4.4.1 GOOSE Editor

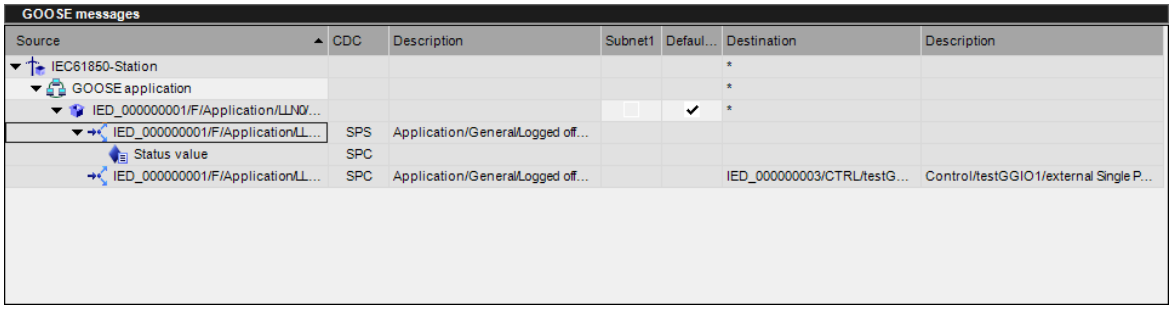


[le_GOOSE editor, 4, en_US]

Figure 8-10 GOOSE Editor

(1) Menu bar
(2) Toolbar
(3) GOOSE messages
(4) Properties
(5) Source catalog
(6) Destination catalog
(7) Description Pane
(8) IEC 61850 System configurator bar

8.4.4.2 GOOSE Messages



[sc_goose messages, 2, en_US]

Figure 8-11 GOOSE Messages Window

The GOOSE window consists of the following elements:

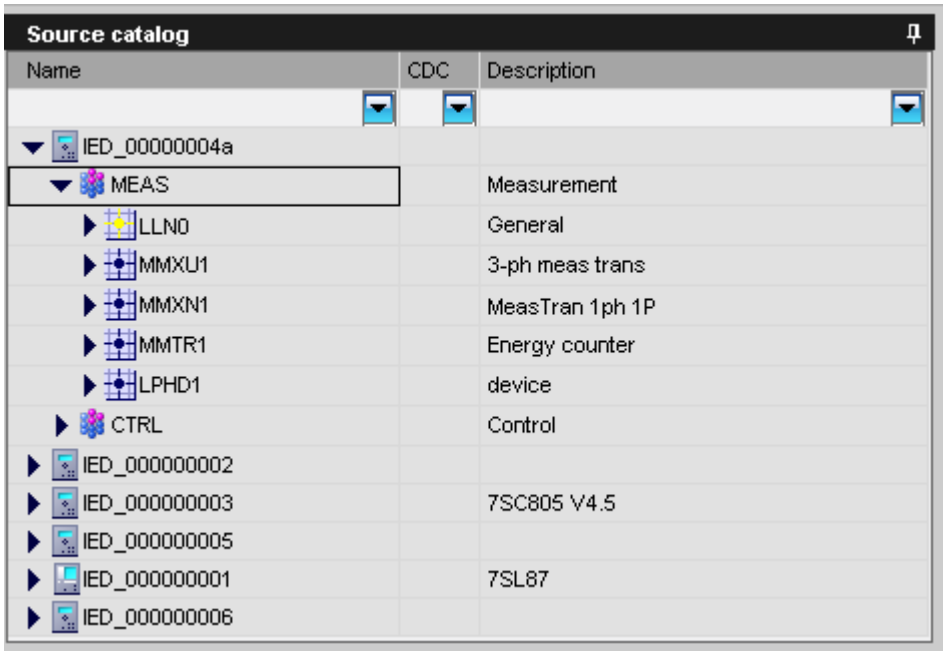
Element	Description
Source	This column specifies the source objects with icons and names in the form of a hierarchical tree structure. The tree structure is in the form of Access point > Logical device > Logical node > Data object. The level of the structure can be displayed or hidden by clicking on the corresponding arrow head. The displayed designations correspond to the names currently entered in the **Properties** window.
CDC	This column specifies the Common Data Class.
Description	This column specifies the description of the source signal.
Destination	This column specifies the destination object.
Description	This column specifies the description of the destination signal.

NOTE

In the GOOSE messages window, the column next to the **Description** represents the name of the subnet.

For example, if there are three subnets in the **Network** editor, the three columns after the **Description** column represent the subnets name.

8.4.4.3 Source Catalog



[sc_source catalogue, 5, en_US]

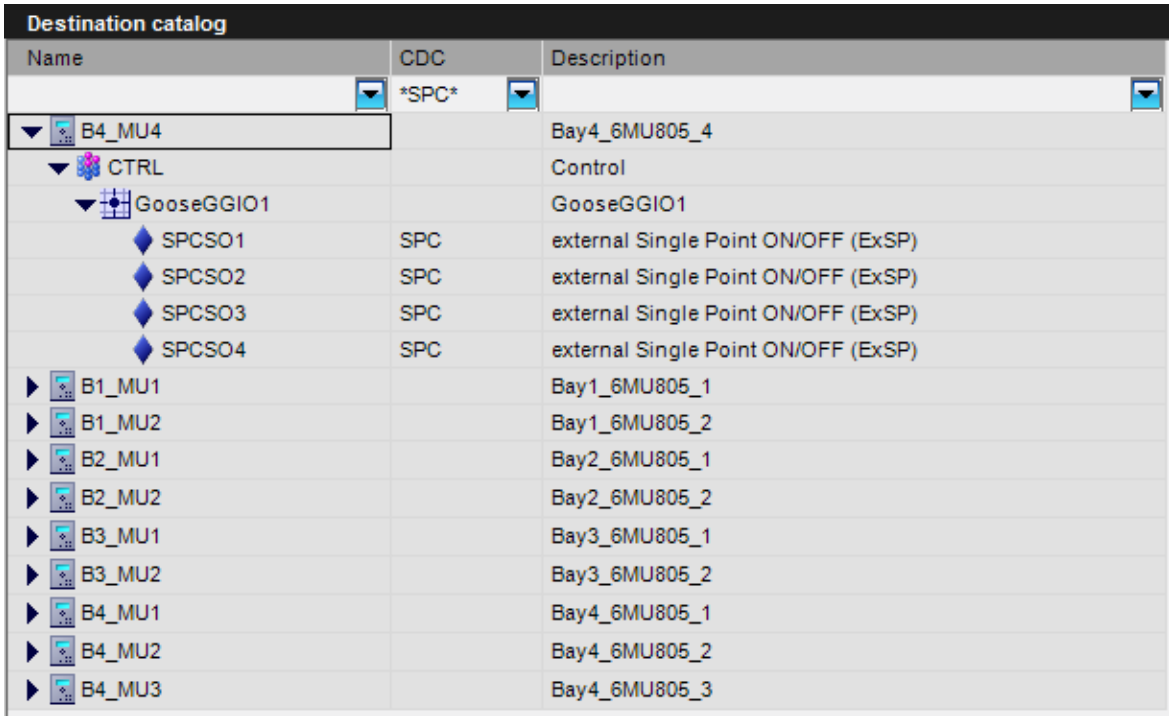
Figure 8-12 Source Catalog - GOOSE Editor

In this window, you select a data object, which serves as the source of the interconnection.

The **Source catalog** window consists of the following elements:

Element	Description
Name	This column specifies the data objects with icons and names in the form of a hierarchical tree structure. The highest level is represented by the access points of the currently selected subnet. Each access point is functionally subdivided into several logical devices.
CDC	This column specifies the Common Data Class.
Description	This column specifies the corresponding description of source objects.

8.4.4.4 Destination Catalog



[sc_destination catalogue, 6, en_US]

Figure 8-13 Destination Catalog - GOOSE Editor

In this window, you select a data object, which serves as the destination of the interconnection.
The **Destination catalog** window consists of the following:

Element	Description
Name	This column specifies the data objects with icons and names in the form of a hierarchical tree structure. The highest level is represented by the access points of the currently selected subnet. Each access point is functionally subdivided into several logical devices.
CDC	This column specifies the Common Data Class.
Description	This column specifies the corresponding description of the destination objects.

The following filters are available only in the **Destination catalog**:

- Configured: This filter is used to list the data objects that are configured to be subscribers in the GOOSE and SMV view.
- Not Configured: This filter is used to list the data objects that are not configured to be subscribers in the GOOSE and SMV view.

NOTE

For an Edition 2 station, the device is displayed only if the GOOSE attribute value is **true** under **ClientServices** in the **Services** section.

8.4.4.5 Properties

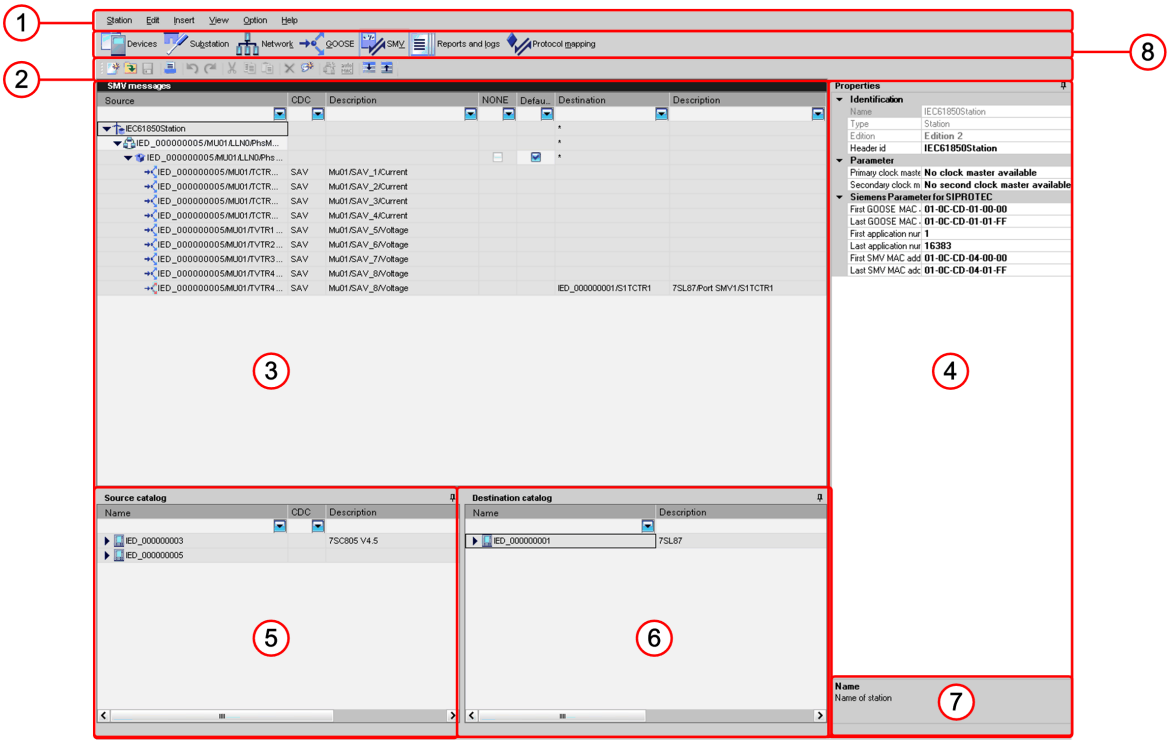
This window shows features and related values of the element which you have selected in the **GOOSE messages**, **Source catalog** and **Destination catalog**.

- For additional information on the elements of IEC 61850 station, refer to *7.1 Station*.
- For additional information on the elements of GOOSE application, refer to *7.15 Application*.

- For additional information on the elements of a Dataset, refer to *7.16 Dataset*.
- For additional information on the elements of GOOSE-link, refer to *7.17 GOOSE Link*.
- For additional information on the elements of DA group, refer to *7.19 DA Group*.
- For additional information on the elements of Device in Source catalog, refer to *7.2 Devices*.
- For additional information on the elements of Logical Device, refer to *7.20 Logical Device*.
- For additional information on the elements of Logical node, refer to *7.21 Logical Node*.
- For additional information on the elements of Data object, refer to *7.22 Data Object*.

8.4.5 SMV

8.4.5.1 SMV Editor

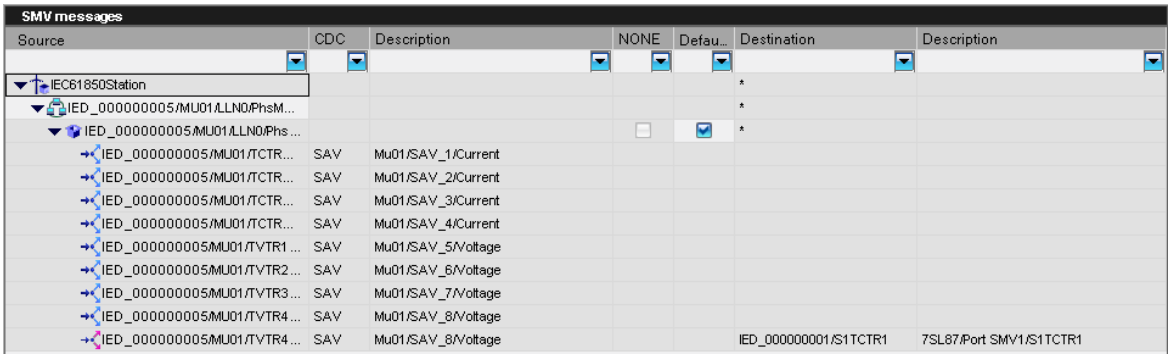


[le_smv editor, 4, en_US]

Figure 8-14 SMV Editor UI

(1) Menu bar
(2) Toolbar
(3) SMV messages
(4) Properties
(5) Source catalog
(6) Destination catalog
(7) Description Pane
(8) IEC 61850 System configurator bar

8.4.5.2 SMV Messages



[sc_smv messages, 3, en_US]

Figure 8-15 SMV Messages Window

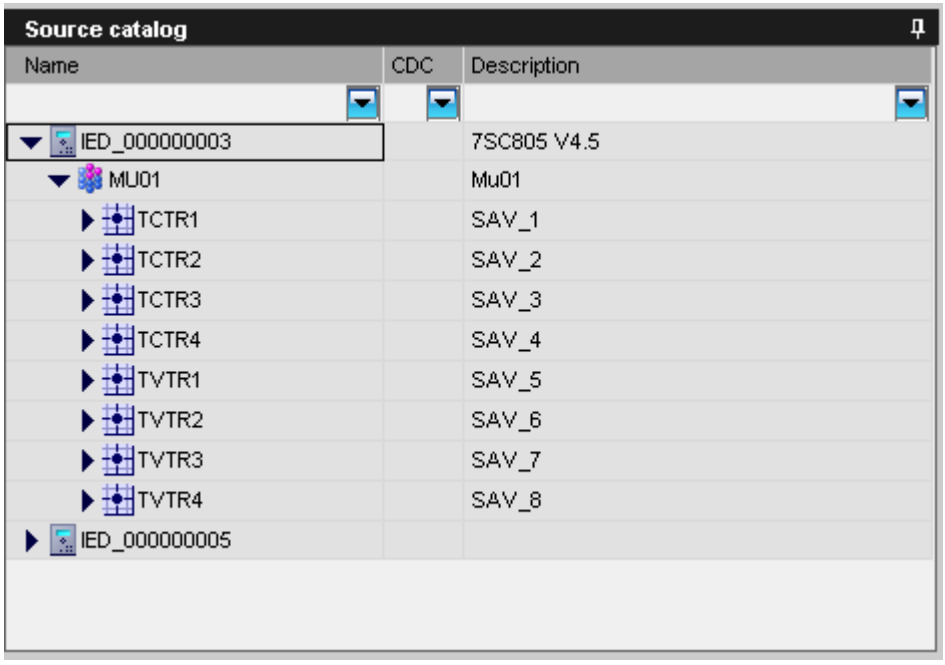
The **SMV messages** window consists of the following elements:

Element	Description
Source	This column specifies the source objects with icons and names in the form of a hierarchical tree structure. The tree structure is in the form of Access point > Logical device > Logical node > Data object. The level of the structure can be displayed or hidden by clicking on the corresponding arrow head. The displayed designations correspond to the names currently entered in the **Properties** window.
CDC	This column specifies the Common Data Class.
Description	This column specifies the description of the source signal.
Destination	This column specifies the destination object.
Description	This column specifies the description of the destination signal.

NOTE

In the SMV messages window, the column next to the **Description** represents the name of the subnet. For example, if there are three subnets in the **Network** editor, the three columns after the **Description** column represent the subnets name.

8.4.5.3 Source Catalog



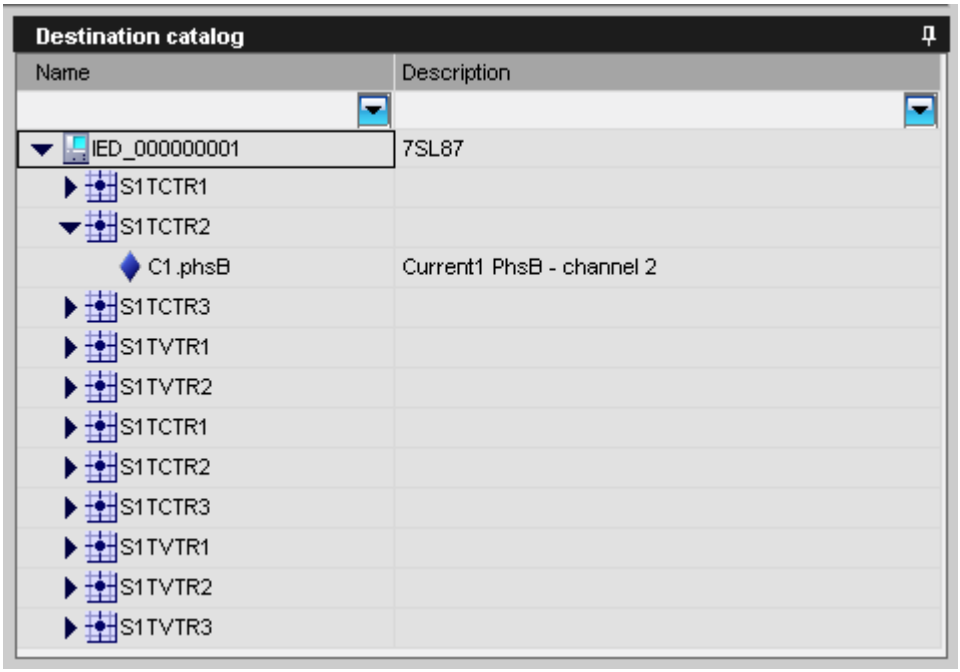
[sc_smv source catalogue, 5, en_US]

Figure 8-16 Source Catalog - SMV Editor

The **Source catalog** window consists of the following elements:

Element	Description
Name	This column specifies the data objects with icons and names in the form of a hierarchical tree structure. The highest level is represented by the access points of the currently selected subnet. Each access point is functionally subdivided into several logical devices.
CDC	This column specifies the Common Data Class for SAV type.
Description	This column specifies the corresponding description of source objects.

8.4.5.4 Destination Catalog



[sc_smv destination catalogue, 5, en_US]

Figure 8-17 Destination Catalog - SMV Editor

The **Destination catalog** window consists of the following elements:

Element	Description
Name	This column specifies the data objects with icons and names in the form of a hierarchical tree structure. The highest level is represented by the access points of the currently selected subnet. Each access point is functionally subdivided into several logical devices.
Description	This column specifies the corresponding description of the source objects.

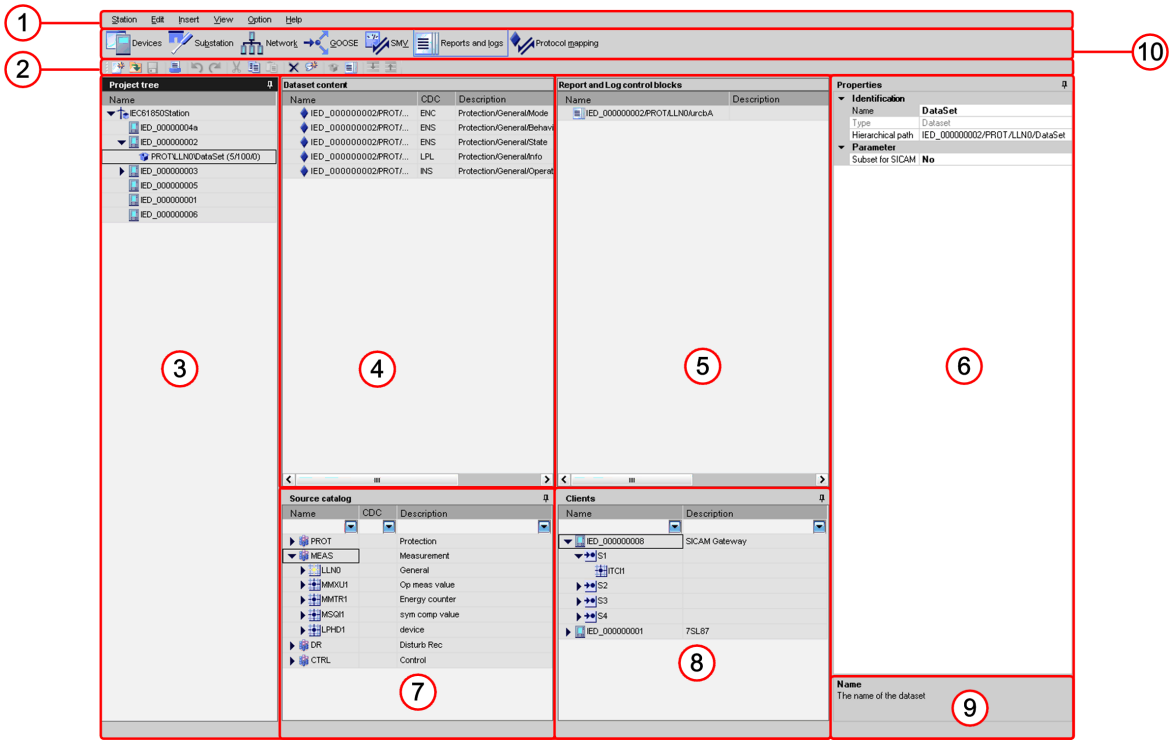
8.4.5.5 Properties

This window shows the features and related values of the element, which you have selected in the **SMV messages**, **Source catalog**, and **Destination catalog**.

- For additional information on the elements of IEC 61850 station, refer to *7.1 Station*.
- For additional information on the elements of SMV application, refer to *7.15 Application*.
- For additional information on the elements of a Dataset, refer to *7.16 Dataset*.
- For additional information on the elements of the SMV Link, refer to *7.17 GOOSE Link*.
- For additional information on the elements of Device in Source catalog, refer to *7.2 Devices*.
- For additional information on the elements of Logical Device, refer to *7.20 Logical Device*.
- For additional information on the elements of Logical node, refer to *7.21 Logical Node*.
- For additional information on the elements of Data object, refer to *7.22 Data Object*.

8.4.6 Reports and Log Control Blocks

8.4.6.1 Reports and Logs Editor

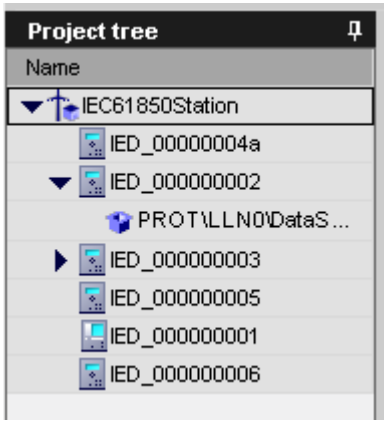


[le_reports and logs editor, 4, en_US]

Figure 8-18 Reports and Logs Editor

(1) Menu bar
(2) Toolbar
(3) Project tree
(4) Dataset content
(5) Report and Log control blocks
(6) Properties
(7) Source catalog
(8) Clients
(9) Description Pane
(10) IEC 61850 System configurator bar

8.4.6.2 Project Tree



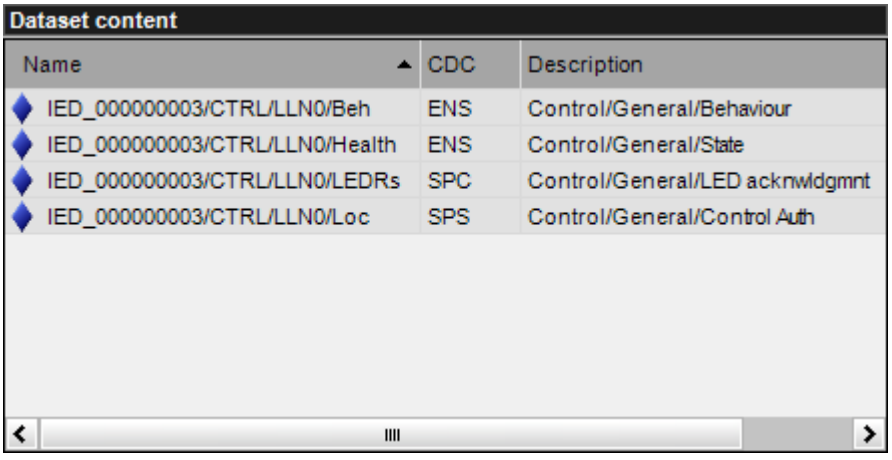
[sc_applications, 3, en_US]

Figure 8-19 Project Tree Window - Reports and Logs

This window shows you the reports and log datasets for each IED in that station.
The **Project tree** window consists of the following:

Element	Description
Name	This column specifies the name of the IED in that station.

8.4.6.3 Dataset Content



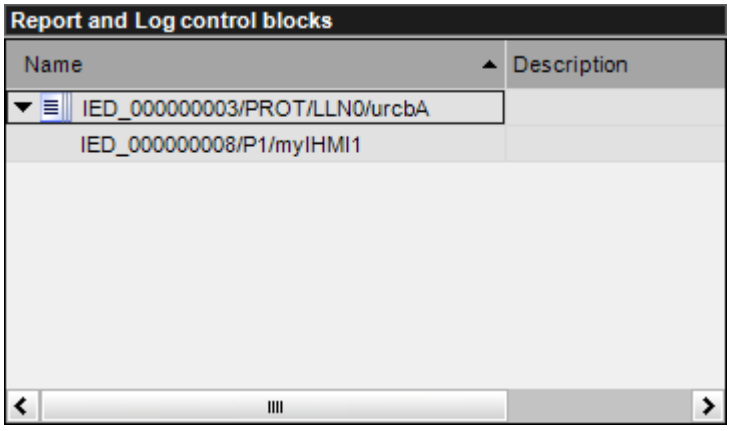
[sc_dataset content, 2, en_US]

Figure 8-20 Dataset Content - Reports and Logs

The **Dataset Content** window consists of the following:

Element	Description
Name	This column specifies the name of the signals added to the dataset that is selected in the **Applications** window.
CDC	This is the Common Data Class.
Description	This column shows the corresponding description of the signals added.

8.4.6.4 Reports and Logs Control Blocks



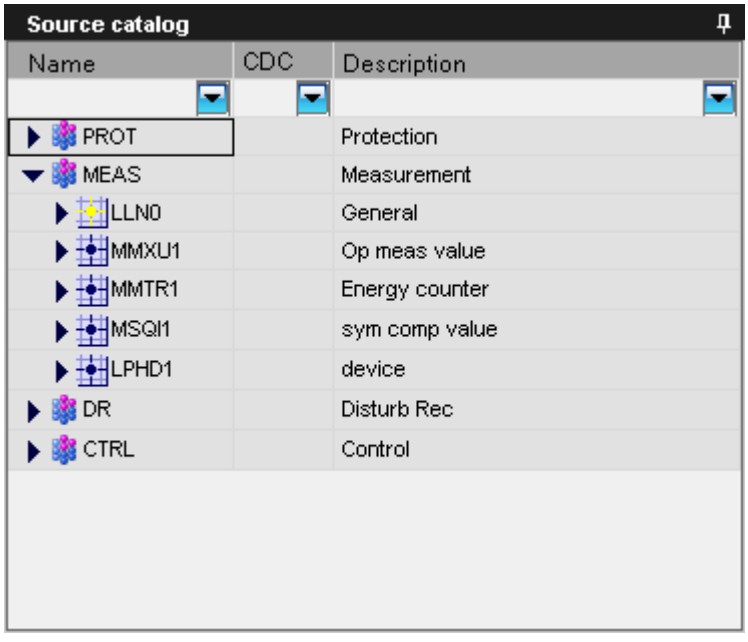
[sc_report and log control blocks, 2, en_US]

Figure 8-21 Report and Logs Control Blocks

Reports and logs control blocks window consists of the following:

Element	Description
Name	This column specifies the name of the report that is created for a particular dataset.
Description	This column specifies the corresponding description of the report control block for which the report is requested.

8.4.6.5 Source Catalog



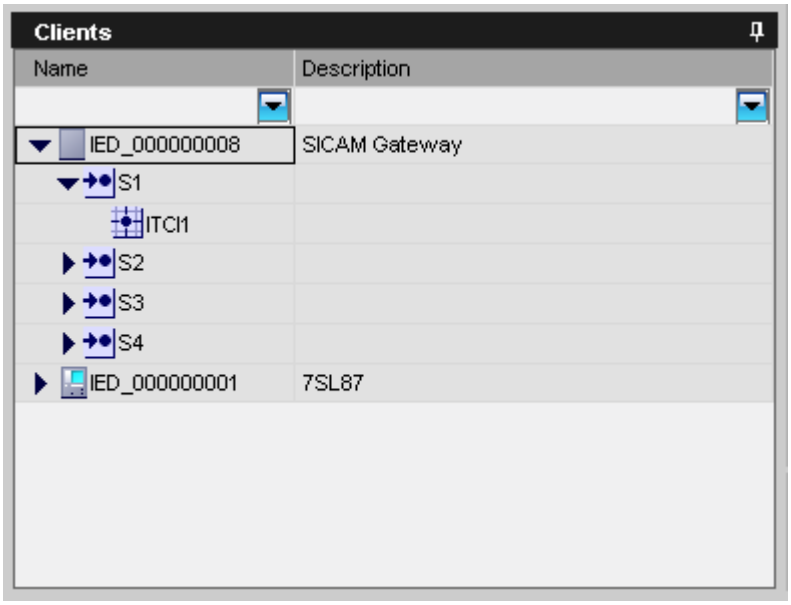
[sc_reports and logs source, 4, en_US]

Figure 8-22 Source Catalog - Reports and Logs

The **Source catalog** window consists of the following:

Element	Description
Name	This column specifies the data objects with icons and names in the form of a hierarchical tree structure. The highest level is represented by the access points of the currently selected subnet. Each access point is functionally subdivided into several logical devices.
CDC	This column specifies the Common Data Class.
Description	This column specifies the corresponding description of source objects.

8.4.6.6 Clients



[sc_clients, 4, en_US]

Figure 8-23 Clients - Report and Logs

The **Clients** window consists of the following:

Element	Description
Name	This column lists the names of the clients added in the station.
Description	This column shows the corresponding description of the clients.

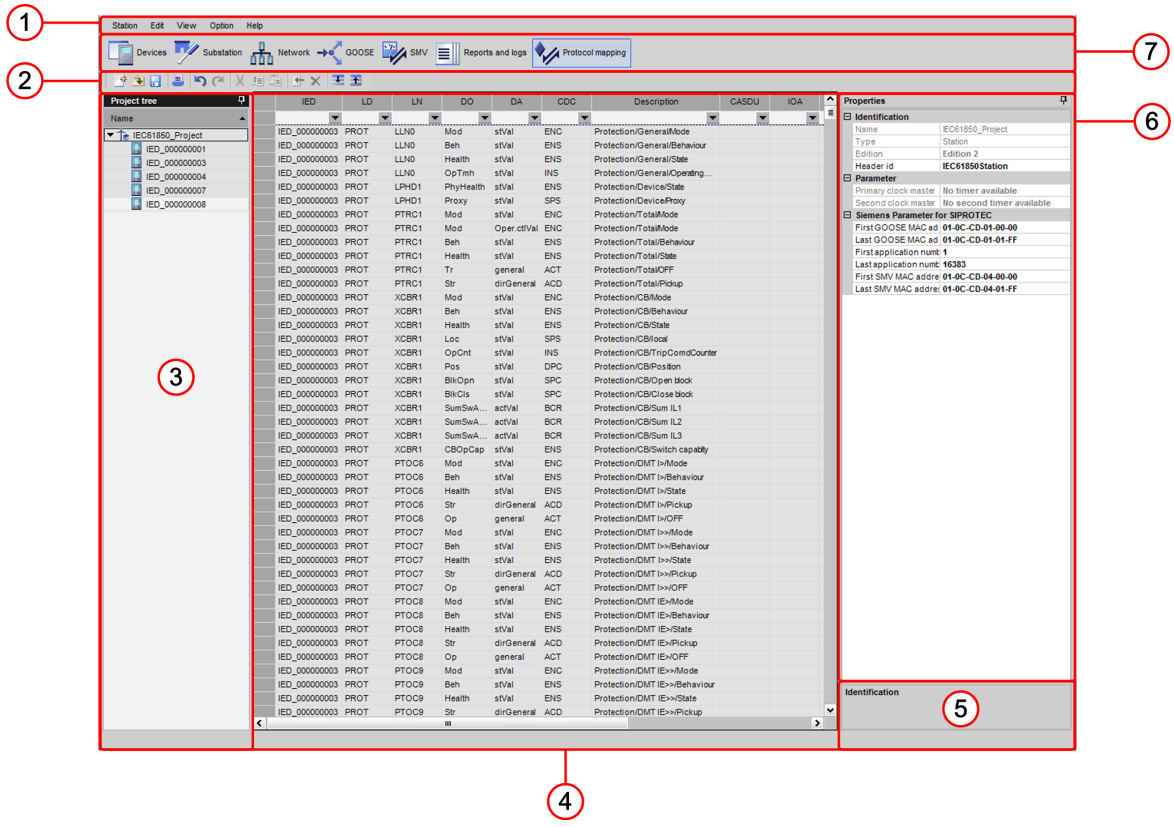
8.4.6.7 Properties

This window shows features and related values of the element which you have selected in the Applications window. For some features the values can be changed, while for others, it is only meant for displaying.

- For additional information on the elements of IEC 61850 station, refer to *7.1 Station*.
- For additional information on the elements of IEDs, refer to *7.2 Devices*.
- For additional information on the elements of a Dataset, refer to *7.16 Dataset*.
- For additional information on the elements of a Dataset entry, refer to *7.17 GOOSE Link*.
- For additional information on the elements of Reports, refer to *7.23 Report Control Blocks*.
- For additional information on the elements of Logical Device, refer to *7.20 Logical Device*.
- For additional information on the elements of Logical node, refer to *7.21 Logical Node*.
- For additional information on the elements of Data object, refer to *7.22 Data Object*.
- For additional information on the elements of the client, refer to *7.25 Client*.

8.4.7 Protocol Mapping

8.4.7.1 Protocol Mapping Editor

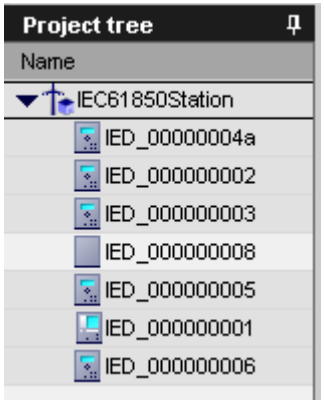


[le_protocol mapping editor, 3, en_US]

Figure 8-24 Protocol Mapping Editor

(1) Menu bar
(2) Toolbar
(3) Project tree
(4) Protocol mapping
(5) Properties
(6) IEC 61850 System configurator bar

8.4.7.2 Project Tree



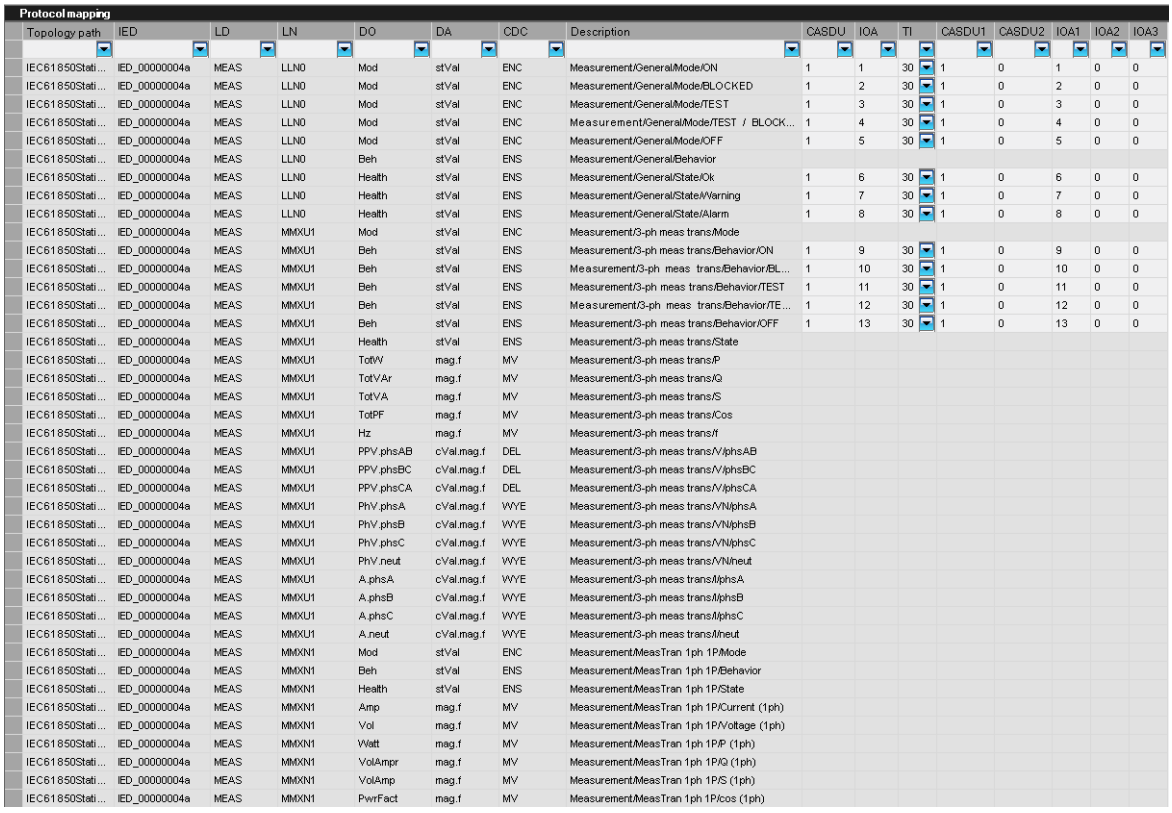
[sc_protocol mapping table, 3, en_US]

Figure 8-25 Project Tree

This window shows you the current network structure reduced to the subnet. The **Project Tree** window consists of the following:

Element	Description
Name	This column specifies the name of the IED in that station.

8.4.7.3 Protocol Mapping



Topology path	IED	LD	LN	DO	DA	CDC	Description	CASDU	IOA	TI	CASDU1	CASDU2	IOA1	IOA2	IOA3
IEC61850Stati...	IED_00000004a	MEAS	LLN0	Mod	stVal	ENC	Measurement/General/Mode/ON	1	1	30	1	0	1	0	0
IEC61850Stati...	IED_00000004a	MEAS	LLN0	Mod	stVal	ENC	Measurement/General/Mode/BLOCKED	1	2	30	1	0	2	0	0
IEC61850Stati...	IED_00000004a	MEAS	LLN0	Mod	stVal	ENC	Measurement/General/Mode/TEST	1	3	30	1	0	3	0	0
IEC61850Stati...	IED_00000004a	MEAS	LLN0	Mod	stVal	ENC	Measurement/General/Mode/TEST / BLOCK...	1	4	30	1	0	4	0	0
IEC61850Stati...	IED_00000004a	MEAS	LLN0	Mod	stVal	ENC	Measurement/General/Mode/OFF	1	5	30	1	0	5	0	0
IEC61850Stati...	IED_00000004a	MEAS	LLN0	Beh	stVal	ENS	Measurement/General/Behavior								
IEC61850Stati...	IED_00000004a	MEAS	LLN0	Health	stVal	ENS	Measurement/General/State/Ok	1	6	30	1	0	6	0	0
IEC61850Stati...	IED_00000004a	MEAS	LLN0	Health	stVal	ENS	Measurement/General/State/Warning	1	7	30	1	0	7	0	0
IEC61850Stati...	IED_00000004a	MEAS	LLN0	Health	stVal	ENS	Measurement/General/State/Alarm	1	8	30	1	0	8	0	0
IEC61850Stati...	IED_00000004a	MEAS	MMXU1	Mod	stVal	ENC	Measurement/3-ph meas trans/Mode								
IEC61850Stati...	IED_00000004a	MEAS	MMXU1	Beh	stVal	ENS	Measurement/3-ph meas trans/Behavior/ON	1	9	30	1	0	9	0	0
IEC61850Stati...	IED_00000004a	MEAS	MMXU1	Beh	stVal	ENS	Measurement/3-ph meas trans/Behavior/BL...	1	10	30	1	0	10	0	0
IEC61850Stati...	IED_00000004a	MEAS	MMXU1	Beh	stVal	ENS	Measurement/3-ph meas trans/Behavior/TEST	1	11	30	1	0	11	0	0
IEC61850Stati...	IED_00000004a	MEAS	MMXU1	Beh	stVal	ENS	Measurement/3-ph meas trans/Behavior/TE...	1	12	30	1	0	12	0	0
IEC61850Stati...	IED_00000004a	MEAS	MMXU1	Beh	stVal	ENS	Measurement/3-ph meas trans/Behavior/OFF	1	13	30	1	0	13	0	0
IEC61850Stati...	IED_00000004a	MEAS	MMXU1	Health	stVal	ENS	Measurement/3-ph meas trans/State								
IEC61850Stati...	IED_00000004a	MEAS	MMXU1	TotW	mag.f	MV	Measurement/3-ph meas trans/P								
IEC61850Stati...	IED_00000004a	MEAS	MMXU1	TotVAr	mag.f	MV	Measurement/3-ph meas trans/Q								
IEC61850Stati...	IED_00000004a	MEAS	MMXU1	TotVA	mag.f	MV	Measurement/3-ph meas trans/S								
IEC61850Stati...	IED_00000004a	MEAS	MMXU1	TotPF	mag.f	MV	Measurement/3-ph meas trans/Cos								
IEC61850Stati...	IED_00000004a	MEAS	MMXU1	Hz	mag.f	MV	Measurement/3-ph meas trans/f								
IEC61850Stati...	IED_00000004a	MEAS	MMXU1	PPV.phsAB	cVal.mag.f	DEL	Measurement/3-ph meas trans/V/phsAB								
IEC61850Stati...	IED_00000004a	MEAS	MMXU1	PPV.phsBC	cVal.mag.f	DEL	Measurement/3-ph meas trans/V/phsBC								
IEC61850Stati...	IED_00000004a	MEAS	MMXU1	PPV.phsCA	cVal.mag.f	DEL	Measurement/3-ph meas trans/V/phsCA								
IEC61850Stati...	IED_00000004a	MEAS	MMXU1	PhV.phsA	cVal.mag.f	WYE	Measurement/3-ph meas trans/VN/phsA								
IEC61850Stati...	IED_00000004a	MEAS	MMXU1	PhV.phsB	cVal.mag.f	WYE	Measurement/3-ph meas trans/VN/phsB								
IEC61850Stati...	IED_00000004a	MEAS	MMXU1	PhV.phsC	cVal.mag.f	WYE	Measurement/3-ph meas trans/VN/phsC								
IEC61850Stati...	IED_00000004a	MEAS	MMXU1	PhV.neut	cVal.mag.f	WYE	Measurement/3-ph meas trans/VN/neut								
IEC61850Stati...	IED_00000004a	MEAS	MMXU1	A.phsA	cVal.mag.f	WYE	Measurement/3-ph meas trans/I/phsA								
IEC61850Stati...	IED_00000004a	MEAS	MMXU1	A.phsB	cVal.mag.f	WYE	Measurement/3-ph meas trans/I/phsB								
IEC61850Stati...	IED_00000004a	MEAS	MMXU1	A.phsC	cVal.mag.f	WYE	Measurement/3-ph meas trans/I/phsC								
IEC61850Stati...	IED_00000004a	MEAS	MMXU1	A.neut	cVal.mag.f	WYE	Measurement/3-ph meas trans/Ineut								
IEC61850Stati...	IED_00000004a	MEAS	MMXN1	Mod	stVal	ENC	Measurement/MeasTran 1ph 1P/Mode								
IEC61850Stati...	IED_00000004a	MEAS	MMXN1	Beh	stVal	ENS	Measurement/MeasTran 1ph 1P/Behavior								
IEC61850Stati...	IED_00000004a	MEAS	MMXN1	Health	stVal	ENS	Measurement/MeasTran 1ph 1P/State								
IEC61850Stati...	IED_00000004a	MEAS	MMXN1	Amp	mag.f	MV	Measurement/MeasTran 1ph 1P/Current (1ph)								
IEC61850Stati...	IED_00000004a	MEAS	MMXN1	Vol	mag.f	MV	Measurement/MeasTran 1ph 1P/Voltage (1ph)								
IEC61850Stati...	IED_00000004a	MEAS	MMXN1	Watt	mag.f	MV	Measurement/MeasTran 1ph 1P/P (1ph)								
IEC61850Stati...	IED_00000004a	MEAS	MMXN1	VolAmpr	mag.f	MV	Measurement/MeasTran 1ph 1P/Q (1ph)								
IEC61850Stati...	IED_00000004a	MEAS	MMXN1	VolAmp	mag.f	MV	Measurement/MeasTran 1ph 1P/S (1ph)								
IEC61850Stati...	IED_00000004a	MEAS	MMXN1	PwrFact	mag.f	MV	Measurement/MeasTran 1ph 1P/cos (1ph)								

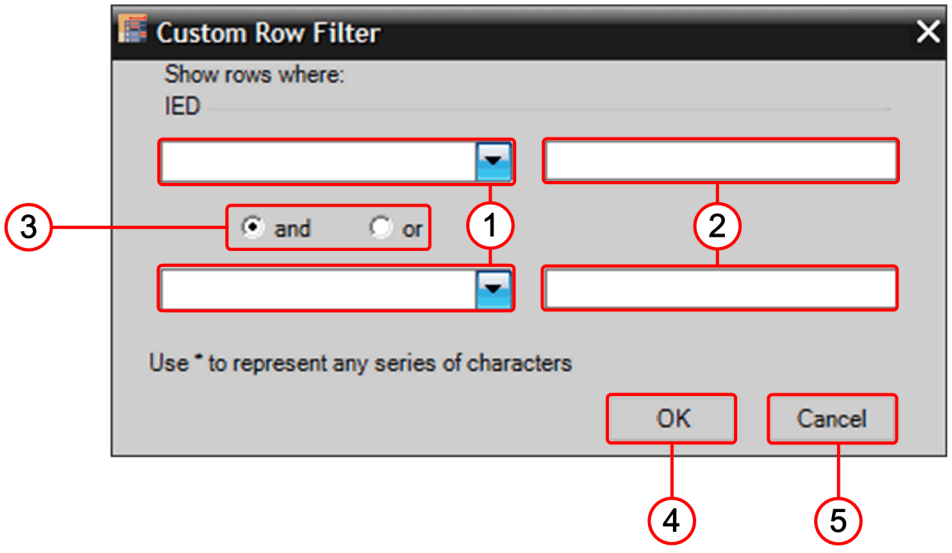
[sc_protocol mapping window, 3, en_US]

Figure 8-26 Protocol Mapping Window

The **Protocol Mapping** window consists of the following elements:

Element	Description
Topology Path	This column specifies the topology paths corresponding to the LN mentioned in the LN configuration. If the LN is not configured in the substation topology, the path is empty.
IED	This column specifies the name of all the devices available in the station.
LD	This column specifies the name of all the logical devices available in the devices.
LN	This column specifies the name of the logical node based on the logical devices listed in the LD column.
DO	This column specifies the data objects corresponding to the logical nodes in the LN column.
DA	This column specifies the data attribute for each data object in the DO column.
CDC	This column specifies the Common Data Class.
Description	This column specifies the corresponding description of Protocol mapping objects.
casdu	This column specifies the common address of ASDU (T104 address).
ioa	This column specifies the information object address (signal information). The IOA value of each address is one unit more than the highest IOA value of the previously added address.
ti	This column specifies the type of the signal.

8.4.7.4 Custom Filter



[le_Custom filter, 1, en_US]

Figure 8-27 Custom Row Filter - Elements

(1) Cell
(2) Text box
(3) AND or OR
(4) OK
(5) Cancel

This dialog is used to generate a user-defined filter with which you can filter the column contents. A filter consists of one or more expressions linked with logical operators.

The explanation for the elements in the **Custom filter** dialog is as follows:

Element	Explanation
Cell	Use this list box to select a condition for an expression. You can select any of the following conditions: • Equals • Does not equal • Is greater than • Is greater than or equal to • Is less than • Is less than or equal to • Begins with • Does not begin with • Ends with • Does not end with • Contains • Does not contain
Text box	Use this text box to define a value for an expression. The value corresponds to the values that can occur in the column to be filtered.
AND or OR	Select one of the logical operators AND and OR with which you wish to combine two expressions. If a filter consists only of a single expression, you do not have to select a logical operator.
OK	This button is used to apply the created filter and close the dialog. The display of the content is updated based on the created filter. This button remains inactive until you create at least one expression.
Cancel	This button is used to abort the filter creation and close the dialog.

8.4.7.5 Properties

This window shows features and related values of the elements that you have selected in the **Project tree** window.

- For additional information on the elements of IEC 61850 station, refer to *7.1 Station*.
- For additional information on the elements of IEDs, refer to *7.2 Devices*.

A Appendix

A.1 Trace Logs and Crash Dump

The trace logs and crash memory dump allow significantly to reduce the analysis time in customer projects. It details the customer logs and thus facilitates reproducibility by Siemens support. In case of fatal application error, it also provides advanced details to Siemens support.

Crash Dump

When there is a fatal error or when the application crashes, a crash dump file is created with the name **SysconCrashDump_yyyyMMdd_hhmmss** in **%ALLUSERSPROFILE%\Siemens Energy\IEC61850SystemConfigurator\SysconCrashDump** directory. At any point of time, maximum of two files are available in that directory. The latest file overwrites the oldest file when there are two dump files in the directory.

NOTE

To launch IEC 61850 System Configurator, there must be at least 1 GB of free physical memory (Operating System installation drive). Once the IEC 61850 System Configurator is launched, if the memory becomes less than 1 GB and if a crash occurs, a log file (.txt) is created. The **Not enough memory to create crash memory dump** message is logged in the text file.

Customer Logs and Developer Logs

When the user encounters an abnormal behavior because of the issues in the application, the log files can be viewed to analyze the workflow and then send the logs to the customer support for further analysis.

Customer Logs

All the critical messages pertaining to the actions performed by the user are logged in **SysconCustomerTraceLog_yyyyMMdd_hhmmss.csv** file in **%ALLUSERSPROFILE%\Siemens Energy\IEC61850SystemConfigurator\SysconCustomerTraceLog** directory. These logs contain only the **Error** level category and the maximum size of the file is 10 MB. At any point of time, maximum of five files are available in the **SysconCustomerTraceLog** directory.

Developer Logs

All the detailed messages pertaining to the actions performed by the user are logged in **SysconDeveloperTraceLog_yyyyMMdd_hhmmss.csv** file in **ALLUSERSPROFILE%\Siemens Energy\IEC61850SystemConfigurator \ SysconDeveloperTraceLog** directory. These logs contain messages from all the categories and the maximum size of the file is 10 MB. At any point of time, maximum of five files are available in the **SysconDeveloperTraceLog** directory.

NOTE

Customer log is a subset of developer log.

User can switch between developer logs and customer logs by changing the value of **TraceLevelSwitch** in **C:\Program Files (x86)\Siemens Energy\IEC 61850 System Configurator V5.20\Configurator \IEC61850Conf.exe.config** file. For customer logs, the **TraceLevelSwitch** value is **1** and for developer logs, it is **4**.

NOTE

By default, the **TraceLevelSwitch** value is set to **1**. It will be changed temporarily only in agreement with Siemens customer support.

A.2 System Implementation Conformance Statement (SICS)

ICD Import and IID Import along with their Usage		Supported or not?	Value or Comments
S11	IED data model	Y	
S12	Predefined data sets	Y	
S13	Predefined control blocks	Y	
S14	Refuse import if SCL version/revision/release is higher than supported by SCT.	Y	
S15	Import up to maximum supported SCL version and revision	Y	2003, 2007, 2007B
S16	Substation bay template with LN links, if it exists	Y	
S17	Reuse already imported DataTypeTemplates for identical types	Y	
S18	Keep attributes and elements of unknown XML name spaces outside Private elements for SCD export	Y	
S19	Import the defined single line layout coordinates	Y	
S110	Import of IID file; update configuration values and setting values, modify data model	Y	Configuration values and setting values are not displayed and therefore not changed.
S111	Imports SCL in UTF-8 coding	Y	
Communication Engineering			
S21	Configure (edit) IED names	Y	
S22	Create and configure Subnetworks and IED communication addresses	Y	Except OSI address parameters
S23	Create or import client IEDs, master clocks, switches, and routers	Y	
S24	Create and configure physical connection attributes		
S25	Configure ldName values	Y	
S26	Configure ldInst and LN prefixes, if the IED allows	Y	
Data Flow Engineering			
S31	Configure control blocks	Y	
S32	Create control block types or instances, if IED capabilities allows	Y	
S33	Create data sets, if IED capability allows	Y	
S34	Modify predefined or created data sets	Y	
S35	Manage control block confRev	Y	
S361	Allocate control block instances to clients and define data destinations (ClientLn element, IEDName element) for all types of data flow related control blocks	Y	

S362	Allocate Logs to Log control blocks if the IED capabilities allow this	Y	
S37	Edit Input sections in LNs	Y	
S381	Create Input section from configured data set flow for GOOSE and SV services		
S382	Create Input section from configured data set flow for report service		
S38	Create Input section from configured data set flow	Y	
S39	Provide source control block reference for signals in Input section	Y	
SCD Substation Section Handling			
S41	Import Substation section from SSD or SCD file	Y	
S42	Edit or create substation section	Y	
S43	Bind logical nodes from IEDs to substation section	Y	
S44	Create bay instances from IED or ICD substation templates	Y	
S45	Edit or create substation topology connections between primary equipments	Y	
S46	Edit substation element names and desc attributes.	Y	
S47	Edit Equipment terminals (name attribute of the Terminal element)	Y	
S48	Edit or create the Function, SubFunction, or GeneralEquipment naming hierarchies	Y	Only Edit or create function and general equipment are supported.
SCD Modifications			
S51	Handle SCD Header revision and version; mark an SCD file change by a new revision or version indication	Y	Automatically increment
S52	Set configuration values (attributes with fc=CF, DC)		
S53	Set Parameter (Setting DATA, fc=SP) values, also for different setting groups		
S54	Add or modify layout coordinates		
S55	Show IED service or engineering capabilities to engineer	Y	
S56	Interpret IED capabilities and prohibit unsupported usage	Y	
S57	Editing of data attributes valKind property		
S58	Handle SCD Header revision history with a new entry for each new version or revision.	Y	
SCD Export			
S61	Previous version(s) and revision(s) export	Y	

S62	Highest supported version/revision/ release export	Y	
S63	Version _____ export		
S64	Restore imported private sections	Y	
S65	Export restructured DataTypeTem-plate types (keeping all instance-related information and all private information constant).	Y	
S66	Keep type identifiers in DataType-Template section. It is unique even if on ICD import the same ID is used in different ICD files for different type structures.	Y	
S67	Export SCL in UTF-8 coding	Y	Only UTF-8 is supported
	SCD Import		
S71	Previous version(s) latest revision import	Y	
S72	Highest supported version/revision/ release import	Y	
S73	Reserved		
S74	Add new bays or equipment in substation section	Y	
S75	Add links from substation section to IEDs	Y	
S77	Update IED configuration values	Y	
S78	Update IED setting DATA values	Y	
S79	Add new IEDs	Y	
	SED Handling		
S81	Export SED for selected dataflow IEDs	Y	Dataflow is always set to fix
S82	Import SED with exported part	Y	
S83	Prohibit editing of IEDs exported with dataflow right (inclusive Substation section links and communication addresses)	Y	Dataflow is always set to fix
S84	Import SED for usage in own project; export modified SED back to the source project	Y	
S85	Import or merge Substation section part from SED	Y	SED contains only GOOSE data and not the substation data
S86	Import or merge Communication section part from SED	Y	
Y represents that it is supported by IEC 61850 System Configurator.			

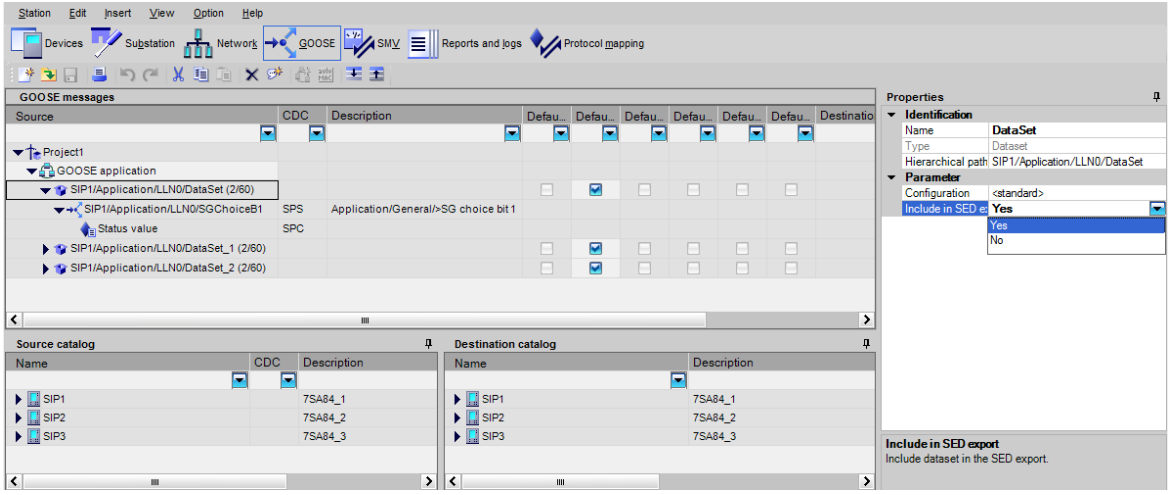
A.3 Exporting and Importing an SED File

To export an SED file which includes GOOSE datasets from one project to another project, proceed as follows:

✧ Open the **IEC 61850 System Configurator**.
Ensure that the GOOSE datasets are configured.
For more information on configuring GOOSE datasets, refer to *2.14.1 Overview of the GOOSE Communication*.

✧ Select the desired GOOSE dataset to be exported from the project.

✧ In the **Properties** window, set the value of the **Include in SED export** parameter to **Yes**.
For more information on SED files, refer to *2.14.19 Selecting the Dataset for SED Export*.



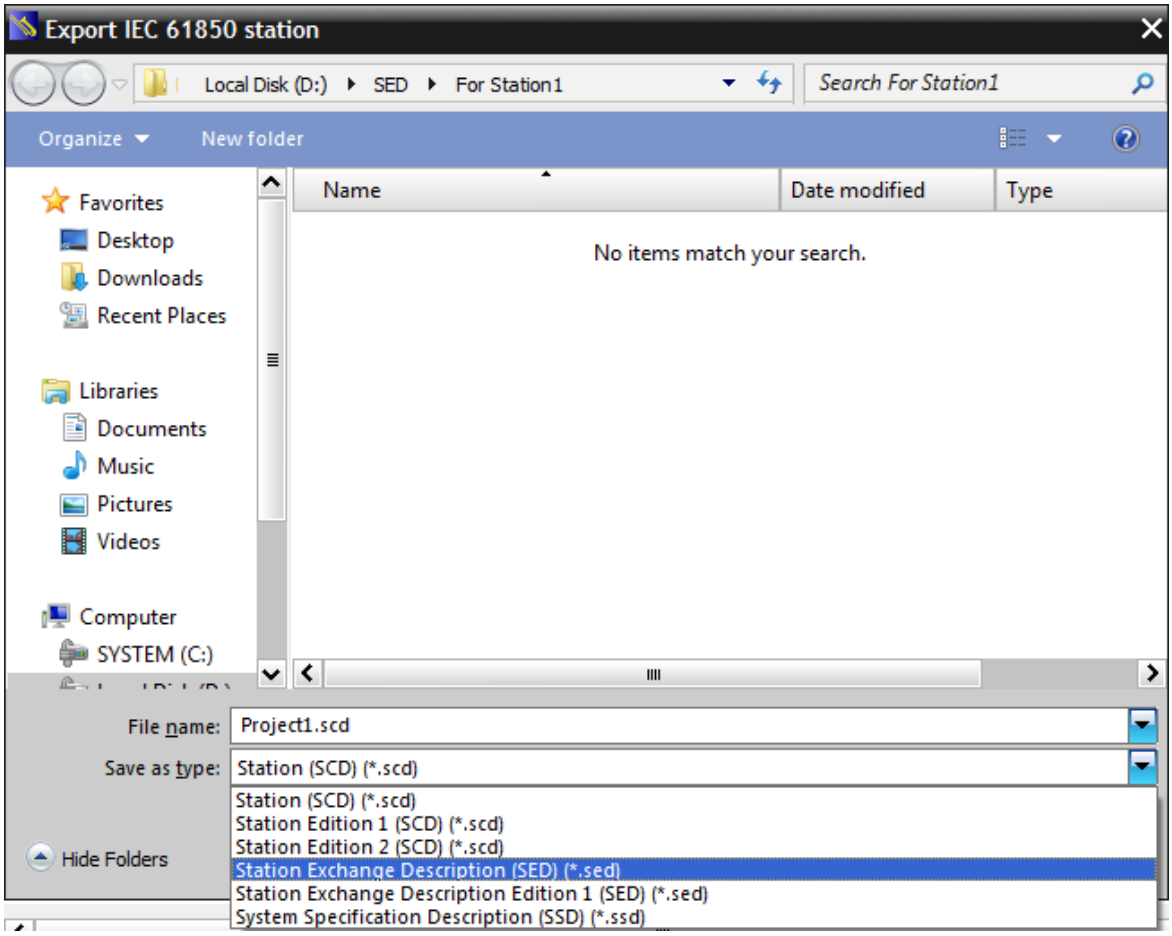
[sc_Goose_dataset_properties, 1, en_US]

Figure A-1 Include in SED File

✧ Click **Station > Export** from the menu bar and select **IEC 61850 station** from the submenu options.
The **Export IEC 61850** station dialog is displayed.

✧ Navigate to the storage location and enter the name for the SED file.

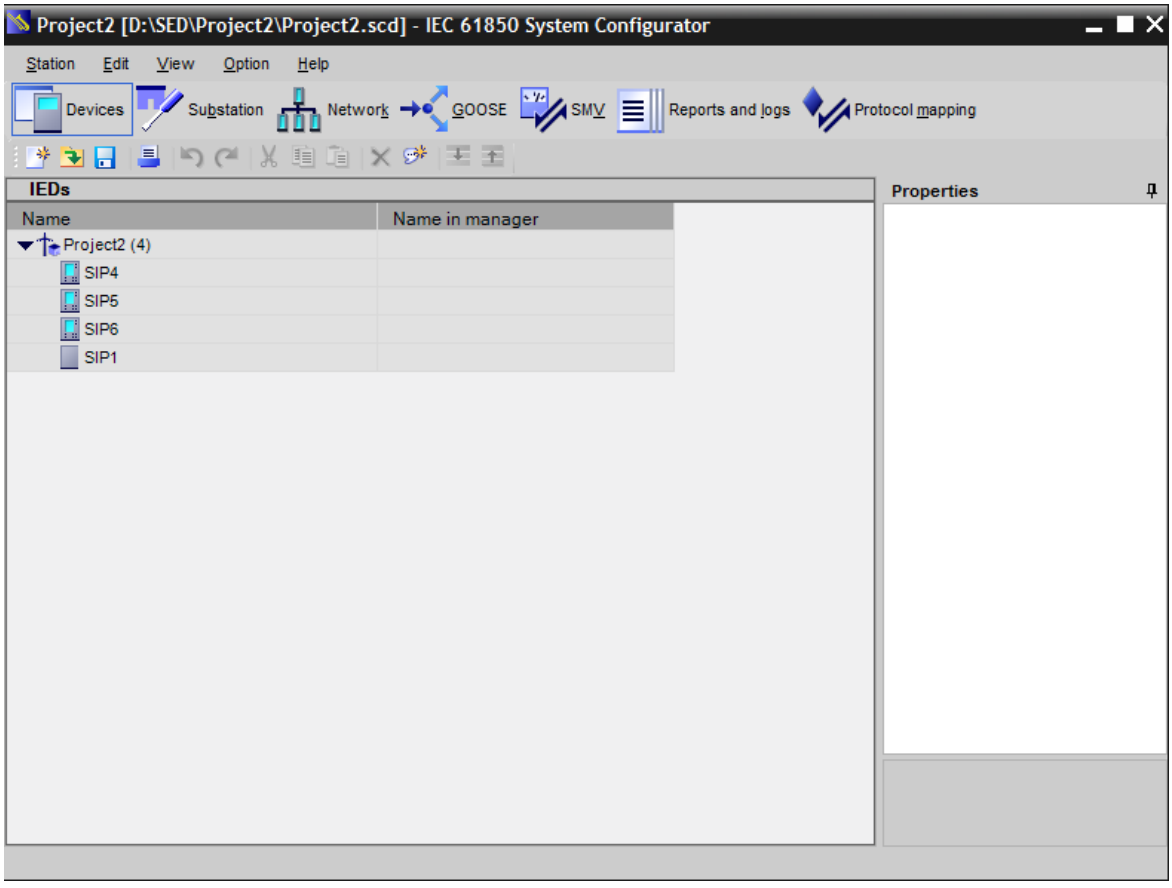
✧ Select the SED file type from the **Save as type** list box.
For more information on exporting SED files, refer to *3.1.2 Exporting IEC 61850 Station (SCD, SED, SSD)*



[sc_Save_station_SED, 1, en_US]

Figure A-2 Save SED File

- ✧ Click **Save**.
  The SED file is exported to the desired location.
- ✧ Close the source project and open the desired destination project.
- ✧ Click **Station > Import** from the menu bar and select **IEC 61850 station** from the submenu options.
  The **Import IEC 61850 station** dialog is displayed.
- ✧ Navigate to the storage location and select the SED file.
- ✧ Click **Open**.
  The SED file is imported with the source-project GOOSE datasets.

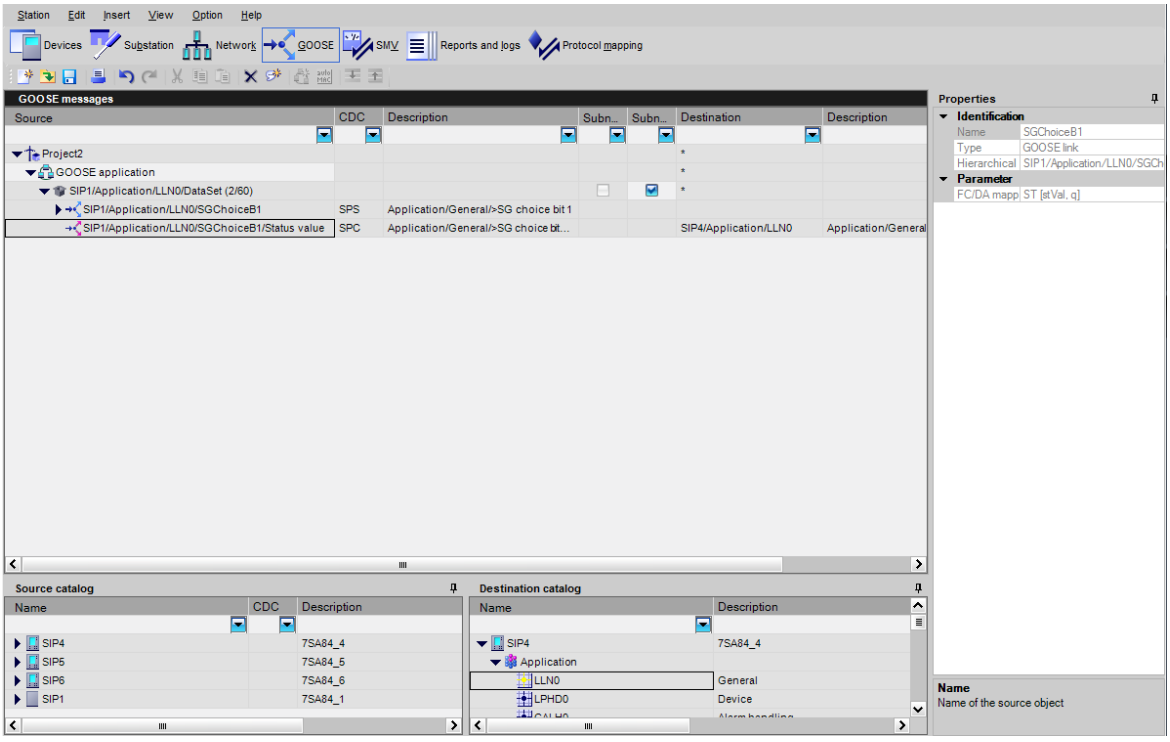


[sc_Goose_dataset_imported, 1, en_US]

Figure A-3 Imported IEDs

The imported GOOSE dataset is indicated by and IEDs are indicated by .

The destination signals of the IED from the destination project can be subscribed to the imported GOOSE dataset of the source project.



[sc_Goose_dataset_sub, 1, en_US]

Figure A-4 GOOSE Datasets

For more information on subscribing GOOSE datasets, refer to *2.14.14 Generating the GOOSE Connection*.

NOTE

For an Edition 2 project, if the GOOSE control block name is edited and reimported to the project, the subscriber control block reference is not updated. You will have to manually edit the control block name after importing it.

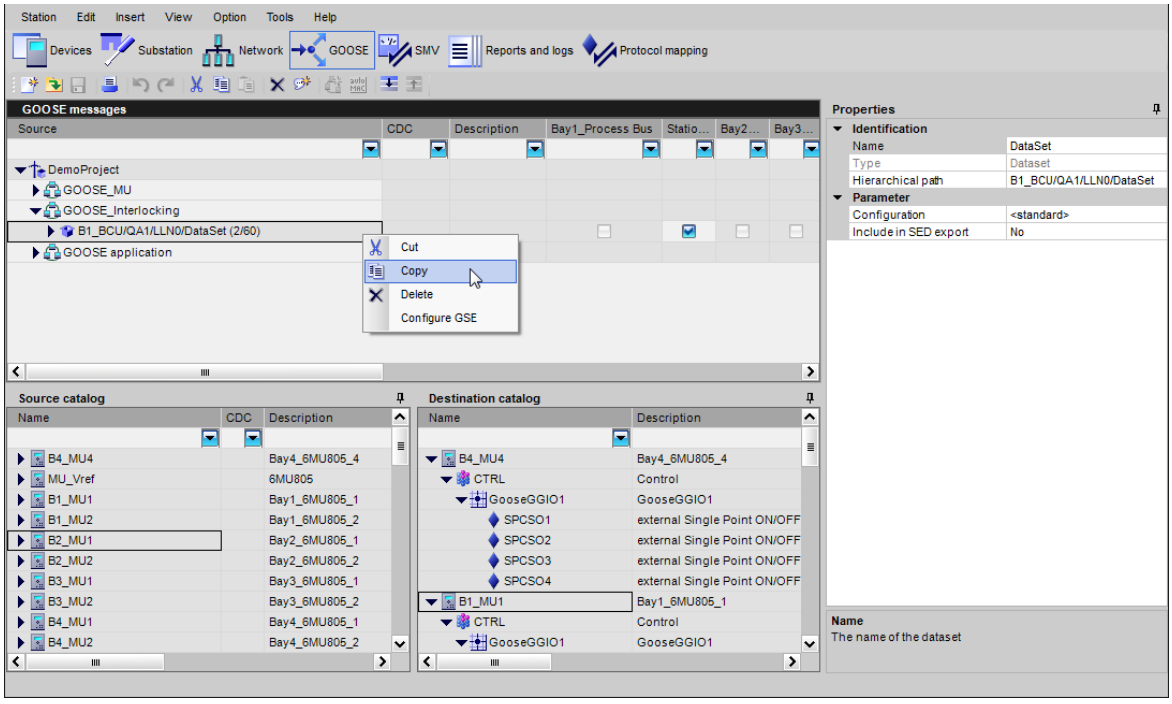
A.4 Copying GOOSE and the Report Configuration within or between IEDs

To copy GOOSE and the report configuration within or between IEDs, proceed as follows:

✧ Open the **IEC 61850 System Configurator**, which has GOOSE already configured.

✧ In the **GOOSE** Editor in the **GOOSE messages** section, select the GOOSE dataset.
For more information on copying multiple GOOSE datasets across IEDs, refer to *2.14.13 Copying all GOOSE Datasets across IEDs*.

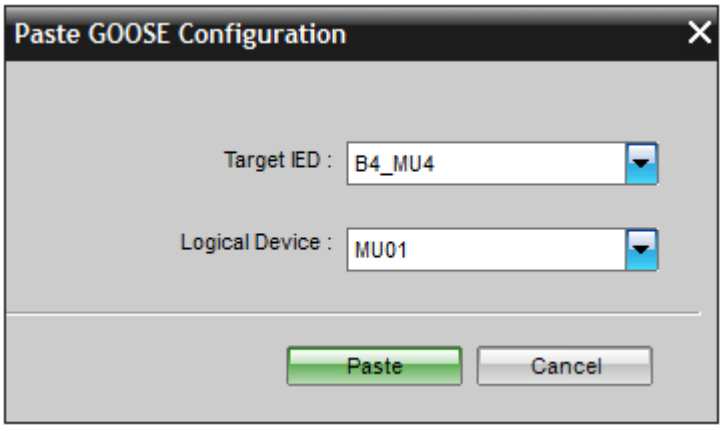
✧ Right-click the dataset and select **Copy** from the context menu.



[sc_copying_dataset, 1, en_US]

Figure A-5 Copying Dataset - GOOSE Messages

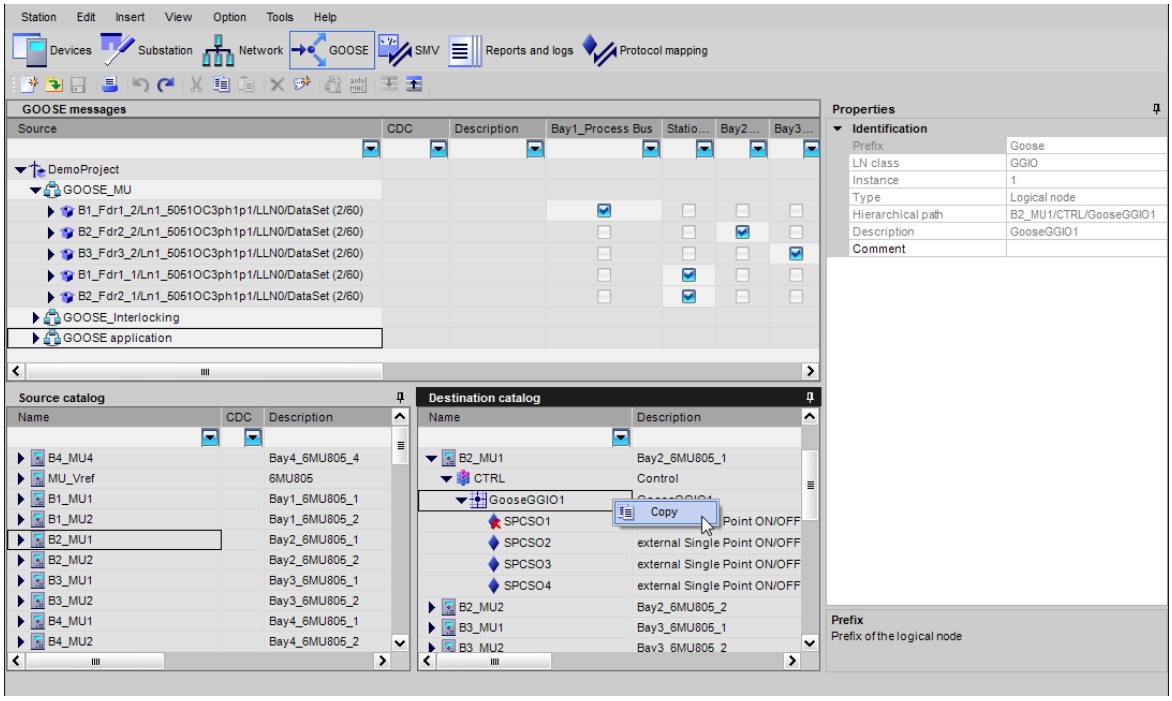
✧ Right-click the GOOSE application in the **GOOSE messages** section or the device in the **Source catalog** where you want to paste the dataset and select **Paste GOOSE Configuration**.
The **Paste GOOSE Configuration** dialog is displayed.



[sc_paste_goose_config, 1, en_US]

Figure A-6 Pasting GOOSE Configuration

- ✧ Select the **Target IED** and the **Logical Device** (LD) correspondingly from the list box.
- ✧ Click **Paste**.
- ✧ Select an IED/LD/LN from the **Destination catalog** which already has configured subscribers.
- ✧ Right-click the IED/LD/LN and select the **Copy** from the context menu.



[sc_copying_LN, 1, en_US]

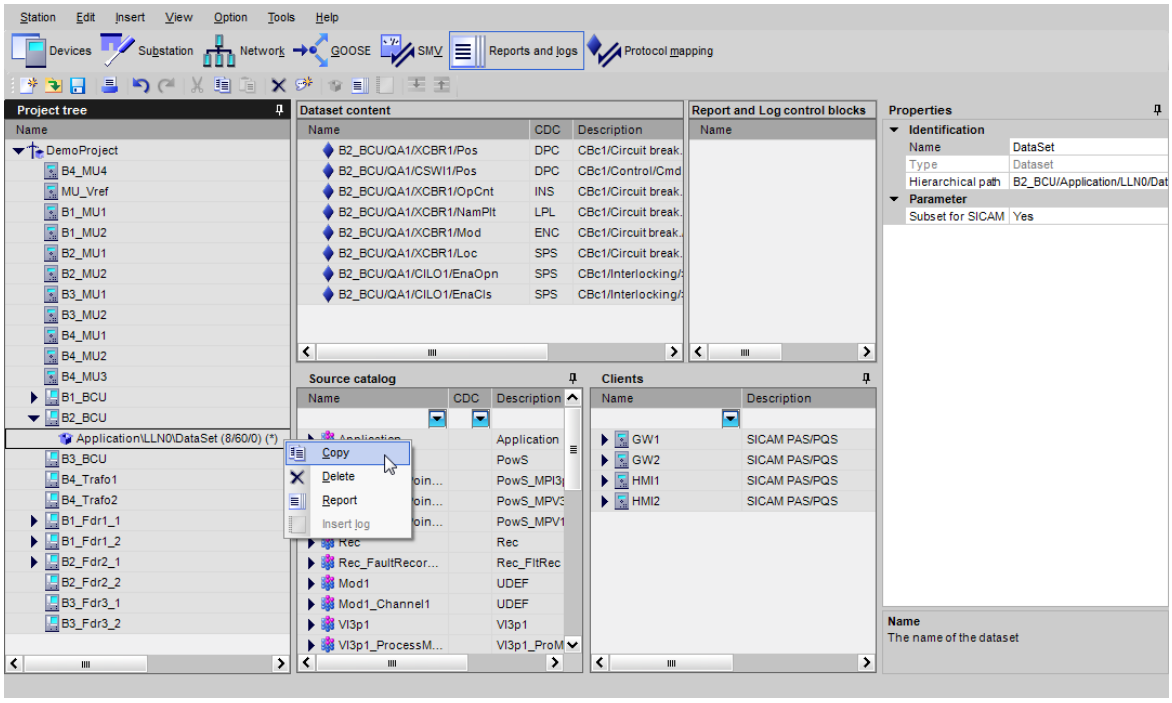
Figure A-7 Copying LN - Destination Catalog

- ✧ Right-click the IED/LD/LN from the **Destination catalog** where you want to paste the GOOSE subscriptions and select **Paste**.

  The GOOSE subscriptions get pasted to the IED/LD/LN.

  For more information on copying an IED/LD/LN from the **Destination catalog**, refer to *2.14.15 Copying the GOOSE Subscribers across IEDs*.
- ✧ In the **Reports and logs** Editor, select a dataset from an IED from the **Project tree**.
- ✧ Right-click the dataset and select **Copy** from the context menu.

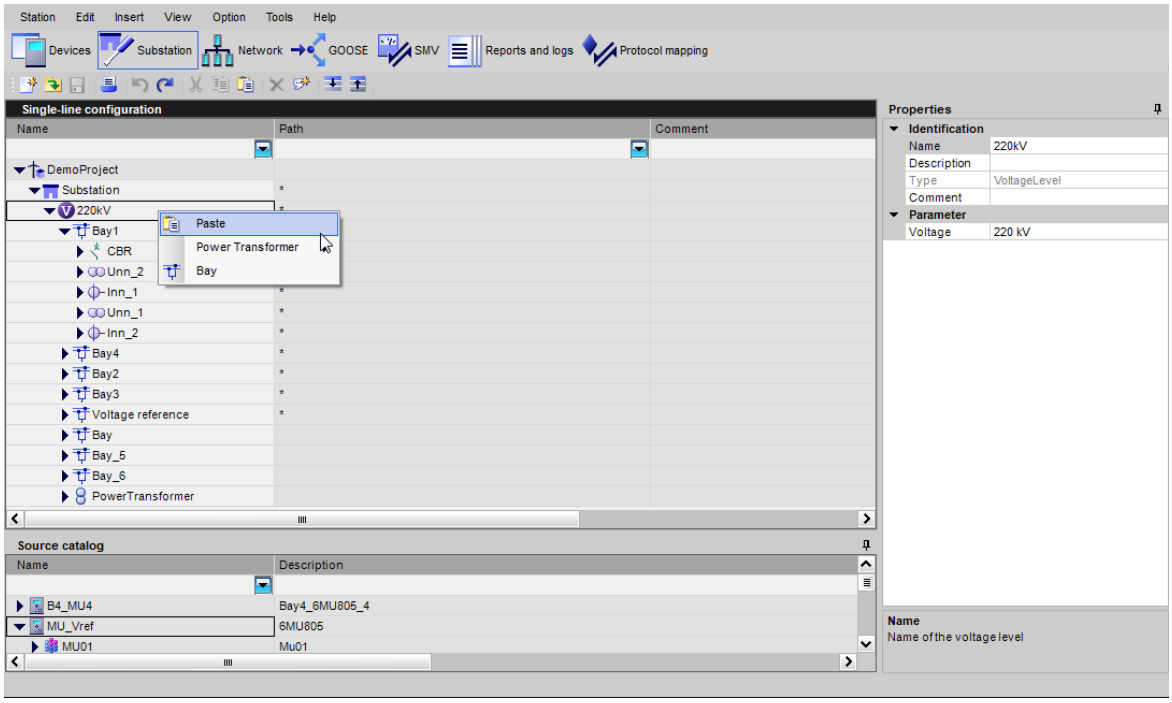
  For more information on copying an IED from the **Project tree**, refer to *2.16.12 Copying all the Reports and Datasets across IEDs*.



[sc_copying_from_IDE, 1, en_US]

Figure A-8 Copying Dataset - Project Tree

- ✧ Right-click any IED from the **Project tree** where you want to paste the report datasets and select **Paste**.
  The **Paste GOOSE Configuration** dialog is displayed.
- ✧ Select the **Target IED** and the **Logical Device** (LD) correspondingly from the list box.
  All the reports and the associated datasets get pasted to the IED.
- ✧ In the **Devices** Editor, select an IED.
- ✧ Right-click the IED and select **Copy** from the context menu.
- ✧ Right-click an IED from the **Devices** Editor where you want to paste the GOOSE and reports datasets and select **Paste**.
  The GOOSE and reports datasets get pasted to the IED.
- ✧ In the **Substation** Editor, right-click the bay and select **Copy** from the context menu.
- ✧ Right-click any desired voltage level in any **Substation** and select **Paste** from the context menu.
  A copy of the bay is created in the substation.



[sc_pasting_bay, 1, en_US]

Figure A-9 Pasting Bay - Substation

NOTE

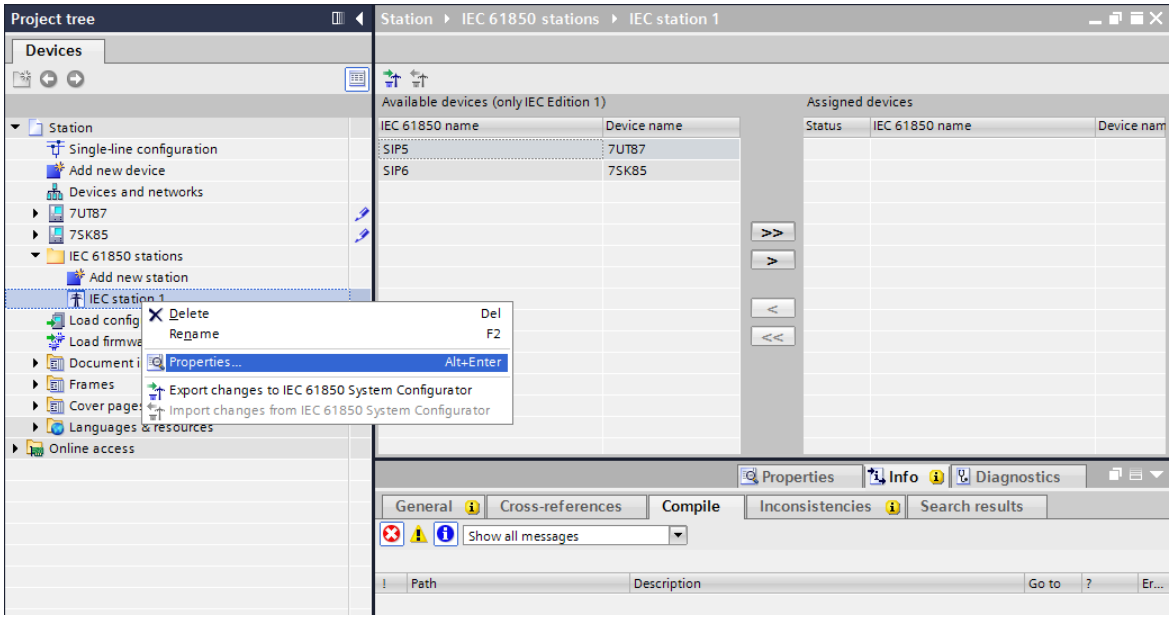
The LNode is not copied.

A.5 Working with Mixed IEC 61850 Editions

Adding a DIGSI Project to an Existing SCD Project

To associate an IEC 61850 System Configurator project with the DIGSI 5 IEC station, proceed as follows:

- ✧ In DIGSI 5, open a project tree that contains an IEC station or create a new IEC station.
- ✧ Double-click the **IEC 61850 stations** folder in the project tree.
- ✧ Right-click the IEC station to which a device or devices are assigned and select **Properties ...** from the context menu.



[sc_DIGSI5_Station_Prop, 1, en_US]

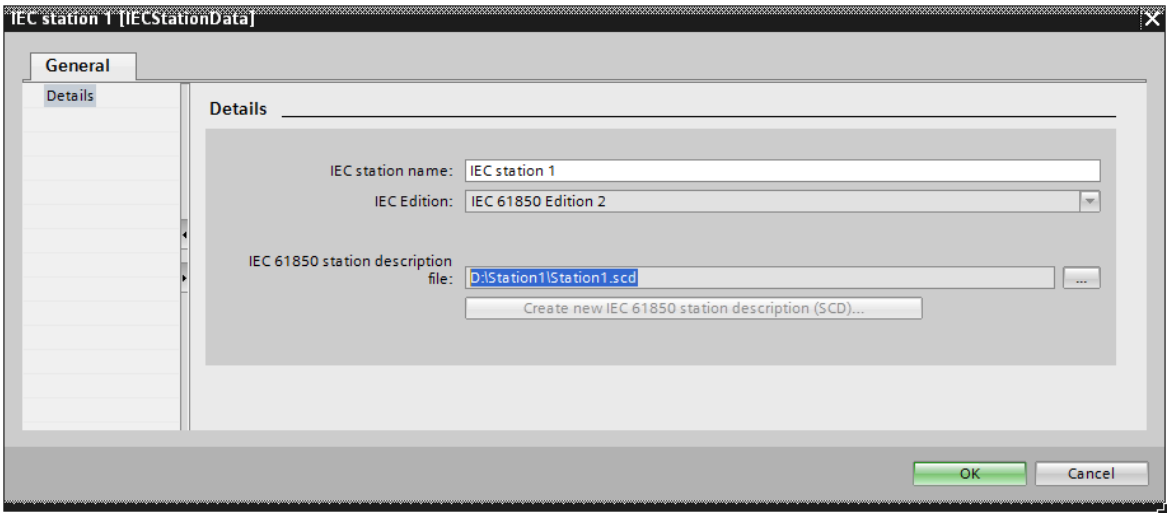
Figure A-10 DIGSI 5 Properties

The **IEC station 1 [IECStationData]** dialog is displayed.

- ✧ Click ... .

  The **Assign IEC 61850 station description (SCD)** dialog is displayed.
- ✧ Navigate to the desired location and select the existing SCD project file.
- ✧ Click **Open**.

  The selected SCD file is displayed in the **IEC 61850 station description file** field.



[sc_Selected_SCD_File, 1, en_US]

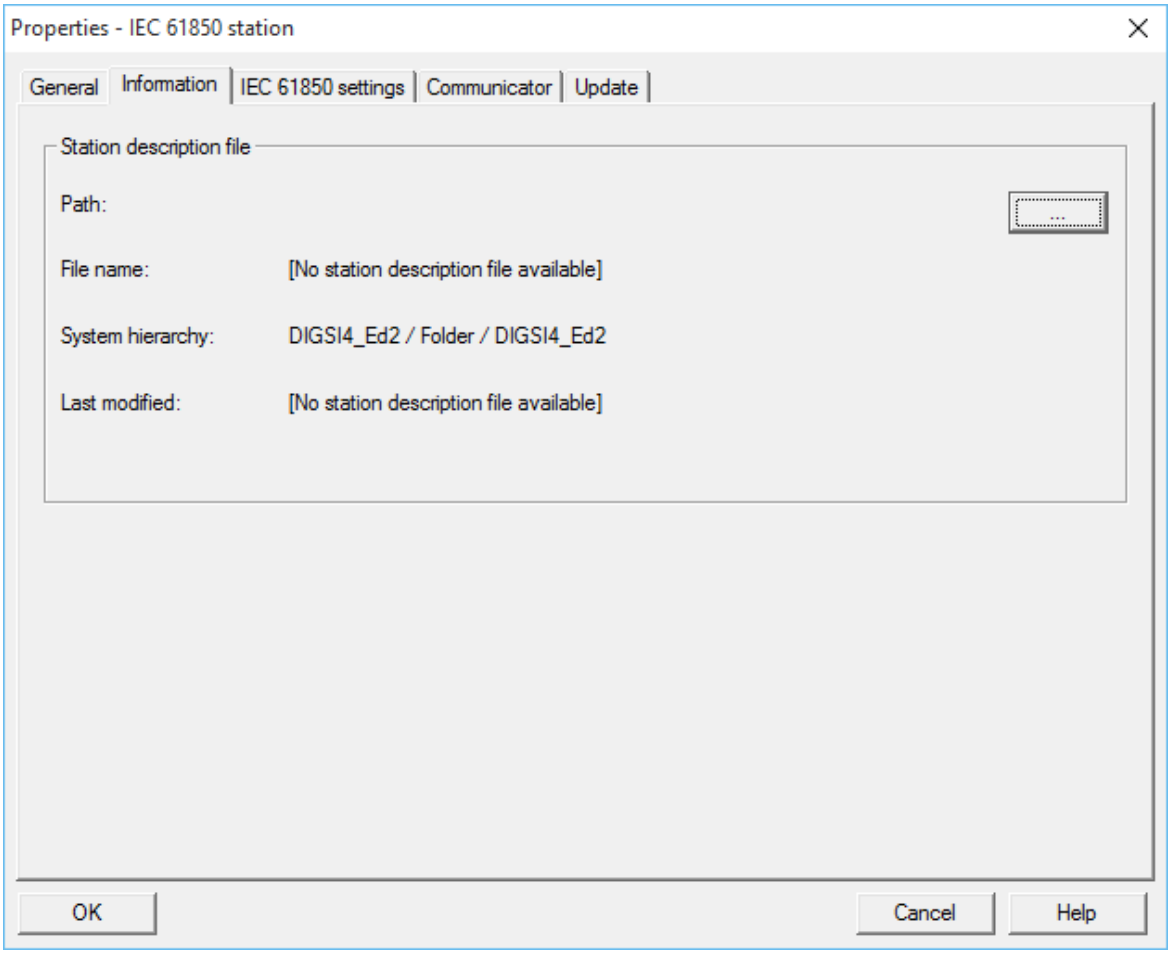
Figure A-11 SCD-File Selection

✧ Click **OK**.

The IEC 61850 System Configurator project file is associated with the DIGSI 5 IEC station.

To associate an IEC 61850 System Configurator project with the DIGSI 4 IEC station, proceed as follows:

✧ In DIGSI 4, right-click the IEC station and select **Properties...** from the context menu.
The **Properties – IEC 61850 station** dialog opens.



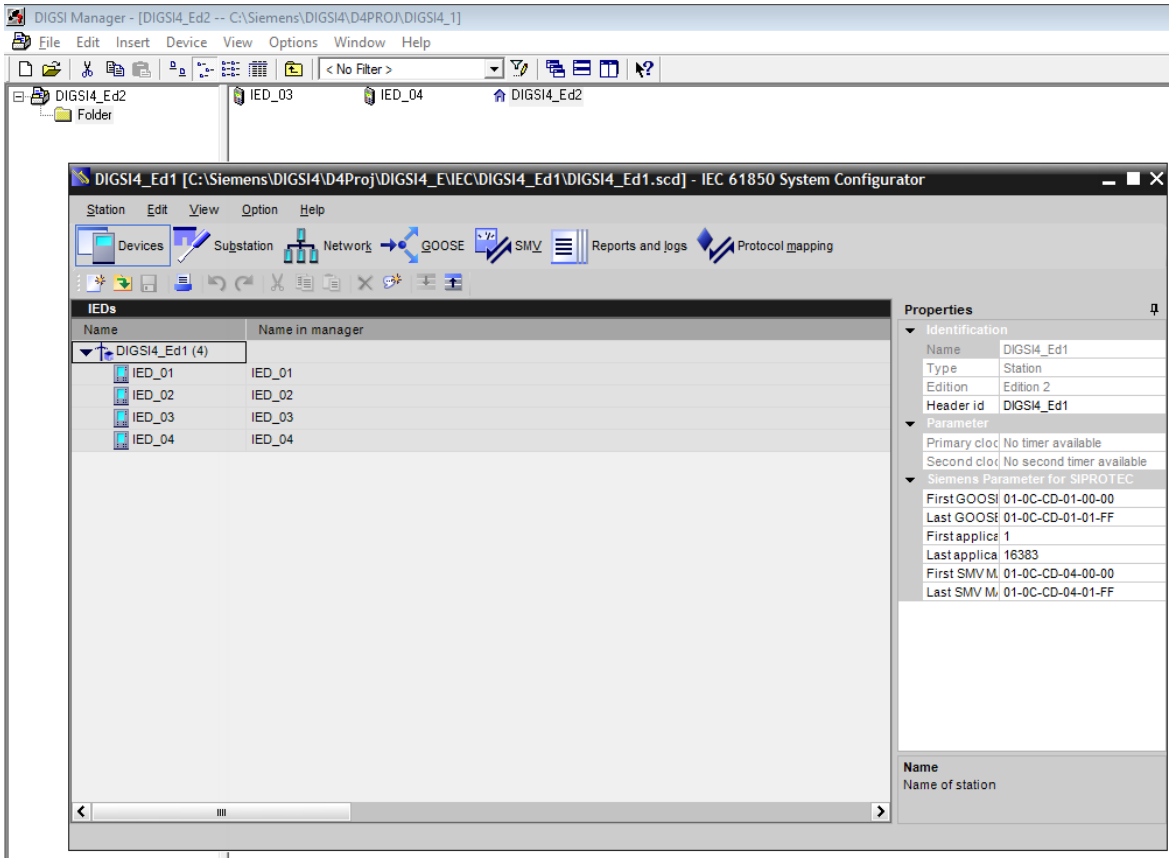
[sc_DIGSI4_Prop, 1, en_US]

Figure A-12 DIGSI 4 Properties

✧ Click ... in the **Station description file** section in the **Information** tab.
The **IEC 61850 station create or assign data** dialog opens.

✧ Navigate to the desired location and select the desired SCD file.

✧ Click **OK**.
The IEC 61850 System Configurator project file is associated with the DIGSI 4 IEC station.



[sc_DIGSI4_Ed_set, 1, en_US]

Figure A-13 DIGSI 4 Mapping

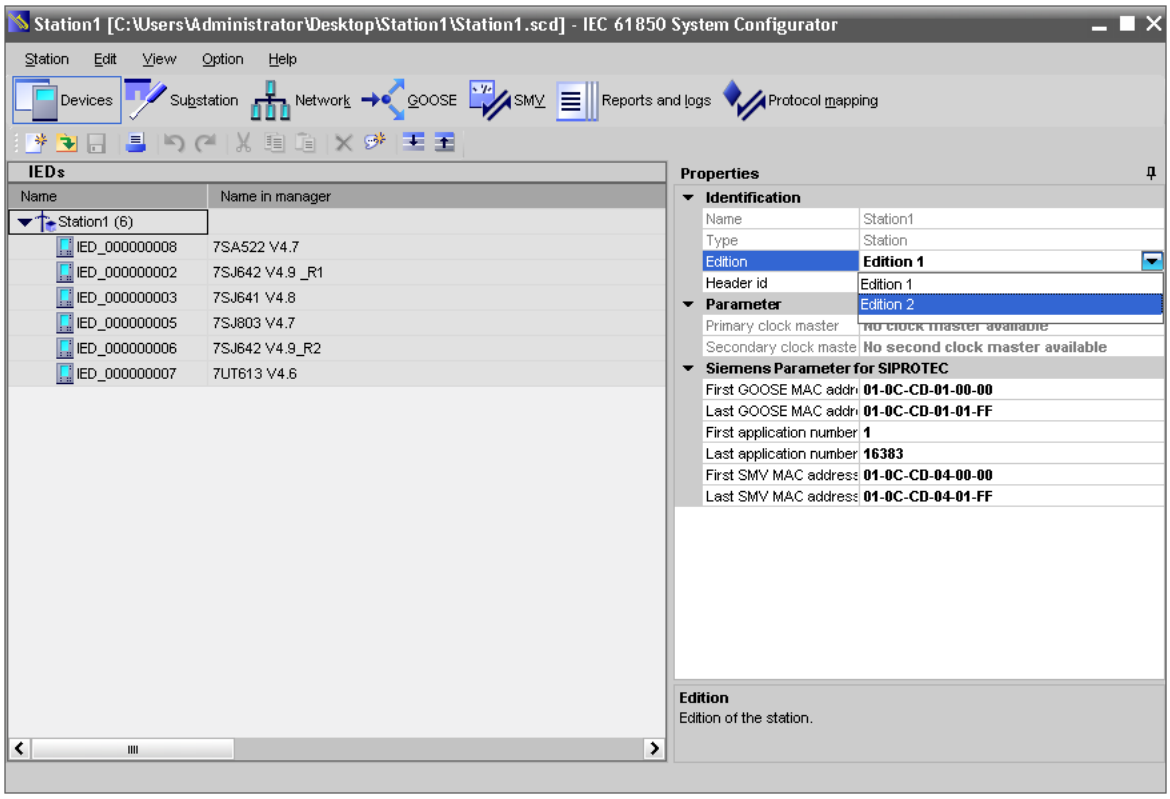
NOTE

An Edition 1 or Edition 2 project created with the IED tool can be mapped to an existing Edition 1, Edition 2, and Edition 2.1 SCD file respectively.

Upgrading SCD Project to Edition 2

To change the edition of the station, proceed as follows:

- ✧ In the IEC 61850 System Configurator, in the **Devices** editor, select an IEC station.
- ✧ In the **Properties** section on the right, click the drop-down arrow button for **Edition**.
- ✧ Select the edition from the list box.



[sc_Edition_Changing, 1, en_US]

Figure A-14 Edition Change

The edition of the station is changed.

NOTE

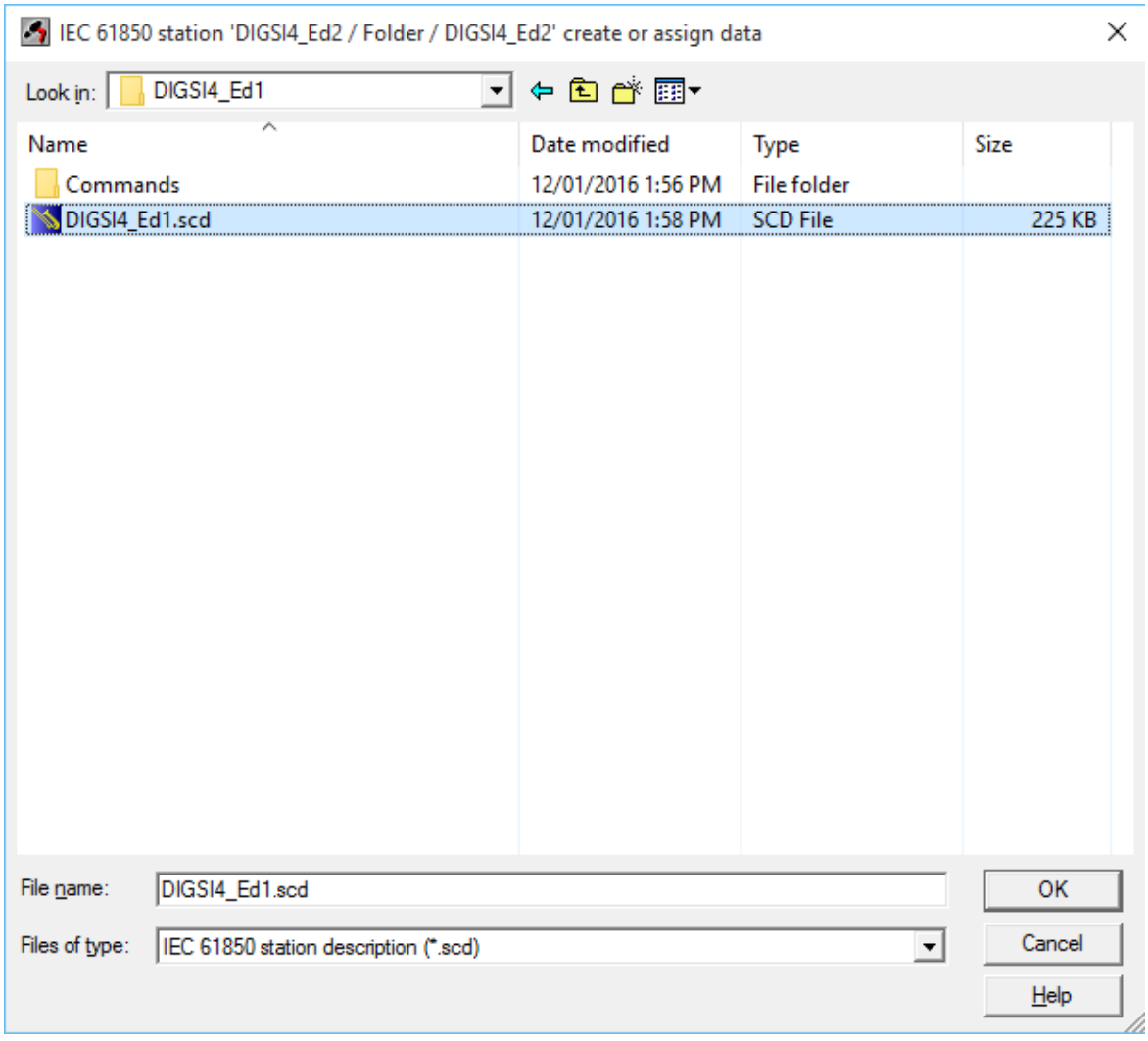
Only the SCD-file edition is changed in the IEC 61850 System Configurator, the edition of the devices remains the same in DIGSI 4 and DIGSI 5.

Automatic Upgrade of the SCD Edition

The changes of the IEC 61850 Edition in IED tools (for example DIGSI 4, DIGSI 5) are done automatically by the IEC 61850 System Configurator.

To check the edition of an SCD file, proceed as follows:

✧ In DIGSI 5 or in DIGSI 4, upgrade to an Edition 2 station.



[sc_DIGSI4_Browse, 1, en_US]

Figure A-15 DIGSI 4 Browser – SCD File Selection

✧ Open IEC 61850 System Configurator from DIGSI 5 or DIGSI 4.

✧ The IEC 61850 System Configurator will automatically convert the Edition 1 SCD file to an Edition 2 SCD file.

To check the edition version of the SCD file, check the **Edition** field in the **Properties** window.

NOTE

Edition compatibility of the station and SCL files:

- Edition 1 SCL files can be imported to an Edition 1 station.
- Edition 1 and Edition 2 SCL files can be imported to an Edition 2 station.
- Edition 1, Edition 2, and Edition 2.1 SCL files can be imported to an Edition 2.1 station.

Index

A

B

C

D

E

F

G

I

L

M

N

O

P

Q

R

S

T

U

V

W