SIEMENS

SICAM
SICAM PAS/PQS

V8.21

Configuration and Operation

Preface

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NOTE

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

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Preface

Purpose of the Manual

This manual serves as an instruction and reference document for the components of SICAM PAS/PQS:

- SICAM PAS/PQS UI – Configuration
- SICAM PAS/PQS UI – Operation, SICAM PAS/PQS UI – Operation Client
- Value Viewer
- User Administration

Target Audience

This manual is mainly intended for customers and their employees who are involved in the configuration and parameterization of substation automation systems.

Scope

This manual is valid for SICAM PAS/PQS.

Standards

SICAM PAS/PQS has been developed in compliance with ISO 9001:2008 standard.

Additional Support

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

Customer Support Center

Our Customer Support Center provides a 24-hour service.

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Notes on Safety

This document is not a complete index of all safety measures required for operation of the equipment (module or device). However, it comprises important information that must be followed for personal safety, as well

as to avoid material damage. Information is highlighted and illustrated as follows according to the degree of danger:

DANGER

DANGER means that death or severe injury **will** result if the measures specified are not taken.

✧ Comply with all instructions, in order to avoid death or severe injuries.

WARNING

WARNING means that death or severe injury **may** result if the measures specified are not taken.

✧ Comply with all instructions, in order to avoid death or severe injuries.

CAUTION

CAUTION means that medium-severe or slight injuries **can** occur if the specified measures are not taken.

✧ Comply with all instructions, in order to avoid moderate or minor injuries.

NOTICE

NOTICE means that property damage **can** result if the measures specified are not taken.

✧ Comply with all instructions, in order to avoid property damage.

NOTE

Important information about the product, product handling or a certain section of the documentation which must be given attention.

Qualified Electrical Engineering Personnel

Only qualified electrical engineering personnel may commission and operate the equipment (module, device) described in this document. Qualified electrical engineering personnel in the sense of this document are people who can demonstrate technical qualifications as electrical technicians. These persons may commission, isolate, ground and label devices, systems and circuits according to the standards of safety engineering.

Proper Use

The equipment (device, module) may be used only for such applications as set out in the catalogs and the technical description, and only in combination with third-party equipment recommended and approved by Siemens.

Problem-free and safe operation of the product depends on the following:

- Proper transport
- Proper storage, setup and installation
- Proper operation and maintenance

When electrical equipment is operated, hazardous voltages are inevitably present in certain parts. If proper action is not taken, death, severe injury or property damage can result:

- The equipment must be grounded at the grounding terminal before any connections are made.
- All circuit components connected to the power supply may be subject to dangerous voltage.
- Hazardous voltages may be present in equipment even after the supply voltage has been disconnected (capacitors can still be charged).
- Operation of equipment with exposed current-transformer circuits is prohibited. Before disconnecting the equipment, ensure that the current-transformer circuits are short-circuited.
- The limiting values stated in the document must not be exceeded. This must also be considered during testing and commissioning.

OpenSSL

This product includes software developed by the OpenSSL Project for use in OpenSSL Toolkit (*http://www.openssl.org/*).

This product includes software written by Tim Hudson (*tjh@cryptsoft.com*).

This product includes cryptographic software written by Eric Young (*eay@cryptsoft.com*).

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1 Product Overview

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1.1 Overview

What is SICAM PAS/PQS?

SICAM PAS/PQS has been designed as a modular system with open communication interfaces. It meets the requirements of state-of-the-art substation control and protection systems and of the power management systems required for industrial manufacturing plants. Functions for power quality evaluation complement its versatile fields of application.

SICAM PAS/PQS UI – Configuration

The SICAM PAS/PQS UI – Configuration system component is used for:

- The configuration and parameterization of your station
- The exchange of configuration data

In the different views, you can specify the type and the transmission modes of your communication links. Additionally, you can define which devices, substations, control centers or HMIs are connected.

For each of the connected system components, you can specify what information is evaluated in SICAM PAS/PQS. Furthermore, you can define what information is available for communication with higher-level control centers and for system management by using SICAM SCC.

You can individually structure your system data in a topological view to map your operating conditions and also assign individual switching permissions.

In this view, you can also define parameters for fault location calculation, for example, the line data, double line, maximum load current, or the starpoint position. In addition, you select the measuring channels whose PQ measuring data must be used for the Fault Locator.

In order to be able to evaluate the quality of power quality measuring data (PQ measuring data), the individual topological levels must be assigned to the Grid Codes.

Predefined device-specific and project-specific templates, templates for scheduled reports and Grid Codes, along with import/export and copy functions, facilitate and accelerate the configuration and parameterization of your system.

For the DNP3i, IEC 60870-5-104, and IEC 61850 protocols, the use of certificates ensures secure and encrypted data transmission.

SNMP is available for the configuration of Ethernet network monitoring.

Redundant system components prevent data loss. When a communication link is interrupted, the redundant component takes over the process connection.

Extensive functions have been implemented for checking the network quality. These functions allow the archiving and evaluation of power quality measuring data according to various criteria. Import and export functions support the data exchange with other evaluation components. Through e-mail and/or SMS, you can obtain information for example, on limit value violations or network faults.

Fault records and fault location reports support your operating personnel in the analysis and location of faults in electric power networks.

The project statistic provides you with an overview of the data defined with the help of parameters, for example, the total number of devices or the total number of data points which have not been mapped.

SICAM PAS/PQS User Administration

By using the User Administration tool, you can assign passwords in order to define which persons can access individual programs.

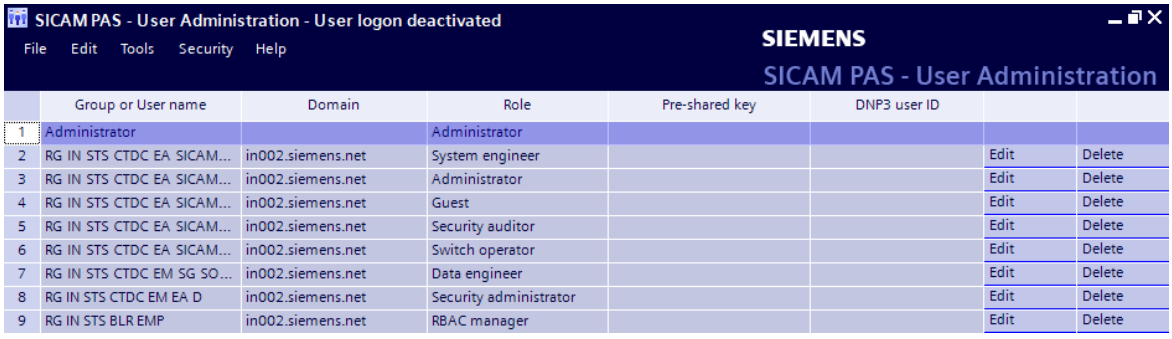
For the password-protected access to system functions, you define either SICAM PAS/PQS internal users or use the same passwords as for Windows access.

User Administration

A user can log on with one of the following user roles:

- **Administrator** with full rights
- **System engineer** with full rights, no access to the User Administration

- **Data engineer** with full rights for SICAM PAS/PQS UI – Configuration and Feature Enabler, read-only rights for SICAM PAS/PQS UI – Operation and Value Viewer
- **Switch operator** with full rights for SICAM PAS/PQS UI – Operation and Value Viewer, read-only rights for SICAM PAS/PQS UI – Configuration and Feature Enabler
- **Guest** with read-only rights for all SICAM PAS/PQS system components with exception of the User Administration
- **Security administrator** with full rights for the User Administration, read-only rights for all SICAM PAS/PQS system components
- **RBAC manager** creates users and assigns roles in the User Administration, with read-only rights for all SICAM PAS/PQS system components
- **Security auditor** audits the security logs, with read-only rights for all SICAM PAS/PQS system components



	Group or User name	Domain	Role	Pre-shared key	DNP3 user ID		
1	Administrator		Administrator				
2	RG IN STS CTDC EA SICAM...	in002.siemens.net	System engineer			Edit	Delete
3	RG IN STS CTDC EA SICAM...	in002.siemens.net	Administrator			Edit	Delete
4	RG IN STS CTDC EA SICAM...	in002.siemens.net	Guest			Edit	Delete
5	RG IN STS CTDC EA SICAM...	in002.siemens.net	Security auditor			Edit	Delete
6	RG IN STS CTDC EA SICAM...	in002.siemens.net	Switch operator			Edit	Delete
7	RG IN STS CTDC EM SG SO...	in002.siemens.net	Data engineer			Edit	Delete
8	RG IN STS CTDC EM EA D	in002.siemens.net	Security administrator			Edit	Delete
9	RG IN STS BLR EMP	in002.siemens.net	RBAC manager			Edit	Delete

[sc_User_Administration, 4, en_US]

Figure 1-1 User Administration, Example

If the control center is connected by using DNP3i, you can further modify the user rights (authentication).

Feature Enabler

SICAM PAS/PQS is designed as an open, modular system whose components can be selected in order to meet project-specific requirements.

Use the Feature Enabler to install all functions required in your project or on the corresponding computer.

In this context, the different communication protocols, the automation (SoftPLC), the HMIs, the SNMP Ethernet monitoring component, OPC connections and Power Quality functions are referred to as "functions".

SICAM PAS/PQS UI – Operation

SICAM PAS/PQS UI – Operation provides you with a brief overview of the operational status of your system components. Update functions ensure that the display is always up to date.

Furthermore, you can enable or disable individual components, such as interfaces or devices, set bay and telecontrol blocks or perform redundancy switchovers.

The diagnostic function supports you in the analysis of fault causes, for example, faulted communication connections.

SICAM PAS/PQS UI – Operation Client

SICAM PAS/PQS UI – Operation Client provides the functions of SICAM PAS/PQS UI – Operation from a local computer or a remote computer with improved performance by an Internet browser.

Value Viewer

If the communication links have been established properly, the **Value Viewer** displays information on the selected device or substation.

During commissioning, for example, you can use this information view to test data links and to check whether an interface or a device transmits correct values. Detailed time stamps provide information on the reliability of values.

For test purposes, you can initiate password-protected command outputs or manually update (substitute) information.

SICAM PAS SoftPLC

In order to perform project-specific automation tasks in SICAM PAS/PQS, you can graphically link automation blocks or even define the automation function as Structured Text (ST), with the help of the Statement List (STL) or by using the Sequential Function Chart (SFC).

A comprehensive library of different automation blocks supports you in performing your tasks. These blocks have been specifically designed to provide sophisticated solutions in the field of power automation.

SICAM PAS LSA Converter

Using the SICAM LSA Converter, you can convert the project data of a SINAUT LSA system configured by means of LSATOOLS or PARAM.

The corresponding file is converted to XML. You can import the XML file into your SICAM PAS/PQS project for parameterization. Additionally, a description for each device is saved in a TXT file. After the import, all bay devices of the SINAUT LSA system are included in the SICAM PAS/PQS project.

Version Scan

The **Version Scan** system component determines the version and the storage location of the products installed and their lower-level system components. Error sources through inconsistent versions of the individual components can thus be determined quickly and efficiently.

2 Configuration

This chapter explains how to use **SICAM PAS/PQS UI – Configuration**.
In the **Configuration** view, you can define a new station configuration or modify an existing configuration for example, in order to add new devices.

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2.1 Starting SICAM PAS/PQS UI – Configuration

Start SICAM PAS/PQS UI – Configuration from the Windows Start menu.

NOTE

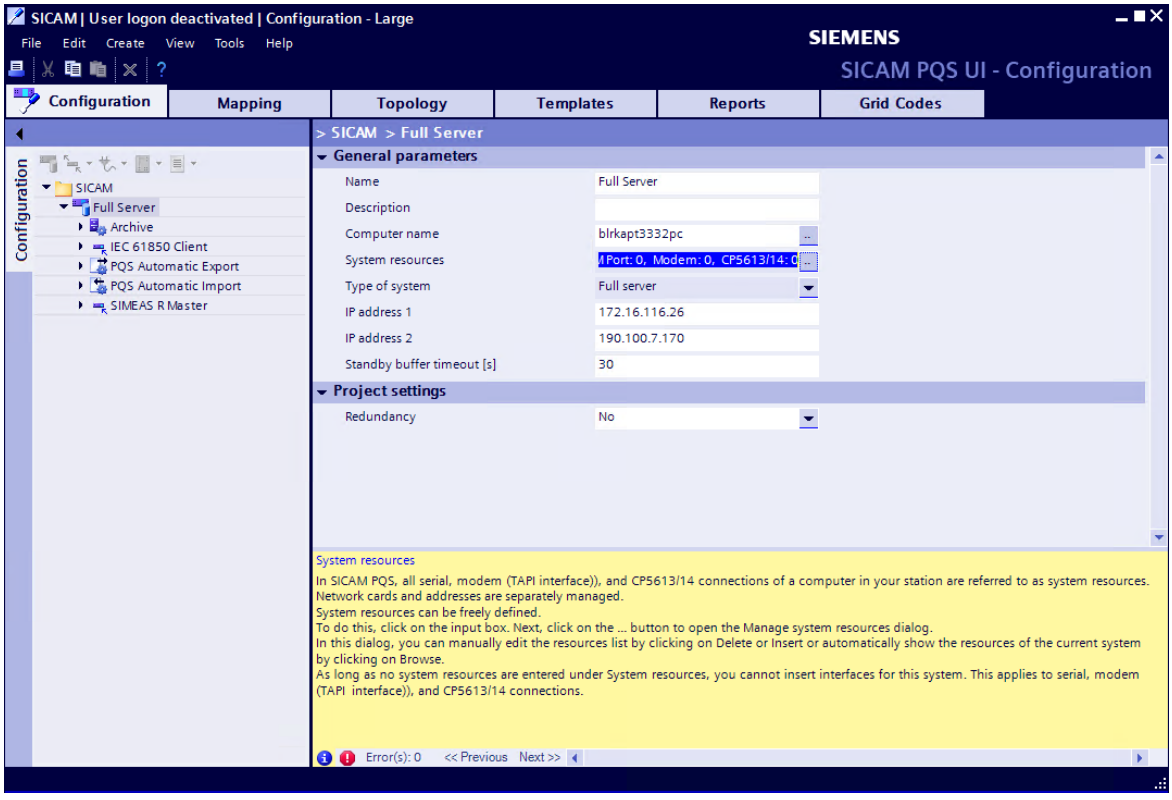
If you open SICAM PAS/PQS after an update, the existing project database is converted and can no longer be edited with previous versions of SICAM PAS/PQS.

✧ Click **Start** and scroll through the app list.

✧ Select **UI - Configuration** from the **SICAM PAS/PQS** folder.

SICAM PAS/PQS UI – Configuration opens with your current station configuration.

If you have enabled the User Administration, you are requested to enter your user name and password.



[sc_SICAM_PAS_PQS, 3, en_US]

Figure 2-1 SICAM PAS/PQS UI – Configuration

2.2 Views

SICAM PAS/PQS UI – Configuration is subdivided into different views. The individual views are used to configure your station, in the following way:

- **Configuration**
  The configuration tree shows all components of your station configuration in hierarchical order. In this view,
  - you insert the individual functions (applications) and
  - define the parameters of the functions
    The functions include all device connections, control center connections, the archive, or the Power Quality functions (Fault Location, Scheduled Reports, and Grid Codes).
- **Mapping**
  In this view, you select
  - the device/substation information to be used
  - the tests to be performed for information processing, for example, bay blocking or switching authority
  - the components to which this information is forwarded, for example, control centers, SICAM SCC
  - the purposes for which the information can be used, for example, as a trigger for PDR recording
- **Topology**
  In this view, you
  - map your station's topology
  - assign the individual structure levels with the appropriate information
  - define the switching authority of the individual structure levels
  - parameterize data for fault location calculation
  - define the measuring channels through which measuring data is transmitted for fault location calculation
  - assign the individual structure levels to the Grid Codes for power quality evaluation
- **Templates**
  Templates can be used for the configuration of the individual components of your project. In this view, you
  - manage and parameterize device descriptions, for example, the assignment of commands and feedbacks, checks for blocks, the switching authority, or "M of N monitoring"
  - define normalization procedures
  - insert certificates which you require for secured data transmission based on IEC 60870-5-104 and DNP3i.
- **Reports**
  In this view, you
  - insert templates for reports to be created at cyclical intervals.
    The templates include selected measured values used as a basis for power quality evaluation. The report templates are created as TXT files and imported into SICAM PAS/PQS
  - select the time and interval of report generation for a report template
  - assign the measuring channels through which PQ measuring data is transmitted
- **Grid Codes**
  In this view, you
  - insert the standards which describe limit values for the network. These Grid Codes provide the basis for evaluating the quality of the PQ measuring data of the station.

2.2.1 Window Structure

The navigation tree which displays the structure of the corresponding project data is located in the left-hand section. You can insert station components by using the tree structure of the navigation tree. The selected view is displayed on the left-hand margin bar of the navigation tree.

In the **Configuration**, **Templates**, **Topology**, **Reports**, and **Grid Codes** views, you select an object from the navigation tree. The parameters of this object are displayed in the input area in the right-hand section. The parameters are grouped according to categories, for example, General parameters or Transmission parameters.

In the **Mapping** view, the right-hand section is subdivided into the **Information – Monitoring direction** and **Information – Command direction** sections. These sections are divided into tabs, **Process** and **Status**. From these tabs, you select the information to be used and you map the information to other system components. In addition, you can define the parameters for different functions, for example, bay blocking or switching authority.

The display depends on the object selected from the navigation tree.

Depending on the object selected from the navigation tree, the right-hand section of the **Templates** view is subdivided into different tabs, for example, **Information points**, **General recording channels**.

The display depends on the selected tab and can be further subdivided.

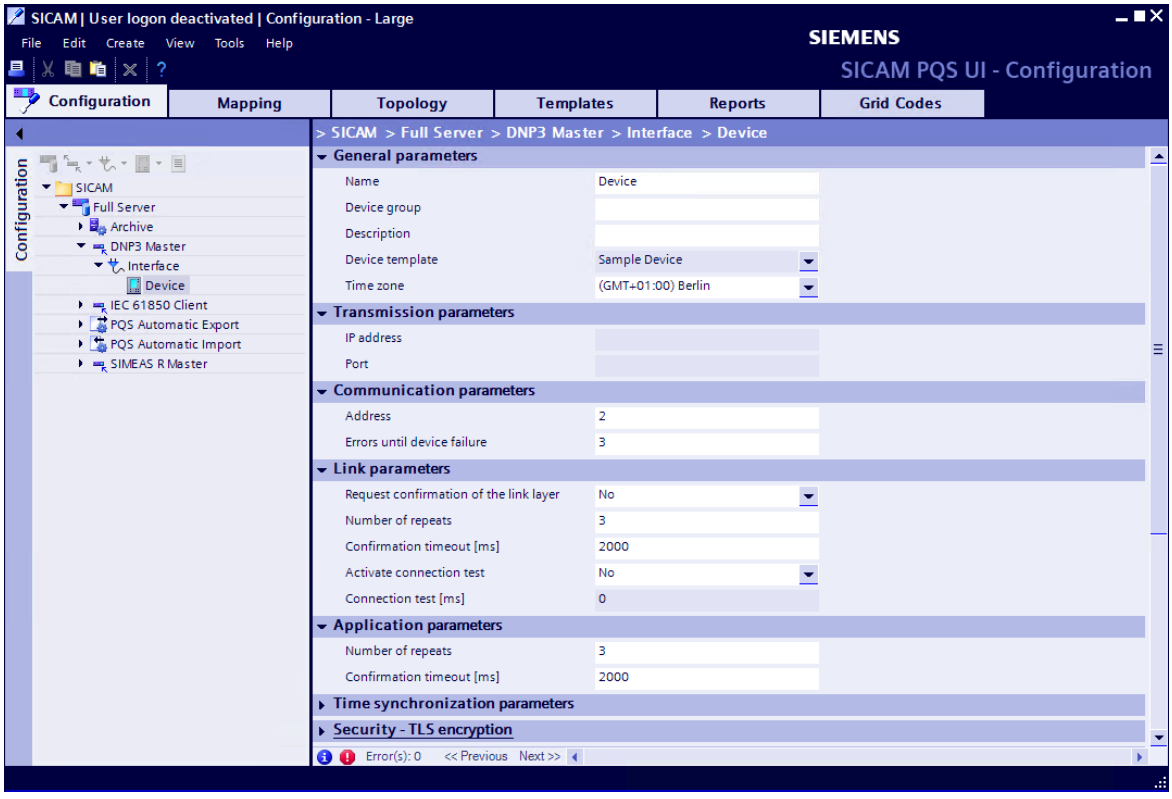
The **Properties** window, displays the general parameters of the selected template.

Clicking the icon at the bottom of the window opens or closes an **information field**. Clicking opens or closes an **error field**, clicking opens or closes a **warning field**.

The information field provides descriptions regarding the value or value range which is permissible for the selected parameter of an object.

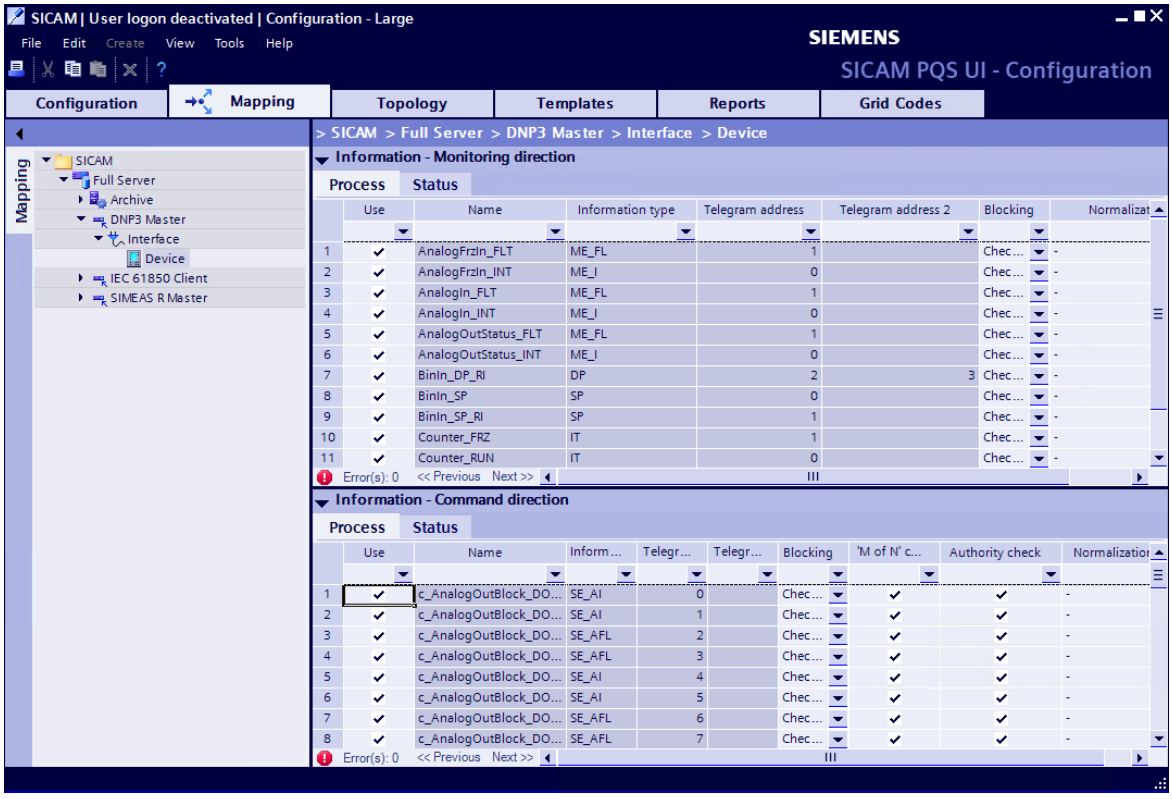
The error field provides information on the cause of an incorrect or incomplete parameter entry.

The warning field is only displayed in the **Mapping** and **Templates** views. It notifies you that the parameters of certain items of information have not been completely defined. This warning is displayed for example, when the item of information exists only in the monitoring direction and not in the control direction, while mapping the items of information for an IEC 61850 control center connection.



[sc_Configuration view, 2, en_US]

Figure 2-2 SICAM PAS/PQS UI – Configuration, Configuration View



[sc_Mapping view, 2, en_US]

Figure 2-3 SICAM PAS/PQS UI – Configuration, Mapping View

2.2.2 Switching the Work Level

To switch between the work levels or views:

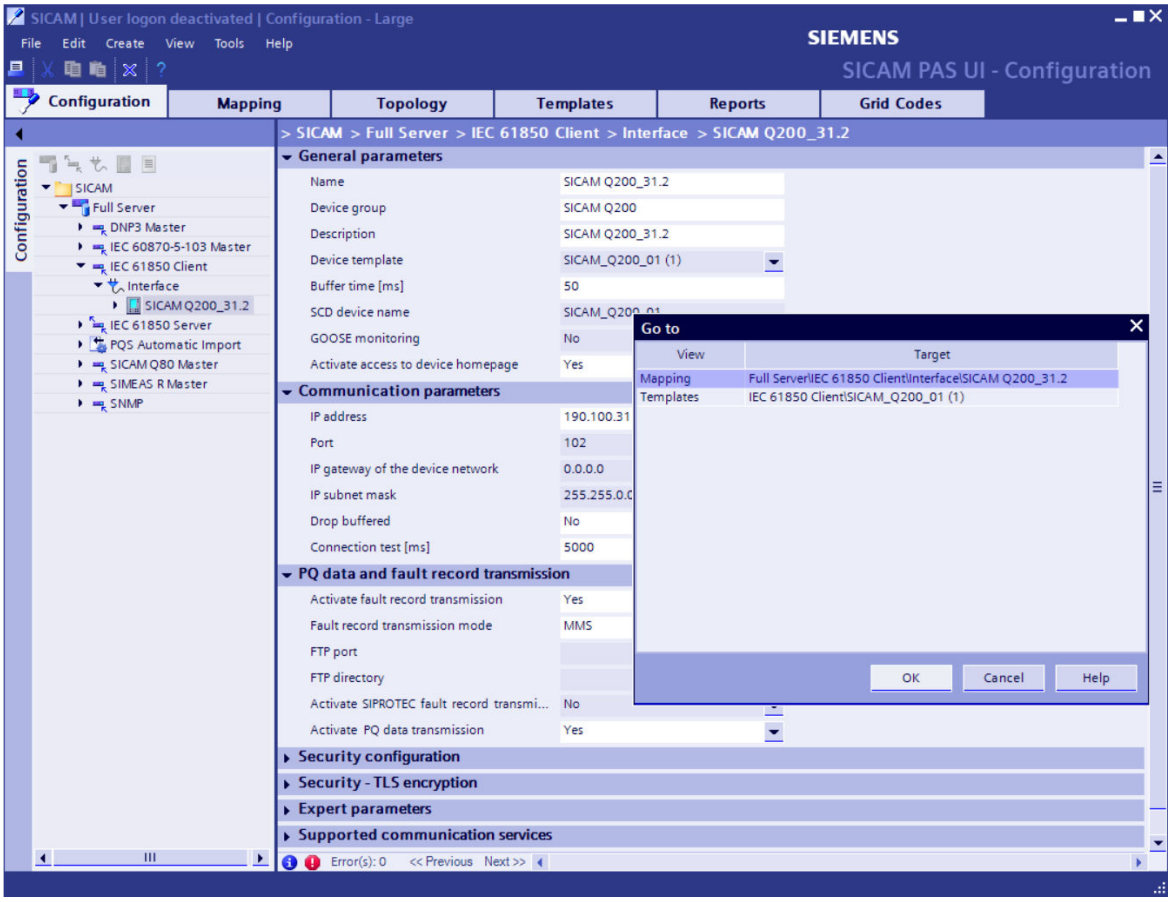
✧ Select the view to which you want to switch.
The view is switched over.

To switch views by using the context menu:

✧ In the configuration tree, select a device or a control center and select **Go to...** from the context menu.
In the window which opens, select the view to which you want to switch.
When switching the view, the focus remains on the previous object which has been selected in the previous view.

To switch between the views:

✧ In the menu bar, click **View** and select the view you want to switch to from the context menu.



[sc_Switching Views, 3, en_US]

Figure 2-4 Switching Views Using Context Menu

2.2.3 Modifying the Representation

You can modify the size of the individual section of the windows in order to focus your view on the current section you are using.

Proceed as follows:

✧ Move the splitter between the individual areas.
The **section of the window** is represented **larger/smaller**.

- ✧ Click the arrow of a component in the configuration window or the arrow in the header of a parameter category displayed in the properties. The lower-level components of the configuration structure or the parameters of the parameter category are **shown/hidden**.
- ✧ To open the **information field**, click the icon at the bottom of the window and select a parameter field. **Explanations** and **input aids** for the selected parameter are now displayed.
- ✧ To open the **error field**, click the icon at the bottom of the window and select a parameter field highlighted in pink. Explanations on the parameters are now displayed, for example, the permissible value range.
- ✧ Click the blue error designation (link). You are now guided to the parameter which has been filled in incorrectly or incompletely.
- ✧ Click **Previous** and **Next**. You are now guided to the incorrect parameter field.
- ✧ To open the **warning field**, click the icon at the bottom of the window.
- ✧ Double-click the blue designation (link) of a warning. The system takes you to the parameter which has not been completely defined.
- ✧ Click **Previous** and **Next**. The system takes you to the corresponding parameter field.

2.3 Working with Project Databases

SICAM PAS/PQS saves your project's configuration data in a relational database in the **%PAS_APPDATA%\Database\pas.db** installation directory.

This project database is loaded and displayed by default. Any change in the current station configuration is automatically saved in this database.

Additionally, you can archive and load back your station's configuration. This creates the backup copies of your station configuration, for example, before performing changes. If you configure a station offline on another computer, you can transfer this configuration to your station and dearchive and customize it afterwards.

You can perform the following operations at the project level:

- *2.3.1 Archiving Project Data*
- *2.3.2 Dearchiving Project Data*
- *2.3.3 Creating a New Database*
- *2.3.4 Creating a New Database from a Template*
- *2.3.5 Compressing the Database and Reducing the Data Points*

2.3.1 Archiving Project Data

NOTE

When archiving a database, all communication links are interrupted and restarted automatically afterwards. SICAM PAS/PQS UI – Operation is exited.

NOTE

As some user-account features can block the archiving on network drives, always archive project data on the computer on which SICAM PAS/PQS has been installed.

Proceed as follows to archive your database:

- ✧ Select the **Configuration** view.
- ✧ Click **File > Archive...** and select the directory in which you want to save the backup copy.

✧ Click **Save** to confirm.

The data is compressed as a ZIP file and saved in the selected directory. The ZIP file includes the database and log files and also the ARCHIVES subdirectory.

NOTE

Note down the information for project identification, for example, directory, file name, database version, and also the information which you have entered under **General parameters** on the project level.

2.3.2 Dearchiving Project Data

NOTE

When copying an archived project database, all communication links are interrupted and restarted automatically afterwards. SICAM PAS/PQS UI – Operation is exited.

NOTE

When loading an archived project database, the current project is overwritten. You are prompted to confirm this step.

Siemens recommends saving a backup copy of your current database before loading another project (**File > Archive...**).

NOTE

When dearchiving the previously archived project database after an update of SICAM PAS/PQS, the database is also converted.

Proceed as follows to dearchive a project database:

✧ Click **File > Dearchive...** and navigate to the directory with the project database which you want to restore.

✧ Select the zipped project database and confirm with **Open**.

Some items of information stored in the dearchived configuration database must be customized for the new system, for example, the IP addresses of the computer.

Dearchiving a Project with Automation Functions

After dearchiving a project with automation functions, you must compile the SoftPLC project.

Proceed as follows:

✧ Open **SICAM PAS SoftPLC UI**.

✧ Exit **SICAM PAS SoftPLC UI** and select **Compile and Save** from the **Close** listbox.

Dearchiving a Project with OPC Connection

After dearchiving a project with OPC connections, you must update the information mapping of the OPC Client.

Proceed as follows:

✧ Ensure that the connection to the OPC Server is available.

✧ In the **OPC Client** application, select the device with the available mapped information and click **...** at the **Value selection dialog** in the **General parameters**.

✧ In the dialog which opens, confirm the mapping with **OK**.

Dearchiving Large Projects

For projects with a large data volume, you have the option to transfer the archived project data directly under Windows.

Proceed as follows:

- ✧ Stop the SICAM PAS/PQS runtime environment. To do this, click **Start > Run > cmd.exe** to open a command prompt window and enter the **net stop ssr** command.
- ✧ In a Windows Explorer, open the **%PAS_APPDATA%\Database** folder of the SICAM PAS/PQS database. Delete or move the **Archives** folder and the **pas.db** and **pas.log** files.
- ✧ Unzip the ZIP file of the archived project to the SICAM PAS/PQS database folder.

The database folder must now contain the **pas.db** and **pas.log** files and, if required, the **Archives** folder again.

- ✧ Start the SICAM PAS/PQS runtime environment. Enter the **net start ssr** command in the command prompt window.
- ✧ Enter the **cd %PAS_BIN%** and **Changeloggenerator.exe** commands in the command prompt window.

The SICAM PAS/PQS runtime environment restarts with the dearchived project.

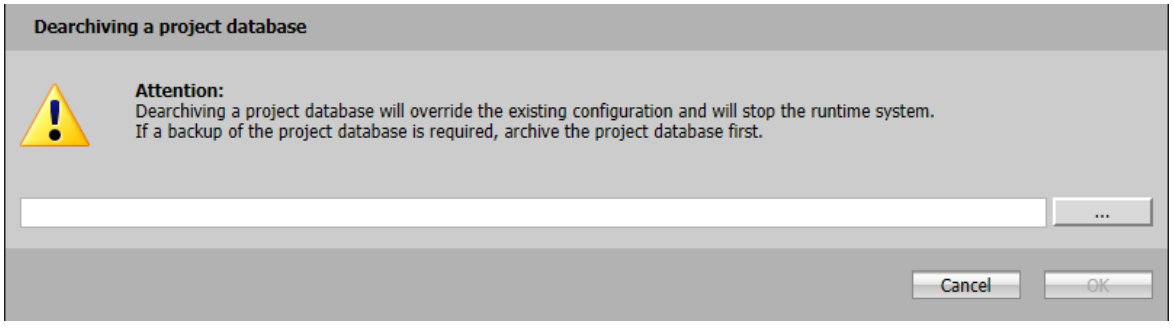
Alternatively, you can click **Update system** to restart the runtime environment in SICAM PAS/PQS UI – Operation , refer to *3.3.1 Updating the Display*.

Dearchiving a Project in SICAM PAS/PQS UI – Operation Client

You can dearchive an archived project in SICAM PAS/PQS UI – Operation Client.

To dearchive a project database:

- ✧ Click **Dearchive**.
  The **Dearchiving a project database** dialog opens.



[sc_Dearchiving_Proj_Data, 1, en_US]

Figure 2-5 Dearchiving Project Database

- ✧ Click **...** , select the required archive and click **OK**.
  Unpacking of the archived project database starts.
- ✧ Once done, click **OK**.
  The system is updated.

NOTE

If the project is archived using a previous version of SICAM PAS/PQS and is being dearchived in SICAM PAS/PQS V8.07, you must convert the project database after starting SICAM PAS/PQS UI – Configuration.

If redundancy is not enabled in the system, a project consisting of a redundant configuration cannot be dearchived in that system and vice versa.

For more information on SICAM PAS/PQS UI – Operation Client, refer to *3.2 Starting SICAM PAS/PQS UI – Operation and SICAM PAS/PQS UI – Operation Client*.

2.3.3 Creating a New Database

You can create a new project database in the **Configuration** view. This menu item is disabled in all other views.

✧ Select **File > New...** in order to define a new station configuration.

NOTE

Be aware that the active project will be overwritten when creating a new project. You are prompted to confirm this step.

Create a backup copy of the active project in order to obtain the configuration settings for this project.

NOTE

In order to create a database for another station on the basis of an existing project database use the **Create new database from template** function.

This ensures that, for example, SICAM PQ Analyzer can distinguish between several individual SICAM PAS/PQS stations.

2.3.4 Creating a New Database from a Template

To create a project database on the basis of an existing one:

✧ Select **File > New from template** in order to dearchive an existing project and use it as a template.

SICAM PAS/PQS assigns new internal identifications, the original project remains unchanged and can be used for further processing steps.

2.3.5 Compressing the Database and Reducing the Data Points

To reduce the size of the database:

✧ Click **File > Compress database and reduce data points...** to remove residues of the deleted data and deselect or remove the unused data points from the project database.

NOTE

Siemens recommends you optimize your project configuration periodically via this option. This ensures the reduction of the launch time for **SICAM PAS/PQS UI – Configuration** and **SICAM PAS/PQS UI – Operation**.

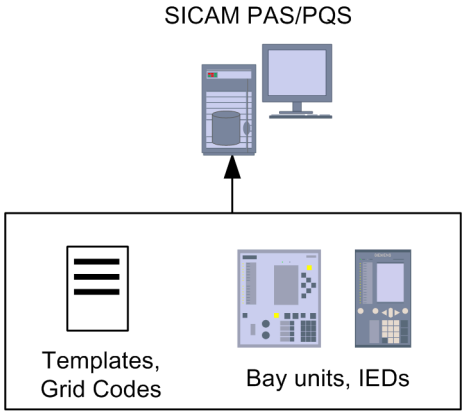
2.4 Importing/Exporting

The **Import** and **Export** functions of SICAM PAS/PQS UI – Configuration support you in the exchange of configuration data with other system components or configuration tools.

Configuration data created by another configuration system in (another) SICAM PAS/PQS project can be transferred into the different SICAM PAS/PQS views.

You can import the following configuration data:

- Several devices (application, interface)
- One single device
- Device templates
- Grid Codes
- Templates for scheduled reports



[dw_importing_config, 2, en_US]

Figure 2-6 Importing Configuration Data for Devices

If you import large data volumes, for example, an IEC 61850 Ed. 2 SCD file with several devices, click **File > Compress database and reduce data points** to compress the database after the import. Additionally, you can use this option to reduce the number of mapped/unused data points.

If you have modified imported configuration data by means of an external configuration tool, you can **update** the data in SICAM PAS/PQS UI – Configuration. The new and the old parameter data is compared during this process.

2.4.1 Importing Configuration Data

2.4.1.1 Configuration Data for Several Devices

Preconfigured configuration data can be imported for several devices on the following levels:

- Project
- Application
- Interface

Project

Complete project configuration files can be created in the TEA-X exchange format. A TEA-X file may include the configuration for the following applications with/without redundancy enabled:

- IEC 61850 Client/Server
- SNMP
- IEC 60870-5-101 Master/Slave
- IEC 60870-5-104 Master/Slave
- IEC 60870-5-103 Master
- DNP3 Master/Slave
- Automation (Mapping)
- SCC
- Archive
- ScPCCN

NOTE

ST programs are exported and imported through the TEA-X file but CFC and SFC programs are not. Before compiling the ST program, it must be linked to the **Active Resource**.

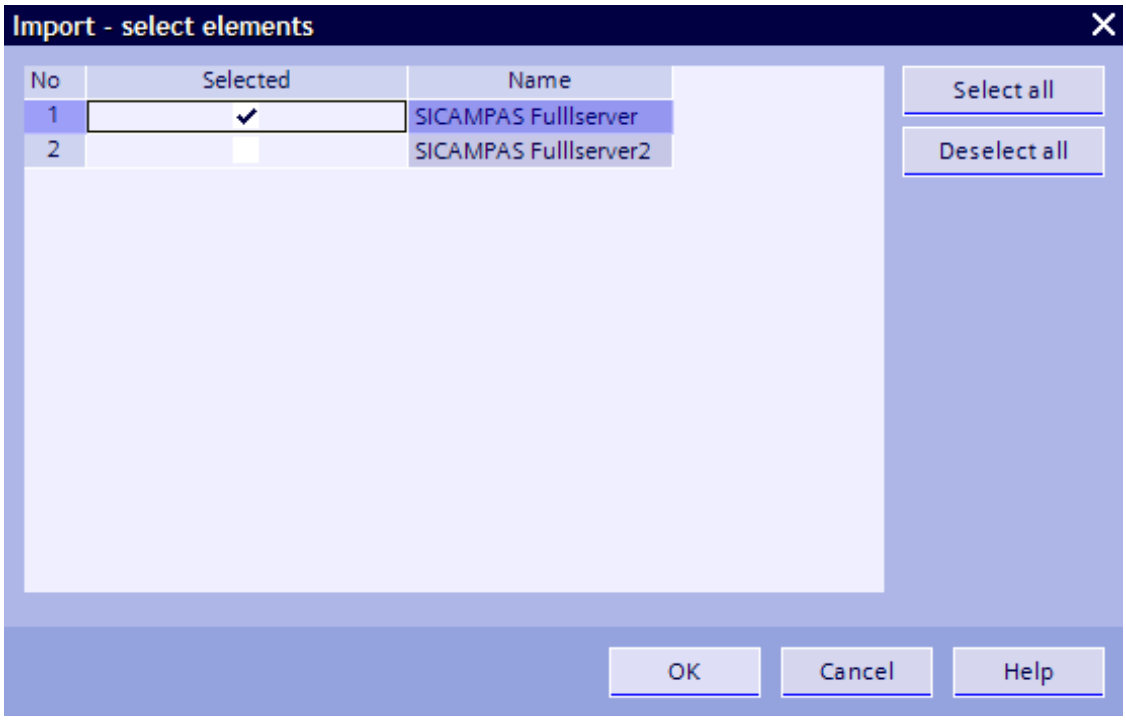
For more information on active resource, refer to */7/ SICAM PAS, Automation Blocks*.

To import a project configuration:

✧ Right-click the project in the configuration tree and select **Import** from the context menu.

✧ Select the TEA-X project file and confirm with **Open**.
The **Import - select elements** dialog opens.

✧ Select the required project.



[sc_Select_TEAX_project, 1, en_US]

Figure 2-7 Importing Project

✧ Click **OK**.
The process can take several minutes. You can view the progress in the **Report**.

Applications

The import file includes all data of the interfaces and devices assigned to the application.
Preconfigured configuration data can be imported into the following applications on the application level:

- **IEC 60870-5-103 Master**
  The XML file formatted for IEC 60870-5-103 Master is used for data exchange.
  The data is created using the SINAUT LSA Converter.
- **SINAUT LSA**
  The XML formatted for SINAUT LSA is used for data exchange.
  Using the SINAUT LSA Converter, the file is created from the configuration data of a SINAUT LSA system.

To import device data on the application level:

✧ Right-click the application in the configuration tree and select **Import** from the context menu.

✧ In the dialog which opens, select the import file and click **Open**.
The process can take several minutes. You can view the progress in the **Report**.

Interfaces

The import file includes all data of the interface and the configuration data for devices and substations assigned to the interface.
Preconfigured configuration data can be imported into the following applications on the interface level:

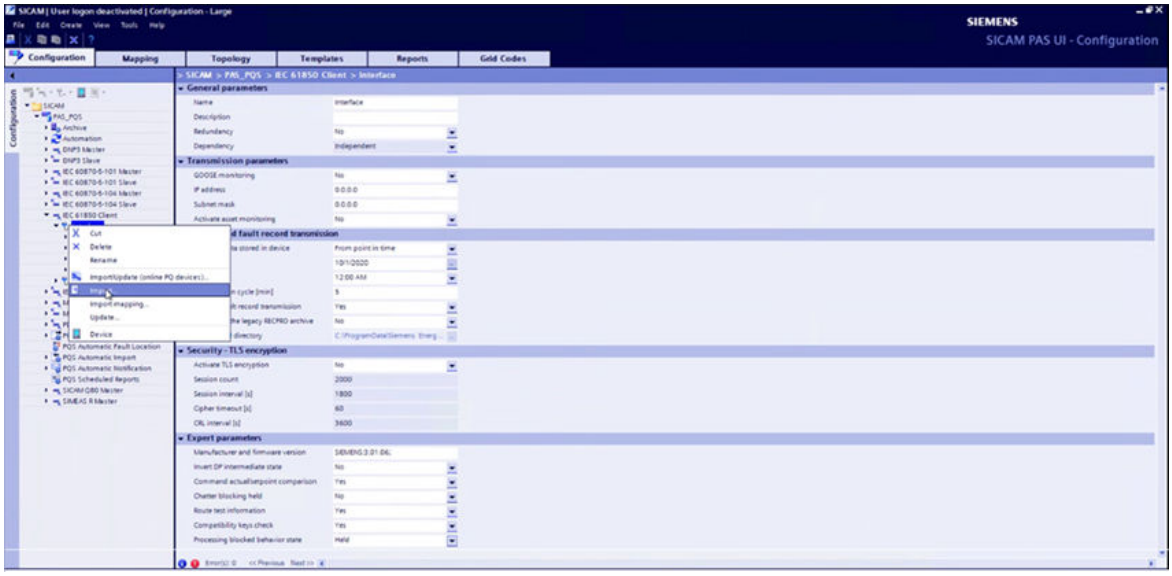
- **IEC 60870-5-103 Master**
  The TEA-X format is used for data exchange.
  The file is created using SICAM PAS/PQS UI – Configuration and DIGSI 5. Versions earlier to DIGSI 5 V6.20 is not supported.
- **IEC 60870-5-104 Master**
  The XML file formatted for IEC 60870-5-104 Master is used for data exchange.
  The XML file is created using SICAM PAS/PQS UI – Configuration, SICAM TOOLBOX II, SICAM plusTOOLS or when exporting the IEC 60870-5-104 Slave.
- **IEC 61850 Client**
  The IID, SCD, or CID data format is used.
  The IID, SCD, or CID file is created using the IEC 61850 System Configurator or a station configurator from a third-party manufacturer.
  The IID or CID files can also be directly imported from the online PQ devices.
- **PROFINET IO Master**
  The PNIO format is used for data exchange.
  The PNIO file is created using the TIA Portal (≥ SIMATIC Step7 V13 SP1)
- **SIPROTEC 4 Service IF Master**
  The INI format is used for data exchange. The INI file is created by SICAM RecProtec.
  The file contains the device configuration data for SIPROTEC 4 devices with fault records that are read by RecProtec.
- **SICAM MIC Master**
  The XML file formatted for SICAM MIC Master is used for data exchange.
  The XML file is created using SICAM TOOLBOX II.

NOTE

In order to be able to import GOOSE data, the **GOOSE monitoring** interface parameter must be set to **Yes**. The **IP address** and **Subnet mask** parameters must not be equal to **0.0.0.0**.

Proceed as follows to import one or several devices on the interface level into your project:

✧ In the configuration tree, right-click the interface and select **Import...** from the context menu.



[sc_Importing_Config_File, 5, en_US]

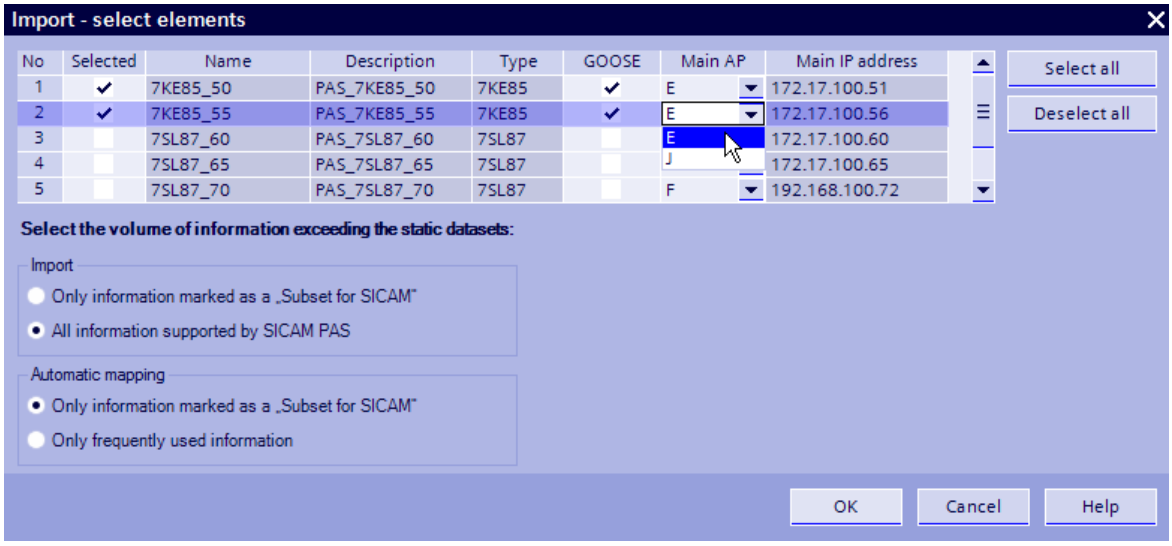
Figure 2-8 Importing a Device Configuration File

✧ Select the device configuration file in the file system and click **Open** to confirm your selection.

If the import file includes several device configurations, the **Import – select elements** dialog opens. This dialog shows a default selection of all devices which are available for import.

✧ In the **Import – select elements** dialog, select single or multiple devices to insert them under the selected interface in the configuration tree.

✧ To import GOOSE data for a device, select the corresponding **GOOSE** column and the **AP** (access point) as configured for GOOSE in the IEC 61850 System Configurator.



[sc_Importing_Several_dev, 3, en_US]

Figure 2-9 Importing Several Devices

In the **Reports and logs** tab of the IEC 61850 System Configurator (version 5.01 or higher), you can mark the datasets whose information you want to use in SICAM PAS/PQS as **Subset for SICAM** in the **Properties** section.

This marked information is available for detailed selection when determining the amount of information to be imported and automatically mapped. For the **Import** you can either select **All information supported by SICAM PAS/PQS** or **Only information marked as a Subset for SICAM**.

The information for **Automatic Mapping** is marked during import in the **Selected** column of the **Mapping** view. You can limit the volume of information to be processed to **Only information marked as a Subset for SICAM** or to **Only frequently used information**.

If the import file does not contain any information marked by the IEC 61850 System Configurator, the options for limiting the amount of information to the subset for SICAM are not available. The option for automatic mapping of frequently used information is only available if all information supported by SICAM PAS/PQS is imported. The selection of the information to be used by SICAM PAS/PQS can be manually adjusted after import in the **Mapping** view.

NOTE

These import settings only influence devices for which the pre-selection has been defined via the corresponding parameter in the IEC 61850 System Configurator (version 5.01 or higher). All other devices are imported via the standard mode.

In the standard mode all information is always imported and the frequently used items are preselected.

Once the import process has been completed, the user performs the definitive selection in the **Mapping** view.

For the standard mode there is a differentiation between devices only supporting static datasets and devices also supporting dynamic datasets (for example SIPROTEC).

- Static dataset

  All information contained in static datasets is always imported and pre-selected. Subsequently, you can select and deselect further data.

- Dynamic dataset

  All information is imported, but only a part is pre-selected. You can select and deselect further data.

✧ To insert the selected information in your system configuration, click **OK**.

To import control center data into a device (Master protocol) in systems with a cascaded structure on the interfaces level, proceed as described above. All control centers which have been exported for the interface of the Slave protocol are now displayed in a selection list.

NOTE

When importing devices all the information in monitoring and command direction is set as **Used** in the Mapping view.

If you use the **IEC 61850 Client - Monitoring** license for connecting devices in monitoring direction, only the commands of the LN types **LLN0** and **RDRE** may be used. For this reason, all the information which is not assigned to the LN types LLN0 and RDRE must be deactivated in the **Mapping** view, **Information - command direction** section.

2.4.1.2 Configuration Data for Individual Devices

You can import configuration data for individual devices for a number of protocols.

The import files include the configuration data of one or several devices. The contents depend on the configuration tool with which they were created. After the import, you must customize the data to meet the requirements of SICAM PAS/PQS.

Configuration data on the level of individual devices can be imported for the following applications:

- **IEC 60870-5-103 Master**

  The DBF, DigT103, XML, or TEA-X data exchange format is used. The files are created in DIGSI.

- **IEC 61850 Client**

  The IID or ICD format is used for data exchange.

  The IID or ICD file is created by means of the IEC 61850 System Configurator or a station configurator from a third-party manufacturer.

- **DNP3 Master**
  The DIGDNP and TEA-X (from DIGSI5 V6.20) format is used for data exchange. The file is created in DIGSI.
- **PROFIBUS DP Master**
  The DIGPRODP format is used for data exchange. The file is created in DIGSI.
- **Modbus Master**
  The DIGMOD format is used for data exchange. The file is created in DIGSI.
- **SIPROTEC 4 Service IF Master**
  The XML format is used for data exchange. The file is created in DIGSI. The file contains the device data for a SIPROTEC 4 device whose fault records are read by RecProtec.
- **SIMEAS R Master**
  The SRP format is used for data exchange. The file is created using SIMEAS R PAR or OSCOP P. This data is imported by using SIMEAS R PAR. SIMEAS R PAR is called up from the **Configuration** view. As soon as all device parameters have been defined, the parameters are saved in the SICAM PAS/PQS database.
- **SICAM Q80 Master**
  To create the configuration data of a SICAM Q80 device, use the SICAM Q80 Manager. The SICAM Q80 Manager is called up from the **Configuration** view. As soon as all device parameters have been defined, the parameters are saved in the SICAM PAS/PQS database.
- For the **OPC Client**, you can transfer OPC Server data on the device level. A dialog for selecting information opens when inserting the device.

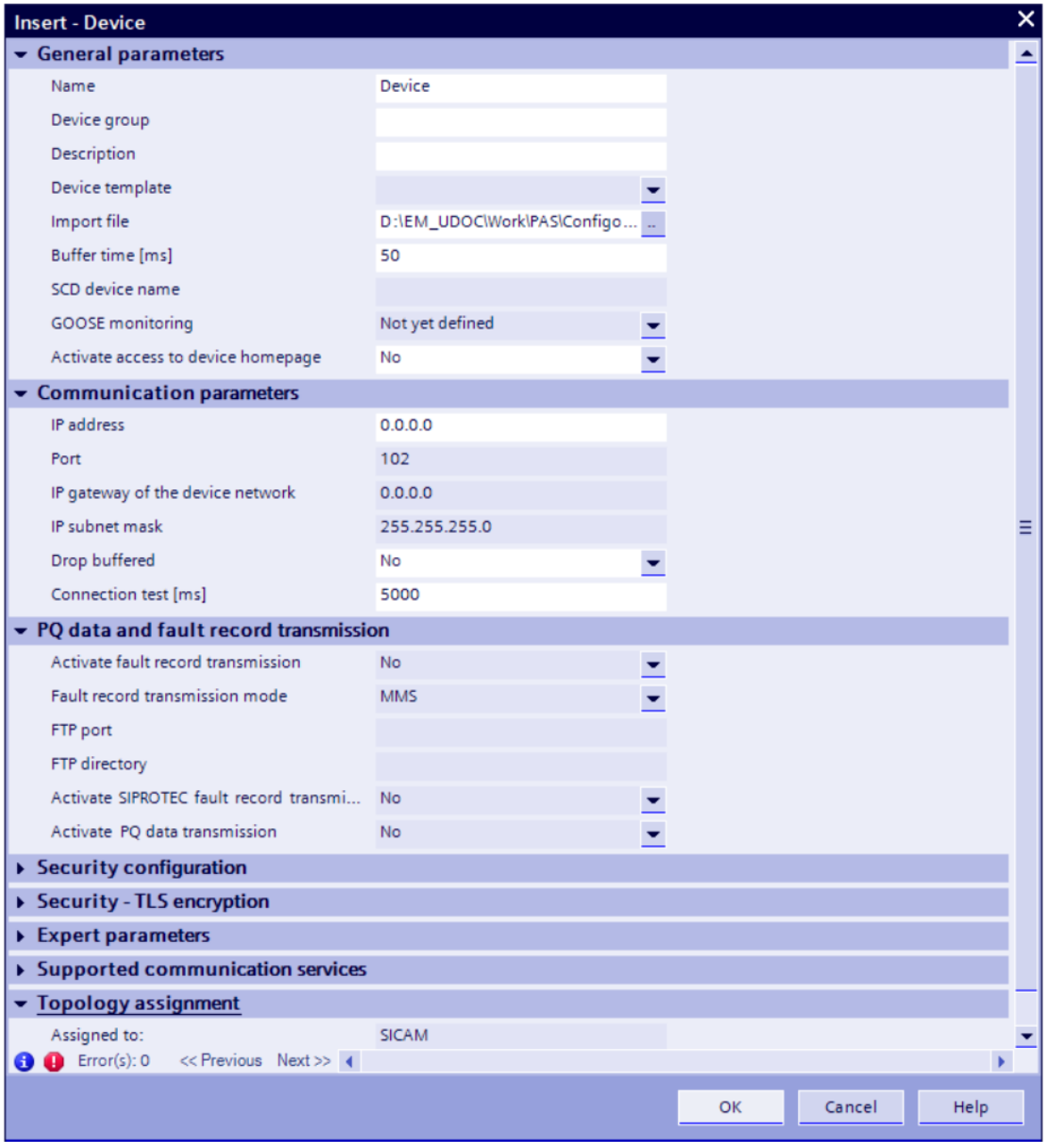
Importing Configuration Data for Creating a Device

Proceed as follows to import a device into your project:

✧ Select the interface in the configuration tree. Select **Device** from the context menu.

✧ In the **Insert – Device** dialog, select the import file which includes the configuration data.

✧ Complete the rest of the parameters and click **OK** to confirm.



[sc_Importing_Dev, 3, en_US]

Figure 2-10 Importing a Device

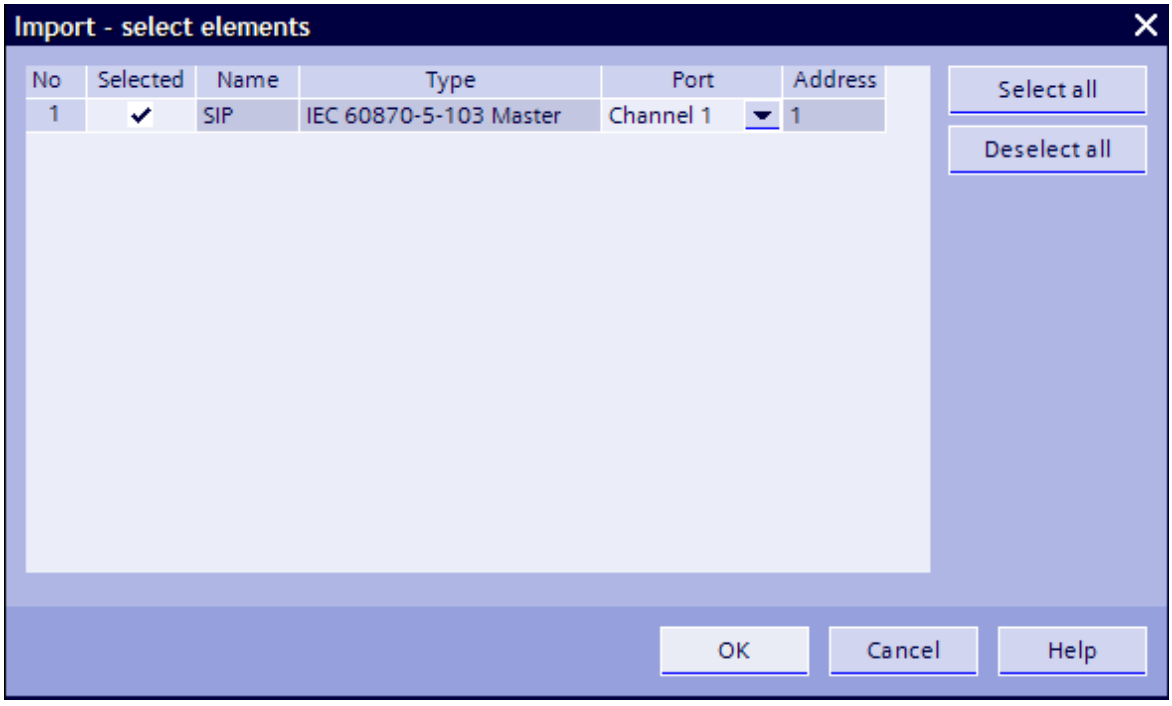
The import process is displayed in the **Report**.

Importing a Device Using a TEA-X File

You can import a device at the interface level using a TEA-X file which is exported from DIGSI 5 V6.20 and later for the DNP3 Master and IEC 60870-5-103 Master protocols.

Proceed as follows to import a device at the interface level using a TEA-X file:

- ✧ From the configuration tree, select the interface that is assigned to the DNP3 Master/IEC 60870-5-103 Master application.
- ✧ Click **Import...** from the context menu.
- ✧ Select the required **TEA-X** file and click **Open**.



[sc_103MasterImport, 1, en_US]

Figure 2-11 Importing Selected Devices

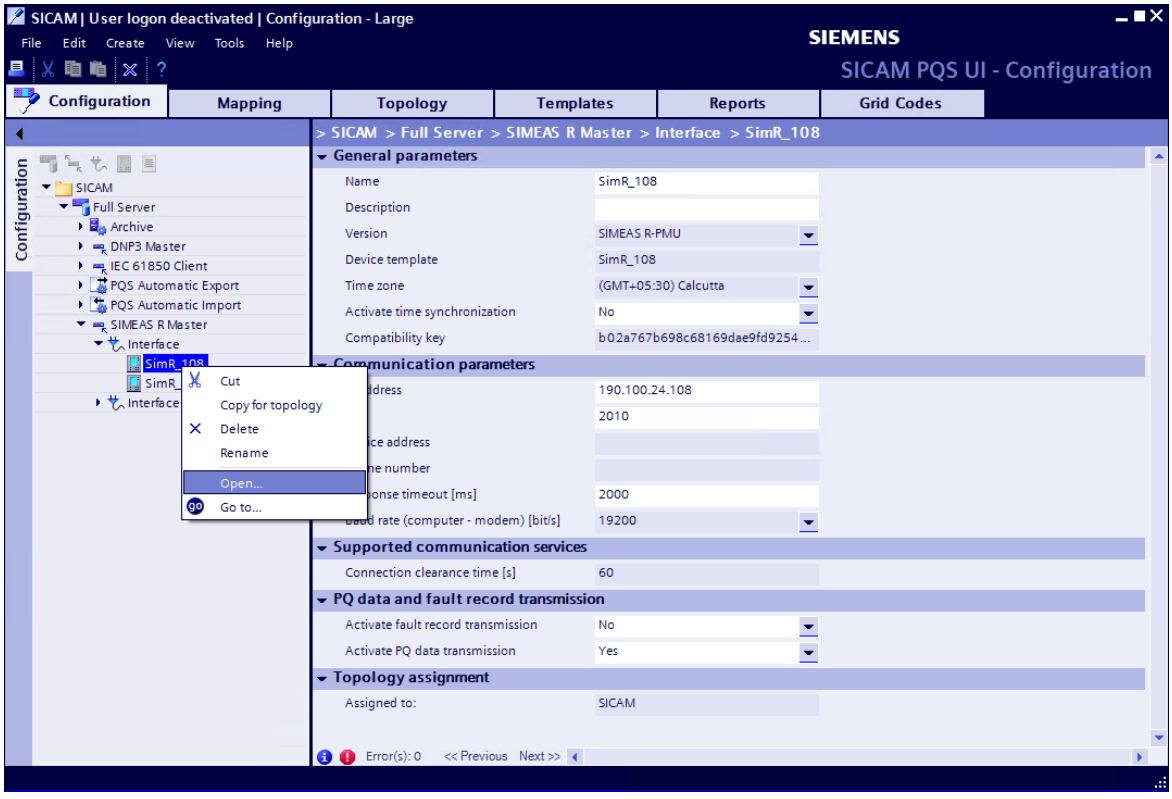
- ✧ In the **Import – select elements** dialog, select the required devices in the **Selected** column.
- ✧ Assign **Channels** for the selected devices in the **Port** column.
- ✧ Click **OK**, to import the selected devices.

Importing Data for Device Parameterization

To create the device data for SIMEAS R and SICAM Q80 devices, you use the SIMEAS R PAR and SICAM Q80 Manager parameterization tools. As soon as the parameterization has been completed, this data is transferred into the database of SICAM PAS/PQS. The following example illustrates how to display SIMEAS R PAR.

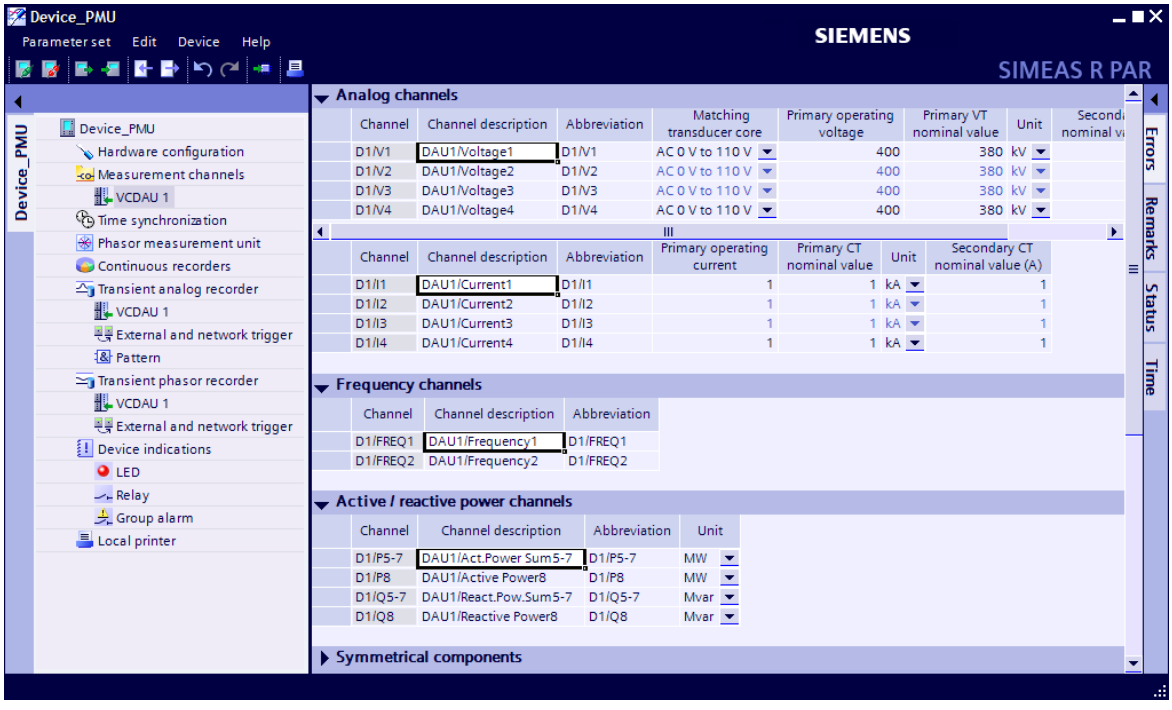
Proceed as follows to import a SIMEAS R device into your project:

- ✧ Insert the device into the configuration.



[sc_Starting_SIMEAS_R_Par, 3, en_US]

✧ To open the SIMEAS R PAR parameterization tool, click **Open...** from the context menu.



[sc_Parameters_SIMEAS_R_Par, 3, en_US]

Figure 2-12 Defining the Parameters of a Device by Using SIMEAS R PAR

✧ Define the device parameters according to your operational requirements or import a SRP parameter file, for example, from OSCOP P.

✧ Save and close the application.

The parameterization data is saved in the SICAM PAS/PQS database and the process is logged in the **Report**.

For more information on how to define the parameters of a SIMEAS R device, refer to */16/ SIMEAS R PAR, Parameterization Tool*.

For more information on how to define the parameters of a SICAM Q80 device, refer to the System Manual and the Operating Instuction of SICAM Q80 Power Quality Recorder.

NOTE

When SIMEAS R is configured and you change the language of SICAM PAS/PQS, the channel names are changed and must be re-assigned in topology and reports.

2.4.1.3 Configuration Data for Online PQ Devices

NOTE

To be able to download an IID file, the self-signed certificates of the device must be added to the Web browser.

For more information refer to the **Trusting Self-Signed Certificates in Browsers** application note which can be downloaded from *https://new.siemens.com/global/en/products/energy/energy-automation-and-smart-grid/grid-security.html*.

Opening the Device Homepage

The Web user interface of the PQ devices SICAM Q100, SICAM Q200, and SICAM P855 which are connected via **IEC 61850 Client** can be opened for configuring the device, viewing online data, and downloading records.

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

- or -

✧ Double-click the device.

The device configuration homepage is opened on the default browser of your computer.

Importing/Updating Configuration Data of Online PQ Devices

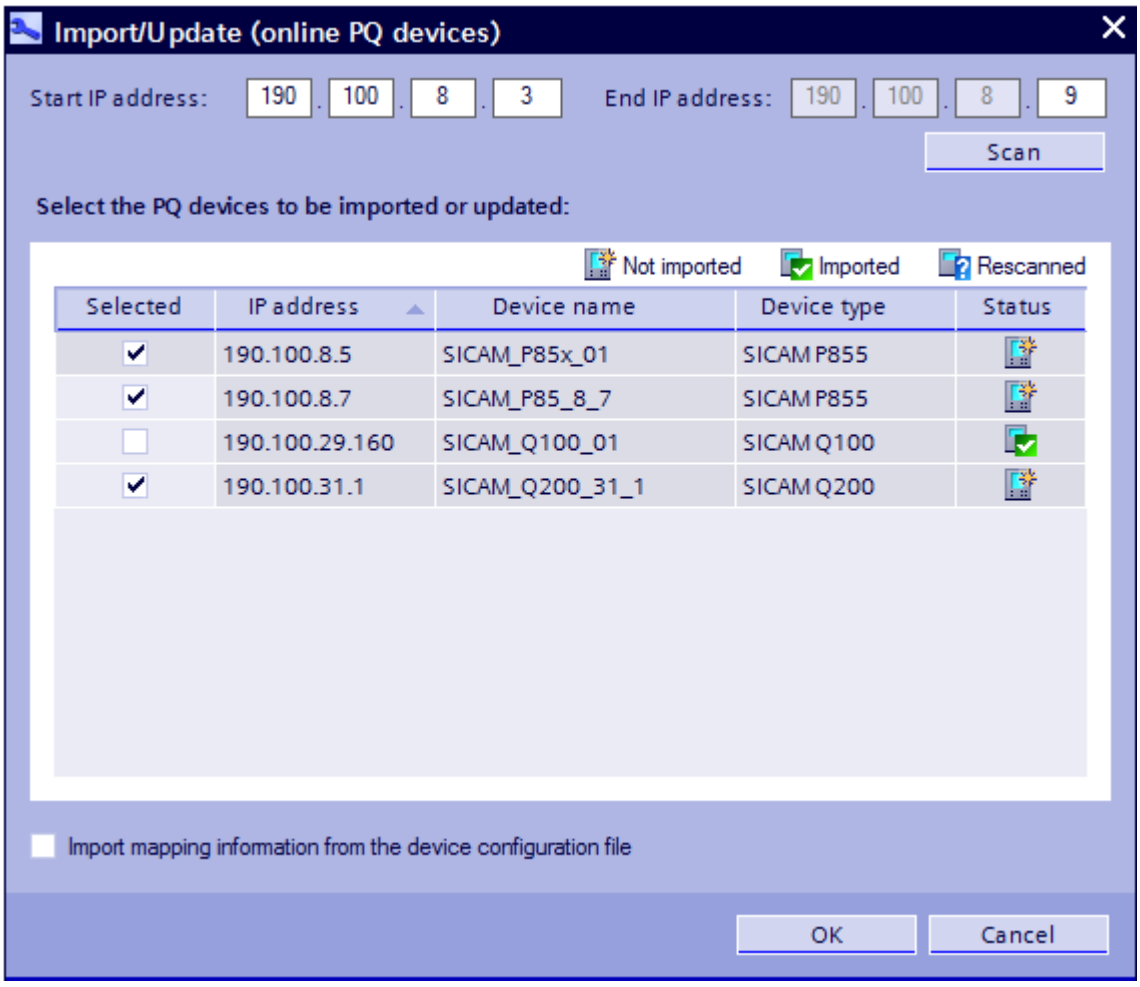
The configuration data (IID and CID files) of SICAM Q100, SICAM Q200, and SICAM P855 devices can be imported/updated directly from the online PQ devices.

Proceed as follows to import the configuration:

✧ Right-click the **IEC 61850 Client** interface and select **Import/Update (online PQ devices)...** from the context menu.

✧ In the dialog which opens, enter the IP address range and click **Scan**.

✧ Select one or multiple devices to be imported or updated and click **OK** to confirm.



[sc_ImportupdateonlinePQdevices, 1, en_US]

Figure 2-13 Importing or Updating Online PQ Devices

2.4.1.4 Configuration Data of Redundantly Connected Devices

If a device is connected through the redundant interface of the IEC 61850 Ed. 2 application, its parameterization must include 2 access points.

2.4.1.5 Device Templates

In the **Templates** view, you can **import** or **update** device template files in TXT format. For more information, refer to *2.11 Working with Device Templates*.

2.4.1.6 Grid Codes

You can import **Grid Codes** in the **Grid Codes** view. Grid Codes define limit values for power quality evaluation. For more information, refer to *2.16 Grid Codes*.

2.4.1.7 Templates for Scheduled Reports

In the **Reports** view, you can import templates for scheduled reports. Scheduled reports are created for the evaluation of PQ data. For more information, refer to *2.14 Reports*.

2.4.2 Updating Device Data

If you have adjusted the imported configuration data using one of the external configuration tools, you can update the data in SICAM PAS/PQS UI – Configuration. The new and the old parameter data is compared during this process.

Updating Several Devices

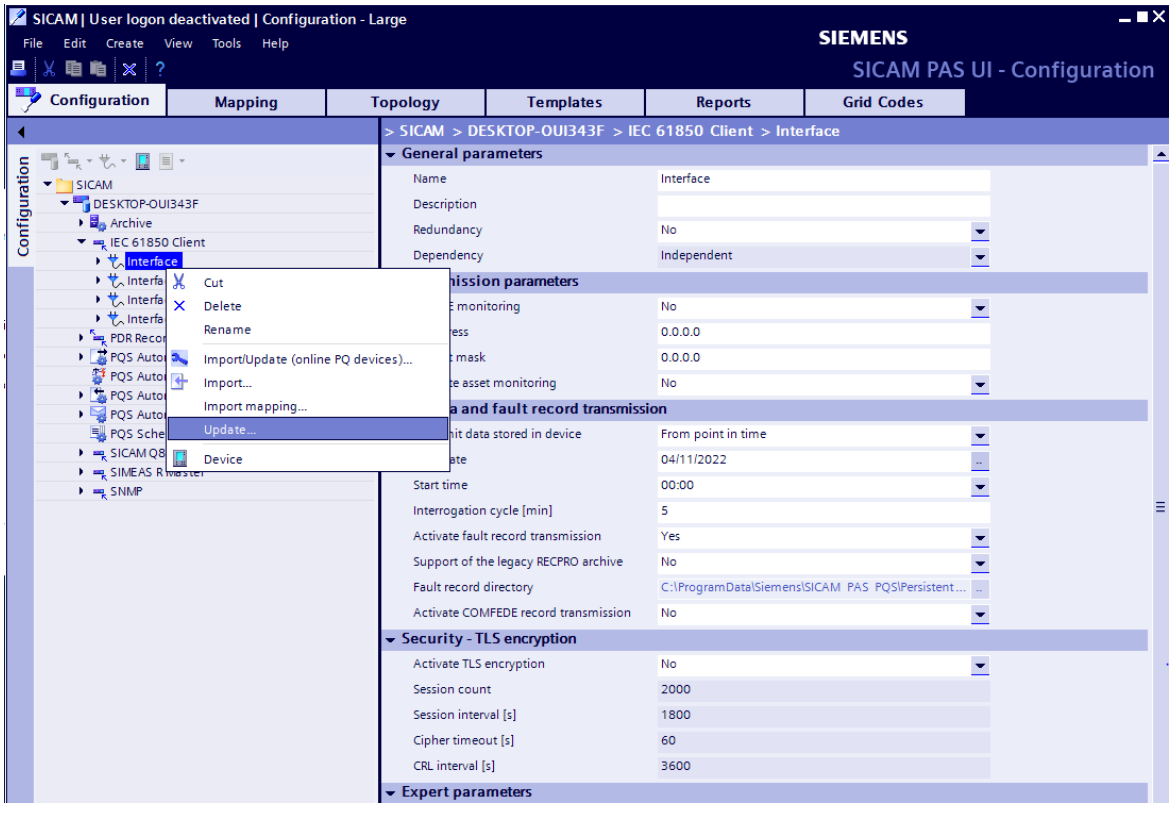
If your import file includes the configuration data for several devices, you can simultaneously update several devices on the interface level.

This type of update is possible for the following applications:

- IEC 61850 Client (SCD)
- IEC 60870-5-101 Master
- IEC 60870-5-104 Master
- SICAM MIC Master

To update the configuration data for several devices:

✧ Right-click the **Interface** in the configuration tree and select **Update...** from the context menu.



[sc_Updating_Dev_selection, 5, en_US]

Figure 2-14 Updating Device Configurations (Selection)

✧ Open the configuration file from which you want to update the devices. All devices which are available for an update are selected.

✧ In the **Update – Select elements** dialog, deselect all devices which you do not want to update (disable) and click **OK** to confirm.

The selected device configurations are overwritten with the information from the update file.

NOTE

When updating an IEC 61850 Ed. 2 device, make sure that you update with the file of the same device which you have used for import.

If the **IED name** for a configured IEC 61850 device is changed, it cannot be updated further in SICAM PAS/PQS UI – Configuration.

Updating Individual Devices

If your import file includes the configuration data for an individual device, you can update the device data on the device level.

This type of update is possible for the following applications:

- IEC 61850 Client (CID, IID)
- IEC 60870-5-103 Master
- DNP3 Master (serial, TCP/IP)
- Modbus Master (serial, TCP/IP)
- PROFIBUS DP

To update the configuration data for an individual device:

✧ Right-click the **device** in the configuration tree and select **Update...** from the context menu.

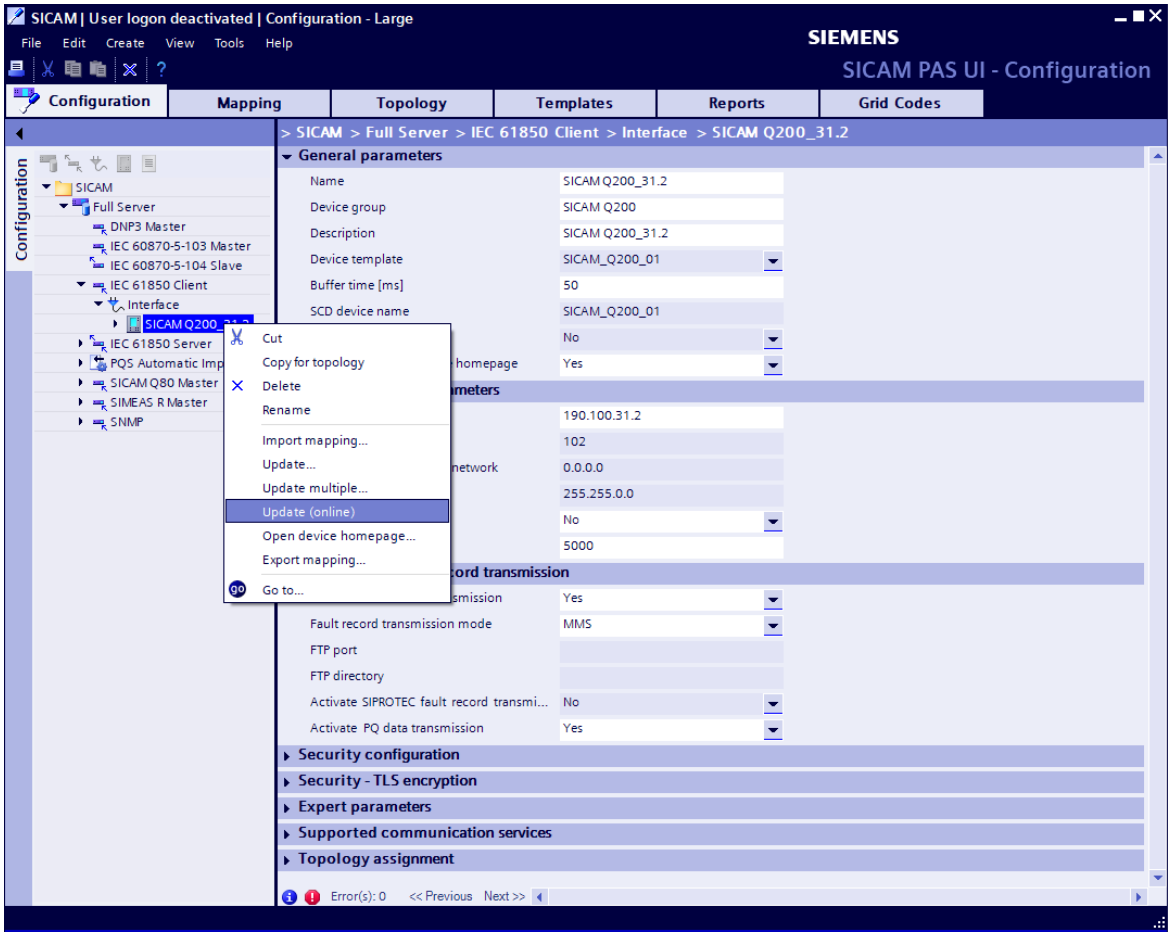
✧ In the dialog which opens, open the configuration file from which you want to update the device.

The device is now overwritten with the information from the update file.

If your configuration file includes the data for several devices although you only want to update an individual device, proceed as described above and select just one single device.

To update the configuration data for an individual device from the online PQ devices:

✧ Right-click the **device** in the configuration tree and select **Update (online)...** from the context menu.



[sc_UpdateOnline, 2, en_US]

Figure 2-15 Updating Configuration Data of a Device

The configuration data for the PQ device supporting IEC 61850 protocol is updated by downloading the configuration file (IID or CID) from the online PQ devices.

NOTE

If an SCL file is updated due to configuration changes for devices supporting PQ data, the IEC 61850 Client driver processes only those channels from the PQDIF files according to the updated SCL file. The channels that are no longer defined in the latest SCL file are skipped from the old PQDIF files.

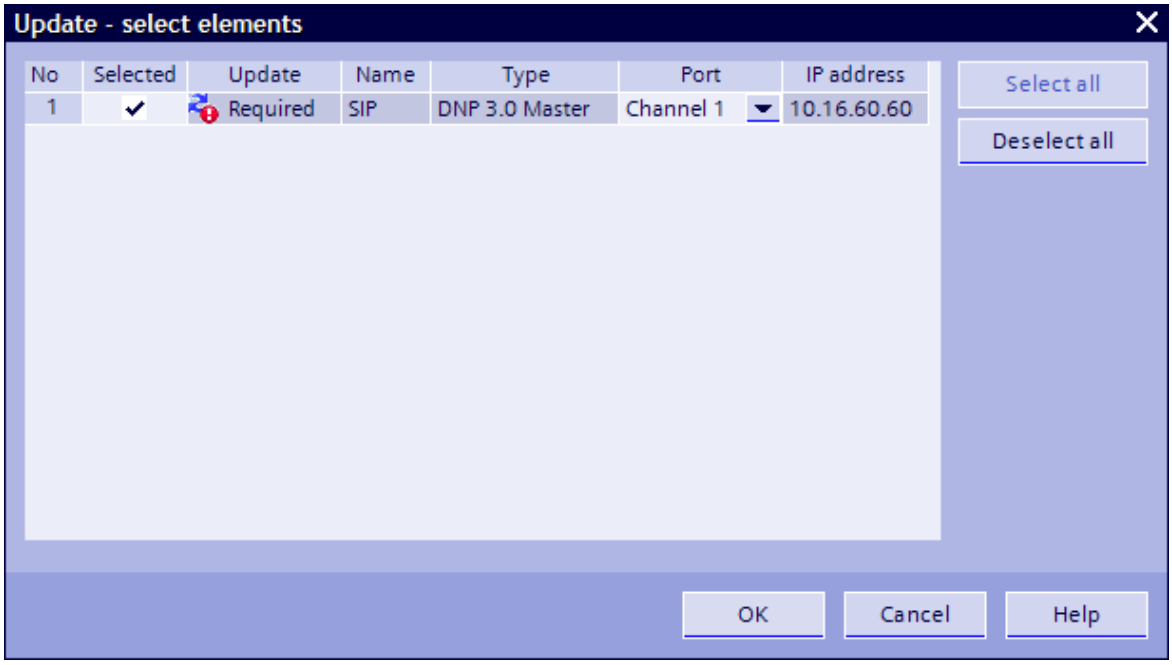
Updating a Device Using a TEA-X File

You can update a device using a TEA-X file, which is exported from DIGSI 5 V6.20 and later for the DNP3 Master and IEC 60870-5-103 Master protocols.

Proceed as follows to update a device using a TEA-X file:

✧ In the **Configuration** view, right-click the DNP3 Master/IEC 60870-5-103 Master device and select **Update...** from the context menu.

✧ Select the required **TEA-X** file and click **Open**.



[sc_DNPUpdateRequired, 1, en_US]

Figure 2-16 Updating Selected Device

NOTE

If the imported TEA-X file has the same device address as the configured device address, **Identical** is displayed in the **Update** column. Otherwise, **Required** is displayed, which implies that the configured device address is overwritten with the TEA-X file device address.

✧ In the **Update - Select elements** dialog, assign the **Channels** in the **Port** column to the devices.

✧ Click **OK**, to update the devices.

2.4.3 Exporting Configuration Data

SICAM PAS/PQS UI – Configuration provides functions for exporting configured and parameterized data. This data can be used in other components of SICAM PAS/PQS or other systems.

You can export the following configuration data:

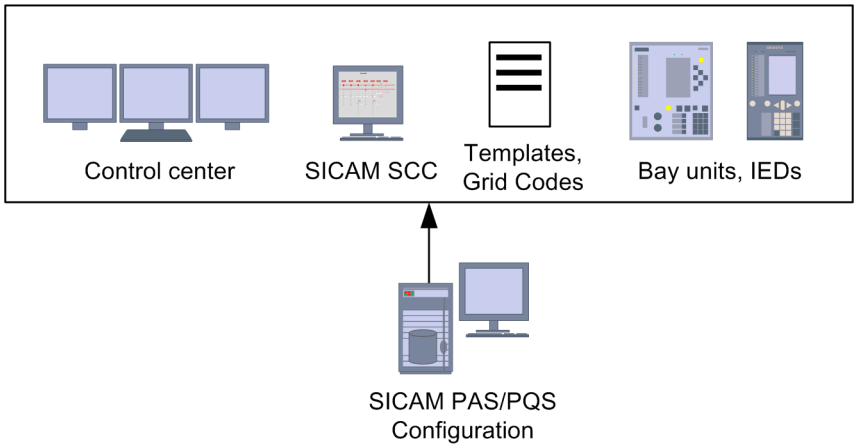
2.4.3.1 Control Center Interface (for example, Power CC)

2.4.3.2 SICAM SCC

2.4.3.3 Device Templates

2.4.3.4 Grid Codes

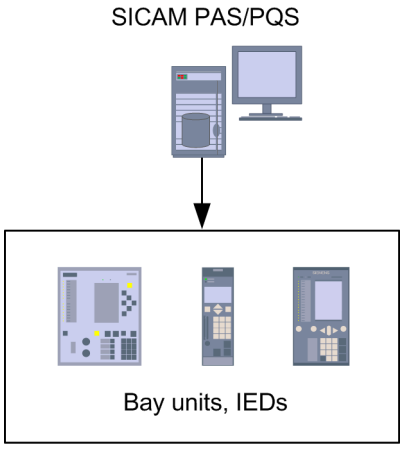
2.4.3.5 Devices



[dw_export_TC, 2, en_US]

Figure 2-17 Exporting SICAM PAS/PQS Configuration Data to Higher-level Applications and Reuse for Other Projects

In addition, you can export the configuration data for devices.



[dw_export_data, 2, en_US]

Figure 2-18 Exporting SICAM PAS/PQS Configuration Data for Devices

2.4.3.1 Control Center Interface

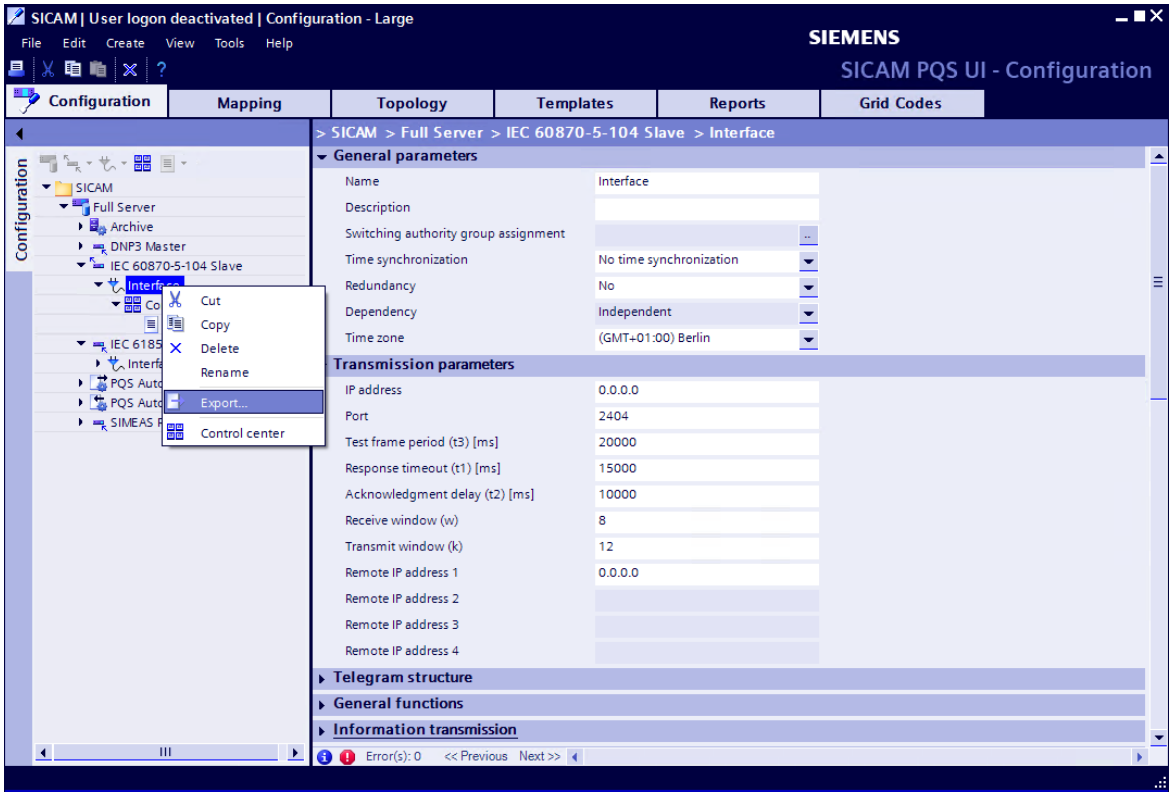
SICAM PAS/PQS UI – Configuration exports the data which you have selected for communication with a control center.

Data can be exported for the following applications:

- **IEC 61850 Server**
  The IID format, IEC 61850 Ed.2, is used for data exchange.
- **IEC 60870-5-101 Slave**
  The XML format is used for data exchange.
- **IEC 60870-5-104 Slave**
  The XML format is used for data exchange.

To export the configuration data for a control center:

✧ Right-click the **Interface** in the configuration tree and select **Export...** from the context menu.



[sc_Exporting_Control_data, 2, en_US]

Figure 2-19 Exporting Control Center Data

✧ In the dialog which opens, enter the storage path for the control center's export data.

The export data for an **IEC 61850 Server** includes:

- Configuration data
- Mapped items of information and their topological assignments
- List assignments

2.4.3.2 SICAM SCC

SICAM PAS/PQS UI – Configuration exports the configuration data which you have selected for further use on the SICAM SCC HMI.

The configuration data for the **SCC** application is exported in the TEA-X or PXD data exchange format.

To export the data for SCC:

✧ From the configuration tree, select a **control center** which is assigned to the SCC application. Select **Export** from the context menu.

✧ In the dialog which opens, enter the storage path for the control center's configuration data.

NOTE

If you have modified the topological assignment of SCC data after the export, you can update the tag names before any further export. Click **Edit > Replace SCC tag names**. In the dialog which opens, you can decide whether you want to export the data with the modified topological designations or the original tag names.

If you are using modified tag names, be aware that the links to graphical picture objects must be re-established.

2.4.3.3 Device Templates

In the **Templates** view, you can **export** device template files in TXT format. For more information, refer to *2.11 Working with Device Templates*.

2.4.3.4 Grid Codes

You can export Grid Codes in the **Grid Codes** view. Grid Codes define limit values for power quality evaluation. For more information, refer to *2.16 Grid Codes*.

2.4.3.5 Devices

SICAM PAS/PQS UI – Configuration exports the device configuration for further use by other configuration tools, for example, DIGSI.

Data can be exported for the following applications:

- **IEC 60870-5-103 Master**
  The TEA-X format is used for data exchange.
- **DNP3 Master**
  The TEA-X format is used for data exchange.

Data can be exported on different structure levels in the **Configuration** view:

- **Application**
  The export file includes all configuration data of the interfaces and devices assigned to the application.
- **Interface**
  The export file includes the configuration data of all devices which are assigned to the interface.
- **Device**
  The export file includes the configuration data of the device.

2.4.4 Mapping

When importing a configuration file, a device's complete information is imported. If you do not want to use all items of information, you can define a typical selection in the **Mapping** view. Afterwards, you can export this selection as a template for other devices with the same volume of information. Afterwards, you can use the import function in order to apply your selection to other devices. This procedure reduces the configuration expenditure for devices of the same type.

In addition to the mapping of an item of information, additional parameters, for example, the Name parameter for IEC 61850 Ed. 2, are included in the import/export.

Mappings which you have previously exported can be further used in the same or another SICAM PAS/PQS project.

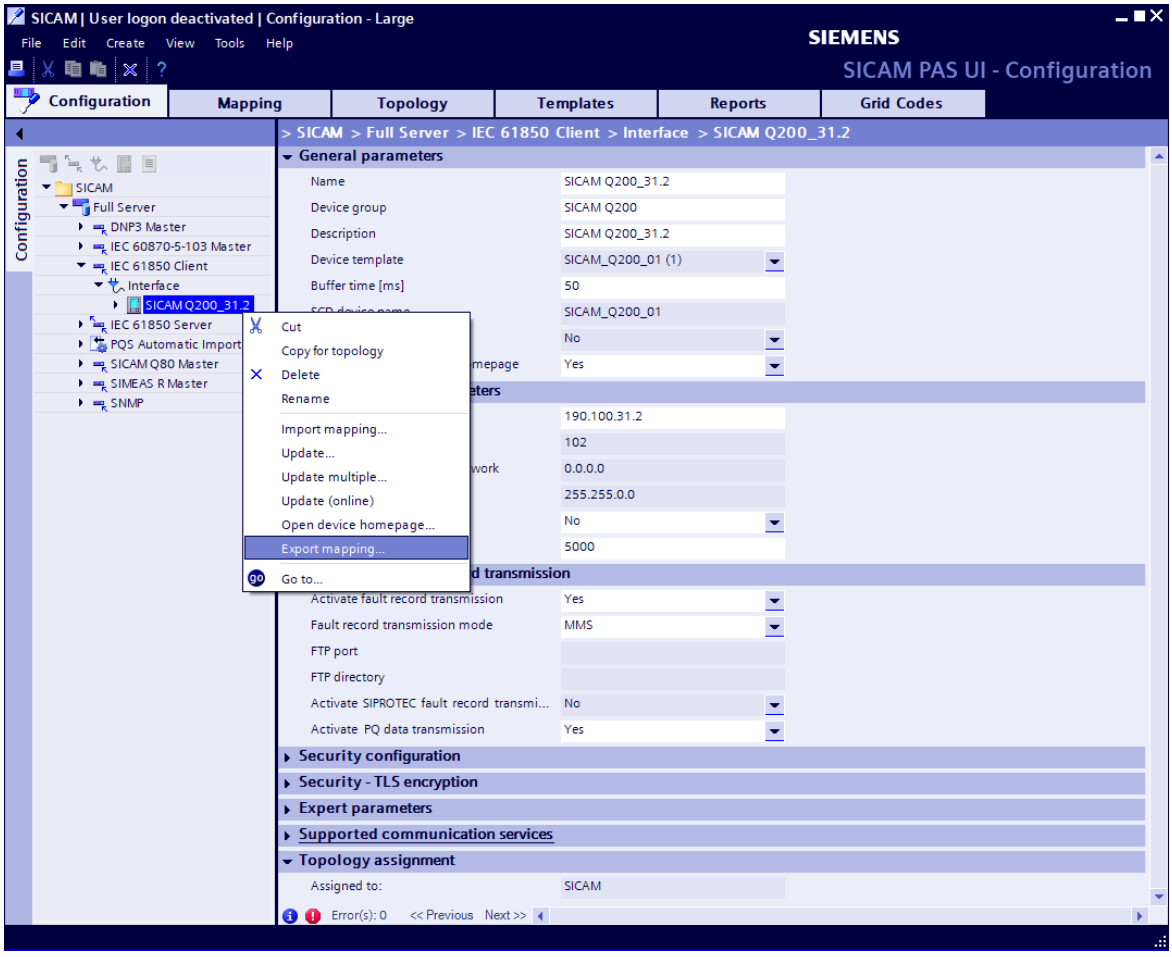
In SICAM PAS/PQS, the import/export of mapping information is supported for the IEC 61850 application.

2.4.4.1 Exporting Mapping Information

To export mapping information for a device:

✧ In the configuration tree in the **Mapping** view, select the device and select **Export mapping...** from the context menu.

✧ In the dialog which opens, enter the storage path for the control device's mapping information.



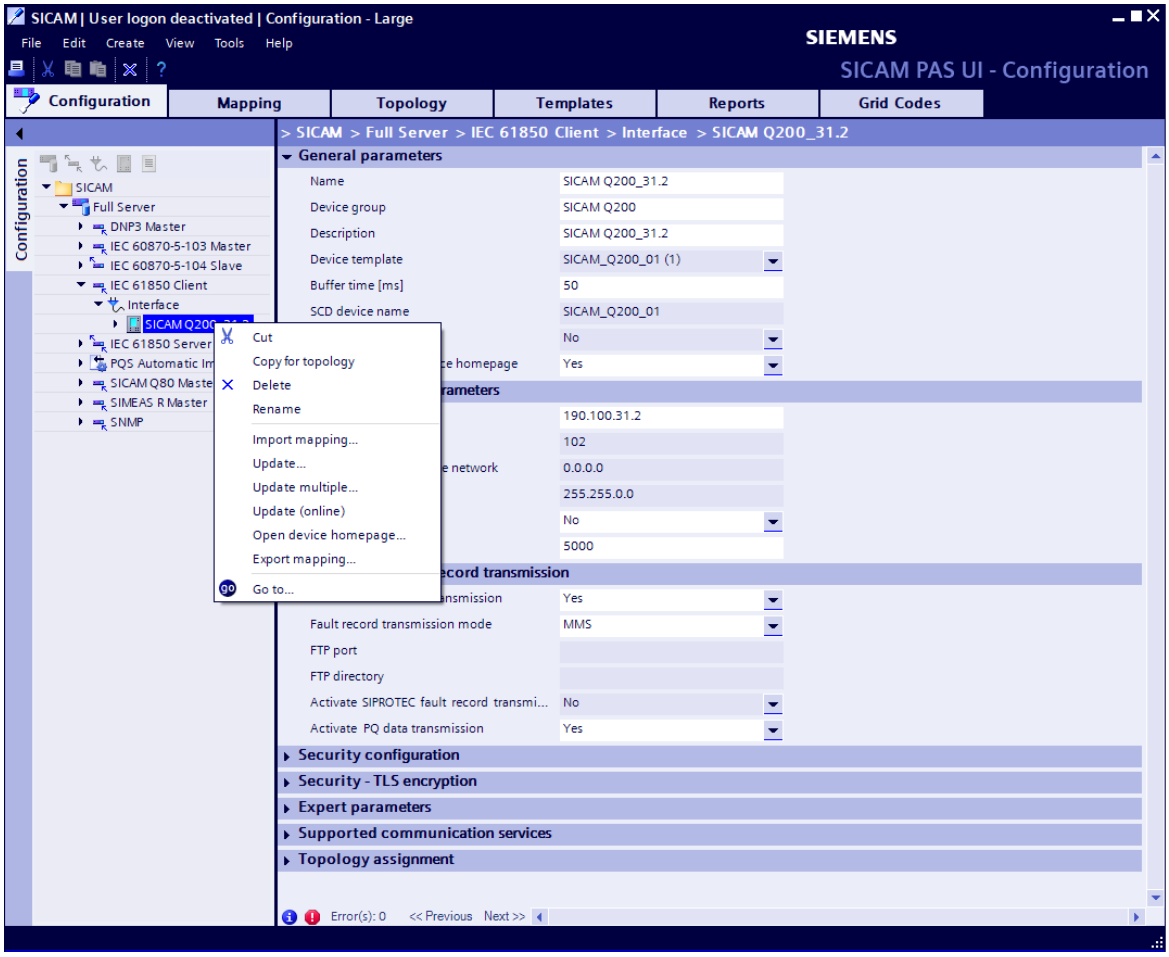
[sc_Exporting_Mapping_info, 3, en_US]

Figure 2-20 Exporting Mapping Information

2.4.4.2 Importing Mapping Information

To import the mapping information for a device:

✧ Right-click a device and select **Import mapping...** from the context menu.

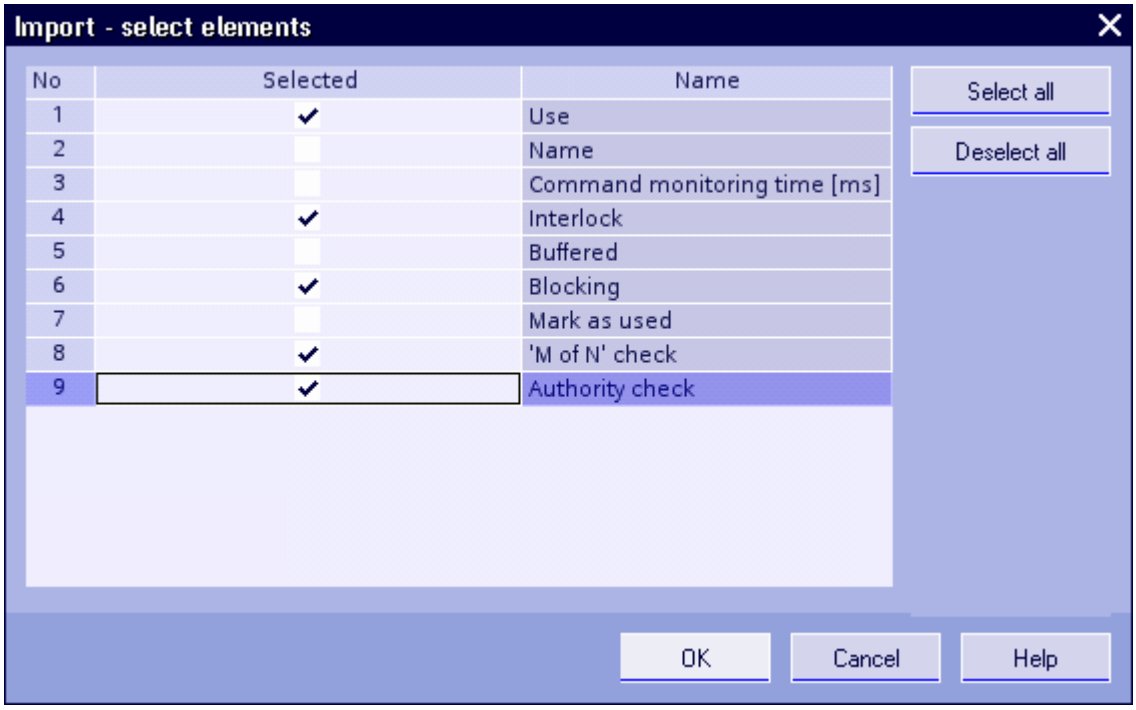


[sc_Importing_Mapping_info, 3, en_US]

Figure 2-21 Importing Mapping Information

✧ Open the XML file from which you want to import mapping information.
The **Import – select elements** dialog opens.

✧ Select the elements to be imported and click **OK** to confirm.
The elements have the same names as the corresponding columns in the **Mapping** view.

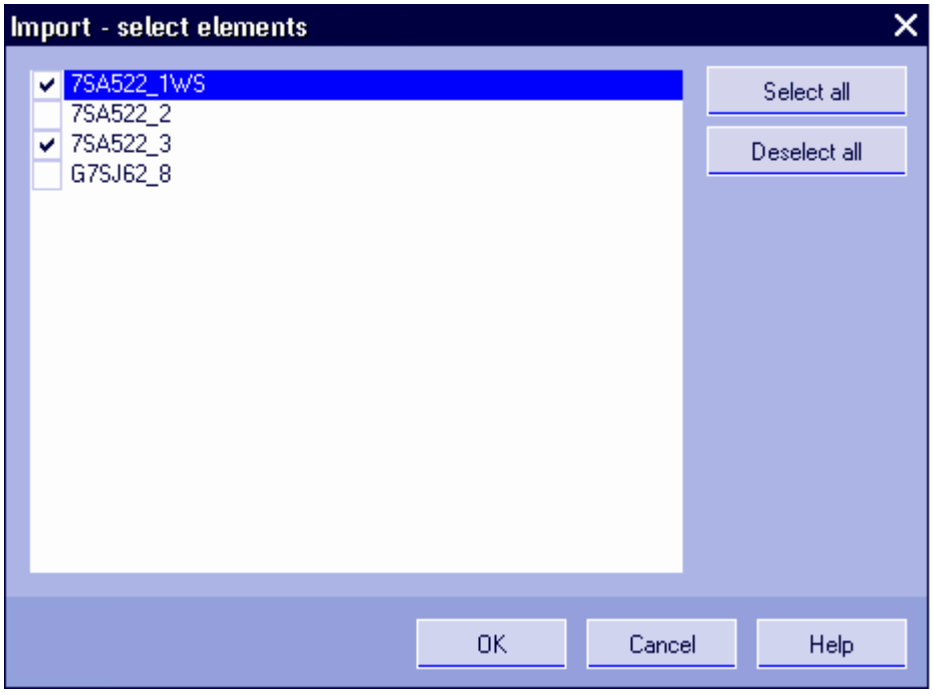


[sc_Selecting_Elements, 1, en_US]

Figure 2-22 Selecting Elements

To import the mapping information for several devices of an interface in the **Configuration** view:

- ✧ Click an interface in order to import its mapping information. Select **Import mapping...** from the context menu.
- ✧ Open the XML file from which you want to import mapping information.
  The **Import – Select devices** dialog opens.
- ✧ Select the devices for which you want to import mapping information and click **OK** to confirm.



[sc_Selecting_Dev, 1, en_US]

Figure 2-23 Selecting Devices

2.5 Managing the Objects of a Project

You can edit the tree structures in the different edit views of your project.
The following options are available:

- *2.5.1 Copying Objects*
- *2.5.2 Pasting Objects*
- *2.5.3 Moving Objects*
- *2.5.4 Deleting Objects*
- *2.5.5 Renaming Objects*

If you use the context menu, the context menu shows you for each selected structure element which edit step is possible.

[sc_Context_menu_ex, 1, en_US]

Figure 2-24 Context Menu, Example

2.5.1 Copying Objects

To copy an object into the clipboard of SICAM PAS/PQS:

✧ Select the object which you want to copy, for example, a device in a configuration tree.

✧ Select **Copy** from the context menu.

The context menu shows the copy function only on those structural levels and for those tree objects for which the Copy function technically makes sense. This also applies to the Cut function.

NOTE

The project and the Full Server cannot be copied.

Copied objects can only be pasted to locations where they can also be created directly by using the **Create** function. Lower-level objects are also copied.

2.5.2 Pasting Objects

When pasting an object, be aware to select the correct level in the tree structure.

✧ Select for example, an interface in the configuration tree in order to insert the device on this interface.

✧ Select **Paste** from the context menu, to create multiple copies of the objects.

NOTE

Different names must be assigned to subordinated objects within the same level. For example, the names of devices which communicate with SICAM PAS/PQS by using the same interface must be unique. However, devices which communicate by using different interfaces can have the same name.

2.5.3 Moving Objects

To move an object, cut it and paste it to another place in the tree structure.

✧ Select the object which you want to move, for example, a device on Interface 1.

✧ Select **Cut** from the context menu.

✧ Select the level under which you want to create the object, for example, Interface 2.
Click **Edit > Paste** to paste the object.

NOTE

Drag and drop is a user-friendly and time-saving method for moving objects.

- Click the object.
- Hold down the mouse button and drag the object to the new position.
- Release the mouse button.

If you try to drag an object to a position where it cannot be pasted, this step will be rejected. The mouse pointer shows a black prohibition sign.

If you move the object to a level on which an object of the same type already exists (for example, an object with the same name or the same address), a dialog opens. In the dialog which opens, the fields to be adapted are highlighted in red.

2.5.4 Deleting Objects

To permanently remove an object from your station structure:

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

2.5.5 Renaming Objects

To rename an object in the tree structure:

✧ Right-click an object and select **Rename** from the context menu.

✧ Overwrite the object name in the tree structure.

- or -

✧ Left-click to select the object in the tree structure.

✧ Overwrite the object name in the Properties window.

NOTE

If you change the computer name following the installation of SICAM PAS/PQS, you must adapt the environment information stored. To do this, you require administrator rights.

Proceed as follows:

- Change the computer name under Windows and restart the computer.
- Right-click the **FixHostname.exe** application and select **Run as administrator** from the context menu. You will find this application in the SICAM PAS installation folder for binary files (%PAS_BIN%\FixHostname.exe).
- Restart the computer.
- Open SICAM PAS/PQS UI – Configuration, select the **system** from the tree structure and enter the current name of the computer under **Computer name**.
- For opening SICAM PAS/PQS UI – Configuration Client, add the new computer name to the shortcut of **UI - Operation Client**.
  - Click **Start** and scroll through the app list.
  - Select **UI - Operation Client** from the **SICAM PAS/PQS** folder.
  - Select **Properties** from the context menu.
  - Modify the computer name in the **Target** field accordingly.
  - Confirm with **Ok**.
- Open SICAM PAS/PQS UI – Operation and click **Update system** in the **Status** window.

2.6 Setting Up and Editing the Configuration

In the **Configuration** view, you can configure and parameterize your SICAM PAS/PQS project. The configuration data is saved in the %PAS_APPDATA%\Database\pas.db installation directory in the project database.

When opening SICAM PAS/PQS, the currently active project database is loaded and shown automatically.

Archive the current project database before modifying the configuration or mapping of your project. This ensures that this data version is available for later use, refer to *2.3 Working with Project Databases*.

How to Proceed

To set up a station configuration with SICAM PAS/PQS, consider the following order:

- *2.6.1 Defining a Project*
- *2.6.2 Inserting and Managing Systems*
- *2.6.3 Selecting an Application*
- *2.6.4 Inserting an Interface*

- *2.6.5 Inserting a Device/Control Center*
- *2.6.6 Inserting a List (General)*

The created system components are shown in the hierarchical structure in the navigation tree.

2.6.1 Defining a Project

In a new SICAM PAS/PQS project, the project level is only entered in the configuration tree.
On this level, you identify a project by assigning a unique designation, a brief explanation text and a project ID. The SICAM SCC HMI recognizes the project by its project ID.

Entering Project Data

To enter **General parameters** or **Project settings** or modify the default settings:

✧ In the input area, select a parameter name or a parameter value. Overwrite the parameter value or select the setting from the selection list.
Explanations on the parameters are available in the information field.

[sc_General_Parameters, 3, en_US]

Figure 2-25 General Project Parameters

Table 2-1 SICAM PAS/PQS Project: General Parameters

Parameter Name	Explanation
Name	Here, you can enter the project name. This name is suggested while archiving/ exporting the project database and also appears in the configuration, mapping, and topology tree.
Description	Here, you can enter further information about the project.
Company name	Here, you can enter the company name.
Created by	Here, you can enter the name of the person creating the project.
Created on	Here, you can enter the project creation date.
Updated by	Here, you can enter the name of the person editing the project.
Updated on	Here, you can enter the last project modification date.
Project ID	This parameter provides a unique identification number for a SICAM PAS project in a SICAM SCC system connected to multiple SICAM PAS systems.

Parameter Name	Explanation
Command processing mode	Number of commands which may be executed simultaneously. In the Mapping view, for each command, you must specify if it is subject to command processing. To disable the command processing mode, enter the value '0'. To enable the command processing mode, enter any positive integer, for example 2, which means that 2 commands are executed at the same time.
Hide warnings	Here, you can hide or show configuration warnings. (Value range: Yes, No) (Default value: No)
Runtime language	Here, you can select the language for the output of spontaneous indications, process indications, or PQ reports. This parameter does not change the user interface language.

2.6.2 Inserting and Managing Systems

SICAM PAS/PQS supports distributed station configurations. A distributed system is located on multiple computers.

The station configuration includes:

- **Full Server**

  1 computer acts as SICAM PAS/PQS server. In addition to the applications, the data distribution system, the DSI server and the relational database are located on this computer.

- **DIP** (Device Interface Processor)

  All other computers in the configuration act as device interface processors (DIPs).

  The Full Server database can be accessed by using an ODBC interface.

  All applications on the DIP are connected to the Full Server with the help of the TCP/IP.

  A DIP can be used in order to process large data volumes. In large systems with a large number of SIPROTEC 4 devices, you connect the devices to a DIP. The HMI functions are realized by using the Full Server.

NOTE

The first system in a SICAM PAS/PQS project is automatically entered as Full Server. All other systems are automatically inserted as DIPs. These assignments cannot be modified.

Full Server and DIPs can operate on redundant hardware components.

For more information on redundancy, refer to */9/ SICAM PAS, Redundancy*.

2.6.2.1 Inserting a System

Proceed as follows to insert a system:

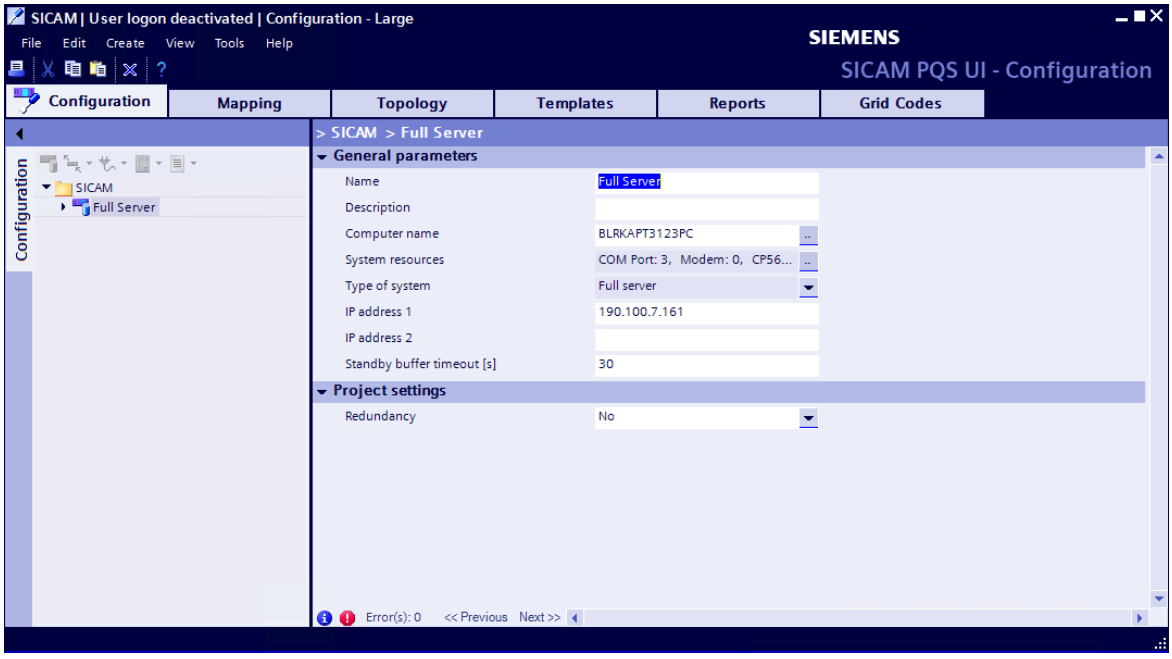
✧ Select the project and select **System** from the context menu.

Your own computer is automatically inserted as the first system, which acts as the Full Server.

2.6.2.2 Configuring a System

To configure a system:

✧ Select the system in the configuration tree. The system parameters are displayed in the input area.



[sc_System_Parameters, 3, en_US]

Figure 2-26 System Parameters of the Full Server

- ✧ Select a parameter name or a value in the input area and modify this parameter value.
- ✧ Overwrite the value or click the button to the right of the value (**...**). You can specify the parameter value in the dialog which opens.
- ✧ To apply your settings, select another parameter.

2.6.2.3 Configurable System Parameters

These parameters are automatically entered when you create the Full Server or the DIPs. You can modify them afterwards.

Table 2-2 System General Parameters

Parameter Name	Explanation
Name	The system name is a free text input area. The name of your own computer is shown as a default name for the Full Server, but you can modify this name as desired. The system suggests **Device Interface Processor (DIP)** as the name for a DIP. You can change this name as desired.
Description	Description regarding the added system (free text input)

Parameter Name	Explanation
Computer name	The name of your own computer is shown as a default name for the **Full Server**,but you can modify this name as desired. The computer name may consist of up to 128 characters and must not include any special characters (exception _). If your computer is part of an active network, the first 2 IP addresses of the network adaptor are automatically assigned. To use another computer in the network as Full Server, click the input box for the computer name. Click **...** to open the **Browse for computer** window. Select the desired computer in the network. The computer name and the corresponding IP addresses are assigned. Change the system name. The system suggests **DIP** as the name for a Device Interface Processor (DIP). You can freely modify this name and/or browse for a computer in the network. When setting up a station configuration offline, you can enter the system name as text. Make sure that the defined name corresponds to the actual name of the computer in the network and correct it later on the destination system. If you change the computer name following the installation of SICAM PAS/PQS, the environment information stored must be adapted accordingly. For more information, refer to *2.5.5 Renaming Objects*. Ensure that the computer name only contains alphanumeric characters excluding few extended characters. Some older operating systems machine names with multiple '-' may not work in certain configurations and you should always consult Operating System documentation for conformance. For more information, see *https://support.microsoft.com/en-us/kb/909264*.
System resources	In SICAM PAS/PQS, all serial interfaces, modem connections via TAPI interface, and CP5613/14 modules of a computer in your station are referred to as system resources. Network cards and addresses are separately managed. System resources can be freely defined. To do this, click the input box. Click **...** to open the **Manage system resources** dialog. In this dialog, click **Delete** or **Insert** to manually edit the resources list. As long as no system resources are entered under **System resources**, you cannot insert interfaces for this system. This applies to serial interfaces, modem connections, and CP5613/14 modules.
Type of system	SICAM PAS/PQS automatically assigns the type of system: The system which was inserted first always acts as Full Server. Each additional system is automatically classified as a Device Interface Processor (DIP). The system type cannot be modified.
IP address 1	First IP address of the system The IP address is identified by using the system name (see Name). If the computer is not integrated in an active network, 127.0.0.1 is entered by default as the first IP address.
IP address 2	IP address of the second network card in the system The system can be equipped with a second network card for interfaces of the station configuration.
Standby buffer timeout [s]	Maximum switchover time of a redundant system component If the connection to the device is disturbed, SICAM PAS/PQS stores its messages in a temporary buffer during this time in order to prevent the loss of information until the switchover to the redundant system. Select a standby buffer time which is greater than the sum of the switchover time and the detection time. The switchover time depends on the error detection time and the necessity of a computer switchover. The detection time depends on the protocol and the configuration. The value for the standby buffer time must lie between 0 to +2 147 483 647. For more information on redundancy, refer to */9/ SICAM PAS, Redundancy*.

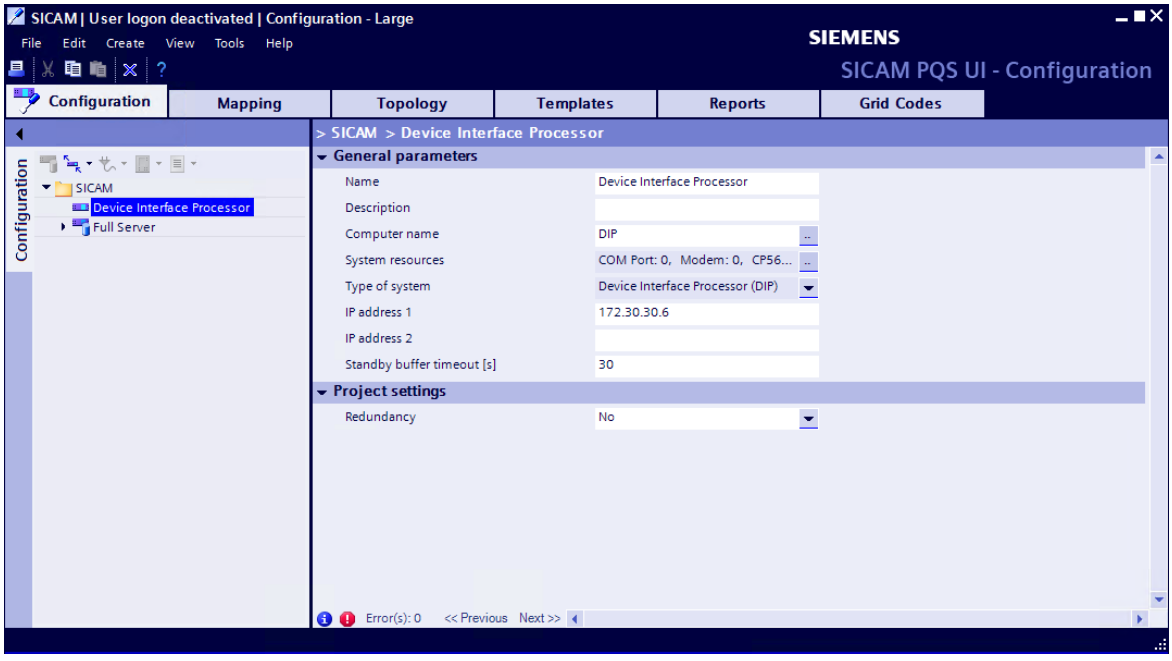
Table 2-3 System Project Settings

Parameter Name	Explanation
Redundancy	Indicates whether the Full Server or the DIP runs on a redundant hardware component For more information on redundancy, refer to */9/ SICAM PAS, Redundancy*.

2.6.2.4 Setting up a Distributed Configuration

To set up a distributed configuration, insert further systems into your station configuration:

✧ Select the project name in the configuration tree and select **System** from the context menu.



[sc_Inserting_DIP, 3, en_US]

Figure 2-27 Inserting a DIP

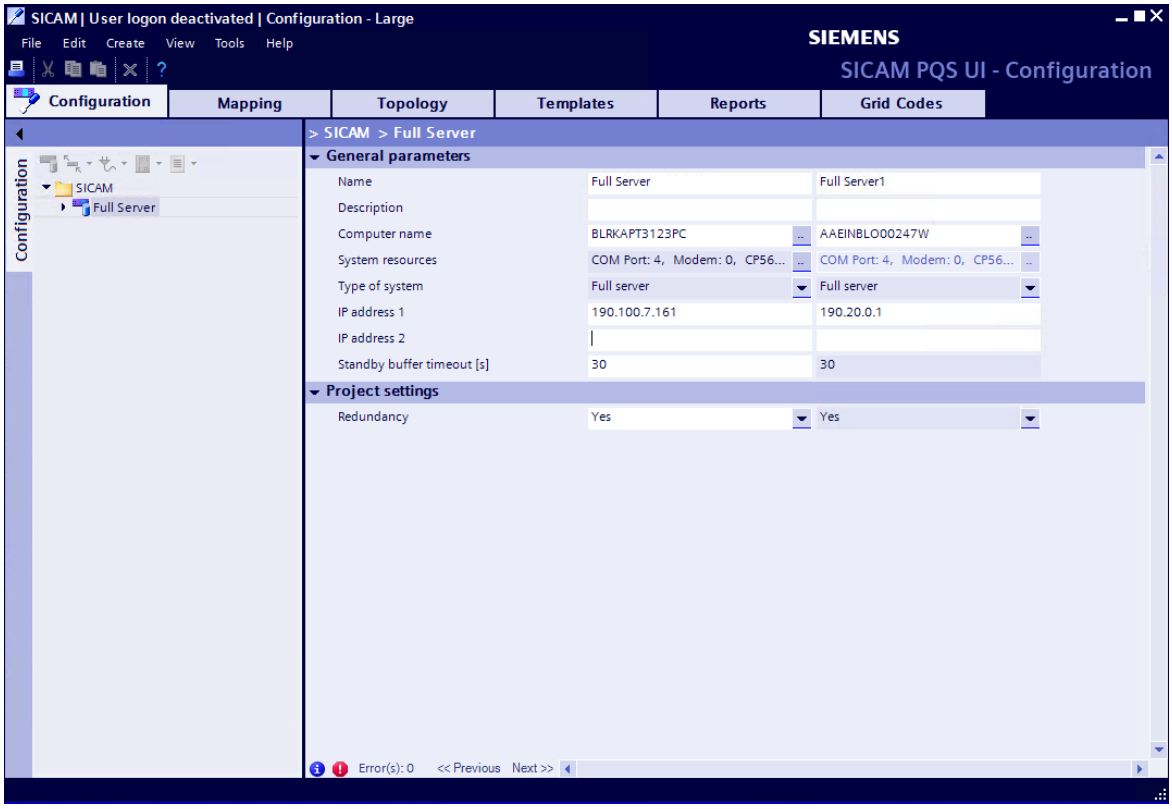
2.6.2.5 Creating a Redundant System

To create a redundant system:

✧ In the Redundancy field under **Project settings** in the input area, select **Yes**.

✧ Enter the computer name of the redundant system or click the **...** button to find the computer.

✧ Enter the IP address of the redundant computer.



[sc_Inserting_Redundant_Sys, 3, en_US]

Figure 2-28 Dialog Window for Inserting a Redundant System

The project is run in hot standby mode. If a system component fails the process is switched over.

For more information on the different options for the redundant configuration of system components, refer to */9/ SICAM PAS, Redundancy*.

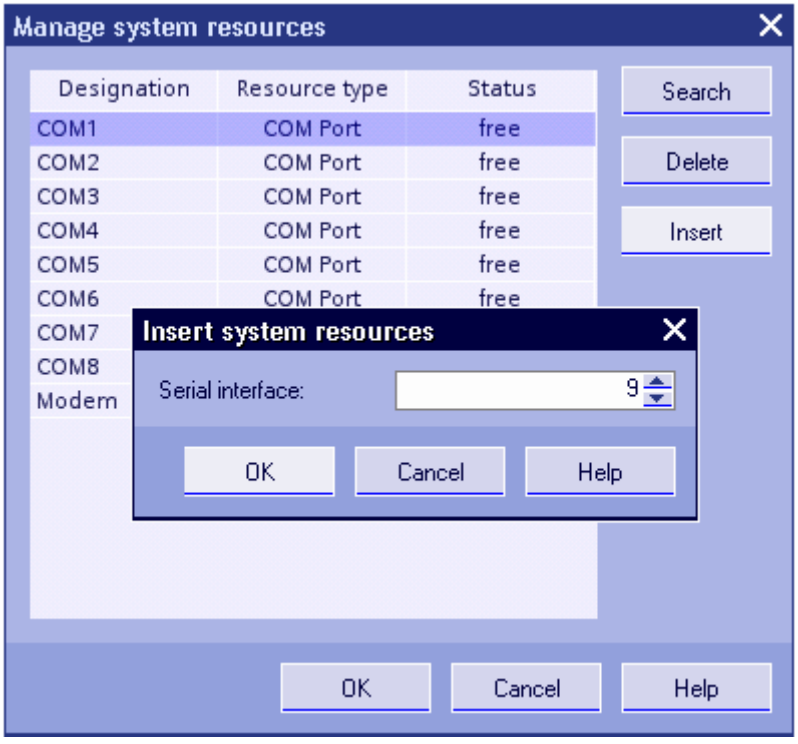
2.6.2.6 Managing System Resources

In the **Manage system resources** dialog, you can determine and manage connections available for data links in the system.

Network connections, that is, IP addresses, cannot be managed in this dialog.

The following connection types can be determined and managed:

- **COM Port** for the serial connection of devices
- **Modem** for the connection of devices through dial-up connection
- **CP5613/14** interface card for the connection of PROFIBUS devices



[sc_Manage_Sys_Resources, 1, en_US]

Figure 2-29 Manage System Resources Dialog

2.6.2.7 Automatic Determination of Connections

To automatically determine all connections of this system:

✧ Click **Search**.

NOTE

The connections available on a system can only be determined automatically by using this method, if the computer name can be determined from the station's IP address (DHCP Client or by using the Host file).

2.6.2.8 Manually Inserting a System Interface

System interfaces which are not available can be added manually. This is required, for example, if you define a system configuration offline in order to use it later on another system.

✧ Click **Insert** to open a selection window.

✧ Select the interface type from the list box.

✧ Enter the serial interface number of the new COM port in the **Insert system resources** dialog.

✧ Enter a name for the modems.

The new interface is inserted into the **Manage system resources** dialog.

2.6.2.9 Deleting a System Interface

System interfaces which you no longer need in your configuration can be removed from the list of system resources.

✧ To do this, click the interface in the **Manage system resources** dialog and then click **Delete**.

The interface is removed from the list and is no longer available for the definition of data links.

2.6.3 Selecting an Application

Select the application which you want to use for communication.

For protocols via which you communicate with devices or control centers, the following 2 applications variants are distinguished:

For serial or modem connections:

- **Master** for setting up data links to **devices**
- **Slave** for setting up a data link to a **control center**

For network connections:

- **Client** for setting up data links to **devices**
- **Server** for setting up a data link to a **control center**

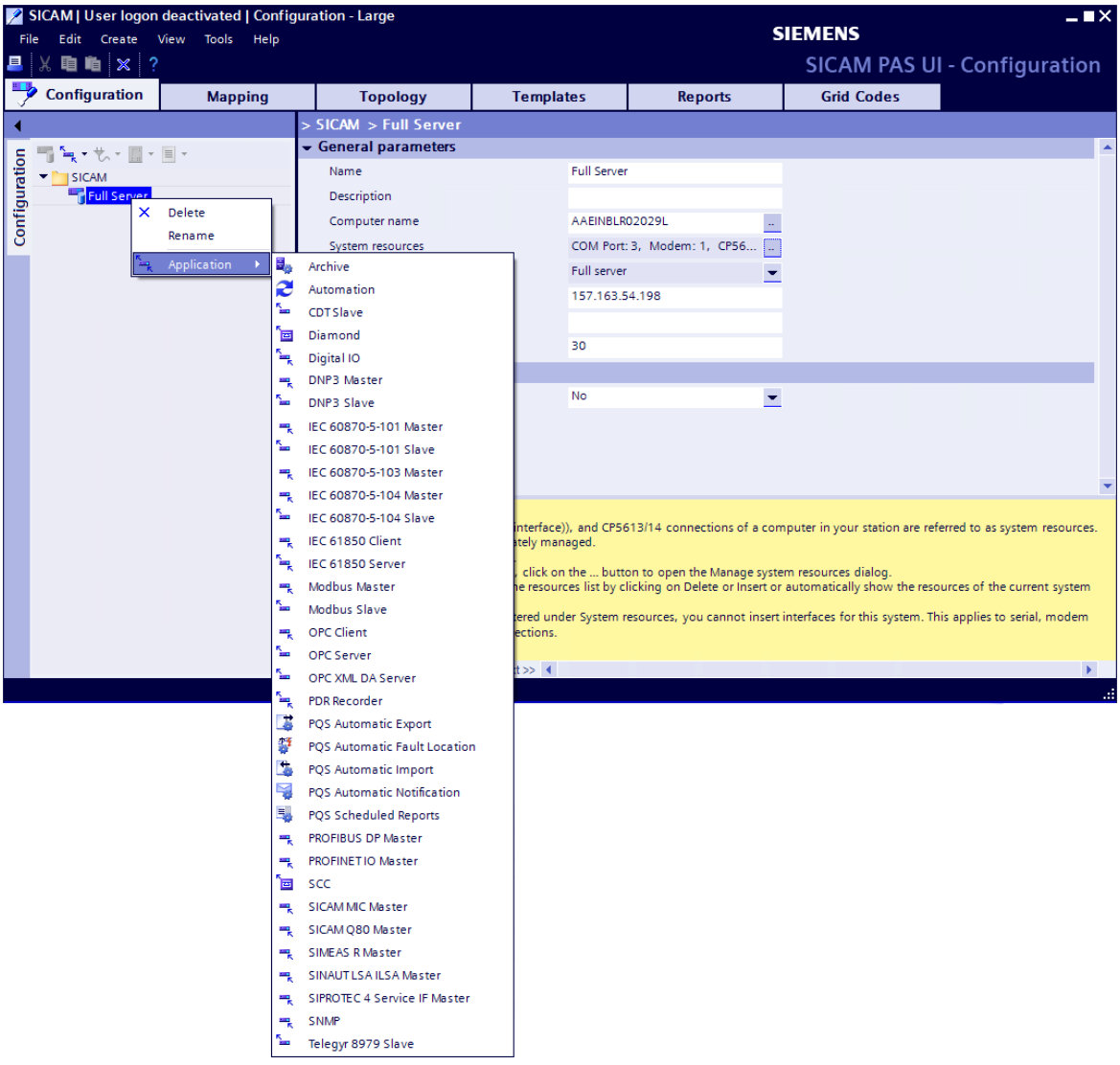
You establish the connection to further SICAM PAS/PQS system components by using the following applications:

- **SCC**
  SICAM SCC Human-Machine Interface (HMI)
- **SoftPLC**
  Configuration of customer-specific functions with CFC, SFC and ST
- **Archive**
  Storage of archive data, including fault records, events, PQ measuring data, and PDR records
- **PDR Recorder**
  Recording of selected network data for the evaluation of power network faults
- **PQS Automatic Fault Location**
  Determination of the fault location in the network
- **PQS Automatic Import**
  Import of fault records or PQDIF data for power network quality evaluation
- **PQS Automatic Export**
  Export of fault records, PQ data, Grid Code violations, and reports
- **PQS Scheduled Reports**
  Scheduled reports with selected measured values for power network quality evaluation
- **PQS Automatic Notification**
  Notification by SMS and/or e-mail as soon as an alarm has occurred or a report is available for example, on PQ violations, fault locations or the receipt of a fault record. You are also notified by e-mail on the completion of scheduled reports.

You configure the applications in SICAM PAS/PQS UI – Configuration. For the evaluation of archived data, you use the different views of the SICAM PQ Analyzer, for example, Report Browser. The fault location is determined by the SICAM PQS Fault Locator.

To insert an **application** in your station configuration:

✧ In the configuration tree, right-click the **system** via which the data link is realized (Full Server or DIP) and select the application from the context menu.



[sc_Inserting_Apps, 2, en_US]

Figure 2-30 Inserting an Application

✧ Customize the application parameters in the input area.

For more information on the parameters, refer to the application descriptions in the online help.

NOTE

Each application can be inserted only once in the configuration tree below a system. Depending on the individual application, you can operate one or several interfaces.

2.6.4 Inserting an Interface

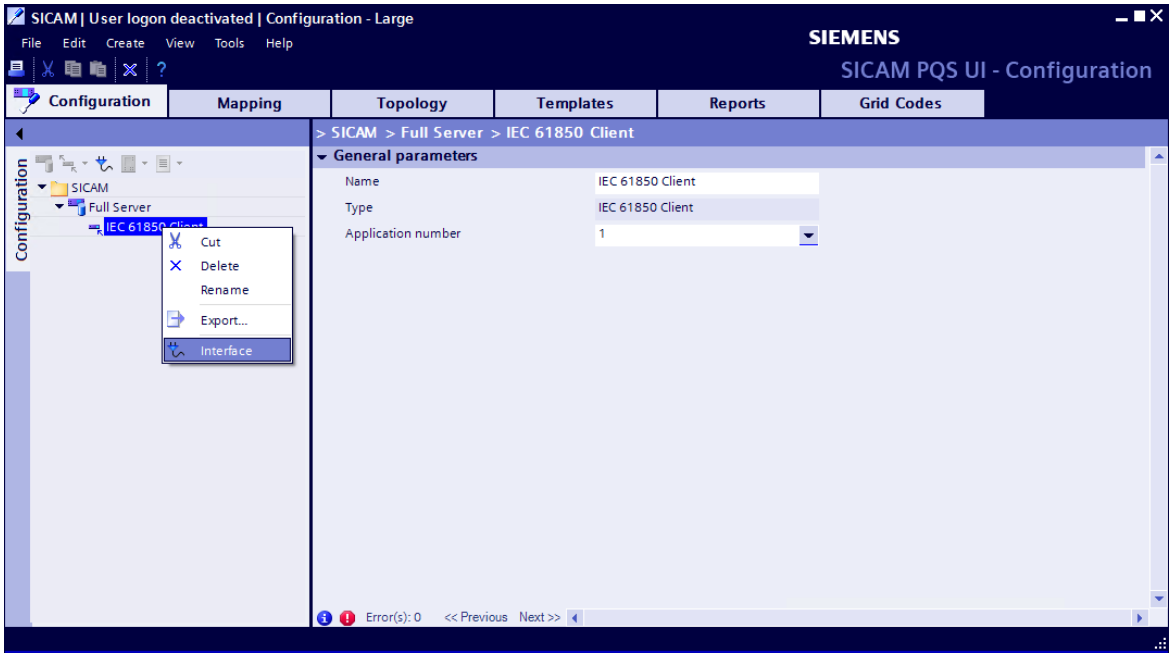
Interface

You can select the connection type and the connection parameters on the interface level. Some applications allow the operation of several interfaces.

For the interface to be inserted, a connection must be available in the system resources.

To insert an **interface**, proceed as follows:

✧ In the configuration tree, right-click the **application** for which you want to insert an interface and select **Interface** from the context menu.



[sc_Inserting_Interface, 3, en_US]

Figure 2-31 Inserting an Interface

✧ Define the parameters of the interface in the input area.

It is possible to modify the interface parameters later.

NOTE

The names of the **interfaces** of an application must be unique.

A new interface is automatically assigned to the next free COM port, CP5613 port, the next free modem or an IP address.

In the **IEC 61850** protocol, if the IP address has also been assigned using a system configurator such as DIGSI, you must enter the same IP address in the transmission parameters of the interface.

Check the automatically assigned connection parameters and customize them according to your requirements.

For more information on the interface parameters, refer to the application descriptions in the Online help.

2.6.5 Inserting a Device/Control Center

Device

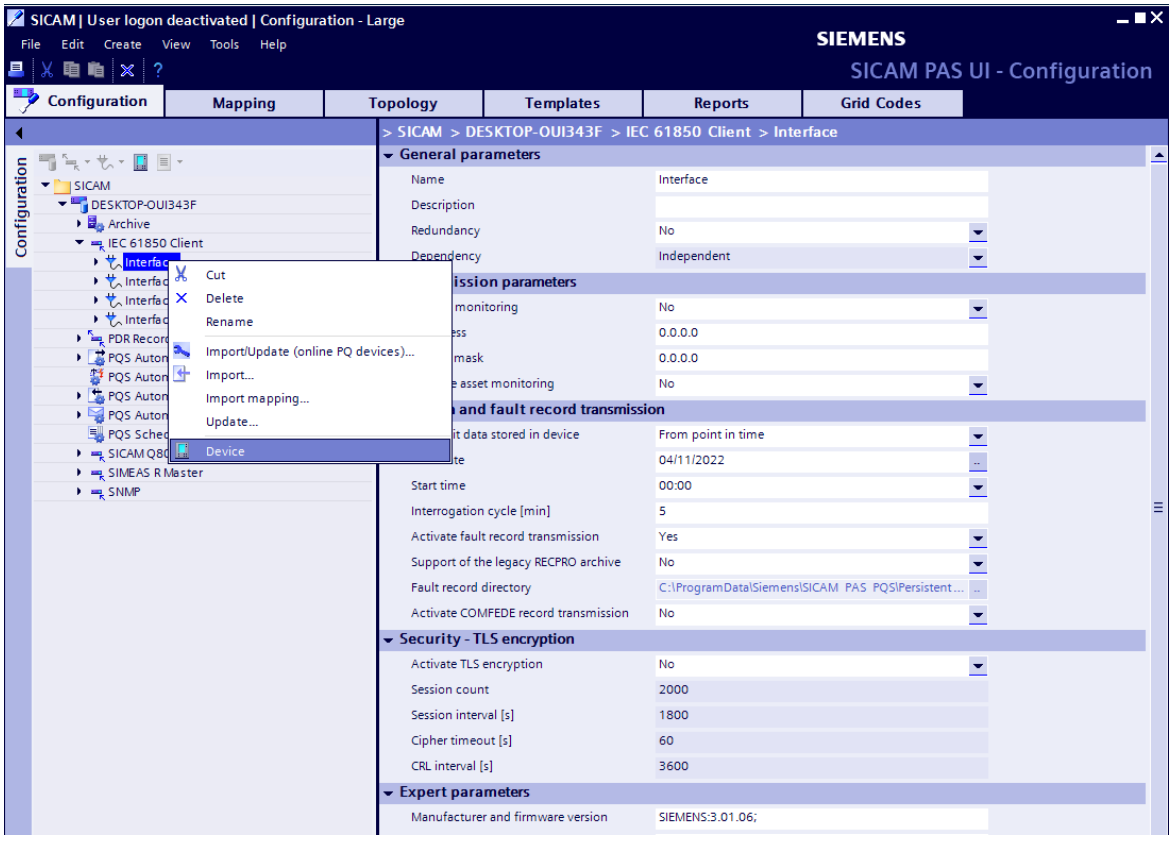
You can communicate with one or several devices through an interface.

The device data can be available as device templates or can be imported. The import files are created with DIGSI, SICAM Toolbox II or SICAM Webmic. You do not need to customize any further parameters for this device. Some protocols support the import of several devices.

To insert a **device**:

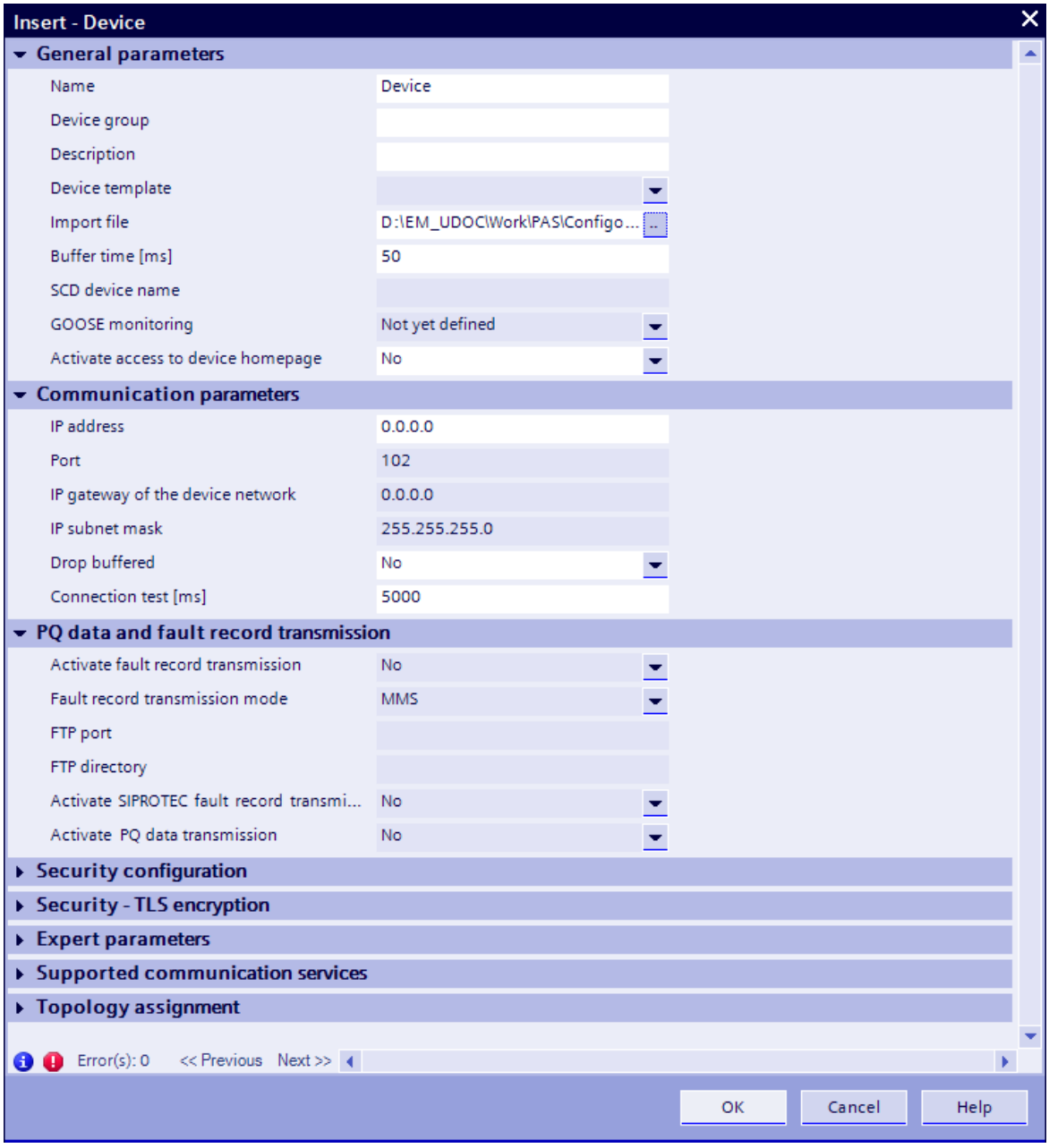
✧ Right-click the **interface** for which you want to insert a device and select **Device** from the context menu.

The **Insert – Device** dialog opens.



[sc_Inserting_Dev, 7, en_US]

Figure 2-32 Inserting a Device



[sc_Selecting_Dev_Template, 4, en_US]

Figure 2-33 Selecting a Device Template

✧ Select either a **device template** or an **import file** and click **OK** to confirm.

✧ Fill in all fields which are highlighted in red.

NOTE

Device configuration files cannot be imported for all applications. You use templates for these devices. For more information, refer to *2.4.1.1 Configuration Data for Several Devices*.

To define the parameters of SIMEAS R and SICAM Q80 devices, you must use device-specific parameterization tools. Insert the devices in your configuration and call up the parameterization tool from the configuration. For more information, refer to *2.4.1.1 Configuration Data for Several Devices* as well as */16/ SIMEAS R PAR, Parameterization Tool* and the System Manual and the Operating Instruction of SICAM Q80 Power Quality Recorder.

NOTE

If you do not enter a specific name for the device, the name will be applied from the device template/ import file during the import process. For more information on the import of device data, refer to *2.4.1.2 Configuration Data for Individual Devices*.

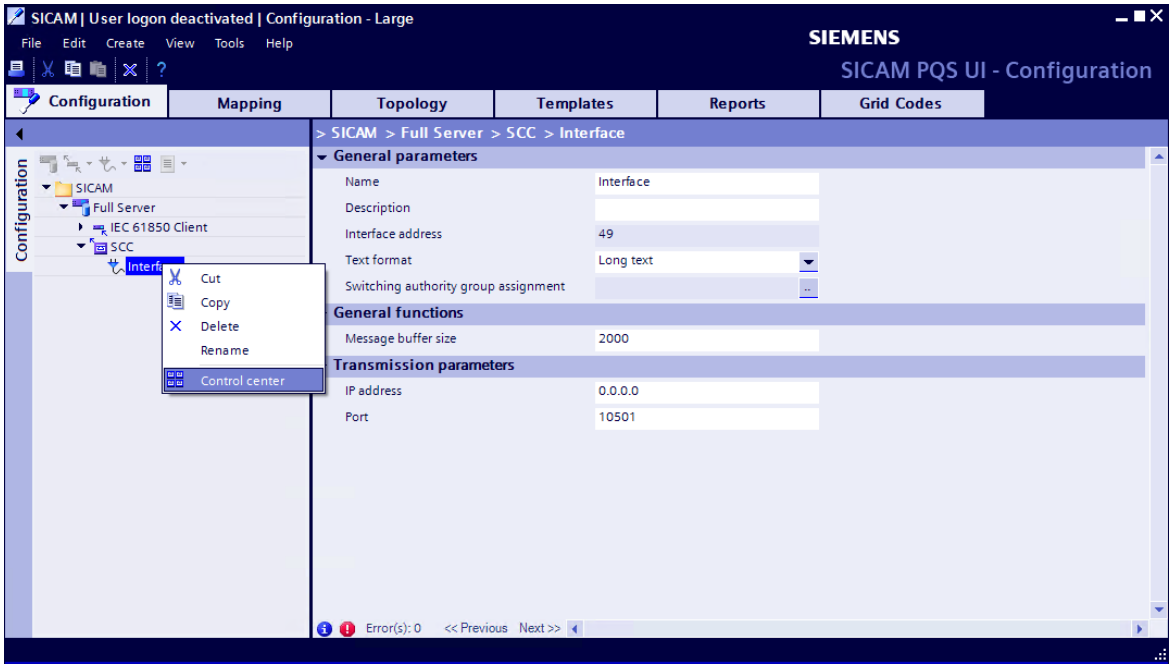
Control Center

Under the applications which serve for the communication with control centers or SICAM SCC, insert a control center under the interface level.

To insert a **control center**:

✧ Right-click the **interface** in the configuration tree and select **Control center** from the context menu.

✧ Assign a name for the control center or the SICAM SCC connection.



[sc_Inserting_Control_Center, 3, en_US]

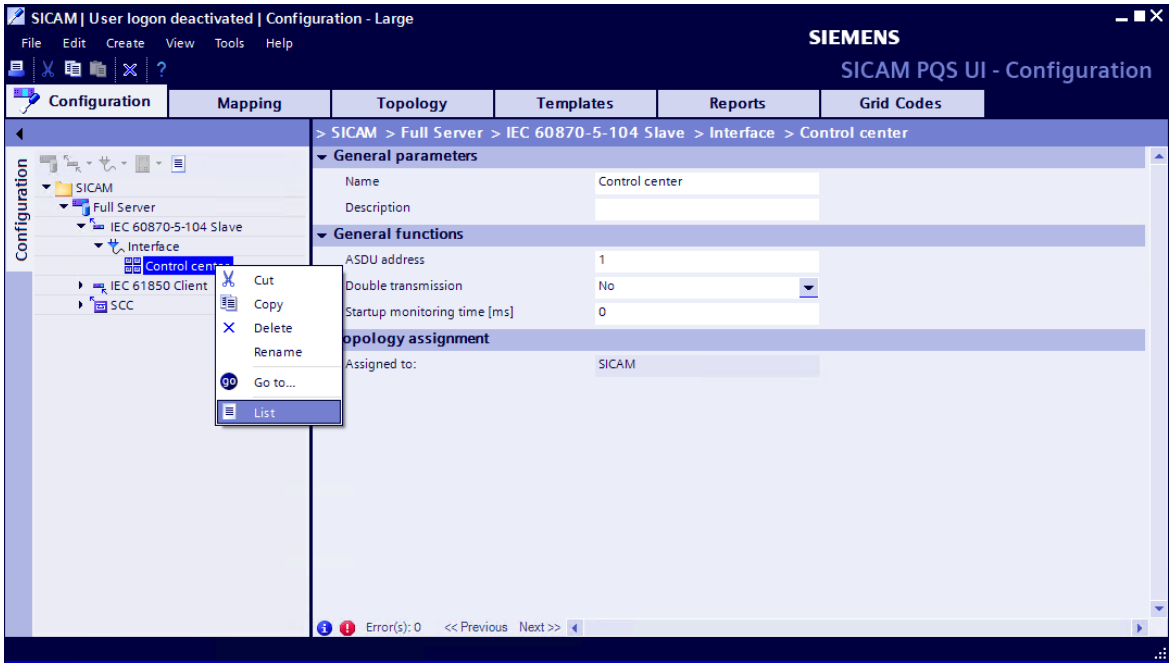
Figure 2-34 Inserting a Control Center

2.6.6 Inserting a List (General)

For many devices and control centers, you can create lists in the **Configuration** view. In the **Mapping** view, you assign these lists items of information.

To create a **list**:

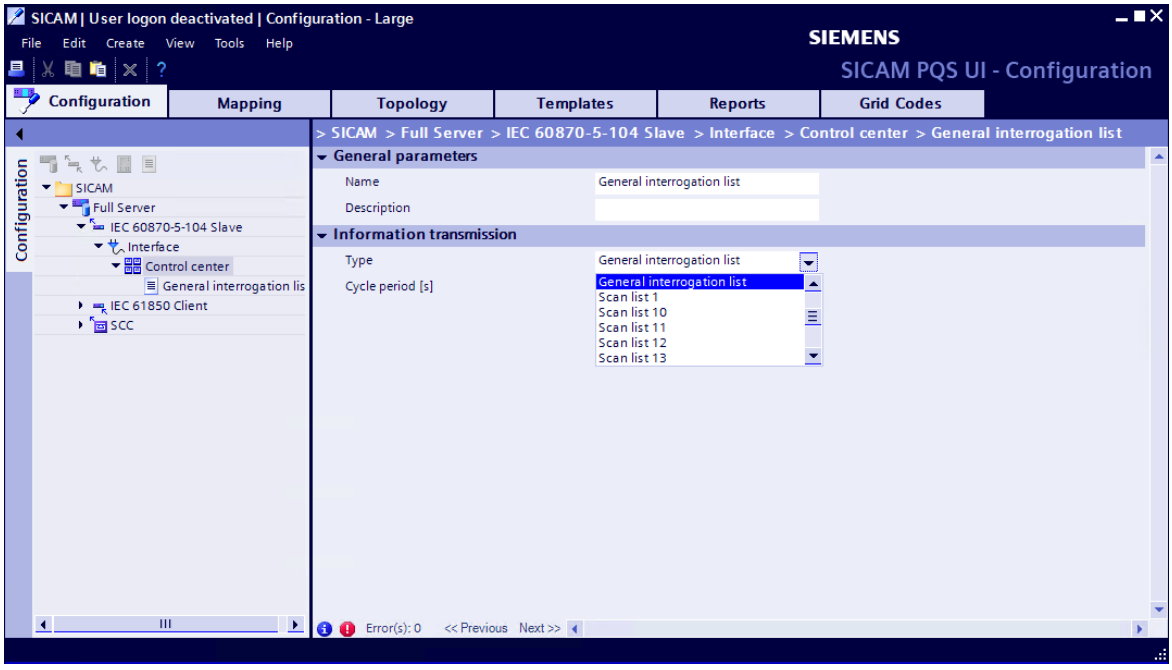
✧ Right-click the device or the control center in the configuration tree and select **List** from the context menu.



[sc_Creating_Interrogation_list, 3, en_US]

Figure 2-35 Creating a General Interrogation List

✧ Configure the general interrogation list. You can select other lists to configure from the **Type** field.



[sc_Defining_Interrogation_Parameters, 3, en_US]

Figure 2-36 Defining General Interrogation Parameters

For more information on the general interrogation list parameters, refer to the application descriptions in the online help.

2.6.7 Inserting Lists with IEC 61850 Client

When using the IEC 61850 protocol, the mapping (reporting) can be defined as follows:

- Fixed definition in the protection device (**static reporting**)
- Flexible definition in the substation controller (**dynamic reporting**)

Static Reporting

Static reporting is defined using the configuration tool of the protection device or the IEC 61850 system configurator tool. Afterwards, these settings are transferred to the protection device and imported into SICAM PAS/PQS via an SCD file. The **ReportControl** and the corresponding **DataSet** in the SCD file are represented as a list. To map additional messages in such a list, the system configurator, protection device configuration and SICAM PAS/PQS import chain must be run again.

If a **ReportControl** has been created in the SCD file and if this ReportControl is linked to another address than the IP address of the corresponding SICAM PAS/PQS interface (via the **ClientLN** attribute), this list is not imported by SICAM PAS/PQS in order to avoid resource conflicts with other substation controllers.

However, if the IP address of the Client interface has been linked to the **ReportControl**, it is preferred during the import.

Dynamic Reporting

For certain protection devices which support dynamic reporting, the mapping can be modified in SICAM PAS/PQS. The new configuration is transferred automatically into the protection devices via the IEC 61850 protocol. The protection device configuration or the system configurator tool are not required for this purpose.

The lists for dynamic reporting can be created by:

- Inserting a list
- Importing an SCD file via the interface

2 internal lists are created when importing the SCD file of these devices:

- **Buffered list**
- **Unbuffered list**

Each mapped value is automatically assigned to the corresponding (buffered or unbufferd) list if it has not yet been assigned to another list via import or parameterization.

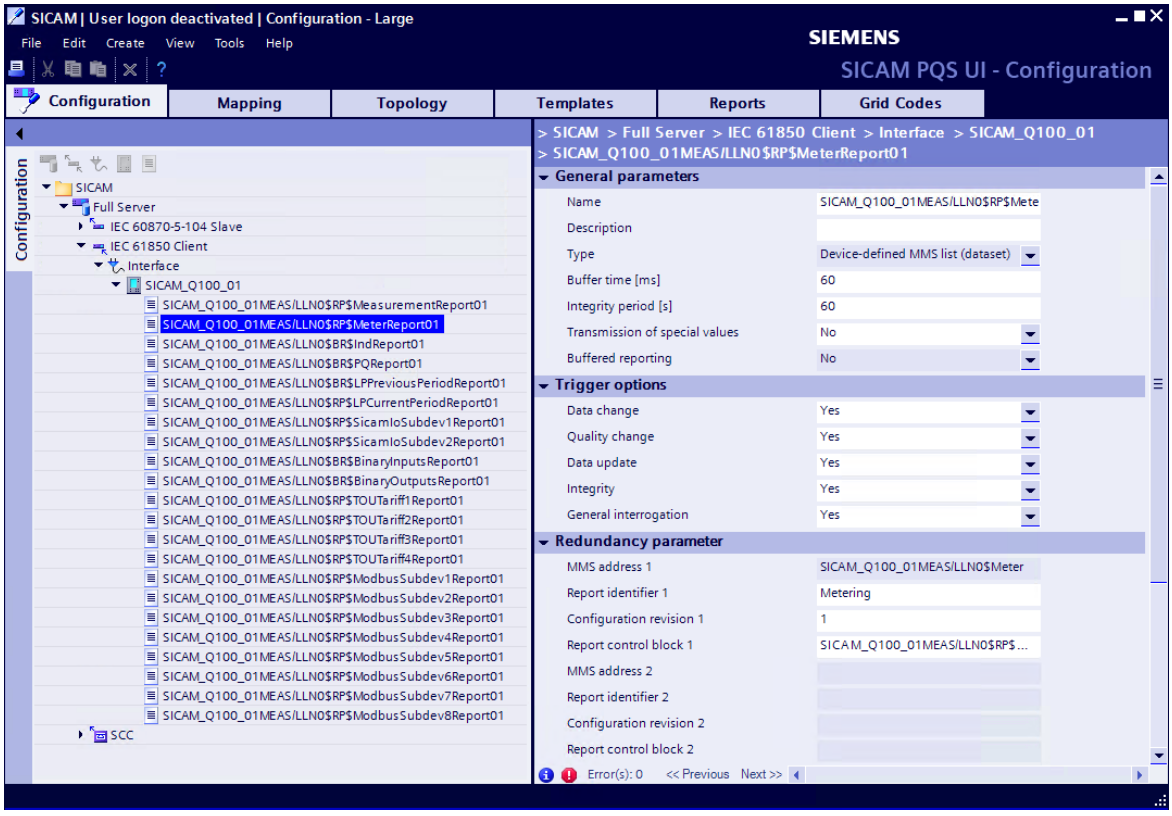
Importing a List

To import a list:

✧ Select the interface in the configuration tree and select **Import...** from the context menu.

✧ In the dialog which opens next, select the SCD file and click **Open**.

During the import, the **MMS address**, the **Report identifier** and the **Report control block** are determined from the import file and entered in the list.



[sc_Importing_SCD_file, 3, en_US]

Figure 2-37 IEC 61850, Importing an SCD File with Dynamic Reporting

If this is not possible, the fields remain empty and the IEC 61850 Client application tries to determine these values during runtime.

2.6.8 Inserting Lists with IEC 61850 Server

NOTE

The IEC 61850 Server application supports the IEC 61850 standard Edition 2 and 2.1 based on your selection.

By creating the first list you define the standard used by the interface which can run either as MMS or as GOOSE.

- **MMS** designates the connection-oriented (TCP/IP) data transmission between the IEC 61850 Server (SICAM PAS) and IEC 61850 Clients (e.g. control center).
- **GOOSE** designates the transmission of data between bay units or (in this case) from the substation controller to the bay units/IEDs as a multicast transmission without a direct connection. GOOSE data is not transmitted to a particular receiver. The receivers are assigned a specific MAC address destination via which they can filter the data. Since it cannot be determined for sure that the data has been successfully transmitted to the receiver when using this procedure, the information is transmitted at cyclical intervals.

NOTE

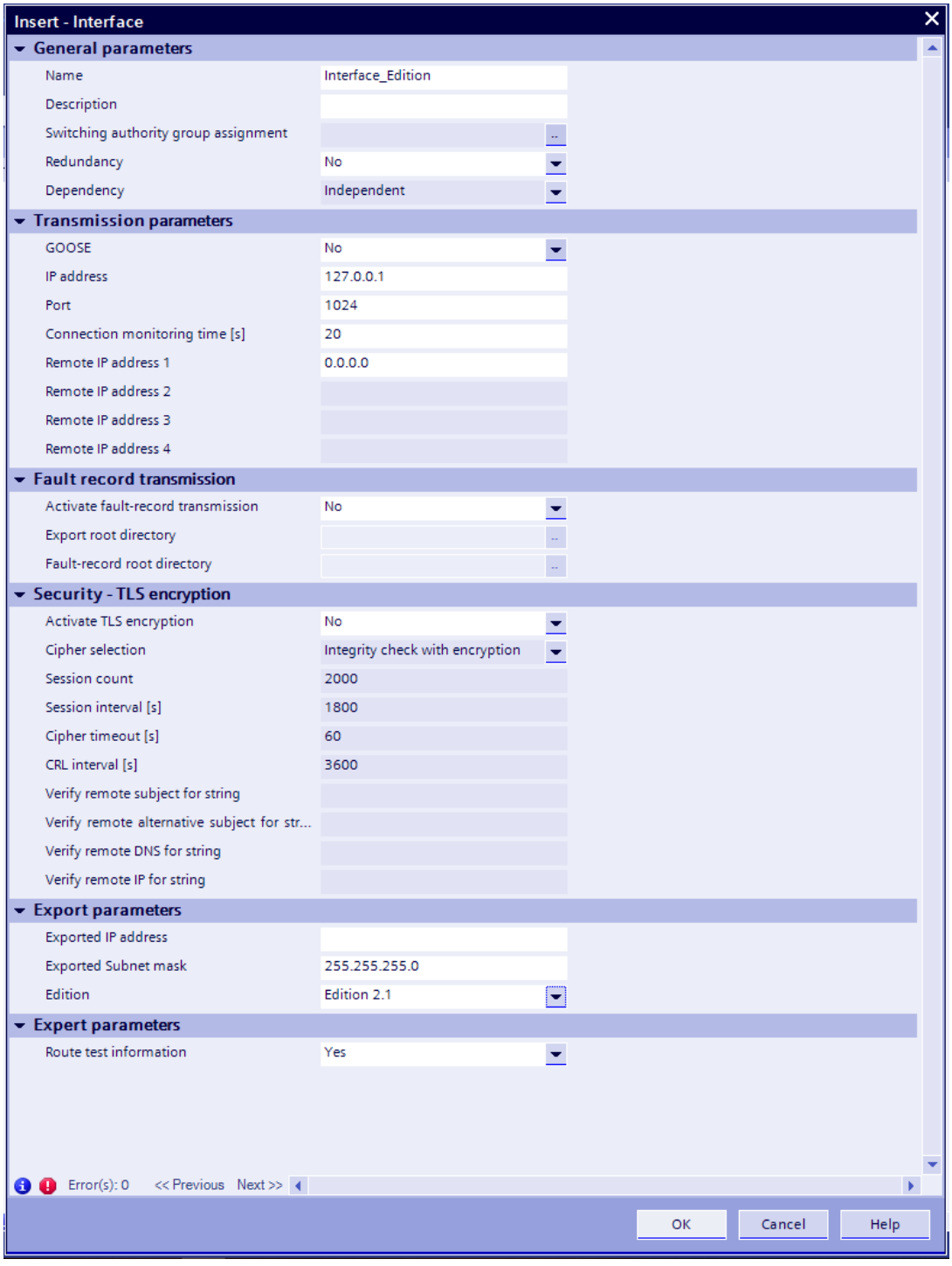
A GOOSE list can be created only, if no interface redundancy is set and if the **IP address** is not equal to **0.0.0.0**.

Inserting GOOSE Lists

GOOSE works with the MAC address determined by the IP address. If you do not enter an IP address, the first MAC address (connection) found will be used. Siemens recommends always enter the IP address when using GOOSE. This ensures that always the right MAC address/network interface card is addressed even if multiple MAC addresses exist, for example when using multiple network interface cards or networks.

To define a GOOSE list:

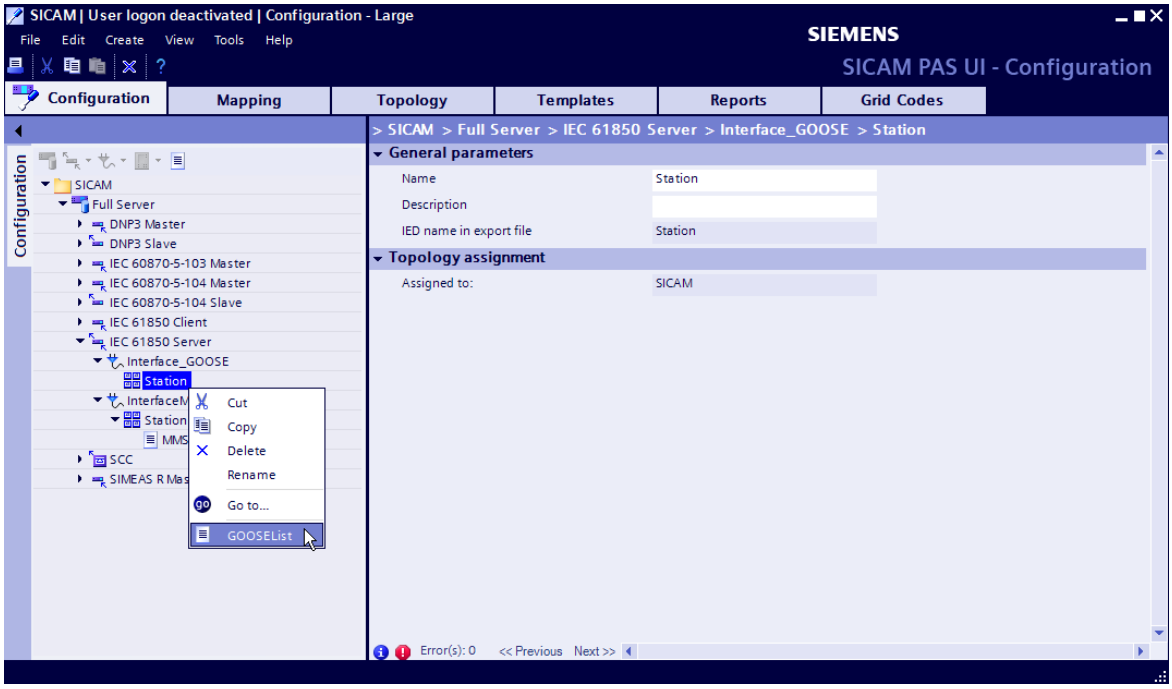
- ✧ Right-click the **IEC 61850 Server** application and select **Interface** from the context menu.
- ✧ In the **Transmission parameters** area of the interface, set the **GOOSE** parameter to **Yes**.
- ✧ Enter the **IP address** at which the application will be accessible. This IP address is written to the IID export file too.



[sc_Defining_GOOSE_Interface, 3, en_US]

Figure 2-38 IEC 61850 Server, Defining the Interface with GOOSE List

✧ Insert a station and select **GOOSEList** from the context menu.

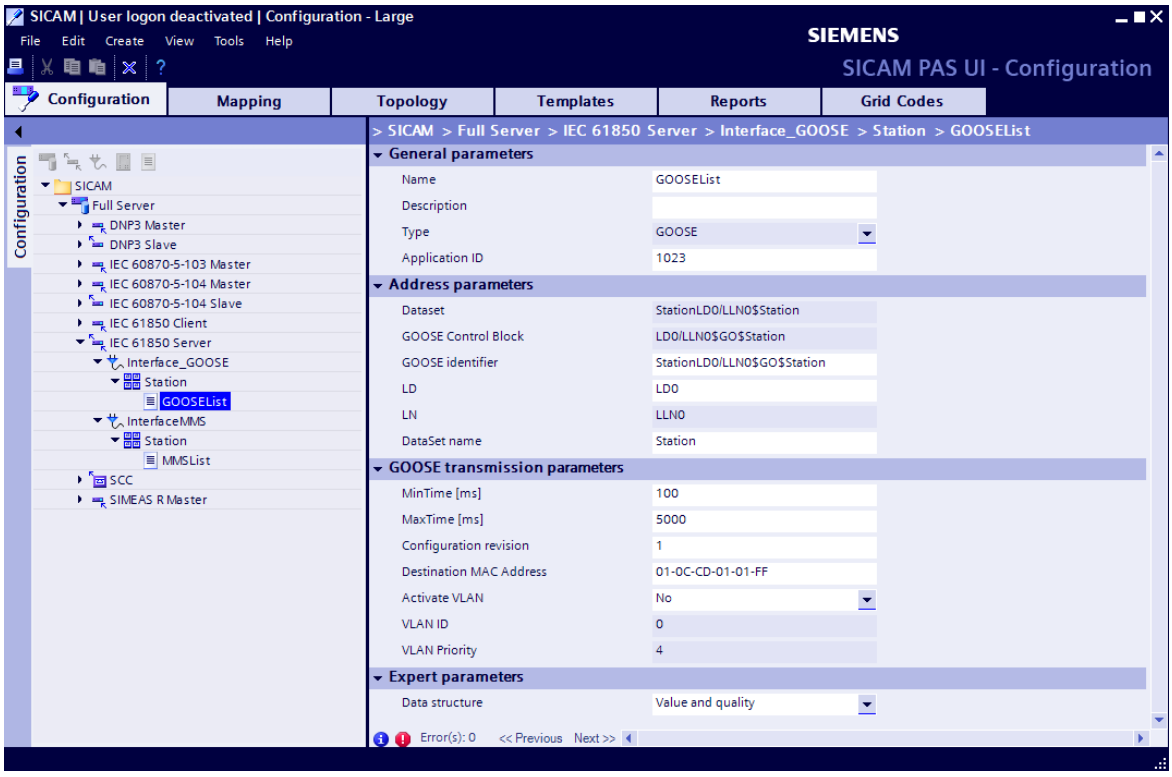


[sc_Selecting_GOOSE_list, 3, en_US]

Figure 2-39 IEC 61850 Server, Selecting a GOOSE List

NOTE

A maximum of 20 GOOSE lists per station can be inserted.



[sc_GOOSE_list_inserted, 3, en_US]

Figure 2-40 IEC 61850 Server, GOOSE List Inserted

NOTE

If you delete a GOOSE list or change the mapping of a GOOSE list, you must update the IEC 61850 station in the IEC 61850 System Configurator accordingly.

The GOOSE list parameters of an exported SCL file, which are changed in the IEC 61850 System Configurator can be updated on an interface level.

NOTE

In case of redundancy configuration, the destination MAC address must be the same for both primary and secondary SICAM PAS/PQS system.

2.6.9 Archive

By using the **Archive** application, you can add the connection to a (source) archive on a Full Server. This archive stores:

- Fault events
- Fault records
- Events (process information)
- Fault location reports
- Scheduled reports
- PQ violation reports
- PDR records

The **SICAM PQ Analyzer** serves for the evaluation of the archived data in several views according to different criteria.

For the evaluation of fault records, the **Incident Explorer** uses the COMTRADE Viewer or SIGRA. PDR records are viewed using the PDR Viewer.

The fault event, the associated fault records, and the related events which occured in the power network are visualized in the **Fault Event Viewer**.

The events selected in the **Mapping** view are visualized in the **Event Viewer**.

For more information on the SICAM PQ Analyzer, refer to */13/ SICAM PQ Analyzer* and */14/ SICAM PQ Analyzer, Incident Explorer*.

2.6.9.1 Configuring the Archive

To configure an archive:

✧ Select the system in the configuration tree and insert the **Archive** application.

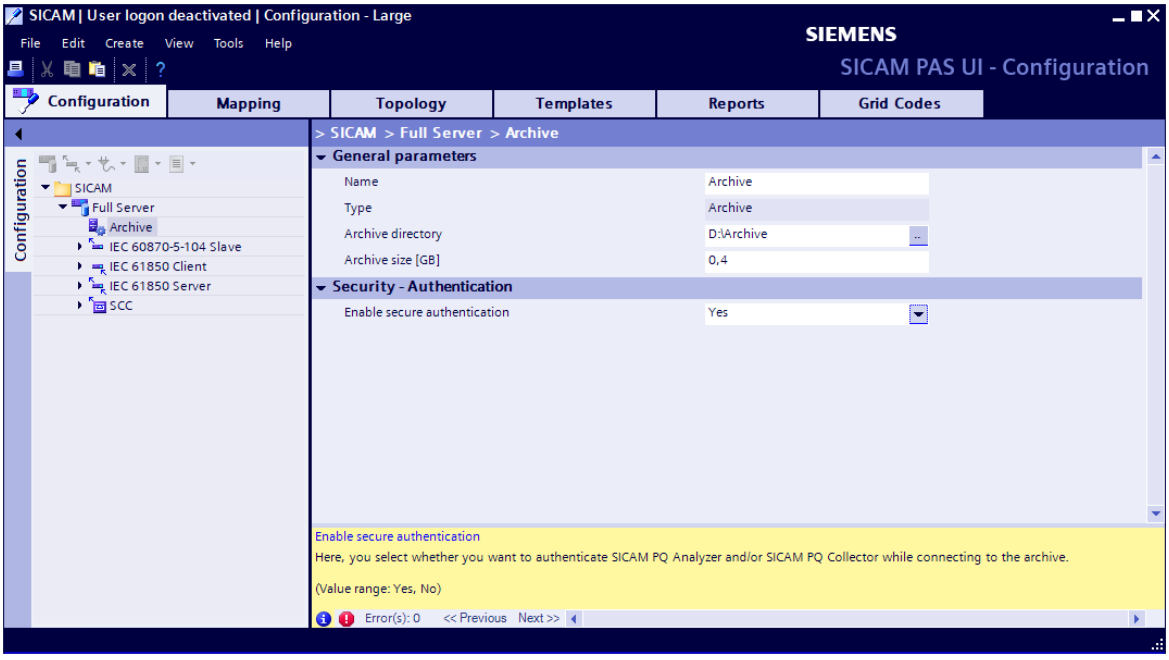
✧ In the dialog which opens, enter the storage location under **Archive directory**. Network directories or removable media are not permissible as archive directory.

NOTE

The **SICAM PAS PQS Users** user group must have **write** permission for the directory.

To achieve this, open the **Properties** of the directory, select the **Security** tab and add the **SICAM PAS PQS Users** user group to the **Group and user names** via **Edit... > Add...** . Grant the **write** permission.

✧ Specify the size (0.4 - 100 GB) of the archive in the **Archive size** field.



[sc_Inserting_Archive, 4, en_US]

Figure 2-41 Configuring an Archive

NOTE

When the SICAM PQ Analyzer is connecting to an archive, the user is authenticated by default. Secure authentication can be disabled to allow access to the archive, for example, if both computers do not belong to the same domain. To disable the secure authentication feature, the SICAM PQ Analyzer must be updated to V3.11 HF2 or later.

2.6.9.2 Storing Process Information

The following information selected in the **Mapping** view is stored in the archive and can be displayed in the **Event Viewer** of the SICAM PQ Analyzer:

- Single-point, double-point, and bit-pattern indications (for process-value changes)
- Fleeting indications, indications with value
- Command messages

The process states determined by startup general interrogation are not archived.

NOTE

Operational measured values are not logged in the event list and, thus, are not stored in the archive.

✧ Right-click the **Archive** application and select **Process information** from the context menu.

✧ Right-click **Process information** and select **Event list** from the context menu.

✧ Right-click the **Event list** and select **Go to...** from the context menu.

✧ In the dialog which opens, confirm the **Mapping** view.

✧ Select all the items of information that you want to be stored for displaying in the Event Viewer.

NOTE

For storing the events in the archive the **Event List / Fault Events** feature must be enabled via the SICAM PAS/PQS Feature Enabler.

2.6.9.3 Configuring Fault Events

The fault event, the associated fault records, and the related events which occurred in the power network can be visualized in the **Fault Event Viewer** of the SICAM PQ Analyzer.

To configure the fault events:

✧ Right-click the **Archive** application and select **Fault event information** from the context menu.

✧ Enter the **Pre-trigger duration [s]** and **Post-trigger duration [s]**.
The pre-trigger duration refers to the time span prior to the trigger point of the fault event. If the pre-trigger record duration of the fault record is greater than the configured **Pre-trigger duration [s]**, the pre-trigger record duration of the fault record is considered.
The post-trigger duration refers to the time span after the trigger point of the fault event. All the fault records generated during the **Post-trigger duration [s]** are included in the fault event. If the post-trigger record duration of the fault record is greater than the configured **Post-trigger duration [s]**, the posttrigger record duration of the fault record is considered.

NOTE

For generating fault events and storing them in the archive the **Event List / Fault Events** feature must be enabled via the SICAM PAS/PQS Feature Enabler.

2.6.10 PDR Recorder

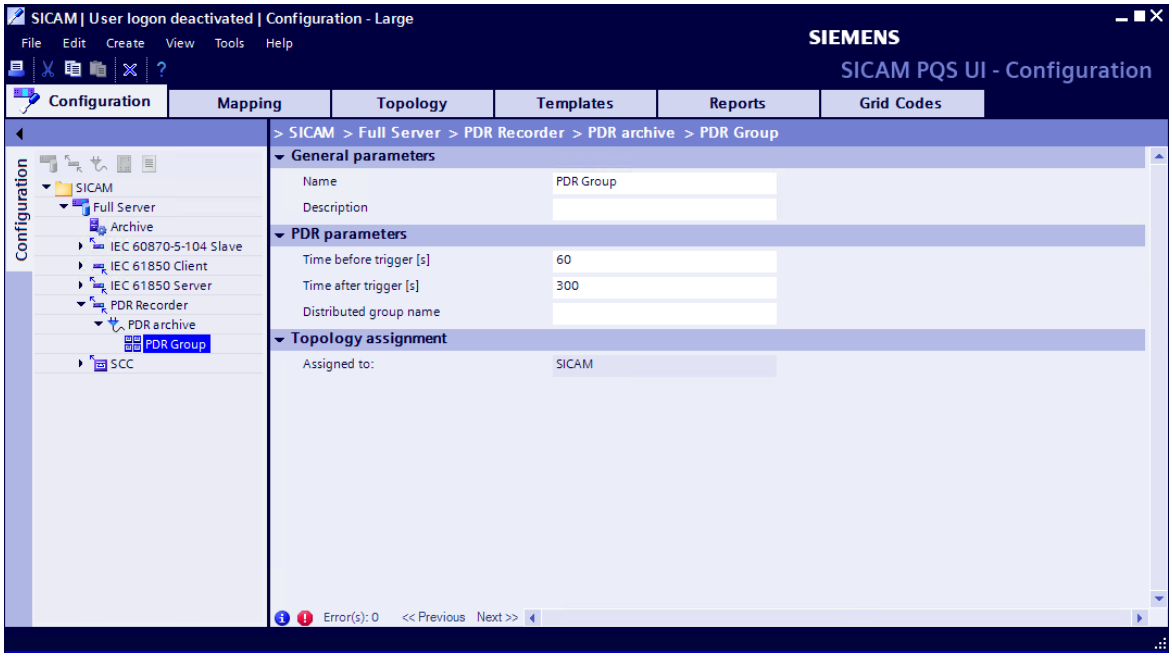
The PDR Recorder records selected information of a station over a selectable period of time. These records allow the precise analysis of the causes of network faults.

To insert the **PDR Recorder** application:

✧ In the configuration tree, select the name of the system and insert the **PDR Recorder** application.

✧ Select this application and select **PDR archive** from the context menu.

- ✧ In the **Support of the legacy RECPRO archive** field, select **Yes** if you want to collect PDR records by SICAM Recpro Collector V6.
- ✧ Select **PDR archive** and insert a **PDR group**.
- ✧ In the **PDR parameters** input area, define the time window through which the information of this group is recorded upon triggering.



[sc_Inserting_ PDR_group, 3, en_US]

Figure 2-42 Inserting a PDR group

In the **Topology assignment** input area, you see the topological level which is assigned to the PDR group. The PDR record is stored in the archive, under this topological assignment. The PDR record is selected and viewed in the SICAM PQ Analyzer in the **Incident Explorer** view.

In the **Mapping** view, you select which items of information is to be included in the PDR group and which information acts as a trigger.

For more information on the PDR records, refer to */14/ SICAM PQ Analyzer, Incident Explorer*.

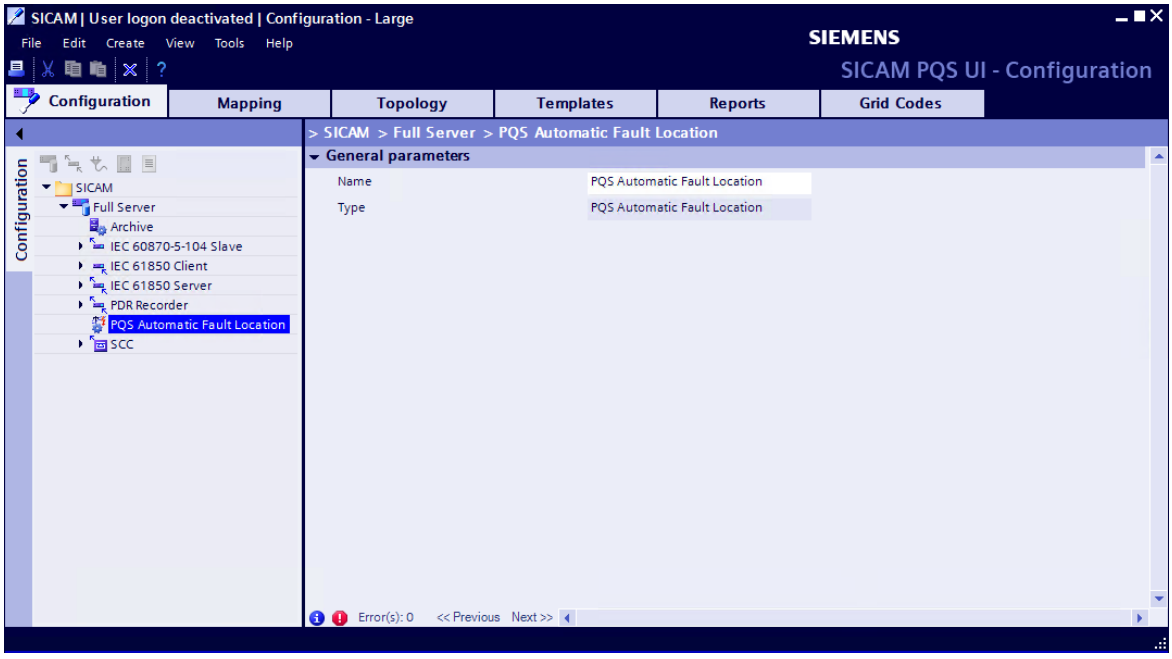
2.6.11 PQS Automatic Fault Locator

The Fault Locator is used to calculate the fault location in order to ensure that the cause of a network fault can be detected within a short time. It can be used:

- As a single-ended or two-ended Fault Locator in systems with single or double lines
- For parallel line compensation
- It also supports fault location based on travelling wave algorithm

To insert the **PQS Automatic Fault Location** application:

- ✧ Select the system in the configuration tree and insert the **PQS Automatic Fault Location** application.



[sc_Inserting_PQS Automatic_App, 3, en_US]

Figure 2-43 Inserting the PQS Automatic Fault Location Application

In the **Topology** view, **Properties** tab, you define the parameters required for calculating the fault location, including the number of lines, the line length and the starpoint position.

In addition, you assign the measuring channels for the evaluation of the fault records' voltage and current channels.

The **Global line overview** tab provides an overview of all line data for which parameters have been defined.

For more information on the functionality and parameterization of the Fault Locator, refer to */12/ SICAM PQS, Fault Locator*.

2.6.12 PQS Automatic Fault Locator Based on Travelling Wave Algorithm

The PQS Automatic Fault Location application supports the fault location calculation based on travelling wave algorithm in addition to the other fault location algorithms available. For more information on configuration of importing the fault records from a device which supports the travelling wave algorithm and creating a fault location report for that device, refer to *Fault Records Sorted by Device, Page 80*

NOTE

Single-ended fault location based on traveling wave algorithm is not supported.

2.6.13 PQS Automatic Import

The Automatic Import is used to transfer data in PQDIF and COMTRADE format from a user-defined path. This is because, based on the configuration of virtual devices, you transfer PQ data and fault records from devices which do not communicate through a protocol supported by SICAM PAS/PQS. Fault records can also be transmitted via File Transfer Protocol (FTP) and from the device which supports Travelling wave algorithm.

The import path must always be defined as a complete network path (UNC path), mapped drives are not permissible.

NOTE

If the PQDIF file name contains Unicode characters that are not supported by the current language setting of the operating system and an error is encountered during the import, the Report displays non-readable characters as the PQDIF file cannot be read.

In this way, you transfer data in the following formats:

- PQDIF (Power Quality Data Interchange Format) for PQ data
- COMTRADE (Common Format for Transient Data Exchange) for fault records

After you have inserted the **PQS Automatic Import** application into the system, configure the data import as follows:

- *2.6.13.1 Importing PQ Data*
- *2.6.13.3 Importing Fault Records*

NOTE

The **SICAM PAS PQS Users** user group must have **write** permission for the directory.
To achieve this, open the **Properties** of the directory, select the **Security** tab and add the **SICAM PAS PQS Users** user group to the **Group and user names** via **Edit... > Add...** . Grant the **write** permission.

2.6.13.1 Importing PQ Data

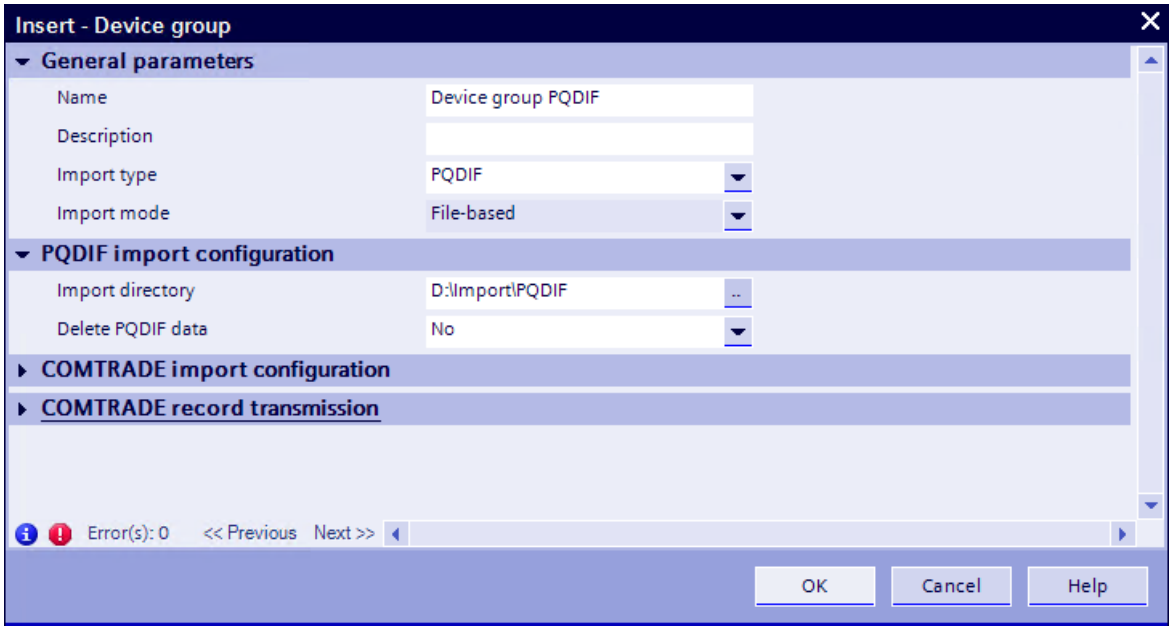
To import the PQ Data, proceed with the following steps:

✧ Right-click **PQS Automatic Import** and select **Device group** from the context menu.

✧ In the dialog which opens, select **PQDIF** in the **Import type** field under **General parameters**. Automatically, the **Import mode** is set to **File-based**.

✧ In the **Import directory** field under **PQDIF import configuration**, select the import path for the PQ data.

✧ In the **Delete PQDIF data** field, select whether the PQ data shall be removed from the source directory after the import.



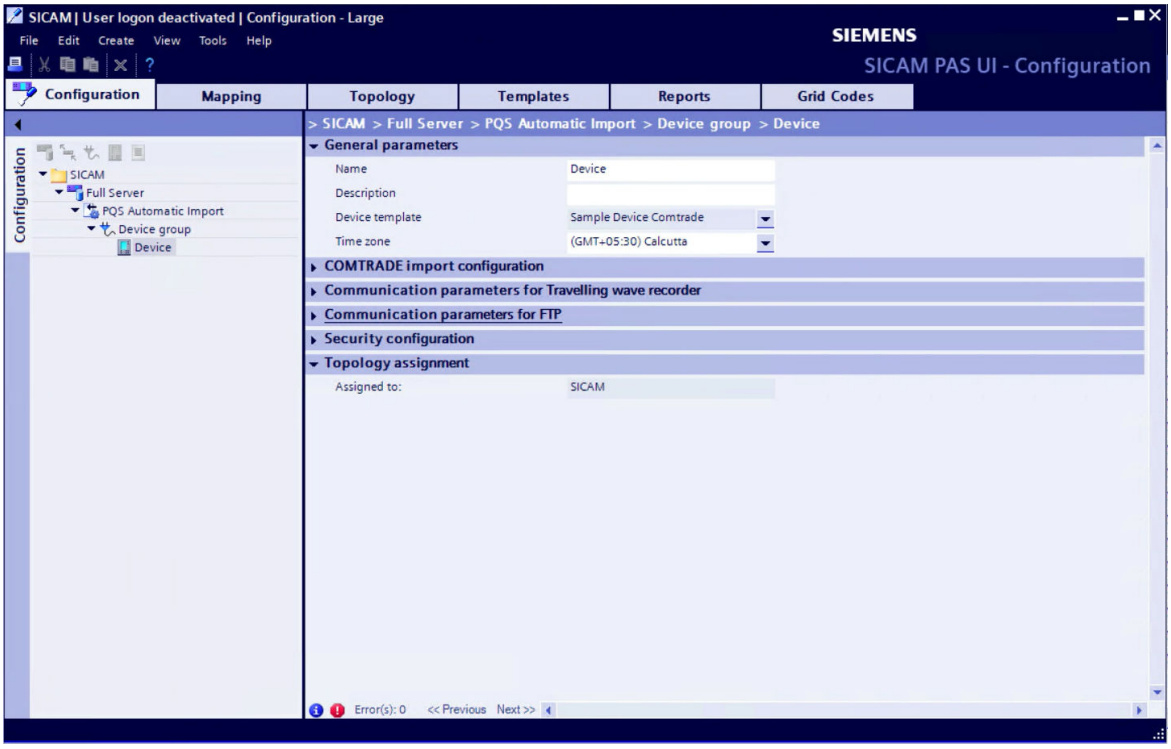
[sc_Insert_Dev_Group_PQDIF, 2, en_US]

Figure 2-44 Insert - Device Group PQDIF

NOTE

To ensure that the size of the **Import directory** does not increase continuously, set the value of **Delete PQDIF data** to **Yes**.

- ✧ Confirm with **OK**.
- ✧ Select the **Device group** and insert a **Device**.
- ✧ Under the **General parameters** of the device, select **Sample Device PQDIF** in the **Device template** field.
- ✧ Confirm with **OK**.



[sc_PQS_Automatic_Import_PQDIF, 4, en_US]

Figure 2-45 PQS Automatic Import PQDIF

2.6.13.2 DDRecCreation for third party devices

Overview

DDRecCreation is a command line tool for creating a device template file and a ddrec file. Based on such files, SICAM PQS will be able to import the third-party PQDIF files.

To precisely interpret the PQDIF-content, SICAM PQS requires the respective **channel descriptions** of PQ Data in PQDIF-files.

Power Quality data from third-party PQ devices that provide data with PQDIF-files (*.pqd) can potentially be integrated into SICAM PQS in two ways:

`Use case a`

3rd-party devices which are not connected to SICAM PQS with IEC 61850:

PQDIF files can be imported from directory using SICAM PQS Automatic PQDIF Import Service. The import service is supported since the first SICAM PQS version V7.0.

`Use case b`

3rd-party devices supporting IEC 61850 and transmitting PQDIF-files via IEC 61850:

Such devices can be connected to SICAM PQS IEC 61850 Client. This service is supported since SICAM PQS version V8.19.

Challenge

Up to V8.18, such channel descriptions must be created manually, either in the SICAM PQS UI Configuration's Template view or in device description text files. Manual creation of channel descriptions needs expert know-how and high effort.

Improvement / Solution

With SICAM PAS/PQS V8.19, the additional tool **DDRecCreationTool** is available and can be used for creating the following:

- Information files about the channels that are not supported
- Device description file (Automatic PQDIF Import Service) and ddrec file (IEC61850-connected devices)
  Both the file-types can be used to import/update in SICAM PQS UI Configuration's Template view.

The DDRecCreationTool requires a third-party PQDIF-file (created by a third-party PQ device) as an input file to create such files.

NOTE

- The template file is created based on one PQDIF file from a third-party device.
  If the third-party device splits the characteristics/channel information (PQ data) into multiple PQDIF files, select the file that best suits your purpose.
- After importing/updating files created by DDRecCreationTool, the operating values must be entered by the user in the **UI-Configuration -> Template**.
- The files **..._ImportService.txt** and **...ddrec** created by the DDRecCreationTool, can be used for multiple devices of the same device type with the same channel names used in PQDIF-files from the devices.
  - In case of automatic import service, the device description file **..._ImportService.txt** will be imported once in template view of UI Configuration and referenced for each device created in the Configuration view. The device name for the device created needs to be identical with the device name used in PQDIF-file transmitted from a connected device.
  - In case of devices connected with IEC 61850 (by importing IEC 61850-SCL-files), each correlated device template in template view of UI Configuration needs to be updated with the ddrec-file created with DDRecCreationTool.

Launching DDRecCreationTool and Files Created

DDRecCreationTool will launch in a Command Line window with these two parameters:
DDRecCreationTool.exe -dir <folderpath> - pqdfile <file>
The files below are created just for information:

- **...-NotSupportedChannels.txt**
  Contains channels that are not supported by SICAM PQS due to PQDIF tag mismatch.
- **...-NotMappedChannels.txt**
  Contains channels that are not supported by the system since the characteristics are not used in SICAM PQS and SICAM PQ Analyzer.
- **..._unknown.txt**
  Contains channels, for which the abbreviations used are unknown.

The files below are created for import/update in UI Configuration's Template view:

- DeviceDescription-file ...-SupportedChannels_ImportService.txt for being imported for “Automatic PQDIF Import” service (compare use case a. on previous page)
- ddrec-file ...-SupportedChannels.ddrec which will be used for updating the device templates in case of IEC 61850 connected devices (compare use case b on previous page).

Number of Supported Channels

Channels listed in ddrec- and device template-file are selected as supported based on SICAM PQS knowledge base used for IEC61850.

Not all the channels (number mentioned in DDRecCreationTool’s command line reply and listed in files) are really supported due to various other reasons:

- ImportService (use case a) uses a different knowledge base resulting in less channels supported
- Tags/attributes of channels in PQDIF-file do not match with SICAM PQS tags/attributes
- Channels are declared in the data source section of the PQDIF file, but PQDIF-file does not contain related data

With SICAM PQS ≥ V8.19, the DDRecCreationTool is available in directory %PAS_BIN%. If executed in Command line window without any parameters, it will display information about the usage.

2.6.13.3 Importing Fault Records

To import the fault records, proceed with the following steps:

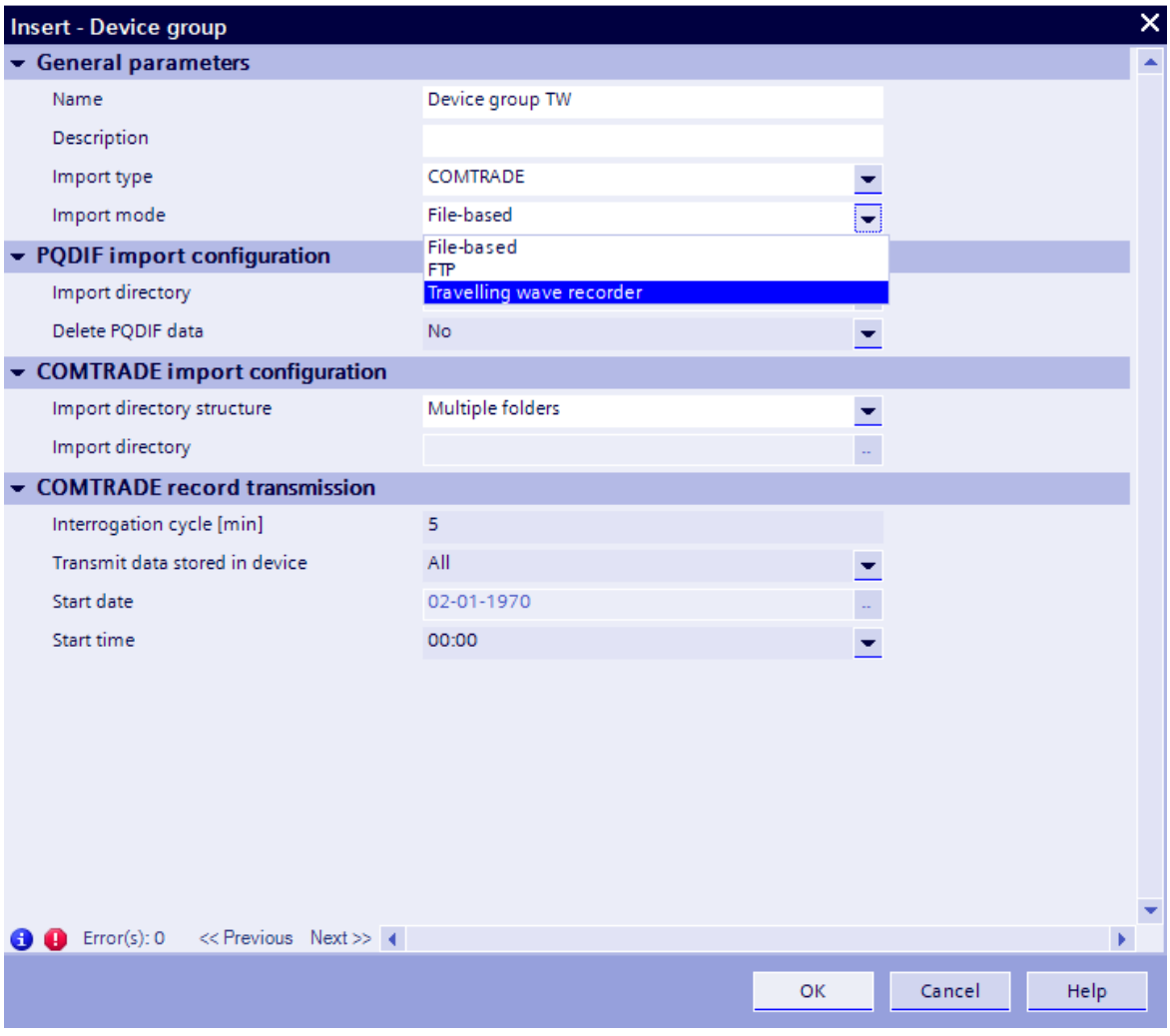
✧ Right-click **PQS Automatic Import** and select **Device group** from the context menu.

✧ Select **COMTRADE** in the **Import type** field under **General parameters**.

✧ Select the desired **Import mode**.

3 options are available:

- **File-based**.
  For using a third-party application or for manually copying fault records to the I**mport directory**.
- **FTP**
  For automatically copying fault records from the FTP directory to the I**mport directory**.
- **Travelling wave recorder**
  For automatically downloading of fault records from the traveling-wave recorder of the device.



[sc_Importing Fault records, 1, en_US]

Figure 2-46 Fault-Records Import Mode

These fault records are automatically imported to the PQS Archive.

NOTE

If you have selected the **FTP** import mode, you need to define the parameters under **COMTRADE record transmission**:

- For the cyclical request of fault records enter the **Interrogation cycle [min]** in minutes.
- From the **Transmit data stored in device** list select:
  - **All**, to transmit all records
  - **From point in time**, to transmit data starting from the entered **Start date** and **Start time**

For more information, refer to the online help.

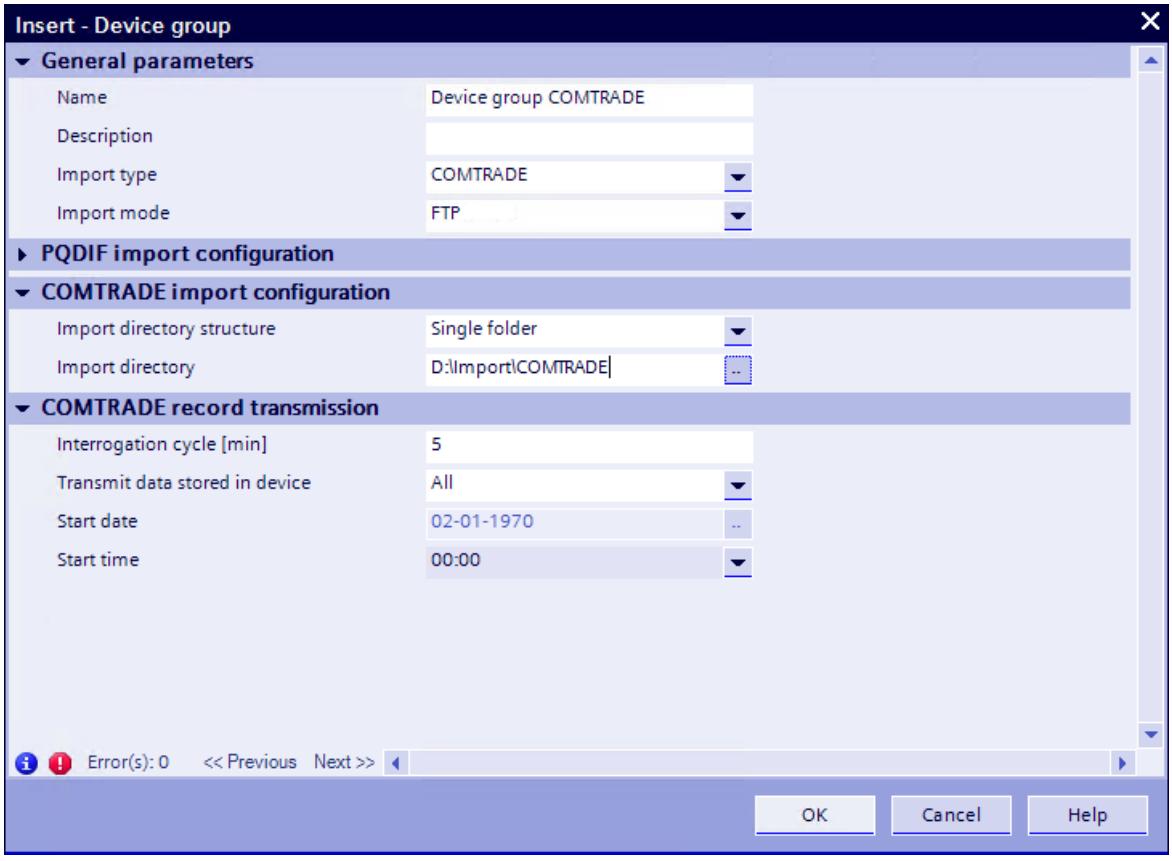
Fault records can be stored in different ways:

- *All Fault Records in One Directory, Page 78* independent of the device name
- *Fault Records Sorted by Device, Page 80* in different directories

All Fault Records in One Directory

If all fault records are stored in 1 shared directory:

- ✧ Select the **Single folder** import directory structure in the **COMTRADE import configuration** input area.
- ✧ In the **Import directory** field, select the import path for the COMTRADE fault records.



[sc_COMTRADE_Dire_Struct, 2, en_US]

Figure 2-47 PQS Automatic Import, COMTRADE Directory Structure

- ✧ Confirm with **OK**.
- ✧ Select the **Device group** and insert a **Device**.
- ✧ Under the **General parameters** of the device, select **Sample Device COMTRADE** in the **Device template** field.
- ✧ In the **COMTRADE import configuration** input area, in the **File name contains** field, you can define the COMTRADE files of the import directory that are assigned to a device.
  Enter a maximum number of 3 colon separated strings that are part of the COMTRADE file name. The strings are logically interconnected by an AND.
  If the field remains empty, all data from the import directory are assigned to the device.
- ✧ In the **Delete fault records** field, select whether the fault records must be removed from the source directory after the import.

NOTE

If the **FTP** import mode is enabled, you must define the following:

- Under **Communication parameters for FTP**, enter the **IP address**, the **Port**, and the **FTP directory** of the device where it internally stores the fault records.
- Under **Security configuration**, enter the **Authentication user name** which is required for the secure communication with the device and the **Authentication password** if the user name is different to **Anonymous**.

For more information, refer to the online help.

✧ Confirm with **OK**.

Example

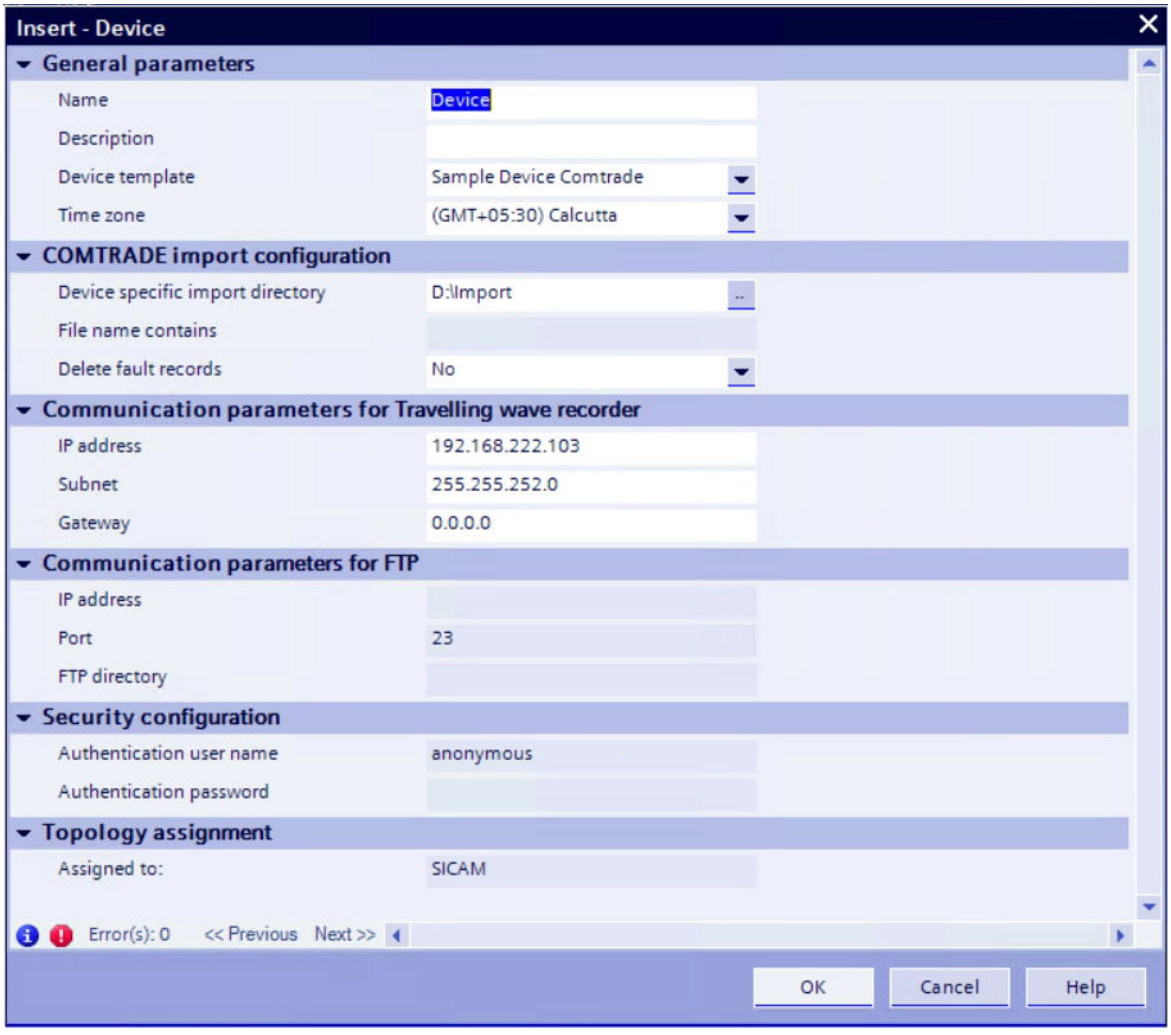
The following fault record files are stored in a shared folder:
2013-2-28_10-29-33_NBG_North_Feeder01.CFG
2013-2-28_10-29-33_NBG_North_Feeder01.DAT
2013-2-28_10-29-33_NBG_North_Feeder01.INF (if available in the device)
2013-2-28_10-29-33_NBG_North_Feeder01.HDR (if available in the device)

2013-2-28_10-29-33_NBG_North_Feeder02.CFG
2013-2-28_10-29-33_NBG_North_Feeder02.DAT
2013-2-28_10-29-33_NBG_North_Feeder02.INF (if available in the device)
2013-2-28_10-29-33_NBG_North_Feeder02.HDR (if available in the device)

2013-2-28_10-29-33_NBG_South_Feeder01.CFG
2013-2-28_10-29-33_NBG_South_Feeder01.DAT
2013-2-28_10-29-33_NBG_South_Feeder01.INF (if available in the device)
2013-2-28_10-29-33_NBG_South_Feeder01.HDR (if available in the device)

2013-2-28_10-29-33_NBG_South_Feeder02.CFG
2013-2-28_10-29-33_NBG_South_Feeder02.DAT
2013-2-28_10-29-33_NBG_South_Feeder02.INF (if available in the device)
2013-2-28_10-29-33_NBG_South_Feeder02.HDR (if available in the device)

When entering **north: Feeder02** in the **File name contains** field, the following data are imported into the PQS Archive:
2013-2-28_10-29-33_NBG_North_Feeder02.CFG
2013-2-28_10-29-33_NBG_North_Feeder02.DAT
2013-2-28_10-29-33_NBG_North_Feeder02.INF (if available in the device)
2013-2-28_10-29-33_NBG_North_Feeder02.HDR (if available in the device)



[sc_COMTRADE_with_Filter, 4, en_US]

Figure 2-48 PQS Automatic Import, COMTRADE with Filter

Fault Records Sorted by Device

- ✧ If fault records sorted by device are stored in different directories, select the **Multiple folders** import directory structure in the **COMTRADE import configuration** input area.
- ✧ Confirm with **OK**.
- ✧ Select the **Device group** and insert a **Device**.
- ✧ Under **General parameters**, select **Sample Device COMTRADE** in **Device template**.
- ✧ Under **COMTRADE import configuration** input area, in **Device-specific import directory**, select the directory of the COMTRADE fault records that you want to import.
- ✧ In **Delete fault records**, select whether the fault records can be removed from the source directory after the import.
- ✧ Under the **Communication parameters for Travelling-wave recorder** input area, in **IP address**, enter the IP address of the device which is compatible with the travelling wave.
- ✧ In **Subnet**, enter the subnet mask of the device which is compatible with the travelling wave.
- ✧ In **Gateway**, enter the gateway of the device which is compatible with the travelling wave.

NOTE

- If the **Templates** view does not include an appropriate import file, you can create a customized template which describes the structure of the data recorded. For more information, refer to *2.11.8 Recording Channels*.

  By using the Import function of the **Templates** view, you can also import customized templates which describe the structure of the data recorded. For more information, refer to *2.11.5 Importing/Exporting a Device Template*.

- To ensure that the size of the **Import directory** does not increase continuously, set the value of **Delete fault records** to **Yes**.

In the **Topology assignment** input area, you see the topological level which is assigned to the device group. The fault records are saved in the archive under this topological assignment and displayed in the SICAM PQ Analyzer, **Incident Explorer** view.

2.6.13.4 Displaying Trigger Information of Fault Records

For the fault records generated from a SIPROTEC 7KE85 device, the COMTRADE header file (HDR) contains information on the trigger, cause, and fault number, whereas the fault records that are generated from OSCOP contain information about trigger and cause only. During the automatic import of these fault records, the information on trigger, cause, and fault number present inside the HDR file is imported and stored in the archive along with the fault record.

In the **Incident Explorer** view of the SICAM PQ Analyzer, the **Fault number**, **Trigger**, and **Cause** are displayed. For more information, refer to */13/ SICAM PQ Analyzer* and */14/ SICAM PQ Analyzer, Incident Explorer*.

2.6.14 PQS Automatic Export

If you require PQ data and fault records from the archive for evaluation by other programs, you can automatically export this data. During this procedure, the current archive data is stored in defined directories.

The **PQS Automatic Export** application exports:

- PQ data in PQDIF (Power Quality Data Interchange Format) format
- PQ data in CSV (Comma Separated Value) format
- Voltage events classified according to IEEE 1159.3 in PQDIF format
- Fault records in COMTRADE (Common Format for Transient Data Exchange) format
- Reports in PDF format

The corresponding, archive data is stored in the directories defined. The archive directory, the configured import paths of the PQS Automatic Import application, and the export paths of the PQS Automatic Export application for the same export types are not permissible as export root directory. The export path must always be defined as a complete network path (UNC path), mapped drives are not permissible.

NOTE

The **SICAM PAS PQS Users** user group must have **write** permission for the directory.

To achieve this, open the **Properties** of the directory, select the **Security** tab and add the **SICAM PAS PQS Users** user group to the **Group and user names** via **Edit... > Add...** . Grant the **write** permission.

After you have inserted the **PQS Automatic Export** application into the system, configure the data export according to the description for:

- *2.6.14.1 Exporting PQ Data*
- *2.6.14.2 Exporting Fault Records*
- *2.6.14.4 Exporting Reports*

2.6.14.1 Exporting PQ Data

For more information on customizing the default mapping file for PQDIF export, refer to *A.2 Updating a User-Defined Mapping File*.

For more information on customizing the default channel list file for CSV export, refer to *A.3 Updating a User-Defined Channel List File*.

To export the PQ Data, proceed with the following steps:

✧ Right-click **PQS Automatic Export** and select **Export Service** from the context menu.
The **Insert - Export Service** dialog opens.

✧ In the **General parameters** input area, in the **Export type** field, select either **PQ data (CSV)** or **PQ data (PQDIF)** format.
In case of a PQDIF export, a single file is exported for the whole device or the measuring group depending on the **Export folder structure**. In case of a CSV export, a CSV file is exported for each characteristic type and measurement value type.
The **PQ data export configuration** input area is enabled and the default option for **Export PQ violations** field is **No**.

NOTE

- If the configuration, device name, topology, measurement group name, channel name, or Grid Code name contains Unicode characters that are not supported by the current language setting of the operating system, exporting of PQ data files do not work.
- The date and time format for the automatic CSV export is always defined by the **Region and Language** settings of the operating system of the **PASRuntimeUser**.

✧ In the **Export root directory** field, select the path under which the exported PQ data is stored based on the topological structure configured or the **Configuration** view. For each device, a subdirectory with PQ data is created for each export time.

✧ In the **Export folder structure** field, select the structure how the PQ data are exported to the **Export root directory**.

- With **Based on Configuration view (multiple folders)**, measured data of a device is exported to a single folder. PQ Violations are exported to the respective subfolders based on Grid Codes.
- With **Based on Configuration view (single folder)**, measured data and the PQ Violations of a device are exported to a single folder.
- With **Based on Topology view (multiple folders)**, measured data of each measuring group assigned to a bay is exported to a single folder. PQ Violations are exported to respective subfolders based on Grid Codes.
- With **Based on Topology view (single folder)**, measured data and the PQ Violations of each measuring group assigned to a bay are exported to a single folder.

✧ In the **Time zone** field, select the time zone to which all the time information of the exported data is referred.
If the timezone contains DST, during the day-light switch the exported PQ data splits depending on the configured interval.

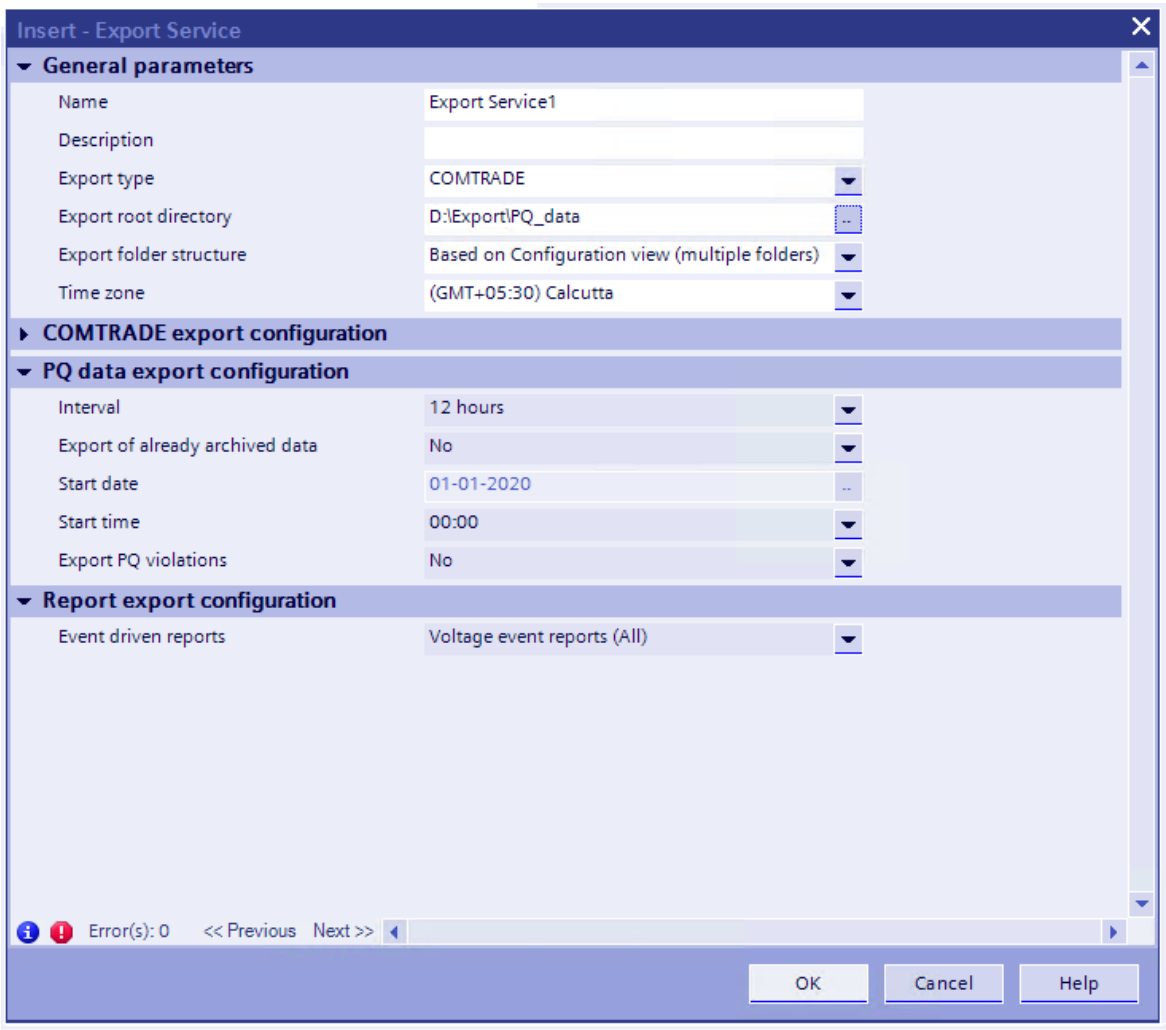
✧ In the **PQ data export configuration** input area, in the **Interval** field, select the time interval in hours, day, or week after which the PQ data is stored in the export directory, for example, **1 hour** for hourly export or **1 day** for daily export. The time intervals refer to 00:00 AM.

NOTE

To reduce the total number of exported reports, you can select **1 week** as the **Interval**.
The PQ data for a device is exported to the destination folder if all the characteristics of the device are available in the archive for the requested interval.

✧ With the **Export of already archived data** parameter, you define whether PQ data already recorded in the archive will be subsequently exported as PQDIF or CSV files.

- If you select **Yes**, you define in the **Start date** and **Start time** field the time when the export starts.
- If you select **No**, the export begins as soon as the export service in SICAM PAS/PQS UI – Operation has been enabled for the first time.



[sc_Inserting_Export_Ser, 6, en_US]

Figure 2-49 Inserting an Export Service for PQ Data

✧ To configure the exporting of Grid Code violations, select **Yes** from the **Export PQ violations** field.

2.6.14.2 Exporting Fault Records

To export the fault records, proceed with the following steps:

✧ Right-click **PQS Automatic Export** and select **Export Service** from the context menu.

✧ In the dialog which opens in the **General parameters** input area in the **Export type** field, select the **COMTRADE** format.

✧ In the **Export root directory** field, select the path under which the exported fault records are stored analogous to the topological structure configured or the **Configuration** view. For each device, a subdirectory with COMTRADE files is created for each export time.

✧ In the **Export folder structure** field, select the structure how the COMTRADE files are exported to the **Export root directory**.

- With **Based on Configuration view (multiple folders)**, fault records are exported to the respective folders based on each record type of a device.
- With **Based on Configuration view (single folder)**, fault records of a device are exported to a single folder (independent of the fault record type).
- With **Based on Topology view (multiple folders)**, a folder is created for each assigned measuring group, which contains subfolders for each fault record type of a device. The records of the assigned device are exported to the respective subfolders based on their type.
- With **Based on Topology view (single folder)**, fault records of a device for which at least one measuring group has been assigned to a bay are exported to a single folder (independent of the fault record type).

✧ In the **Time zone** field, select the time zone to which all the time information of the exported data is referred.

✧ In the **COMTRADE export configuration** input area in the **Export COMTRADE records from archive** field, you define whether the fault records already stored in the archive will be exported.

- If you select **From point in time**, the fault records stored from the time defined in the **Start date** and **Start time** field are exported.
- If you select **All**, all the fault records stored in the archive are exported.

✧ In the **COMTRADE version** field, select the version for the **COMTRADE 1997**, **COMTRADE 1999**, **COMTRADE 2001**, or **COMTRADE 2013** export.

✧ In the **COMTRADE format** field, select the **ASCII**, **Binary**, **Binary32**, or **Float32** export format.

Only the COMTRADE version 2013 supports the **Binary32** and **Float32** formats.

✧ In the **Save as** field, select the file format in which you want to save the COMTRADE files (cfg, dat, hdr, and inf):

- With **Individual files**, the COMTRADE files are saved individually in the export folder.
- With **ZIP files**, the COMTRADE files are saved in 1 ZIP file in the export folder.

✧ In the **Modification of the sampling frequency** field, select whether you want to reduce the sampling frequency of the fault record data during export. The sampling frequency must be reduced if the evaluation program cannot operate with the recorded sampling frequency.

✧ In the **Sampling frequency [Hz]** field, enter the frequency for data resampling.

✧ In the **File naming convention** field, select the file name structure of the exported COMTRADE records.

- With **Legacy**, the file name is structured depending on the option selected in the **Export folder structure**.

  For the **(multiple folder)** options, the file name structure is **Start date and time**.

  For the **Based on Configuration view (single folder)** option, the file name structure is **Record type, Start date and time**.

  For the **Based on Topology view (single folder)** option, the file name structure is **Record type, Device name, Start date and time**.
- With **IEEE Std C37.232-2011**, the file name is structured according to the IEEE Std C37.232-2011:

  Start Date, Start Time, Time Code, Station Identifier, Device Identifier, Company Name, Duration, Record Type

  where

  Record Type is either slow-scan (sl), phasor (ph), or transient (tr). For fast-scan records, the Record Type is omitted.

  Company Name is the name of the company entered at the project level in the **Configuration** view.

NOTE

The special characters \, /, :, *, ?, ", <, >, and | in the **Company Name** are replaced by _ in the file name.

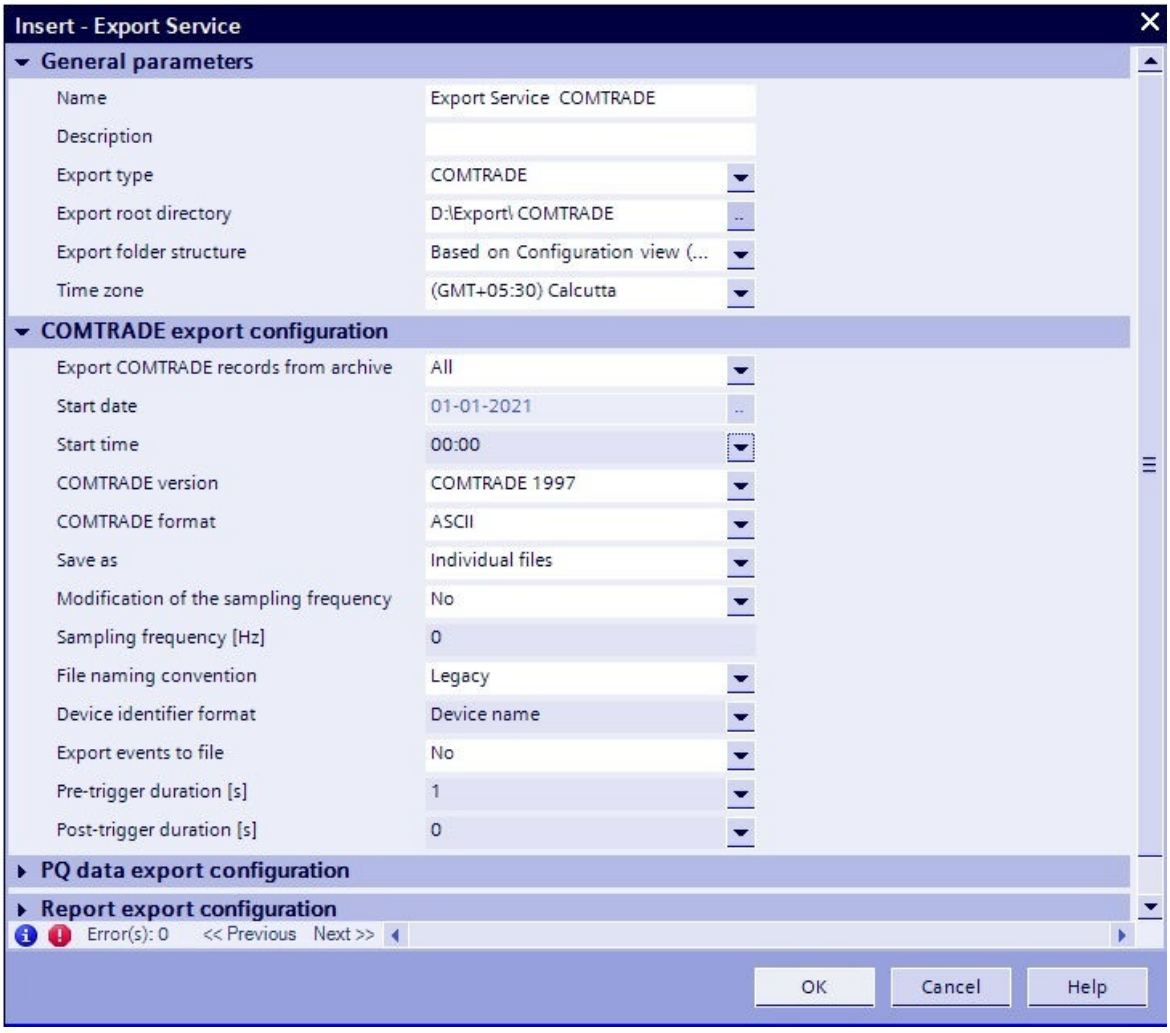
✧ In the **Device identifier format**, select the file name format in which you want to identify the exported fault record.

- With **Device name**, the exported fault record is named as the device name configured in the **Configuration** view.
- With **Voltage level, bay, and device name**, the exported fault record is named as a combination of the voltage level and bay name from the **Topology** view and the device name from the **Configuration** view separated by hyphens.

NOTE

The **Device identifier format** field is enabled only for the **IEEE Std C37.232-2011** option in **File naming convention**.

If the **Export folder structure** is based on configuration view, the **Voltage level, bay, and device name** option cannot be selected in the **Device identifier format**.



[sc_Inserting_ Export_Ser_Fault, 6, en_US]

Figure 2-50 Inserting an Export Service for Fault Records

2.6.14.3 Exporting Events as CSV File

To map the relevant events to the archive, proceed with the following steps:

- ✧ Right-click the **Archive** application and select **Process information** from the context menu.
- ✧ Right-click **Process information** and select **Event list** from the context menu.
- ✧ Right-click the **Event list** and select **Go to...** from the context menu.
- ✧ In the dialog which opens, confirm the **Mapping** view.
- ✧ Select all the items of information that you want to be stored for displaying in the Event Viewer.

To export events as a CSV file, proceed with the following steps:

- ✧ In the **Export events to file** field, select **Yes** to enable automatic export of event list along with fault records as a CSV file.

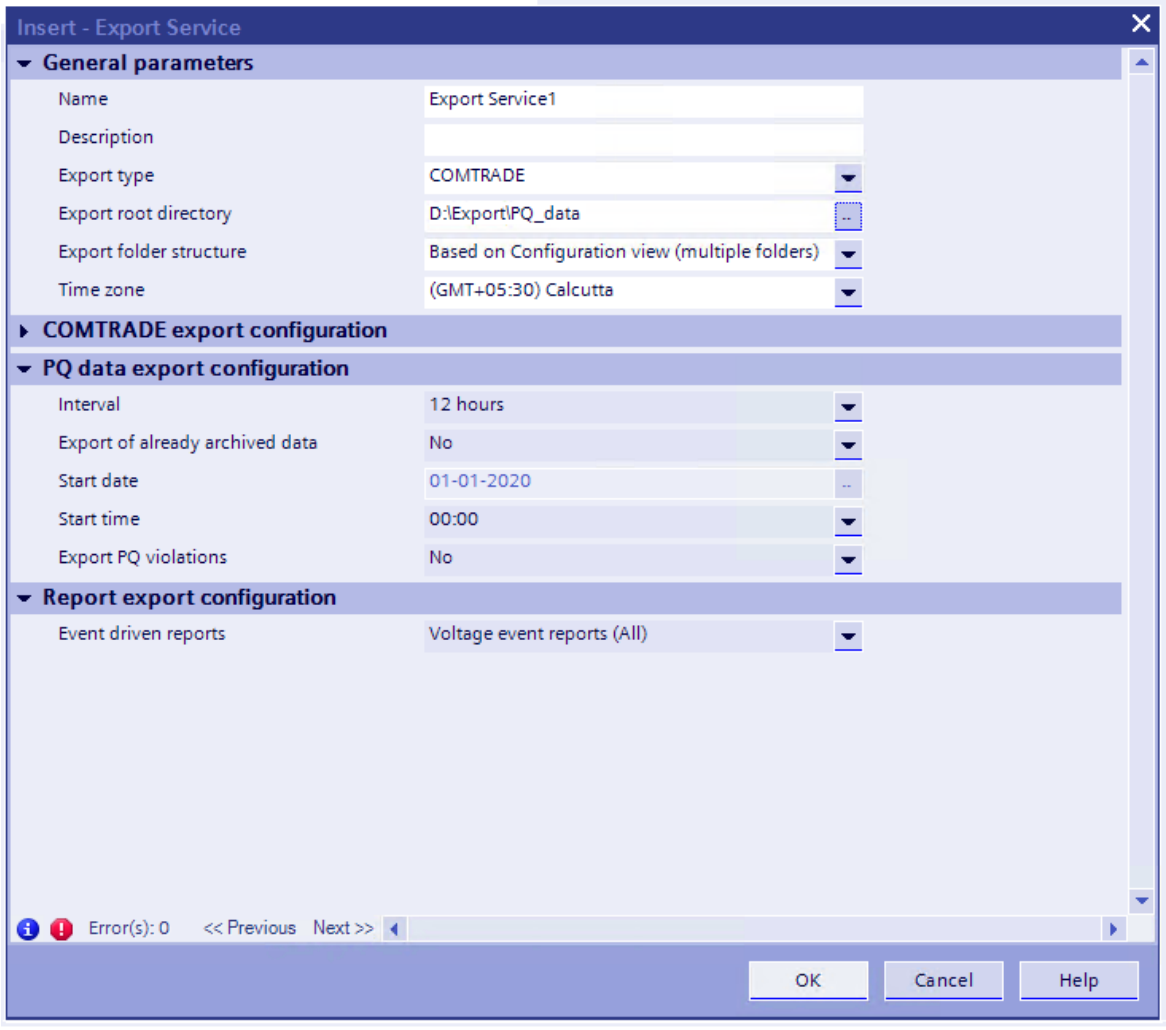
  The CSV file will be stored in **Events** folder. An **Event** folder is created along with the **COMTRADE** device or **Topology export** folder.
- ✧ Enter the **Pre-trigger duration [s]** and **Post-trigger duration [s]**.

  The pre-trigger duration refers to the time span prior to the trigger point of the fault event. If the pre-trigger record duration of the fault record is greater than the configured **Pre-trigger duration [s]**, the pre-trigger record duration of the fault record is considered.

  The post-trigger duration refers to the time span after the trigger point of the fault event. All the fault records generated during the **Post-trigger duration [s]** are included in the fault event. If the post-trigger record duration of the fault record is greater than the configured **Post-trigger duration [s]**, the posttrigger record duration of the fault record is considered.

NOTE

- Only events from the device providing the fault record will be included in the exported CSV file.
- You can only enter a **Pre-trigger duration [s]** and **Post-trigger duration [s]** when **Export events to file** is set to **Yes**.



[sc_Inserting_Export_Ser, 6, en_US]

Figure 2-51 Inserting an Export Service for Fault Records

2.6.14.4 Exporting Reports

NOTE

If Unicode characters which are not supported by the installed Siemens font are used in the configuration, topology, device name, channel name, measurement group name, Grid Codes, or comments, the reports can contain replacement characters such as □ or ?.

You can resolve the same by installing a font that supports these characters and updating the font name in the **FontFamily** section of the **PMPDFStyleSettings.xml** file which is available in the **%pas_bin%** directory.

To export the reports, proceed with the following steps:

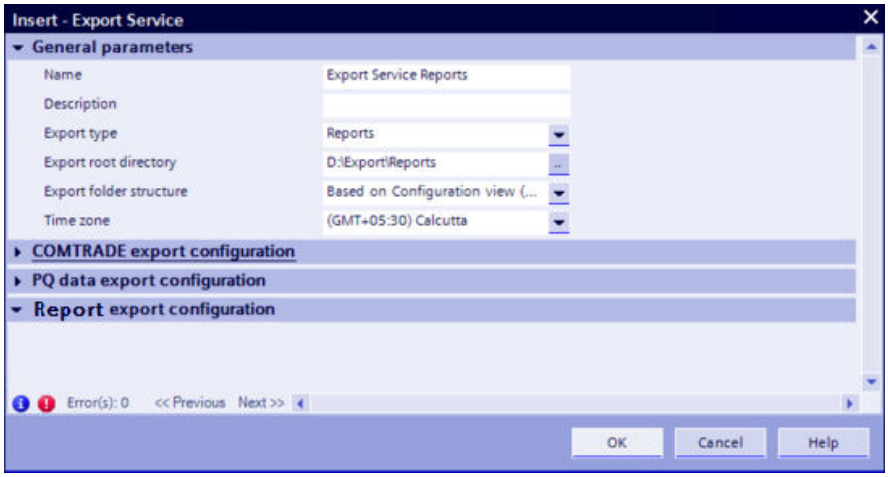
- ✧ Right-click **PQS Automatic Export** and select **Export Service** from the context menu.
- ✧ In the dialog which opens in the **General Parameters** input area in the **Export type** field, select the **Reports** format.
- ✧ In the **Export root directory** field, select the path under which the exported reports are stored.
- ✧ In the **Export folder structure** field, select the structure how the reports are exported to the **Export root directory**.

- With **Based on Configuration view (multiple folders)**, the reports are exported to the respective folders based on each of the configured scheduled report template. PQ Violation reports and Fault location reports are exported to the respective subfolders based on the measuring groups under the device folder.
- With **Based on Topology view (multiple folders)**, a folder is created for each assigned measuring group, which contains subfolders for each scheduled report template (whose diagrams were assigned to this measuring group). The scheduled reports are exported to the respective subfolders based on the template and the assigned measuring group. PQ Violation reports and Fault location reports are exported to the measuring group folders.

✧ In the **Time zone** field, select the time zone to which all the time information of the exported data is referred.

Reports are stored in the following directories:

- Scheduled reports under their name
- PQ violation reports and fault location reports analog to the topological structure configured or the **Configuration** view



[sc_Inserting_Export_Ser_Reports, 4, en_US]

Figure 2-52 Inserting an Export Service for Reports

2.6.14.5 Exporting Event Reports

NOTE

If Unicode characters which are not supported by the installed Siemens font are used in the configuration, topology, device name, channel name, measurement group name, Grid Codes, or comments, the reports can contain replacement characters such as □or **?**.

You can resolve this issue by installing a font that supports these characters and updating the font name in the **FontFamily** section of the **PMPDFStyleSettings.xml** file which is available in the **%pas_bin%** directory.

To export the event reports, proceed with the following steps:

✧ Right-click **PQS Automatic Export** and select **Export Service** from the context menu.

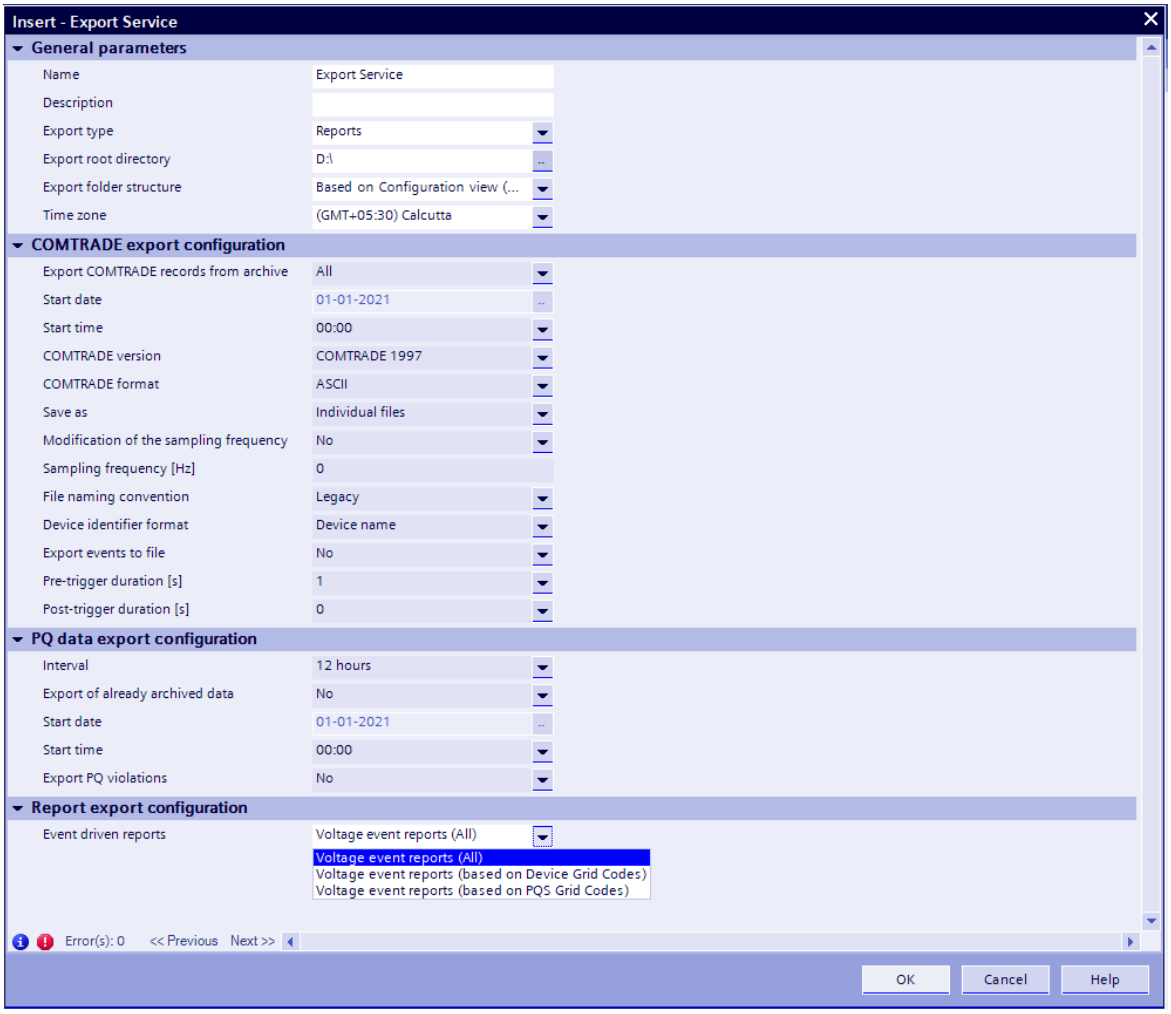
✧ In the dialog which opens in the **General Parameters** input area in the **Export type** field, select the **Reports** format.

✧ In the **Export root directory** field, select the path under which the exported reports are stored.

✧ In the **Export folder structure** field, select the structure how the reports are exported to the **Export root directory**.

  - With **Based on Configuration view (multiple folders)**, the event reports are exported to the respective folders based on each of the configured scheduled report template.
  - With **Based on Topology view (multiple folders)**, a folder is created for each assigned measuring group, which contains subfolders for each scheduled report template (whose diagrams were assigned to this measuring group). The scheduled event reports are exported to the respective subfolders based on the template and the assigned measuring group.

- In the **Time zone** field, select the time zone to which all the time information of the exported data is referred.
- In the **Report export configuration** input area in the **Event driven reports** field, you define whether you want to export voltage event reports based on device Grid Codes, PQS Grid Codes, or both.



[sc_report_export_ser, 2, en_US]

Figure 2-53 Exporting Event Reports

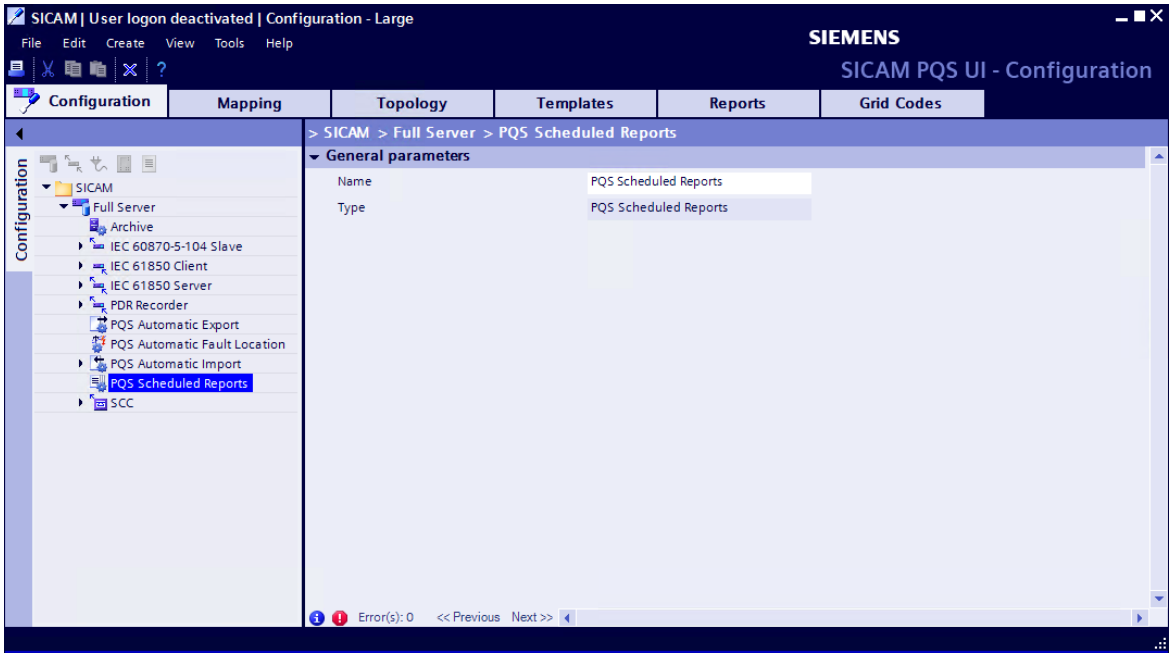
2.6.15 PQS Scheduled Reports

In the **Reports** view, you define report templates for the scheduled reports of selected and measured values of data. The **PQS Scheduled Reports** application activates the creation of these reports at the time which you have defined in the template.

To insert the **PQS Scheduled Reports** application:

✧ Select the system in the configuration tree and insert the **PQS Scheduled Reports** application.

Apart from a name, no other parameters are required.



[sc_Inserting_PQS_Scheduled_Reports, 3, en_US]

Figure 2-54 Inserting PQS Scheduled Reports

For more information on report templates, refer to *2.14.5 Inserting a Report Template*.

NOTE

If you delete the **PQS Scheduled Reports** application, all the configured report templates are also deleted.

2.6.16 PQS Automatic Notification

The **PQS Automatic Notification** application notifies you by e-mail and/or SMS on various system events. The events are classified into alarms and reports.

NOTE

Avoid the usage of Unicode characters in the e-mail address and domain names.

You can define to be notified on the following events:

- **Process and status information**
  You will be notified by e-mail and/or SMS on a status change of selectable process or status information.
- **Fault records**
  When a new fault record arrives, you will receive an SMS with brief information on the topological origin and the time when the fault occurred.
- **PQ violations**
  If a PQ violation has occurred, you will receive an SMS with brief information on the topological origin and the type of limit value violation. In addition, you will receive the PQ violation report in PDF format by e-mail.
- **Scheduled reports**
  On completion of a scheduled report, you will receive the report in PDF format by e-mail.

- **Fault location reports**
  On completion of a fault location report, you will receive an SMS with brief information on the topological origin, the fault type and the distance to the fault location. In addition, you will receive the fault location report in PDF format by e-mail.

NOTE

To be notified on PQ violations, scheduled reports and fault location reports, the functions and the archive must have been created and configured. For more information, refer to the online help.

NOTE

By **PQS Automatic Notification** application, you will not get notified on manually imported PQDIF or COMTRADE records.

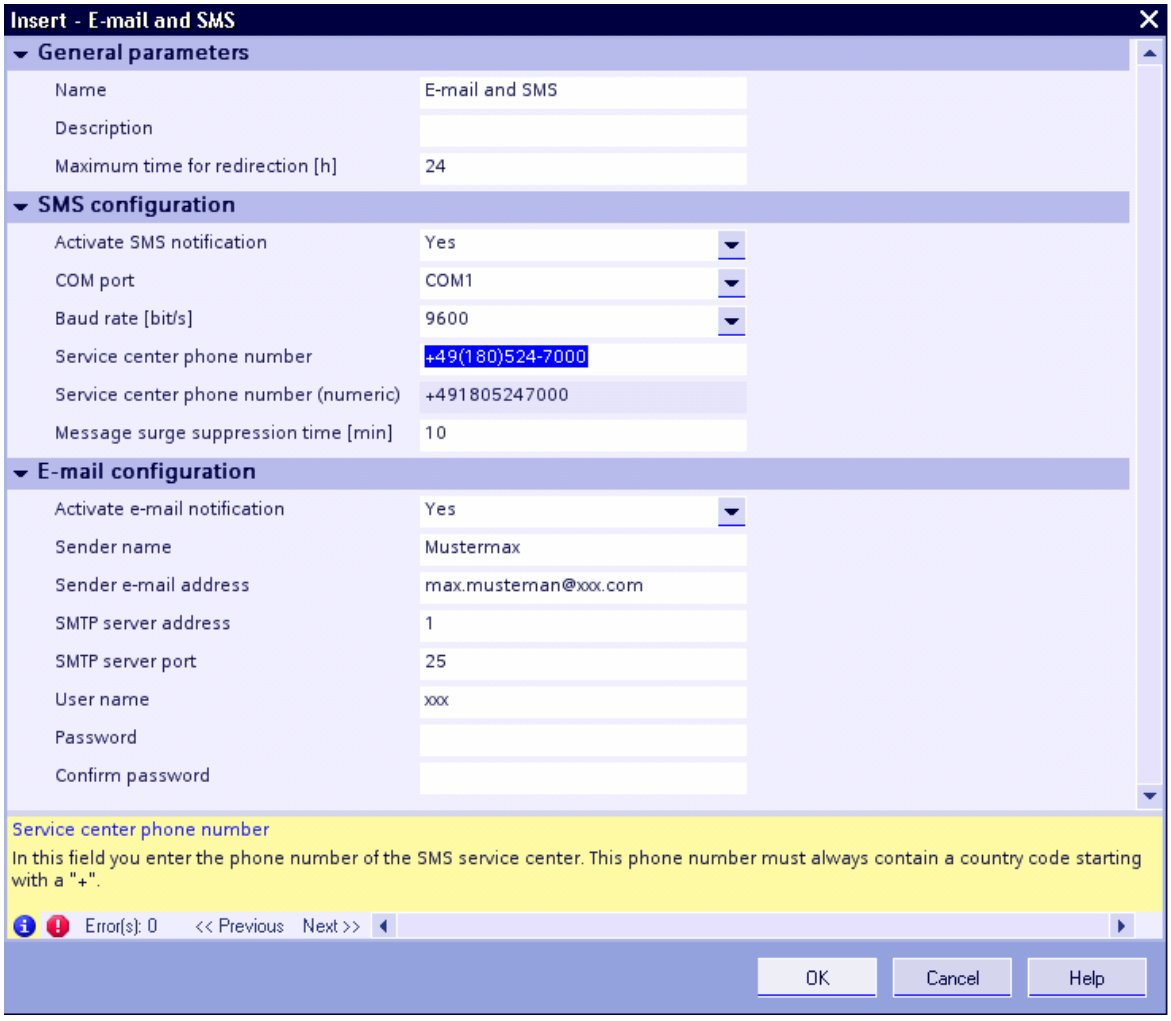
NOTE

If a time zone different from your operating system time is selected for exporting fault records, the time specified in the file name of the fault records attached to the e-mail and the exported fault records will be different.

Creating the Application

To insert the **PQS Automatic Notification** application:

- ✧ In the configuration tree, select the system and insert the **PQS Automatic Notification** application.
- ✧ Right-click the application and select **E-mail and SMS** from the context menu.
  The **Insert – E-mail and SMS** dialog opens.
- ✧ In the **General parameters** input area in the **Maximum time for redirection [h]** field, define the period during which the event shall still be transmitted after an established notification service has failed.
- ✧ In the **SMS configuration** input area, you define whether you want to be notified by an SMS and enter the data of the sending SMS port. Enter the telephone number with a + sign and the country code.
- ✧ In the **E-mail configuration** input area, you define whether you want to be notified by e-mail and enter the data of the sending SMTP server address and its port.



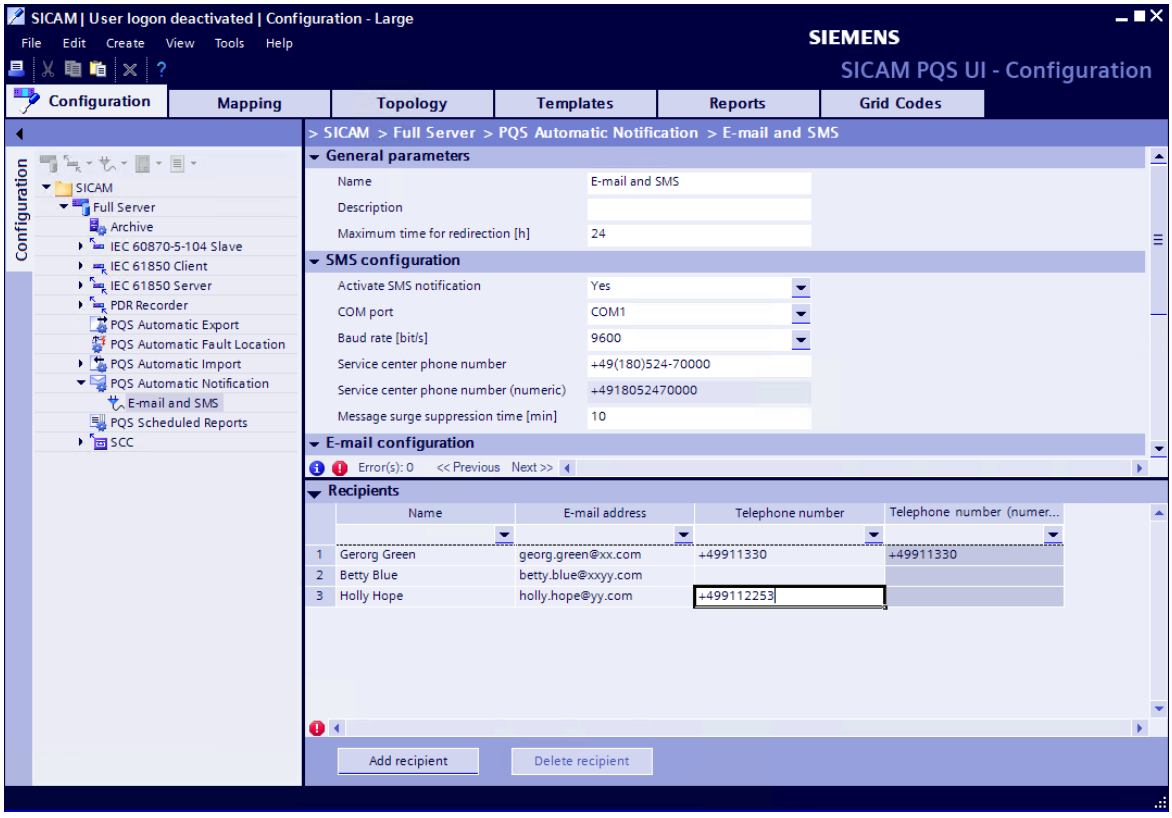
[sc_Creating_EMail_SMS_Not, 1, en_US]

Figure 2-55 Creating an E-Mail and an SMS Notification

- ✧ Select **E-mail and SMS** in the configuration tree.
- ✧ In the **Recipients** input area, click **Add recipient**.
- ✧ Enter the **Name** of the recipient, the **E-mail address** and the **Telephone number** of the recipient of the notification.

  The telephone number must contain the country code starting with a + sign, for example, +49(911)433-7415.

  If you enter the phone number in letters, a number sequence is displayed in the **Telephone number (numeric)** field.



[sc_Inserting_Recipient_Data, 3, en_US]

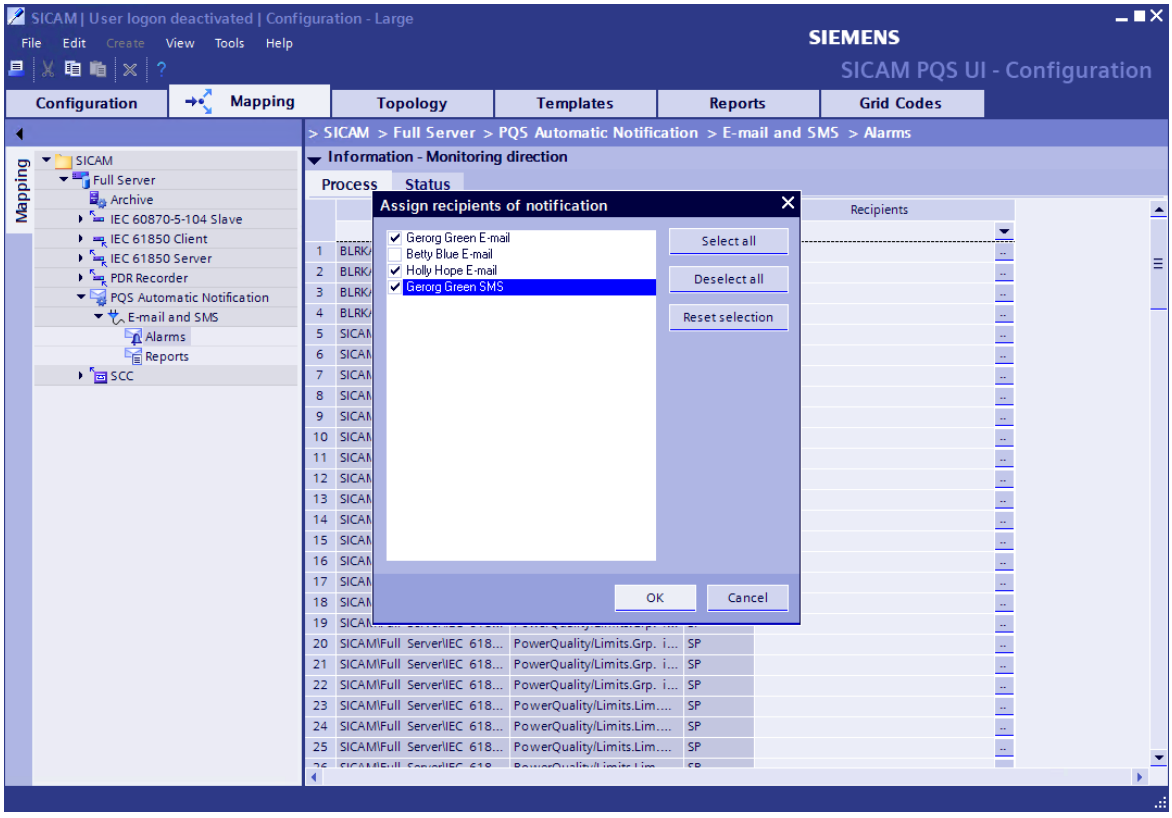
Figure 2-56 Inserting Recipient Data

Setting up a Notification for Alarms

To set up a notification for alarms:

- ✧ Right-click **E-mail and SMS** in the configuration tree and select **Device > Alarms** from the context menu.
- ✧ In the **SMS message surge suppression** input area, enter the number of SMS to be sent before the defined suppression time becomes effective. If the number of arriving alarms exceeds the parameterized value, no further SMS will be sent to the assigned receiver during the surge suppression time defined.
- ✧ Open the **Mapping** view and select **Alarms** in the configuration tree.
- ✧ In the **Process** or **Status** tab, select the information for which you want a notification to be sent if there is a status change. To perform the selection, you can use the sorting and filter options described in *2.8.2 Optimizing the View*.
- ✧ Click **...** in the **Recipients** column.
- ✧ In the dialog which opens select the people to be notified by e-mail and/or SMS.

The selection performed is shown in the **Recipients** column.



[sc_Assigning_Not_Alarms, 3, en_US]

Figure 2-57 Assigning Notifications for Alarms

Setting up a Notification for Reports

To set up a notification for reports:

✧ In the configuration tree, right-click **E-mail and SMS** and select **Reports** from the context menu.

✧ In the **SMS message surge suppression** input area, select the number of SMS to be sent before the defined suppression time becomes effective. If the number of arriving alarms exceeds the parameterized value, no further SMS will be sent to the assigned receiver during the surge suppression time defined. The number is separately defined for fault records, fault location reports, and PQ violations.

✧ In the **Preferences** input area, in the **Event-driven reports** field, select whether you want to receive an e-mail and SMS notification containing:

- All reports
- PQ violation reports
- Voltage event reports (based on Device Grid Codes)
- Voltage event reports (based on PQS Grid Codes)

If you select **All Reports** or **Voltage event reports (based on Device Grid Codes)**, the **PQ Violations** input area in the **Mapping** view, you define the recipients you want to be notified on the arrival of all reports or voltage event reports based on device Grid Codes.

In the Grid Code used in device line, click **...** in the **Recipients** column. In the dialog which opens, select the people to be notified by e-mail and/or SMS.

✧ In the **Scheduled reports** field, select whether you want to receive an e-mail containing:

- All reports
- Reports with violations
- Reports with violations, warnings, or gaps

✧ In the **Scheduled report content** field, select whether you want to receive an e-mail containing:

- Full report
- Only the table of contents of the report

✧ In the **E-mail attachments** input area, in the **Attach fault records** field, select whether or not the fault record is attached to the e-mail.

✧ In the **Attachment type** field, select the type in which you want to attach the fault records:

- With **COMTRADE**, the fault records are attached as COMTRADE files (cfg, dat, hdr, and inf).
- With **COMTRADE and PDF**, the fault records are attached as COMTRADE files and PDF file.
- With **PDF**, the fault records are attached as a PDF file.

✧ In the **Attach COMTRADE fault records as** field, select the file format in which you want to attach the COMTRADE files (cfg, dat, hdr, and inf):

- With **Individual files**, the COMTRADE files are attached as separate files.
- With **ZIP file**, 1 ZIP file containing the COMTRADE files is attached.

✧ In the **File naming convention**, select the file name structure of the attached COMTRADE records.

- With **Legacy**, the file name is a combination of device name, date, and time separated by blanks, for example, 7KE85 2019-06-03 09-25-04_451.
  Date and time are defined by the Region and language settings of the operating system of the PASRuntimeUser.
- With **IEEE Std C37.232-2011**, the file name is structured according to the IEEE Std C37.232-2011:
  Start Date, Start Time, Time Code, Station Identifier, Device Identifier, Company Name, Duration, Record Type
  where
  Record Type is either slow-scan (sl), phasor (ph), or transient (tr). For fast-scan records, the Record Type is omitted.
  Company Name is the name of the company entered at the project level in the **Configuration** view.

NOTE

The special characters \, /, :, *, ?, ", <, >, and | in the **Company Name** are replaced by _ in the file name.

✧ If **IEEE Std C37.232-2011** is selected as file naming convention, select in the **Device identifier format** field the file name of the attached fault record.

- With **Device name**, the attached fault record is named as the device name configured in the **Configuration** view.
- With **Voltage level, bay, and device name**, the attached fault record is named as a combination of the voltage level and bay name from the **Topology** view and the device name from the **Configuration** view separated by hyphens.

✧ In the **Maximum attachment size [KB]** field, enter the maximum permissible size of the attachment. If the attachment exceeds the limit defined, it is not attached to the e-mail.

✧ Select **Reports** in the configuration tree and open the **Mapping** view.

Fault Records and Fault Location Reports

In the **Fault recording** input area in the **Mapping** view, you define whether you want to be notified on the arrival of a fault record or fault location report.

✧ In the **Fault record** or **Fault location** line, click **...** in the **Recipients** column. In the dialog which opens, select which people you want to be notified by e-mail and/or SMS.

The selection performed is shown in the **Recipients** column.

PQ Violations

The **PQ violations** input area in the **Mapping** view shows all the Grid Codes which you have previously defined in the **Grid Codes** view. For each Grid Code, you can define whether you want to be notified if there is a PQ violation.

✧ Click **...** in the **Recipients** column. In the dialog which opens, select the people to be notified by e-mail and/or SMS.

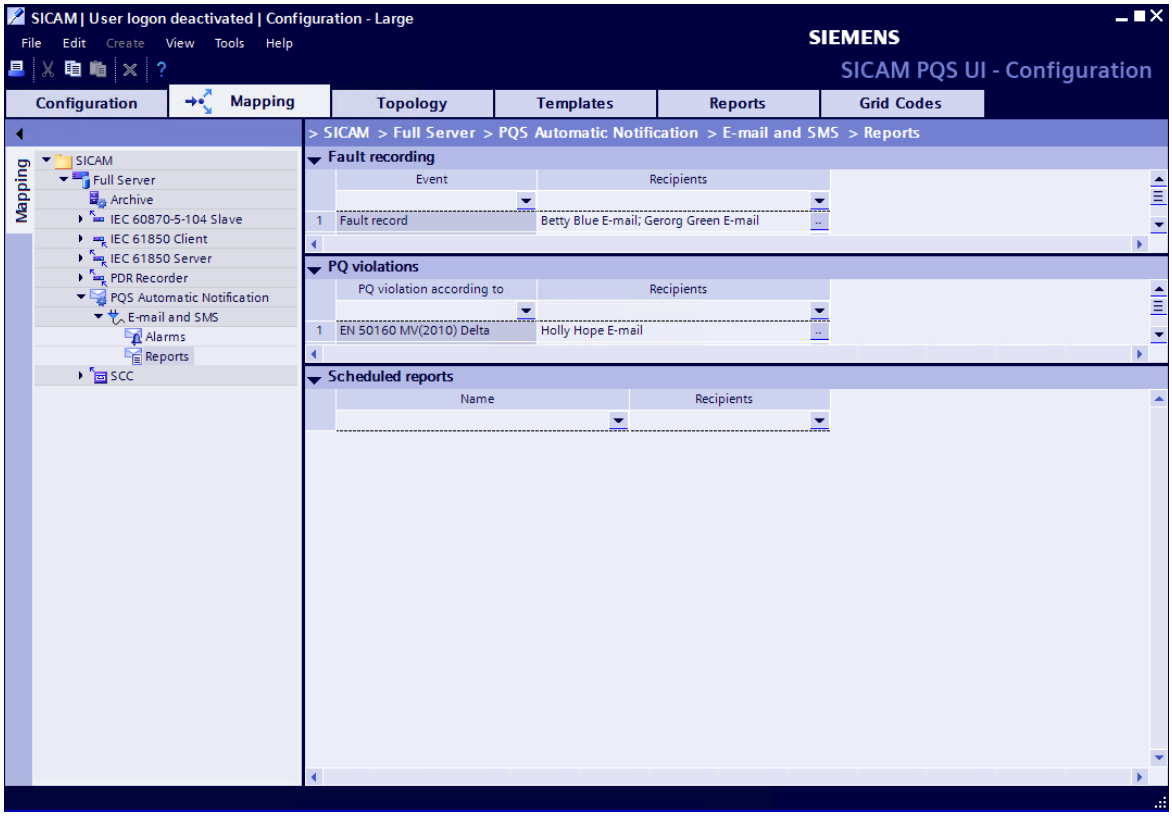
The selection performed is shown in the **Recipients** column.

Scheduled Reports

The **Scheduled reports** input area in the **Mapping** view shows all the reports which you have previously defined in the **Reports** view. For each report you can define whether you want to be notified upon its completion.

✧ Click **...** in the **Recipients** column. In the dialog which opens, select the people to be notified by e-mail.

The selection performed is shown in the **Recipients** column.



[sc_Assigning_Not_Reports, 3, en_US]

Figure 2-58 Assigning a Notification for Reports

2.7 Defining PQ Data Transmission

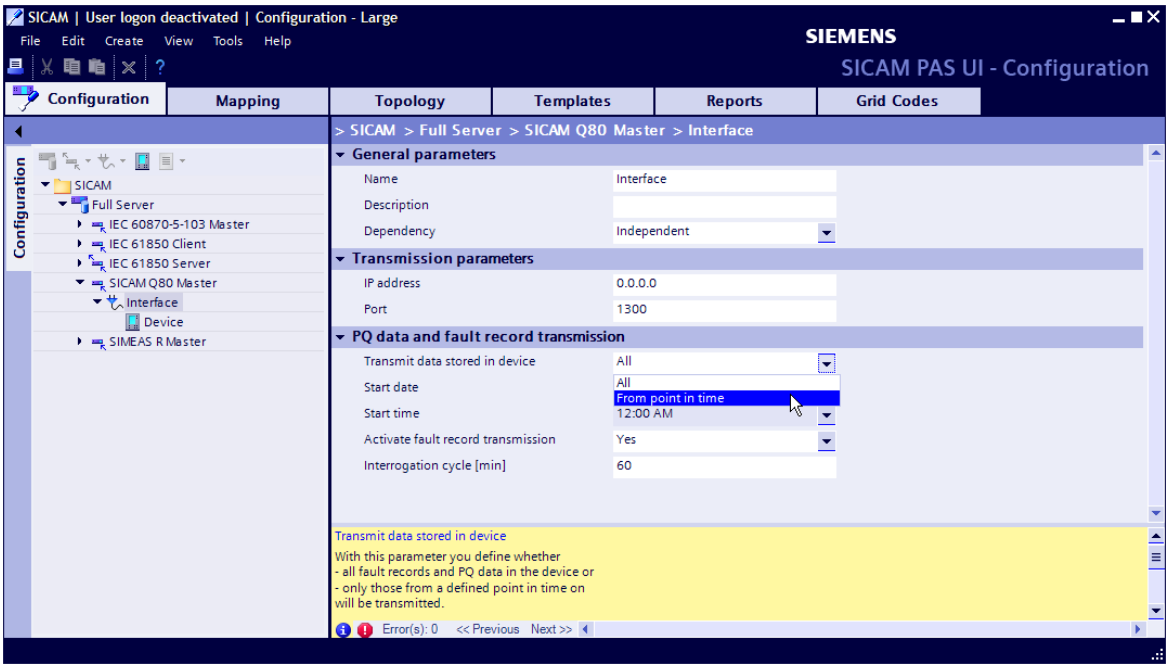
The feature **PQ Data Transmission** allows you to transmit records from SIMEAS R and SICAM Q80 devices from the date and time selected by you. To transmit records, perform the following steps:

✧ In the **Configuration** view, select a SIMEAS R Master or a SICAM Q80 Master interface.

✧ Select **All** from the **Transmit data stored in device** list to transmit all records.

- or -

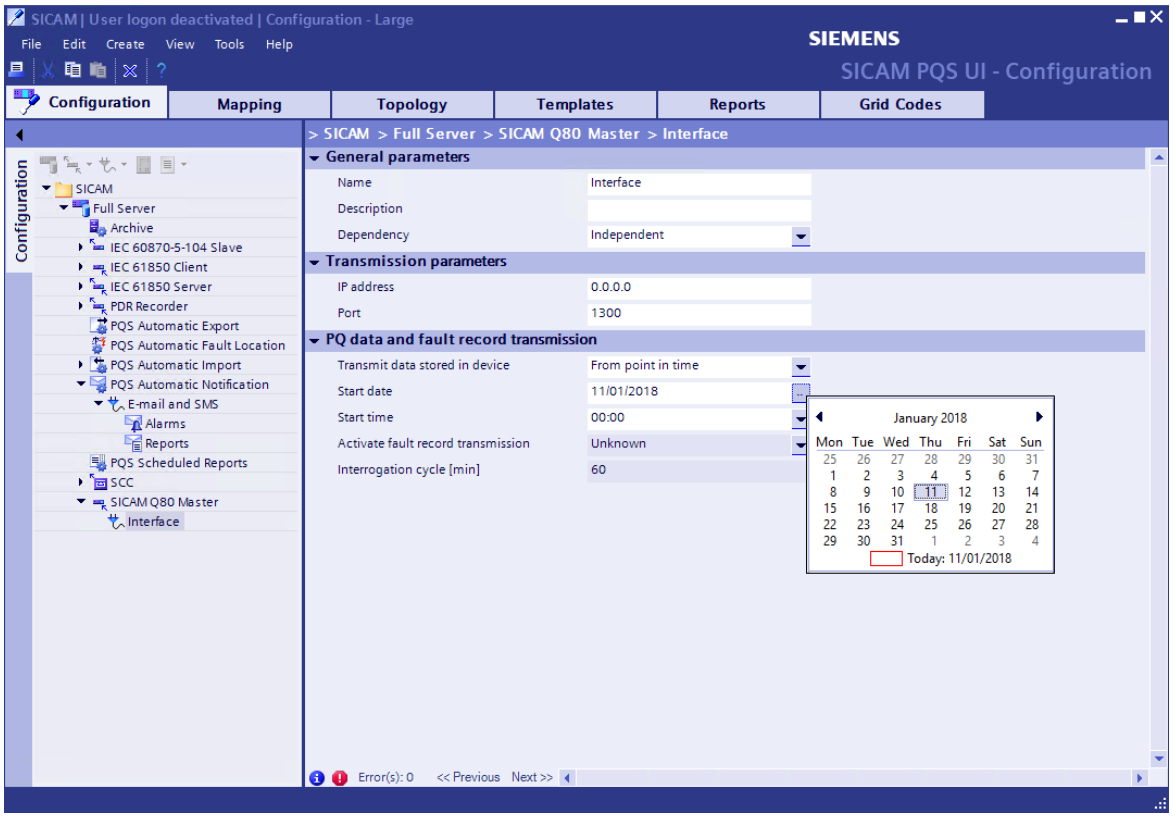
✧ Select **From point in time** to transmit data starting from the entered date and time.



[sc_Defined_data_fetch, 3, en_US]

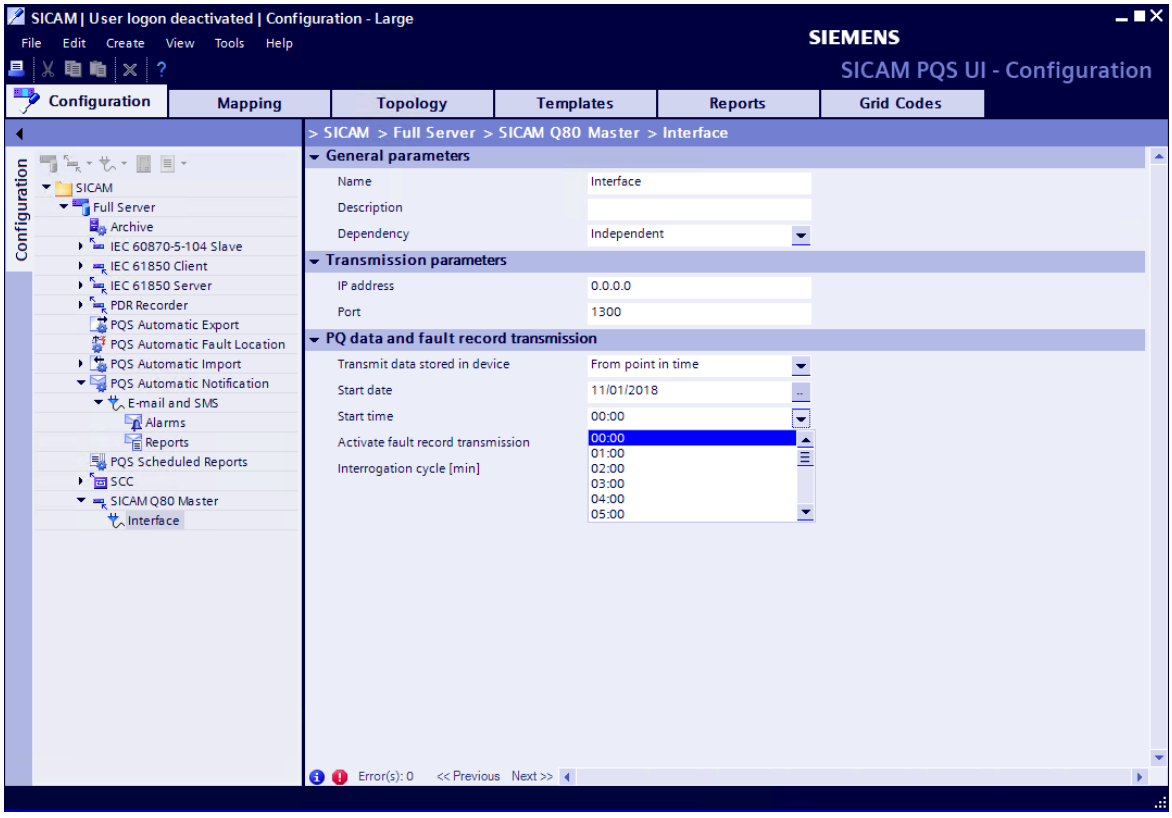
Figure 2-59 Transmitting Data from User-Defined Selection

✧ Select the **Start date** and the **Start time** from the list box.



[sc_Select_date, 5, en_US]

Figure 2-60 Selecting Start Date of Transmitting Measured Data in Devices



[sc_Select_time, 5, en_US]

Figure 2-61 Selecting Start Time of Transmitting Measured Data in Devices

✧ Start the SICAM PQ Analyzer and verify in the **Incident Explorer** view if the data is transmitted to the archive as per the selected date and time.

NOTE

If multiple devices are connected to an interface, more time is required to transmit data from SIMEAS R and SICAM Q80 devices.

2.8 Defining the Mapping

After you have configured and parameterized a data link, open the **Mapping** view. In this view, you select for example, which items of information you want to use and to which locations you want to forward them.

Proceed as follows to map information:

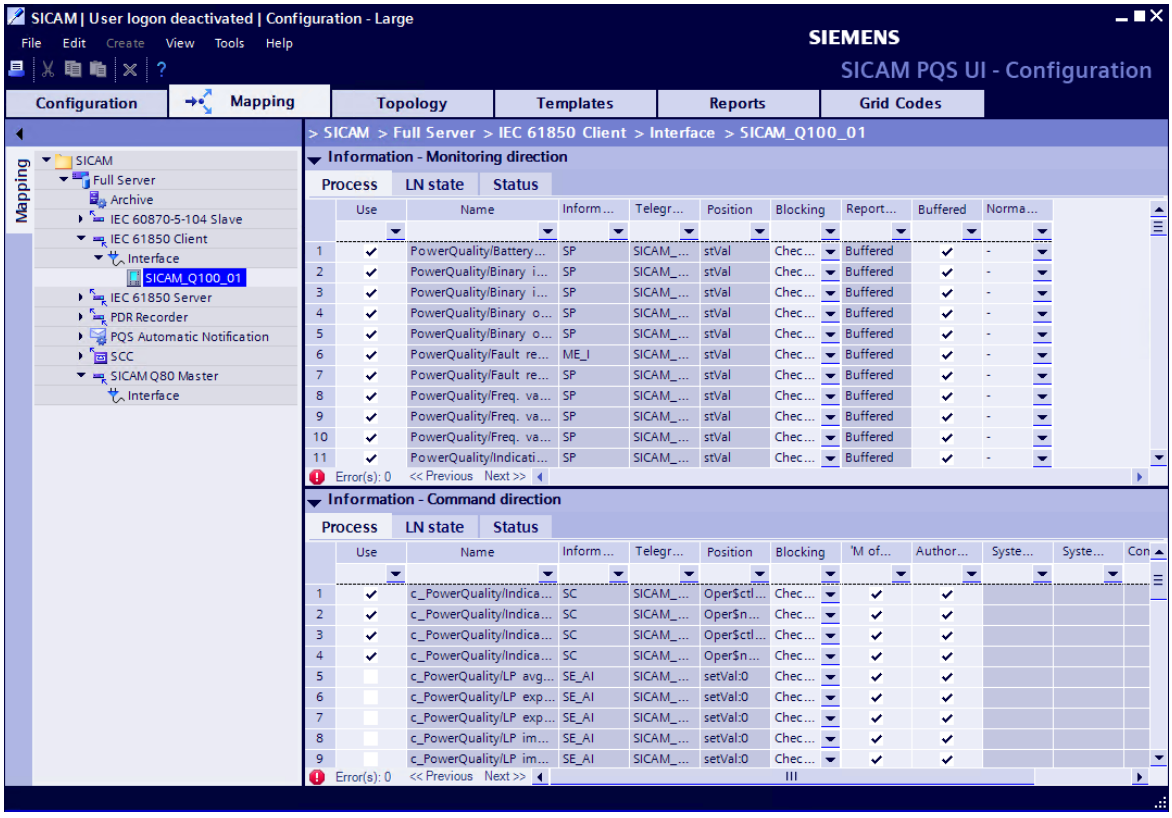
- *2.8.1 Selecting a Data Link*
- *2.8.2 Optimizing the View*
- *2.8.3 Mapping the Information*

2.8.1 Selecting a Data Link

After you have switched to the **Mapping** view, the device or the control center connection which you have previously edited in this view is selected.

The **Go to...** context menu item selects the device which you have previously selected in the **Configuration** view.

✧ Select the device or the control center connection and select the items of information which you want to use in the monitoring and command direction.



[sc_Selecting_data_link_Mapping, 3, en_US]

Figure 2-62 Selecting the Data Link in the Mapping View

2.8.2 Optimizing the View

The right-hand section of the **Mapping** view includes all items of information which are provided by a device and which are available for forwarding to the control centers and to SICAM SCC.

The information is subdivided into the following areas:

- Information – Monitoring direction
- Information – Command direction

Depending on the protocol through which the device or the control center is connected, the areas are subdivided into several **tabs**, for example, **Process**, **Status**, and **LN state**.

SICAM PAS/PQS provides several tools which help you to optimize the representation of information for the corresponding process step.

The following options are possible:

- *Sorting Information, Page 100*
- *Filtering Information, Page 102*
- *Adjusting the Column Width, Page 103*
- *Showing/Hiding Columns, Page 104*
- *Fixing a Column/Undoing the Fixing, Page 104*

Sorting Information

To sort information in a table:

- ✧ Double-click the column header in the table in order to sort information according to the contents of this column (in ascending order), for example, according to information type.
- ✧ Double-click a second time to reverse the sorting (in descending order).
- ✧ To sort multiple columns, double-click another column header to sort the information.

  Multiple column sorting is indicated by an up arrow (ascending order) and a down arrow (descending order) along with numerical indications. A numerical indication in the column header shows the sequence of the columns according to which the information is sorted. If sorting is applied on a single column, no numerical indication is displayed.

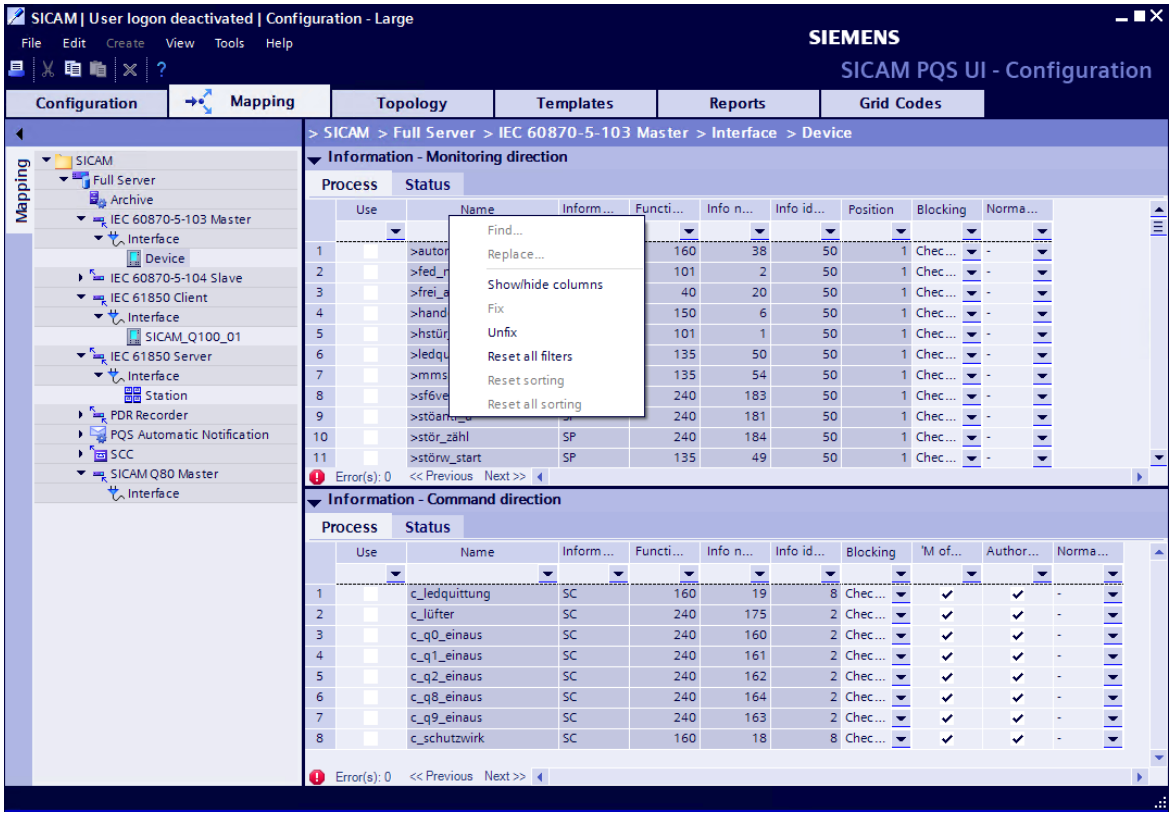
NOTE

A maximum of 5 columns can be sorted at a time.

- ✧ To undo the sorting sequence of a column, right-click on the column header and select **Reset sorting** from the context menu.
- ✧ To remove all the sorting sequences, right-click on the column header and select **Reset all sorting** from the context menu

NOTE

This menu option is displayed if multiple columns are sorted.



[sc_Sorting_Info_Multiple_Columns, 3, en_US]

Figure 2-63 Sorting Information in Multiple Columns

NOTE

Use the sorting function in order to specifically copy certain items of information into an EXCEL table. When copying back the information in the **Mapping** view, make sure that the same sorting criteria are defined. This ensures that no information parameters are accidentally confused.

NOTE

Multiple column sorting is applicable for the **Templates** view and **Mapping** view and not for the **Topology** view

Filtering Information

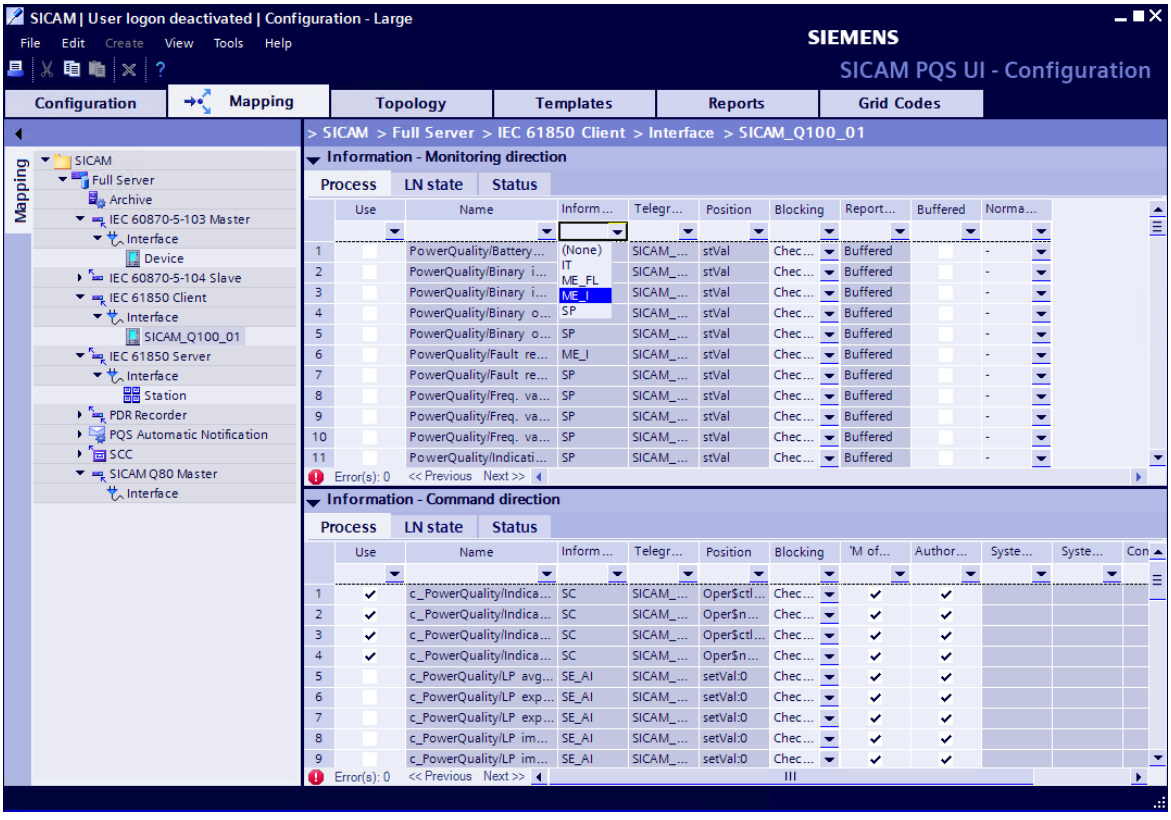
You can filter the information according to the criteria of one or several columns. Filtering focuses the display to these criteria.

Proceed as follows to filter information:

✧ Open the selection list, for example, in the **Information Type** column.

✧ Select an **information type**. The selected information type is displayed as filter criterion.

The view now only includes information of this type.



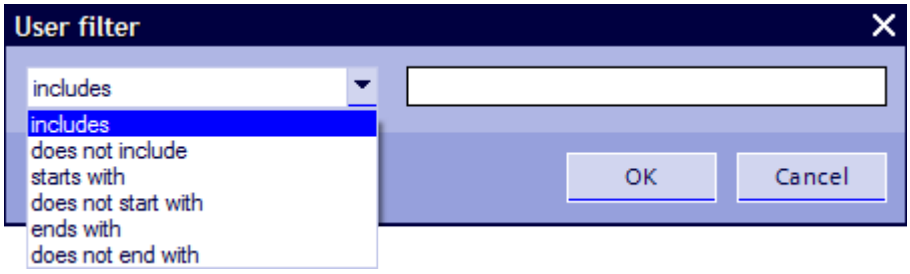
[sc_Filtering_Info, 3, en_US]

Figure 2-64 Filtering Information, Example

To define customized filter criteria:

✧ Select the **(User)** criterion in the filter line.

✧ Select the filter criterion in the **User filter** window.



[sc_Defining_Filter_Criteria, 1, en_US]

Figure 2-65 Defining Customized Filter Criteria

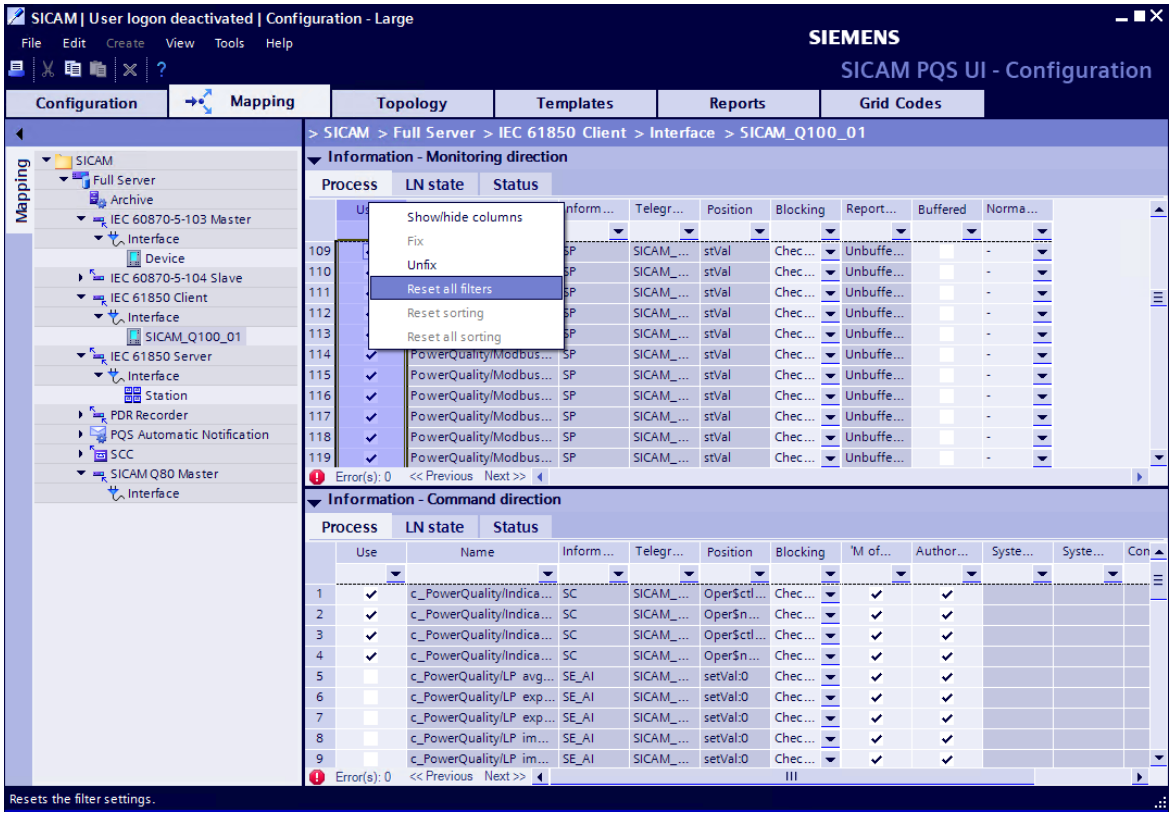
The table only shows information which meets the defined filter criterion.

To reset filter criteria:

✧ Open the selection list and select **(None)** to reset the filter.

- or -

✧ Select any column header and select **Reset all filters** from the context menu. The filters of all the columns are reset.



[sc_Resetting_Filters, 3, en_US]

Figure 2-66 Resetting all Filters

Adjusting the Column Width

If column entries are too long for the currently defined column width, you can adjust the column width.

✧ Double-click the dividing line between the 2 columns in the column header. The column is adjusted to the text width of the entries.

- or -

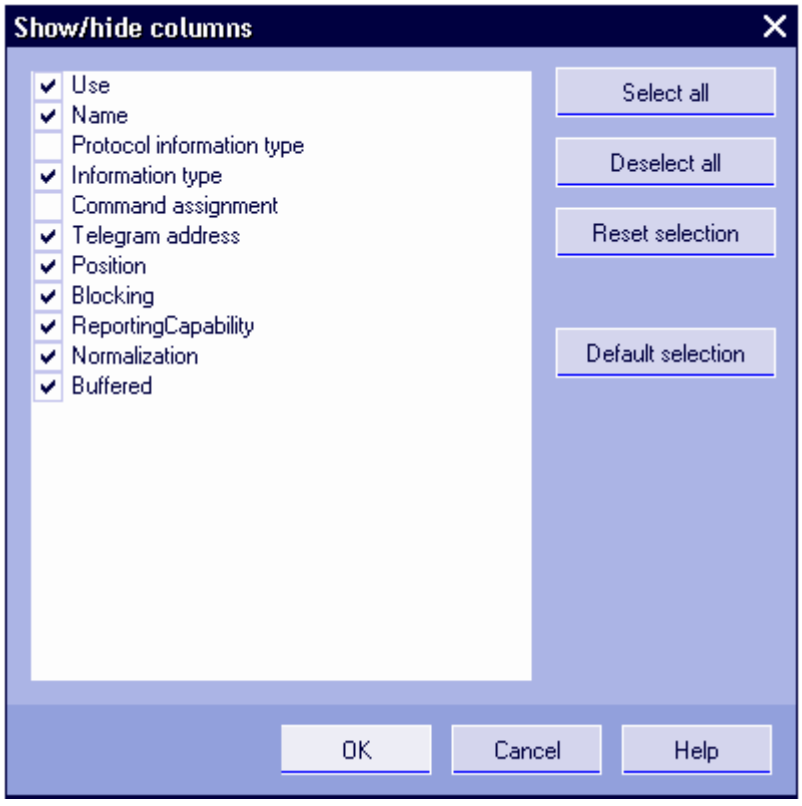
✧ In the column header, select the dividing line between 2 columns, hold down the mouse button and drag the pointer to the right (to enlarge the column) or to the left (to reduce the column).

Showing/Hiding Columns

If you do not require all the parameters for the current parameterization, you can temporarily show or hide individual columns.

✧ Select the column header. Click **Show/hide columns** in the context menu in order to select or deselect the column display.

The context menu is only displayed if the mouse pointer is placed on the column header.



[sc_Show_Hide_Columns, 1, en_US]

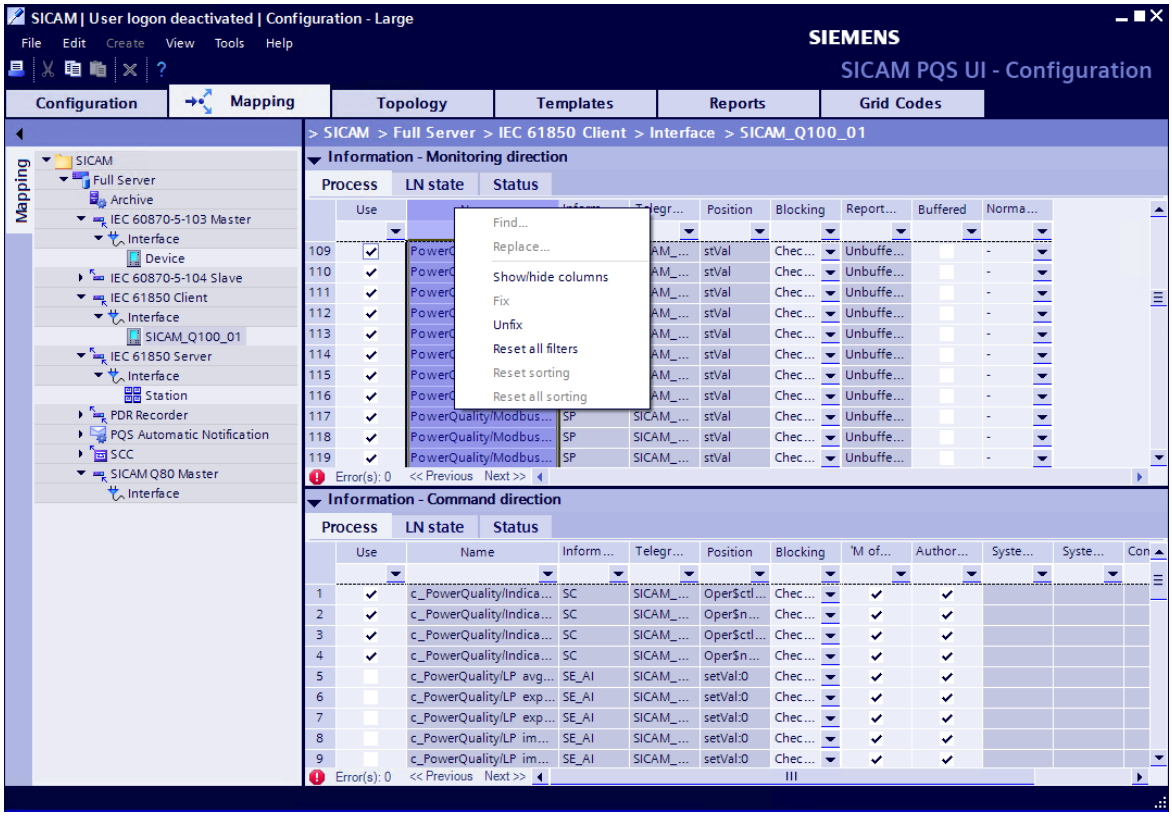
Figure 2-67 Show/Hide Columns

Fixing a Column/Undoing the Fixing

If a table is particularly wide, you can use the scroll bars or the tab buttons to scroll to the right in order to view this part of the table.

In order to ensure that one or several columns always remain on the left-hand table margin while scrolling, you can fix these columns (for example, the **Use** and **Name** columns).

✧ To select the columns (shaded in blue), select the column headers and select **Fix** from the context menu.



[sc_Fixing column, 3, en_US]

Figure 2-68 Fixing a Column

✧ To undo the fixing, select the column header line in the table window and select **Unfix** from the context menu.

The context menu is only displayed if the mouse pointer is placed on the column header.

NOTE

The control options for optimizing the view also apply to the **Templates** view, the **Assignments** tab of the **Topology** view, and the input area for the **Recipients** of the **PQS Automatic Notification** function.

2.8.3 Mapping the Information

To map information, specify whether and where you want to use each individual item of information.

For example, you select whether the information shall be

- displayed or logged on the SICAM SCC Human-Machine Interface (HMI)
- forwarded to other control centers

If you have used an import file with mapping information to insert a device, this configuration step is not required, for example, for the IEC 61850 Ed. 2 protocol.

Proceed as follows to map individual items of information:

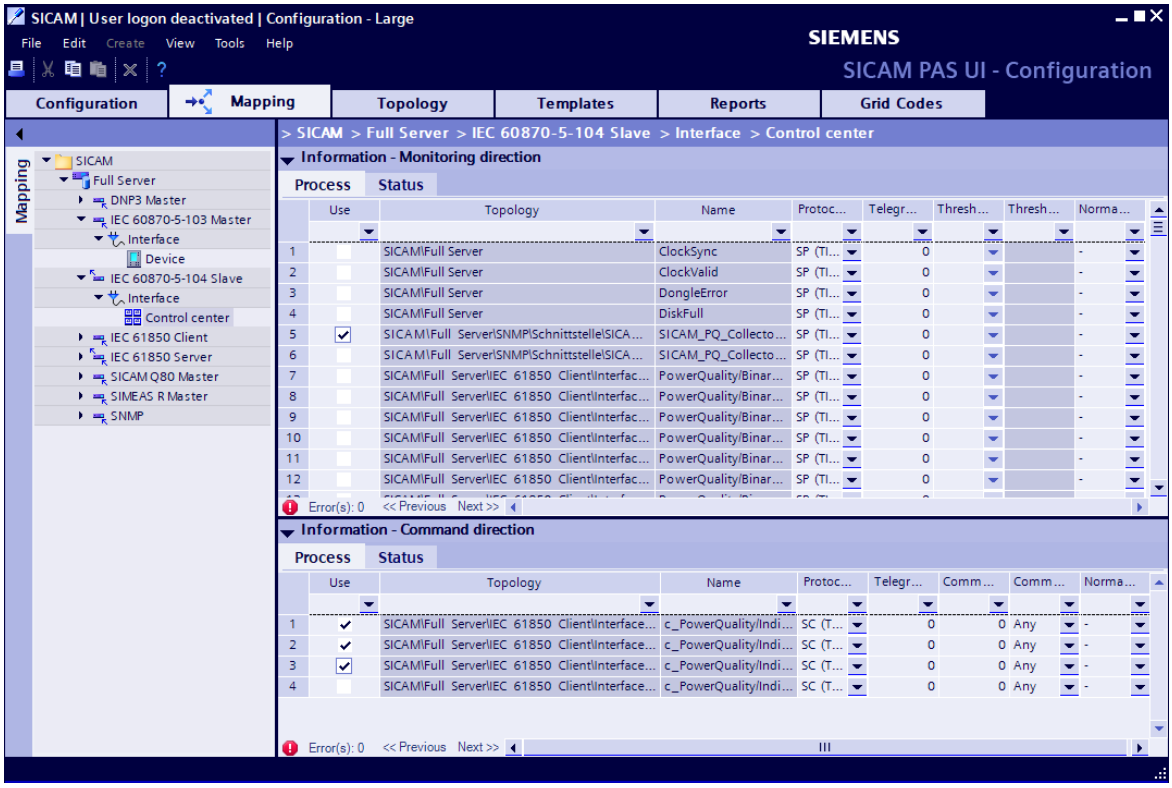
- *Using Information, Page 106*
- *Lists (Protocol-Dependent), Page 108*
- *Switching Authority, Page 109*

- *Selecting Normalization (Optional), Page 111*
- *Automatic Notification for Alarms, Page 111*

Using Information

To mark that you want to use an item of information:

✧ Select the information in the **Use** column.



[sc_Using_Info, 4, en_US]

Figure 2-69 Using Information

If the parameters for the item of information have not been completely defined, the column number and mandatory parameters are highlighted in red.

✧ Place your mouse pointer on a red field. The cause of the error is displayed as a tooltip.

- or -

✧ Select a red field. The cause of the error is indicated in a tooltip.

- or -

✧ Open the error field at the bottom of the information description. The cause of the error is described in this field.

✧ Complete the parameterization and correct the entry.

✧ To apply your settings, select another parameter.
If you close the table window without clearing all errors, a box with a safety question opens. In this box, you are prompted to select whether you want to continue your corrections or undo the entries.

Incomplete mappings can also lead to a **warning**. The warning field provides information on the item of information detected. The warning pops up for example, when mapping the information for an IEC 61850 control center connection because an item of information is available in monitoring direction although the corresponding item is missing in command direction.

In addition to mandatory parameters which must be entered in any case, you can modify the default values of other parameters. All fields highlighted in white can be edited in the tables of the **Mapping** view. Fields displayed in gray cannot be modified. They originate from the device template or the import file. Any change in a device template influences all devices which use the corresponding template.

NOTE

The topological names are considered for the tag names which are created for SICAM SCC. Tag names define for example, the assignment to graphic objects.

The tag names are created when selecting the information for SICAM SCC. If you have defined the topological structure of your station before mapping the information to SICAM SCC, this assignment will be transferred. If you modify the topological structure afterwards, you can update the tag names by using a menu command. Update the tag names before exporting the configuration data for SICAM SCC.

NOTE

The Information which becomes a part of a fault record as markers, for example, **Dev. pickup** or **Device OFF**, must always be selected in the **Use** column.

NOTE

If only monitoring direction licenses have been installed for the connection of protection devices by using IEC 61850 or IEC 60870-5-103, you must disable all information in the command direction tab in the **Use** column.

Mapping IEC 61850 Server

In the **Mapping** view of the control center connection, all IEC 61850 parameters are applied which you have previously defined in the **Templates** view for the information of a device.

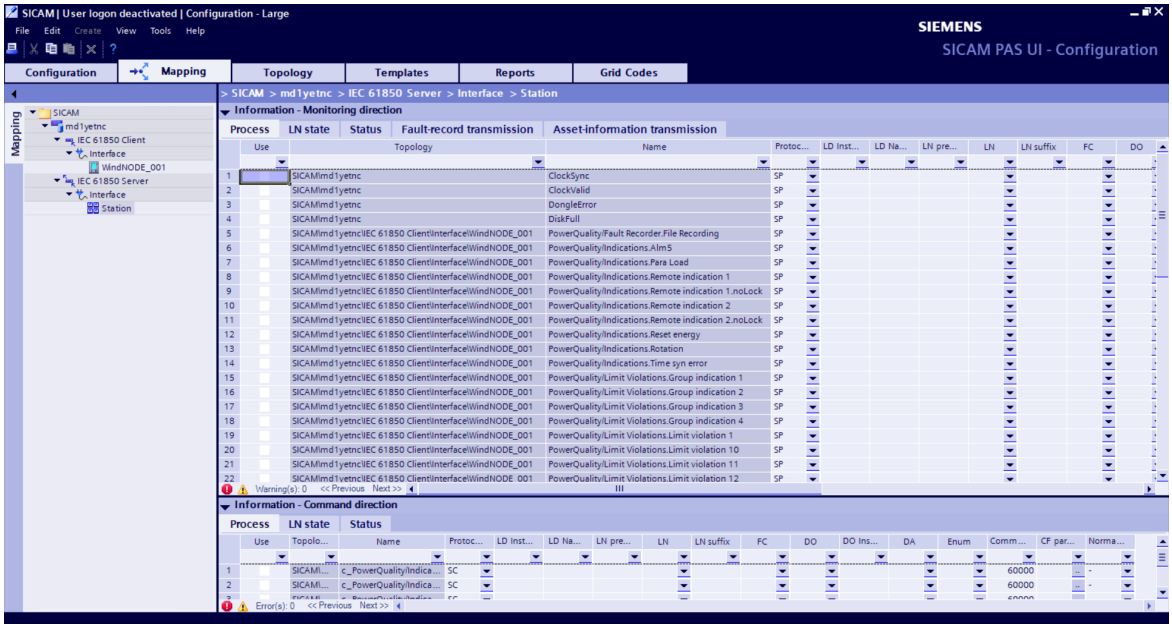
The **Templates** view allows you to generate proposed values for the MMS addresses for devices connected to SICAM PAS/PQS by using the IEC 61850. These proposed values are generated based on the available address information of the template. To generate the values, use the **Create MMS addresses** menu.

If status values (for example, _ComFault of any interface) are mapped, the corresponding MMS addresses are preset with generated default values.

The parameters can be overwritten in the **Mapping** view. As soon as you deactivate the **Use** selection, the original parameterization from the template is displayed again.

The example below shows an incomplete configuration from the **Templates** view in which only the parameters for the information direction have been entered. A warning is thus attached to the item of information in order to indicate that the command direction is missing.

If you also mark the correlative item of information as used in the command direction, the parameters are highlighted in red as incorrect for this direction. The error messages and warnings disappear as soon as you have completed all missing parameters.



[sc_Mapping_IEC_61850_Ser, 4, en_US]

Figure 2-70 Mapping IEC 61850 Server, Example

The DO **Beh** data object (behavior of the logical node) cannot be selected. It is calculated from the DO **Mod** data object (mode of the logical node).

The selectable data objects are defined in IEC 61850 Ed.2 standard.

If you have assigned one or several lists to the station, be aware that the information type of an item of information matches the list selected. A warning pops up if you assign an item of information of the **Event** type to a general interrogation list. The warning also pops up if there is a subsequent change of the trigger condition for the list in the **Configuration** view.

The assignment of the Logical Device **LD** and Logical Node **LN** address parameters of the list in the **Configuration** view and the assignment of LD and LN of the item of information in the **Mapping** view are independent.

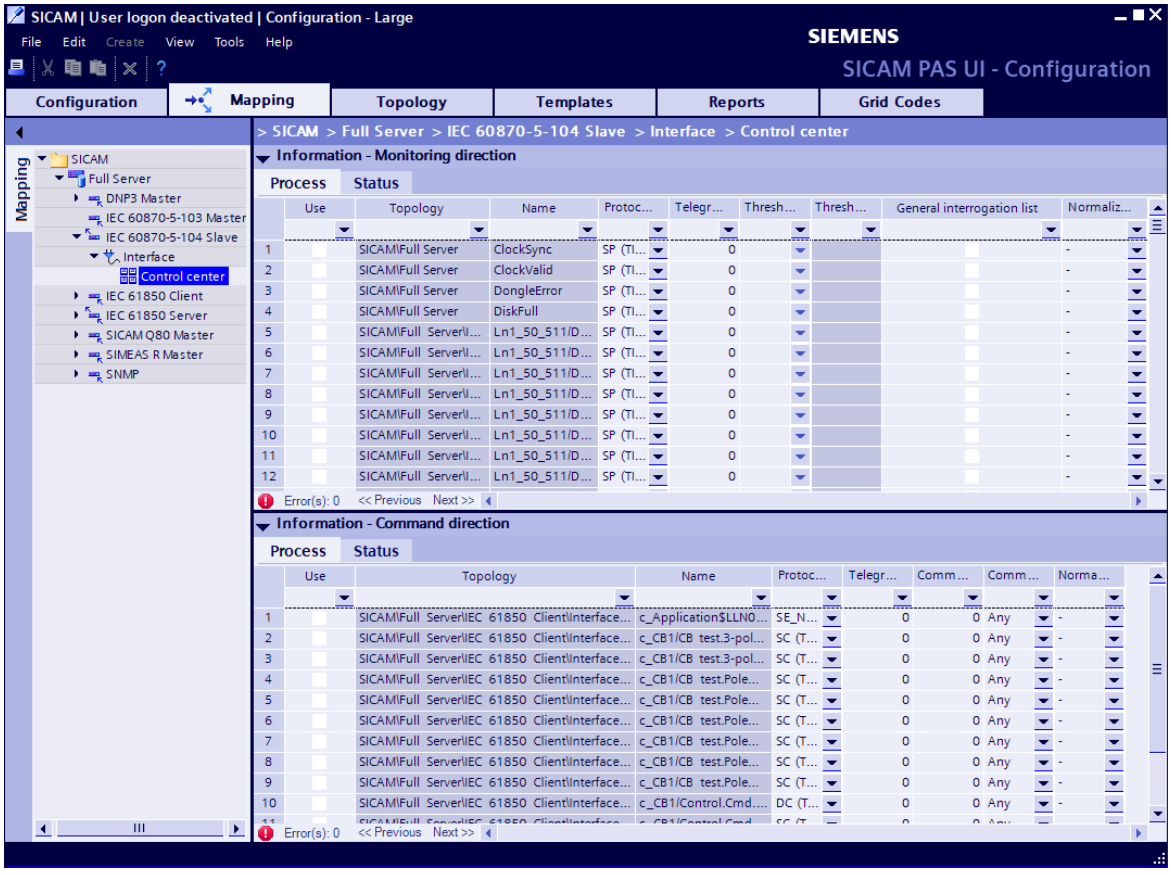
For more information on the parameterization of object model templates, refer to *Changing the Parameters of an Item of Information, Page 149*.

Lists (Protocol-Dependent)

A **list** is created in the **Configuration** view for data links to control centers.

Information in monitoring direction which is included in a list must be assigned to a **List**, for example, an alarm list, in the **Mapping** view.

✧ Activate the assignment in the **General interrogation list** (list name) column.



[sc_Assigning_Mapped_Info, 4, en_US]

Figure 2-71 Assigning Mapped Information to a List

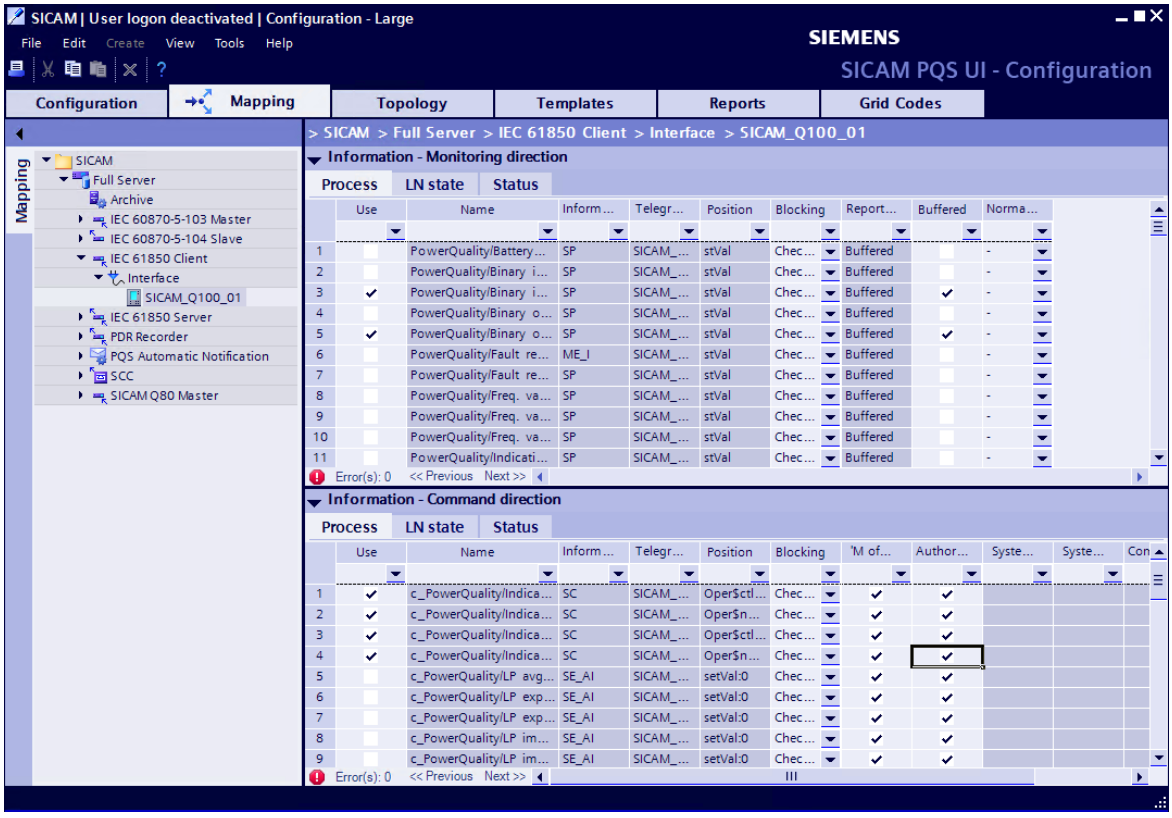
Switching Authority

In the **Mapping** view, you can select for individual commands of devices and substations whether the command output is subject to a switching authority check.

If the selection is enabled, the switching authority of the topological level to which the information is assigned is effective.

If the selection is disabled, the command output is without a check.

The switching authority itself can be parameterized for any structure level in the **Topology** view.



[sc_Assigning_Switching_Authority, 3, en_US]

Figure 2-72 Assigning an Information-Specific Switching Authority

For more information on the parameterization of the switching authority and switching permissions for individual users, refer to *2.9 Mapping the Topological Structures*, *6.3 Administrating Users*, the online help of the User Administration, *A.14 Information – Switching Authority*, and */8/ SICAM PAS/PQS, Security*.

Operating Mode (Select Before Operate)

If the substation expects a 2-step command, the command is always executed in 2 steps (**Select** and **Execute**). The Execute command is only forwarded if the substation has positively acknowledged the previous Select command.

✧ Select **Direct operate**, if the control center only sends the Execute command and the application creates the required Select command.

- or -

✧ Select **Select before operate**, if the Select and Execute commands are transmitted from a control center.

Command Termination

For the information from a control center, you select by using a Command termination how the command shall be terminated.

If the selection is enabled, the application expects a command termination message.

If the selection is disabled, the application only expects the confirmation from the substation that the command has been accepted.

"M of N" Check

For commands from devices and substations, you can select individually whether the command output of a check is subject to **"M of N" monitoring**.

If the selection has been activated, the command is only transmitted if the permissible number of simultaneously transmittable commands has not yet been reached. The number can be defined on the project level (command processing mode).

If the selection is deactivated, the command is forwarded independently of the number of command outputs to the device which are currently in progress.

Blocking

For items of information which originate from devices and substations, you can select individually whether the communication in the command or monitoring direction is subject to bay or telecontrol blocks.

If a bay block has been set, no items of information from devices or substations are transferred to the Full Server.

If a telecontrol block has been set, no items of information are transmitted to the control center.

If **Check all** has been defined, the bay and the telecontrol block are observed.

If **Check bay blocking** has been set, only the bay block is observed and the telecontrol block is ignored.

If **Check telecontrol blocking** has been set, only the telecontrol block is observed and the bay block is ignored.

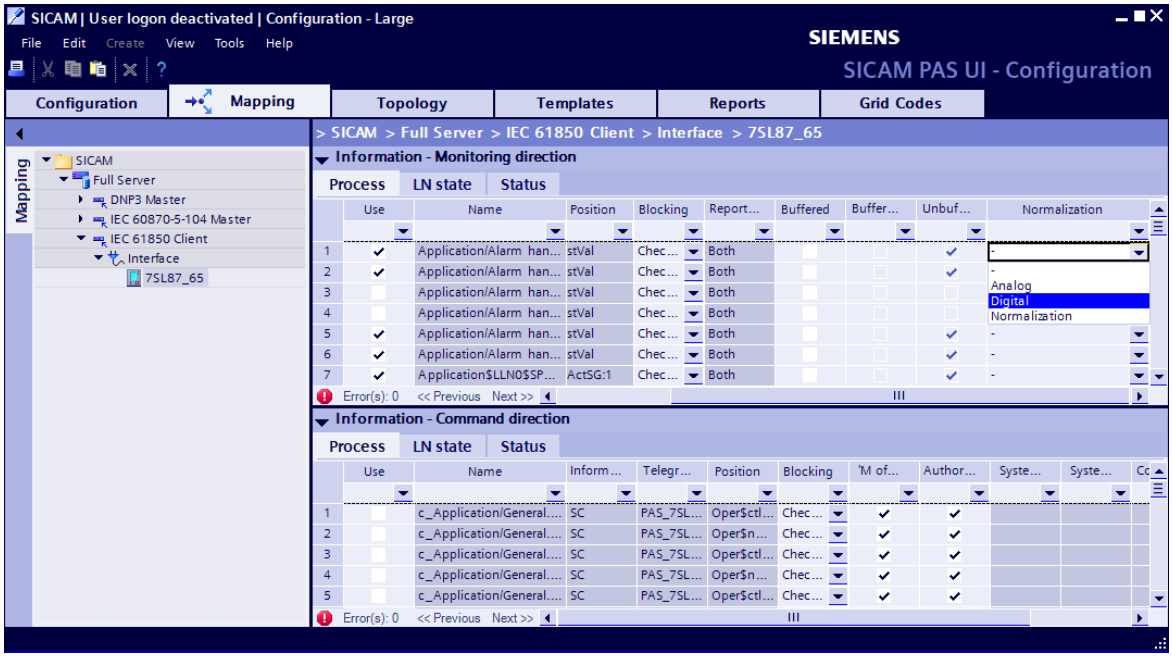
If **Ignore all** has been set, the information from the device or the substations will be accepted and forwarded independently of a bay or telecontrol block.

Selecting Normalization (Optional)

You can define normalization procedures in the **Templates** view. In the **Mapping** view, you assign these normalization procedures to individual items of information.

To assign an item of information a normalization procedure:

✧ In the **Normalization** field, open the selection list of all available normalizations. Select a procedure.



[sc_Normalization_Procedures, 3, en_US]

Figure 2-73 Normalization Procedures

For more information, refer to *2.12 Working with Normalizations*.

Automatic Notification for Alarms

In order to be notified by e-mail and/or SMS on the status change of process and status information

✧ Select **PQS Automatic Notification** application.

For more information refer, to *2.6.16 PQS Automatic Notification*.

2.9 Mapping the Topological Structures

In the **Topology** view, you map the structure of your station configuration according to operational aspects. This topological structure is accepted by other system components and used for the display and evaluation functions.

The topological designations are transferred to the tag names of the Human-Machine Interface (SICAM SCC tags).

The topological device assignment is transferred to the archive and is used for archive evaluation in the different views of the SICAM PQ Analyzer.

You perform different tasks in the **Topology** view:

- Assigning information to a hierarchical, topological structure
- Level-specific assignment of measuring channels, Grid Codes, and switching authority
- Parameterizing data for manual and automatic fault location

Structure of the Topology view

The topological tree shows the topological structure of your system data.

The right window is structured with the following tabs:

- **Assignments** for the assignment of information to the topological levels
  For more information, refer to *2.9.2 Assigning Information*.
- **Properties** for the parameterization of the functions, for example, fault locator
  The display of the properties categories depends on the selection in the structure tree.
  For more information, refer to *2.9.3 Defining the Properties of Topological Levels*.
- **Global line overview** for displaying line data for the fault locator
  You cannot change parameters in this tab. This tab is only visible for the project level.
  For more information, refer to *2.9.3.5 Defining the SICAM PQS Fault Locator*.

Editing the Topology Structure

You perform following steps to edit the topology structure of your system:

- *2.9.1 Defining the Topological Tree Structure*
- *2.9.2 Assigning Information*
- *2.9.3 Defining the Properties of Topological Levels*
- *2.9.3.5 Defining the SICAM PQS Fault Locator*

2.9.1 Defining the Topological Tree Structure

Use one of the following objects in order to map your station's configuration:

- Region
- Station
- Voltage level
- Bay
- User-defined group

The context menu and the header of the topological tree only make available those objects which can actually be used under a level.

Objects can be converted to **user-defined groups** under the Bay level.

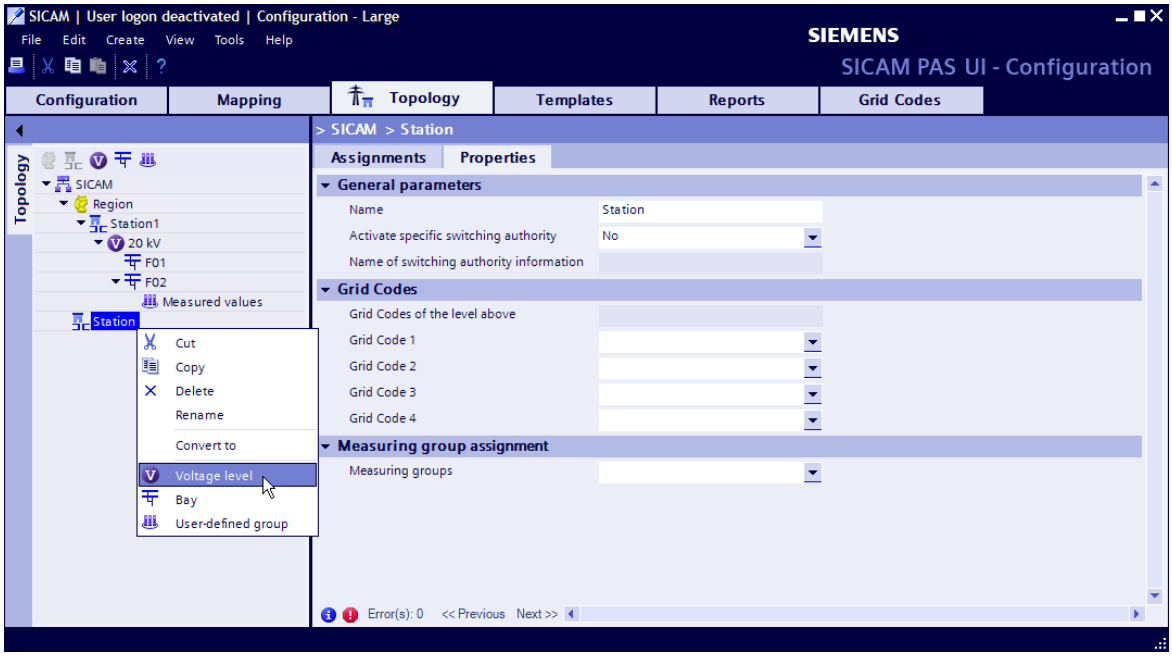
In order to assign a device-specific switching authority, click **Edit > Create topology hierarchy** to convert your station's configuration structure to a topological structure. All items of information are automatically assigned to the topological structure levels. The structure corresponds to the structure in the configuration tree in the **Configuration** view.

Inserting an Object

To define the topological tree structure:

✧ Select the **project** and select a first object from the context menu, for example, Station.

✧ Add further topological levels to the tree structure.



[sc_Defining_Topological_Struct, 2, en_US]

Figure 2-74 Defining the Topological Tree Structure

You can move the objects within the structure or remove them.

2.9.2 Assigning Information

After defining your station configuration's topological basic structure, assign the items of information which you have configured for the project to the individual topological levels.

This assignment is displayed in the **Configuration** view (**Topology assignment** input area) and in the **Mapping** view (**Topology** column).

How to Proceed

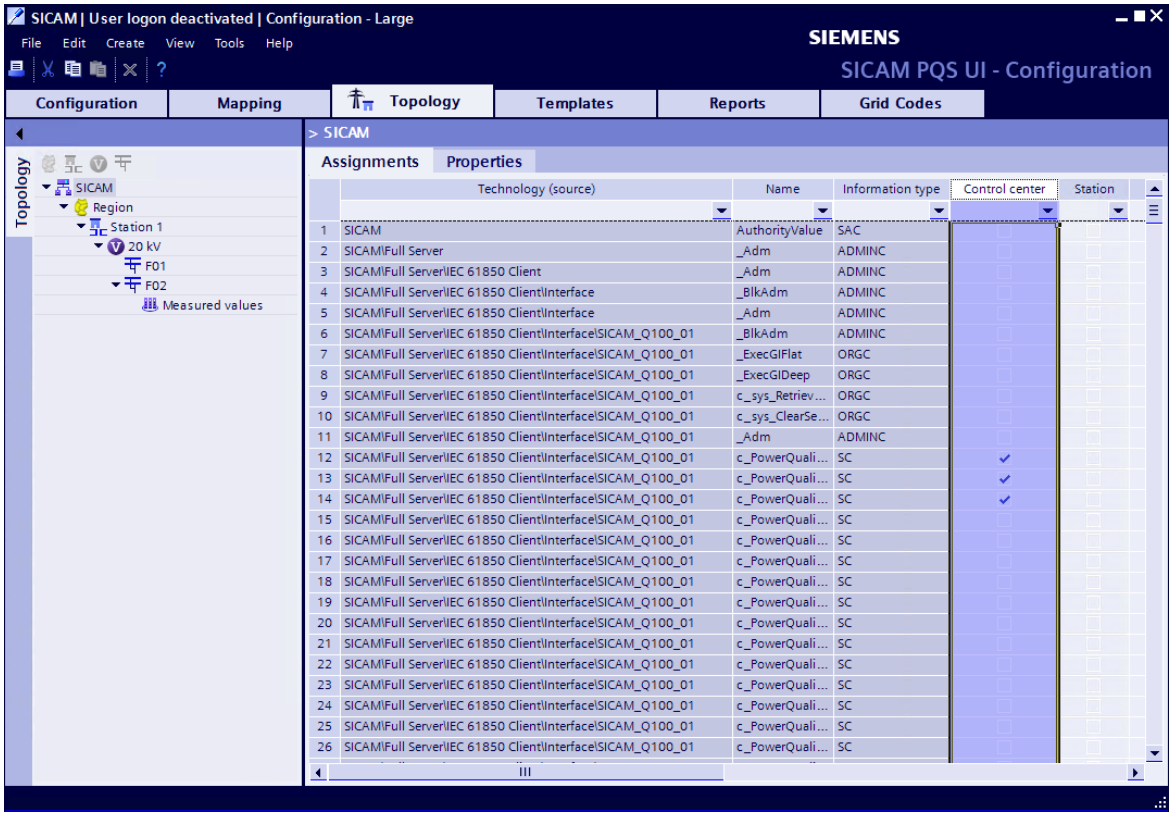
To distribute mapped information to different topological levels, perform the following steps:

- *Optimizing the View, Page 113*
- *Assigning Information, Page 114*

Optimizing the View

Unless you have created the topological structure automatically, all mapped items of information of the SICAM PAS/PQS project are located on the uppermost level of the topological tree structure.

Additional items of information which you configure later are first located on the project level of the **Topology** view again.



[sc_Info_Topology_view, 3, en_US]

Figure 2-75 Information in the Topology View

The table shows:

- The origin of the item of information (Technology (Source))
- The name of the item of information (Name)
- The type of information (Information Type)
- The control centers to which the information is forwarded (control center)

Since all columns are disabled (gray), you cannot change these definitions here.

SICAM PAS/PQS UI – Configuration provides numerous options for the sorting or filtering of information in the **Topology** view. To do this, you proceed almost in the same way as in the **Mapping** view.

You can consider the following steps:

- *Sorting Information, Page 100*
- *Filtering Information, Page 102*
- *Adjusting the Column Width, Page 103*
- *Showing/Hiding Columns, Page 104*
- *Fixing a Column/Undoing the Fixing, Page 104*

For more information, refer to *2.8.2 Optimizing the View*.

Assigning Information

To assign a topological element an item of information:

✧ Select the first column with the consecutive number in order to select an item of information.

✧ Hold down the **SHIFT** or **CTRL** key, select additional rows in order to expand your selection and drag your selection to a topological object.

- or -

✧ Define a filter criterion, for example, the name of a device.

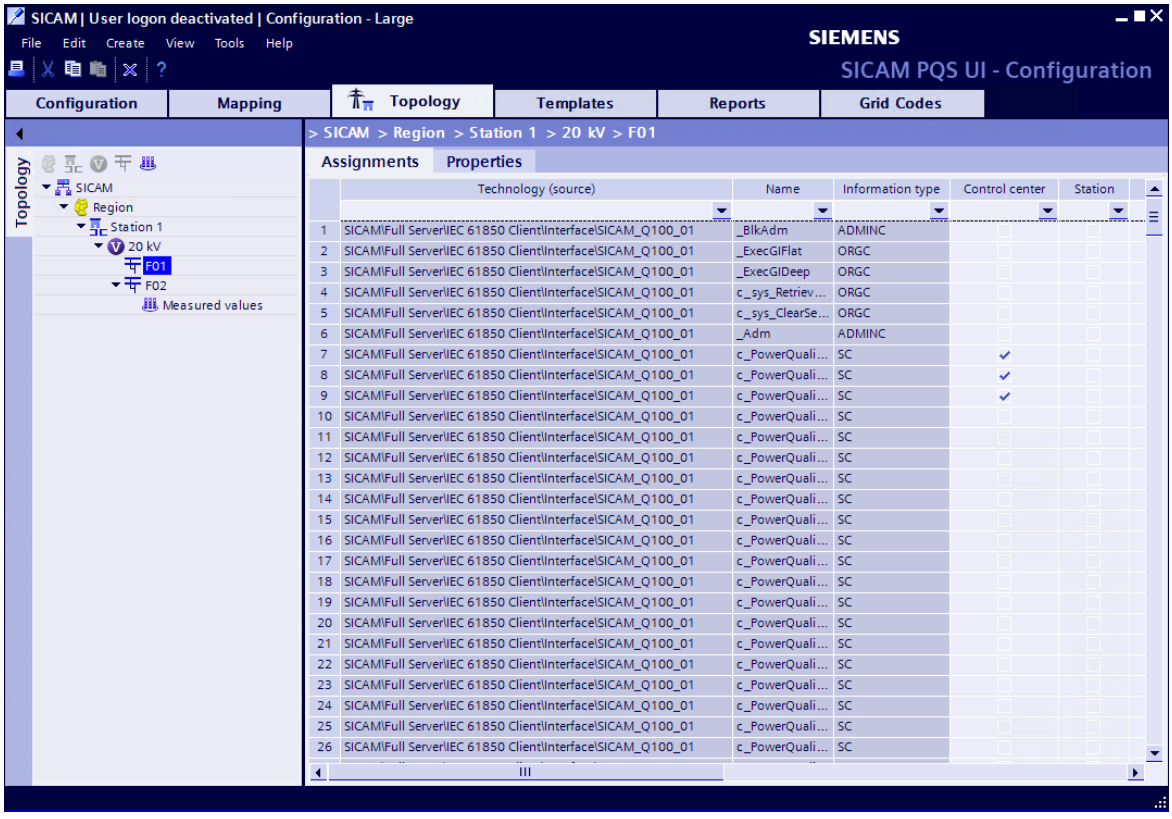
✧ Click the first column with a consecutive number in order to select the row including this information.

✧ Click **Select all rows** in the context menu and drag the selection to a topological object.

- or -

✧ From the configuration tree in the **Configuration** view, right-click a **device** and select **Copy for topology** from the context menu.

✧ In the **Topology** view, right-click the structure level to which you want to assign the device and select **Paste** from the context menu.



[sc_Assigning_Info_Topology_view, 3, en_US]

Figure 2-76 Assigning Information in the Topology View

The information is now assigned to the topological structure level. You can freely modify the assignment between the topological structure levels. For more information, refer to *2.5 Managing the Objects of a Project*.

2.9.3 Defining the Properties of Topological Levels

The display in the Properties tab depends on the selection in the structure tree. The tab contains the following properties categories:

- **General parameters** for assigning the switching authority
  For more information, refer to *2.9.3.1 Switching Authority*.
- **Grid Codes** for assigning up to 4 Grid Codes
  For more information, refer to *2.9.3.2 Grid Codes*.

- **Measuring group assignment** for a topological assignment of the PQ data and fault records
  For more information, refer to *2.9.3.4 Measuring Channels*.
- **Measurement parameters** for defining the power frequency, voltage level, and declared supply voltage
  For more information, refer to *2.9.3.3 Measurement Parameters*.
- **Fault location** to activate and parameterize central information for the fault-location determination
  For more information, refer to *2.9.3.5 Defining the SICAM PQS Fault Locator*.
- **Line** for the parameterization of line data
  For more information, refer to *2.9.3.5 Defining the SICAM PQS Fault Locator*.
- **Segments** for the parameterization of the line or line sections
  For more information, refer to *2.9.3.5 Defining the SICAM PQS Fault Locator*.

2.9.3.1 Switching Authority

In the **Topology** view, you can define a specific switching authority tag on each level of the topological structure. By using these switching authority tags, you implement for example, a station level-specific or voltage level-specific switching authority.

The switching authority tag is set by SICAM SCC, a control center or the Value Viewer during the runtime of the system. A Local x or Remote x switching authority can be assigned. The different options are defined on the level of the corresponding application to which you can assign as a switching authority.

In order to transmit a command independently of a defined switching authority tag, the check can be deactivated in the **Mapping** view.

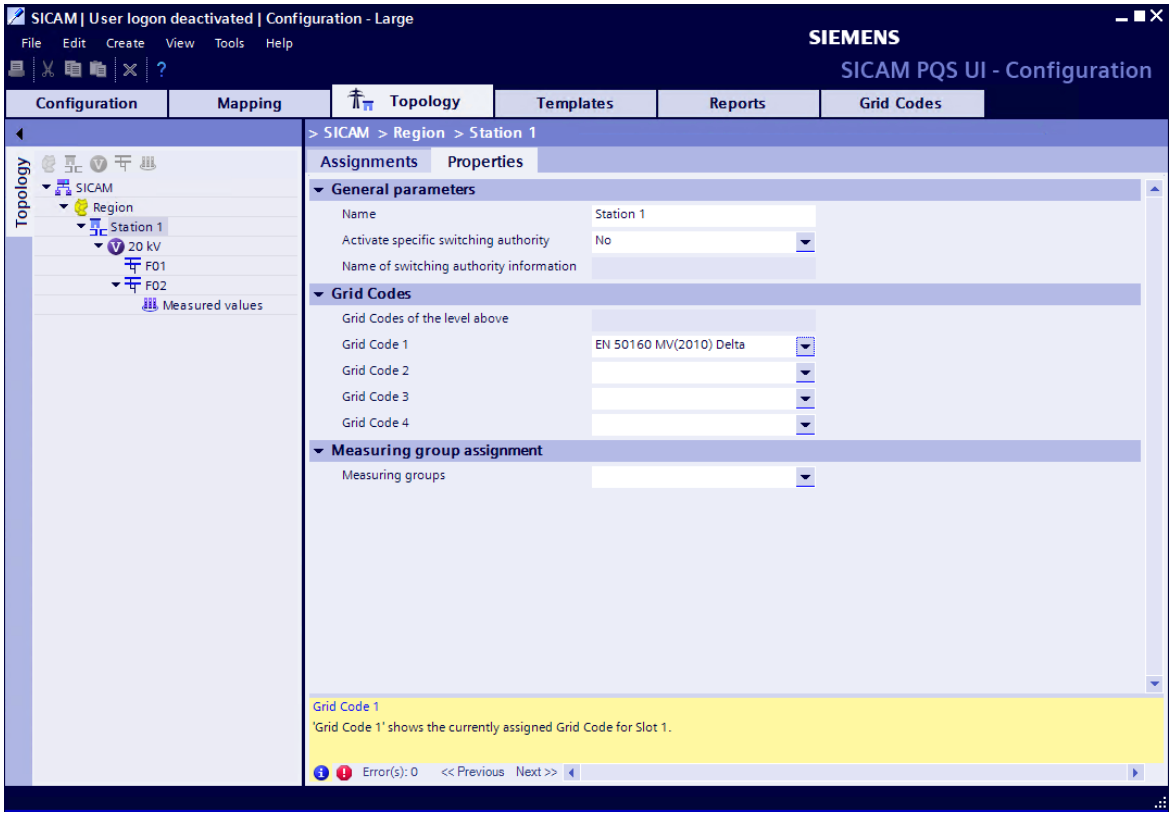
To assign a topology level-specify **switching authority**:

✧ Select the structural level.

✧ In the input area, select Yes under **Activate specific switching authority**.

A switching authority tag is created in the **Name of switching authority information** field.

Tag names can be freely defined.



[sc_Assigning_Switching_Authority_Top_level, 3, en_US]

Figure 2-77 Assigning a Specific Switching Authority for a Topological Level

For more information on the switching authority, refer to *A.14 Information – Switching Authority*.

For more information on the parameterization of the switching authority on the SICAM SCC Human-Machine Interface (HMI), refer to */5/ SICAM SCC, Human Machine Interface SICAM SCC*.

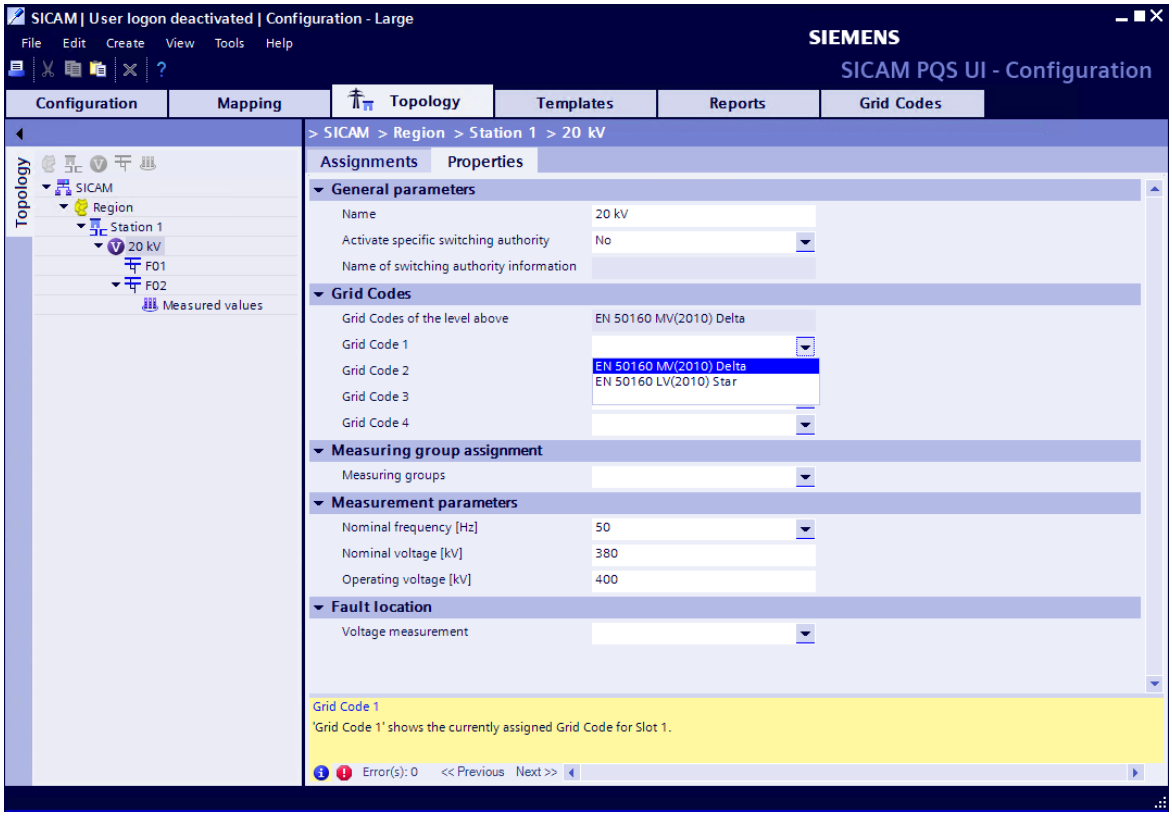
2.9.3.2 Grid Codes

Grid Codes are defined in the **Grid Codes** view in the SICAM PAS/PQS system and assigned to the individual topological structure levels in the **Topology** view.

To assign **Grid Codes**:

✧ Select the structure level and assign up to 4 Grid Codes in the input area.

The Grid Codes include limit values which serve as a basis for the evaluation of PQ measuring data.



[sc_Assigning_Grid_Codes, 3, en_US]

Figure 2-78 Assigning Grid Codes

For more information on the import of Grid Codes and change options for the limit values defined in these Grid Codes, refer to *2.16 Grid Codes*.

2.9.3.3 Measurement Parameters

You can parameterize the following data in the Measurement parameters section:

- Power frequency of the system (Nominal frequency in Hz)
- Voltage level of the system as phase-to-phase voltage (Nominal voltage in kV)
- Declared supply voltage of the system as phase-to-phase voltage (Operating voltage in kV)

These data are used for the fault-location calculation.

2.9.3.4 Measuring Channels

Measuring channels include a description of the information transmitted from the devices. They include for example, the phase assignment of the voltage and current channels. This assignment is required for example, for the fault location function.

The measuring channels are created automatically during:

- Parameterization of a SIMEAS R or SICAM Q80 device
- Import of the XML files for protection devices created with DIGSI 4 or DIGSI 5

For the following application cases, you must define these measuring channels yourself in the **Templates** view:

- Protection devices which provide fault records
- Visualization of fault records from IEC 60870-5-103 devices which include non-standardized channels or channel texts
- Virtual devices of the **PQS Automatic Import** function

Templates are available for this purpose. For more information, refer to *2.11.8 Recording Channels*.

In the **Measuring group assignment** section, you assign the measuring group with the related measuring channels to the topological level where the PQ data and fault records shall be available for analysis.

2.9.3.5 Defining the SICAM PQS Fault Locator

The SICAM PQS Fault Locator creates fault location reports which you can evaluate using the SICAM PQ Analyzer. The fault location reports are created either automatically or manually. You can define to be notified by e-mail and/or SMS on completion of a fault location report. For more information, refer to *2.6.16 PQS Automatic Notification*.

For automatic fault location, you insert the **PQS Automatic Fault Location** application in the project structure in the **Configuration** view.

The **Topology** view allows you to parameterize the data of the automatic and manual fault location function.

NOTE

In the **Topology** view, if

- the user-defined group and the station or
- the user-defined group and the voltage level or
- the user-defined group and the bay level

are present at the same topology level, fault location reports are not generated for the user-defined group.

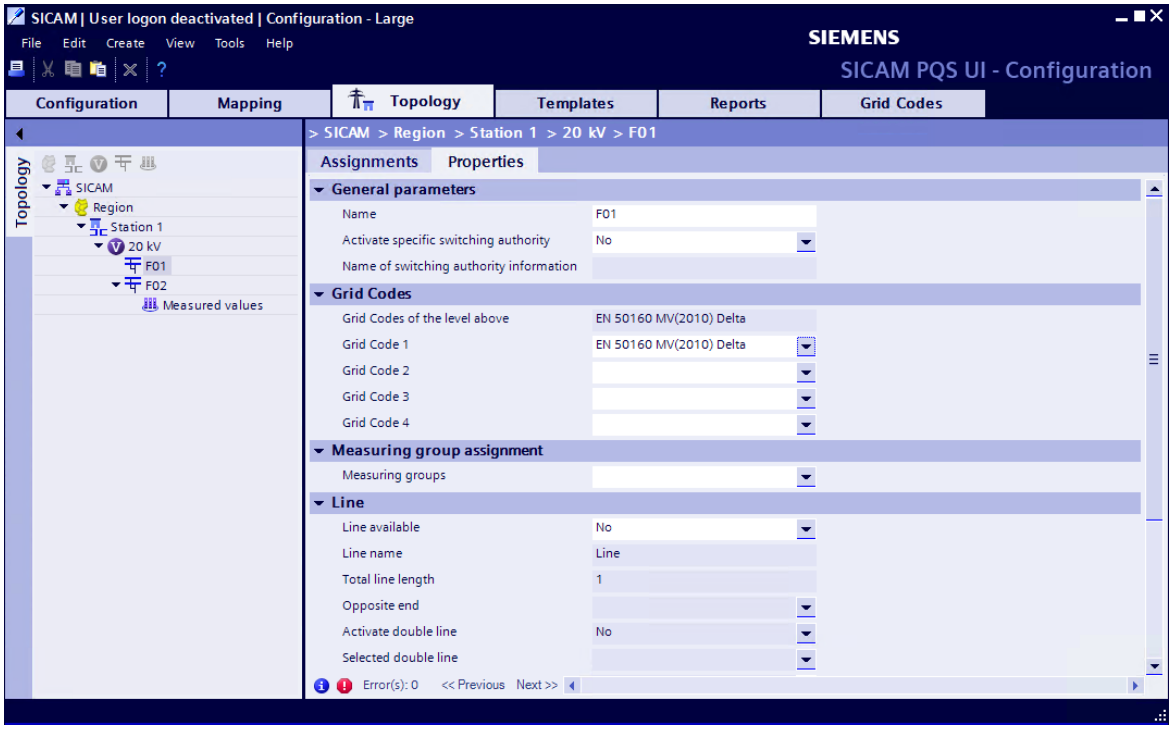
On the bay level, you define line data, the rated current, the maximum load current, and the star point direction. In addition, you activate the automatic fault location function on this level.

On the voltage and bay levels, you select all measuring channels in the **Measuring group assignment** section that are used for the fault-location calculation, refer to *2.9.3.4 Measuring Channels*.

On the bay level, you assign the measuring channels in the **Fault location** section that are used for the automatic fault location function. The assignment is done separately for the voltage and current measuring channels.

In the **Segments** table, you configure the single line sections used for the fault location calculation. You define, for example, the line type (overhead line, 3-pole or 1-pole cable), the line length, the resistance and the capacity for each line section.

On the project level, the line data defined for the overall project are displayed in the **Global line overview** tab. You cannot change any parameters in this tab.



[sc_Parameters_Fault_Locator, 3, en_US]

Figure 2-79 Defining the Parameters of the Fault Locator

Defining Line Segments

The segment table allows you to define the single line sections. The type and number depend on the lines between the stations.

A line must consist of at least one line segment. The length of a line is calculated as the sum of the lengths of all line segments.

A double line consists of 2 parallel lines with identical line data.

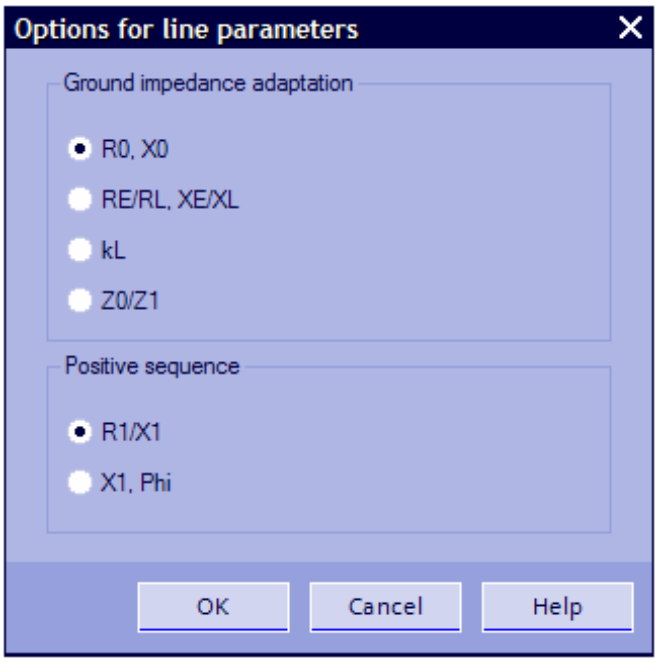
The performance characteristics of the Fault Locator include:

- **Single-ended fault location**
  Single line: 1 line is connected to one single bay of a station
  Double line: 2 parallel lines are connected to 2 bays of a station
- **Two-ended fault location**
  Single line: 1 line connected to 2 bays of 2 stations
  Double line: 2 parallel lines connected to 4 bays of 2 stations
- **Parallel line compensation**
  - For segment-wise coupled lines
  - Direct support of double lines
  - For identical or different voltage levels

The segment in the **first** row of the list corresponds to the segment on the highlighted bay. The segment in the **last** row of the list corresponds to the segment on the remote bay.

The display of the columns (parameters) in the segment table depends on the input-format selection in the dialog **Options for line parameters**.

✧ To do this, select **Tools > Options for line parameters...** .



[sc_Options_Line_Parameters, 1, en_US]

Figure 2-80 Defining the Input Format of Line Parameters

You can copy and delete segments or change their order.
You can either enter the capacities or have them calculated from the reactance.
The following table shows the possible parameters of the segment table.

Table 2-4 Line Parameters

Bay	Meaning
Segment	Name of the line segment
Coupling	Selection of the parallel line segment which is to be coupled to the current segment
Type	Segment type The following entries are possible: **Overhead**, **3-pole cable** or **Single-pole cable**.
Length	Length of the line segment in km or miles The unit depends on the regional settings of the operating system.
Central phase	Phase in the center of the phase arrangement For twisted lines, **None/Unknown** must be defined here.
Resistance R_1'	Positive-sequence resistance in Ω/km or in Ω/mile
Reactance X_1'	Positive-sequence reactance in Ω/km or in Ω/mile
Capacity C_1'	Positive-sequence capacity in µF/km or in µF/mile C_1' is equal to the C_B' operating capacity.
Resistance R_0'	Zero-sequence resistance in Ω/km or in Ω/mile
Reactance X_0'	Zero-sequence reactance in Ω/km or in Ω/mile
Capacity C_0'	Zero-sequence capacity in µF/km or in µF/mile
Phi angle	Angle between R_1 and X_1 (positive sequence) in degrees
R_E/R_L	Scalar factor of the resistance ratio R_E = resistance (ground), R_L= resistance (line)
X_E/X_L	Scalar factor of the reactance ratio X_E = reactance (ground), X_L= reactance (line)

Bay	Meaning
k_L amount	Amount of the impedance ratio, Z_E/Z_1 (Z_E = amount of the ground impedance, Z_1= amount of the positive-sequence impedance) k_L corresponds to the k_0 parameter
k_L angle	Angle between the Z_E and Z_1 impedances in degrees k_L corresponds to the k_0 parameter
Z_0/Z_1 amount	Amount of the impedance ratio, Z_0/Z_1 (Z_0 = amount of the zero-sequence impedance, Z_1= amount of the positive-sequence impedance)
Z_0/Z_1 angle	Angle between the Z_0 and Z_1 impedances in degrees
RM/RL	Parallel line coupling RM = resistance (coupling impedance), RL = resistance (line)
R_{0m}'	Mutual zero-sequence resistance (coupling resistance) of the line in Ω/km
XM/XL	Parallel line coupling XM = reactance (coupling impedance), XL = reactance (line)
X_{0m}'	Mutual zero-sequence reactance (coupling reactance) of the line in Ω/km

For more information on the functionality and parameterization, refer to */12/ SICAM PQS, Fault Locator*.

2.9.3.6 Assigning Fault Records

Fault records are created by PQ devices and protection devices or transferred by the **PQS Automatic Import** function in SICAM PAS/PQS.

Afterwards, fault records can be selected in the **Configuration** view of the SICAM PQ Analyzer, Incident Explorer view.

In order to also display fault records in the topological view of the SICAM PQ Analyzer, link the device information in SICAM PAS/PQS UI – Configuration, **Topology** view, with a topological level.

If the device has a description of the recording channels (**Templates** view), the linkage with the topological level is performed by assigning the measuring channels of the device (**Topology** view). If the fault records are used for the Fault Locator, the linkage must be performed in this way.

For all other devices, you assign the **_Opr** tags of those devices which transmit fault records to the topological levels on which the fault records are to be displayed.

To assign the _Opr tag:

- ✧ Select the **project** in the tree structure of the **Topology** view.
- ✧ In the Assignments tab, select the row of the device's with **_Opr** tag.
- ✧ Drag the tag to the topological level on which you want to display the fault record in the topological view of the SICAM PQ Analyzer.

NOTE

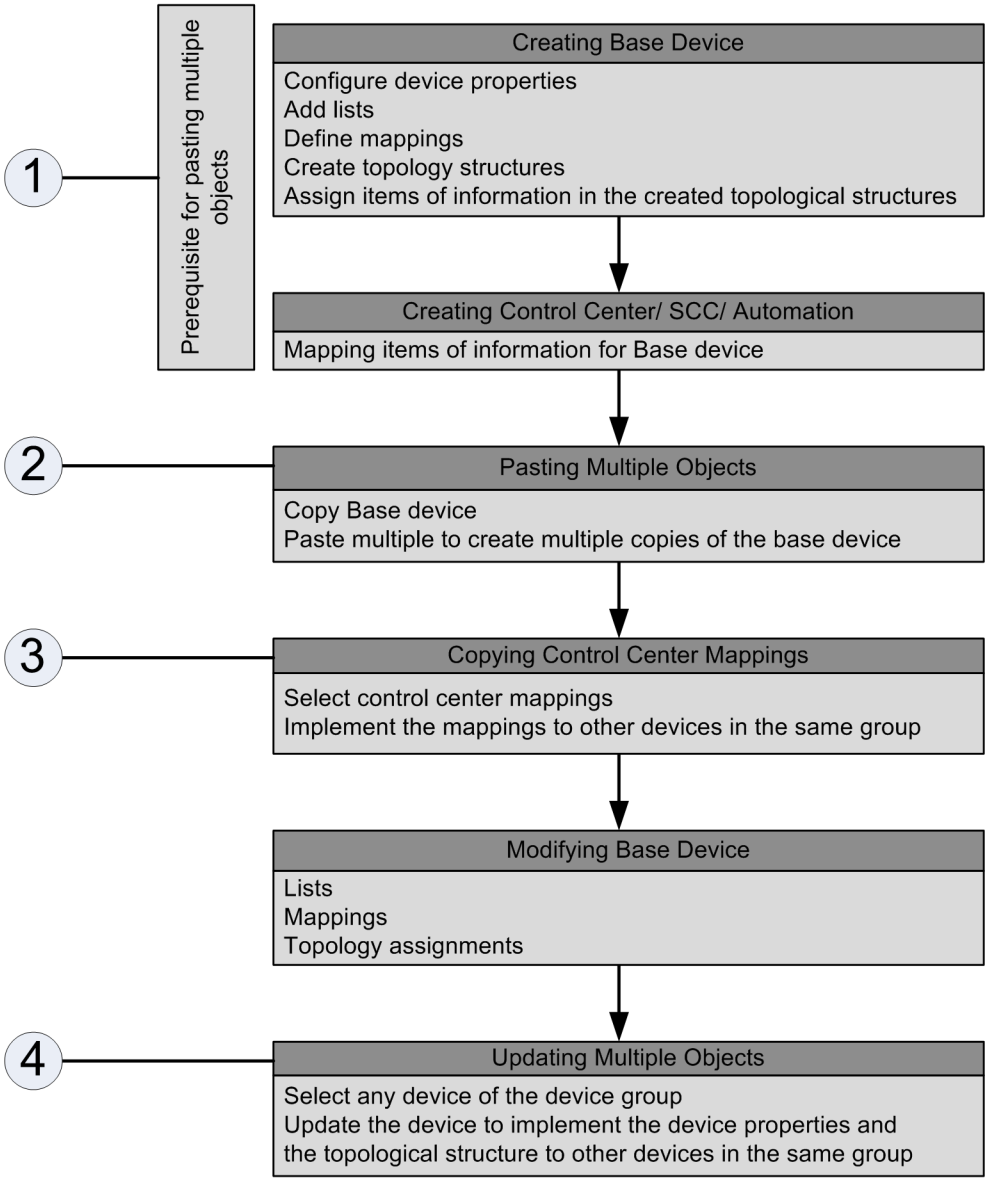
In case of a redundant configuration (system redundancy, interface redundancy, or full redundancy), ensure that the _Opr tag of the device in primary system is assigned to the topological level.

The fault record is also stored in the archive under this topological assignment.

If you copy a device in the **Configuration** view and paste it in the **Topology** view, all items of information of the device are transferred to the selected topological level. If this happens, no additional linkage of the device's **_Opr** tag is required. Fault records are displayed under the topological level to which the device is assigned.

2.10 Formula-Based Device Configuration

By the means of a formula, you copy the configured device and its redundant (interface and system) devices including mapping information, topology assignments, and lists and create definable quantities of the device with unique names (case-insensitive). During copying control center mappings, the control center mappings and the topology assignments of the selected device are copied to all devices of the same device group. During updating, the properties of the devices are updated collectively with respect to the base device.



[dw_Workflow_FBDC, 1, en_US]

Figure 2-81 Workflow for Formula-Based Device Configuration

(1) *2.10.1 Preliminary Steps*
(2) *2.10.2 Pasting Multiple Objects*
(3) *2.10.3 Copying Control Center Mappings*
(4) *2.10.4 Updating Multiple Objects*

2.10.1 Preliminary Steps

Before you copy devices using a formula:

- ✧ Configure a device and create a list (for example, an interrogation list).
  For more information, refer to *2.6 Setting Up and Editing the Configuration*.
- ✧ Define mappings for the device.
  For more information, refer to *2.8 Defining the Mapping*.
- ✧ Map the topological structures to the device.
  For more information, refer to *2.9 Mapping the Topological Structures*.

NOTE

The configuration of the device can be changed by using **Update multiple...** feature and overwriting manually.

How to Proceed

To configure the devices using a formula, consider the following order:

2.10.2 Pasting Multiple Objects
2.10.3 Copying Control Center Mappings
2.10.4 Updating Multiple Objects

NOTE

These functions can be applied to the devices in redundancy configurations.

2.10.2 Pasting Multiple Objects

The purpose of this function is to create a definable quantity of copies of a configured device. The selected device is referred as a **base device**. When pasting an object, select a target interface from the same application type in the tree structure (either in the Full Server or the DIP).

The **Paste multiple...** function can only be used for the following applications:

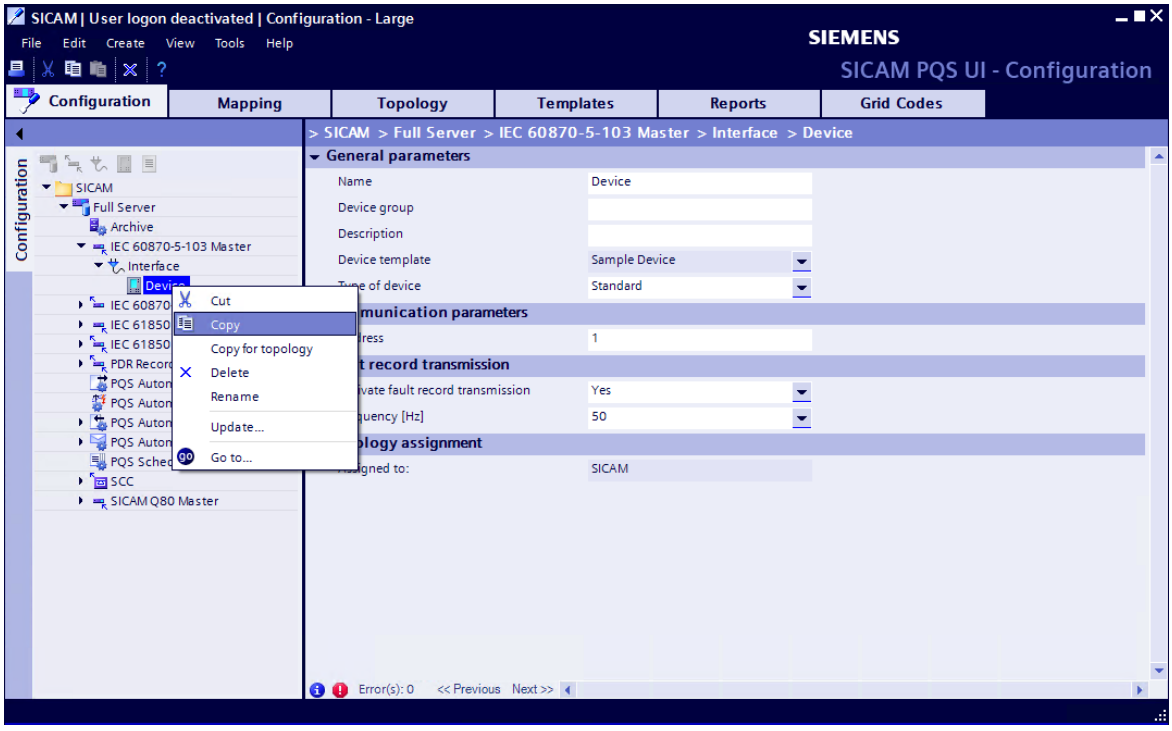
- IEC 60870-5-101 Master
- IEC 60870-5-103 Master
- IEC 60870-5-104 Master
- DNP3 Master
- Modbus Master

NOTE

The mandatory attributes (red fields) of a device and its redundant device need to be unique, for example, Link address for IEC 60870-5-101 Master.

To paste multiple objects:

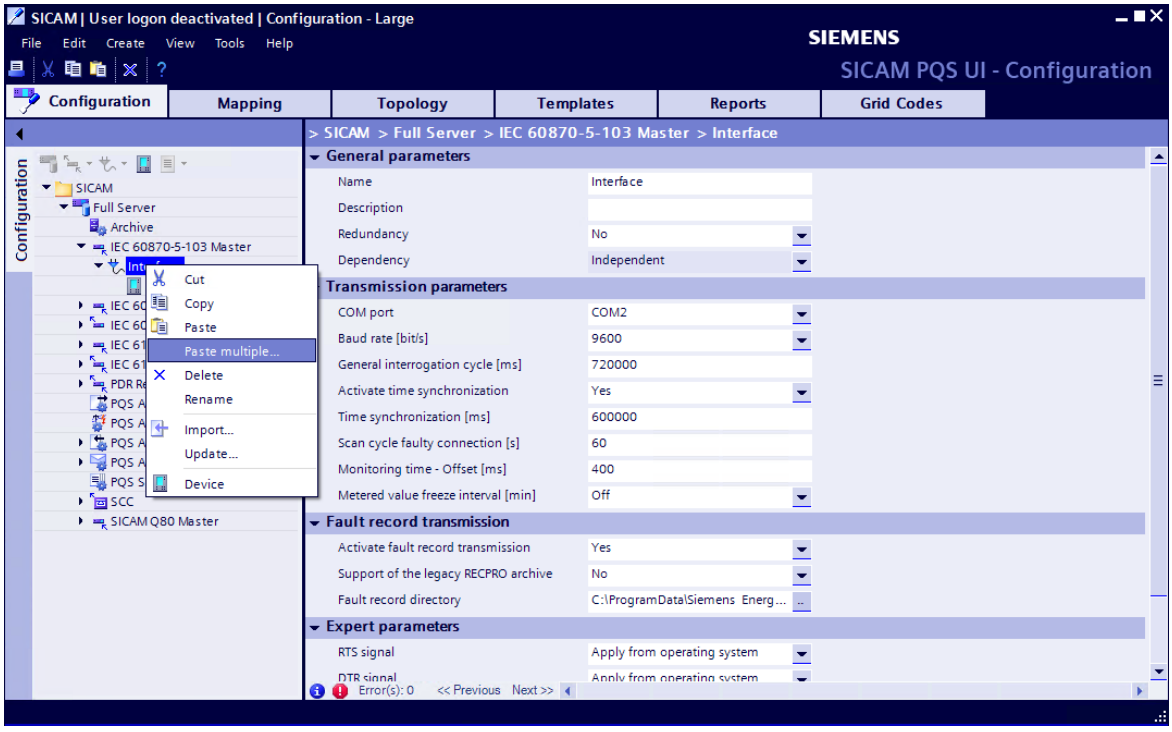
- ✧ Select the device, which you want to use as the **base device** and select **Copy** from the context menu.



[sc_Copy_Multiple, 3, en_US]

Figure 2-82 Selecting Copy from the Context Menu

✧ Select the desired interface from the same application type and select **Paste multiple...** from the context menu.

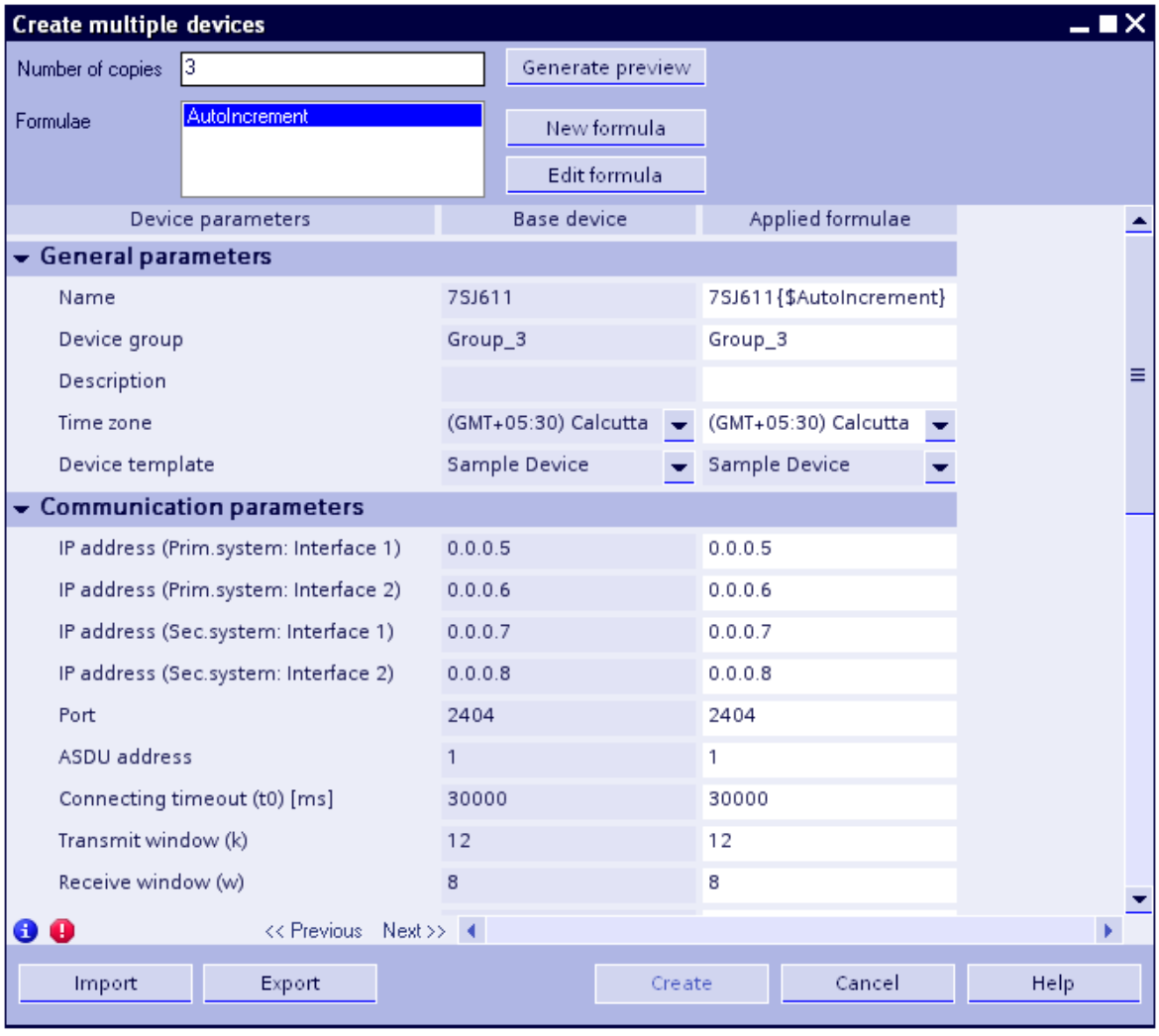


[sc_Paste_Multiple, 3, en_US]

Figure 2-83 Pasting Multiple

The **Create multiple devices** dialog opens.

✧ In the **Number of copies** field, enter the number of copies of the device you want to create.



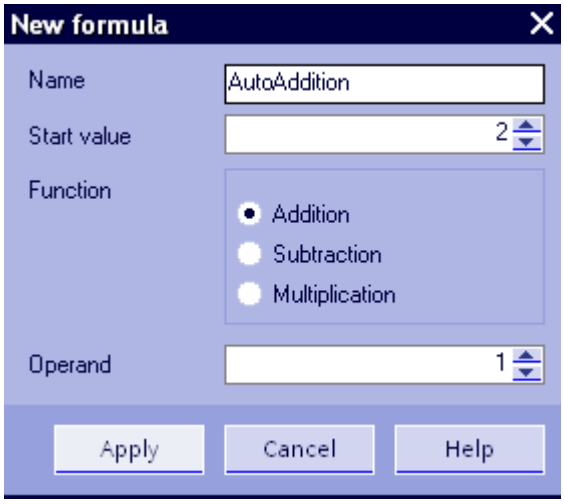
[sc_Number_of_Copies, 1, en_US]

Figure 2-84 Create Multiple Devices

Defining Formula

A formula is used to create unique parameters such as names, device addresses, and topology information. A new formula can be created or an existing formula can be edited.

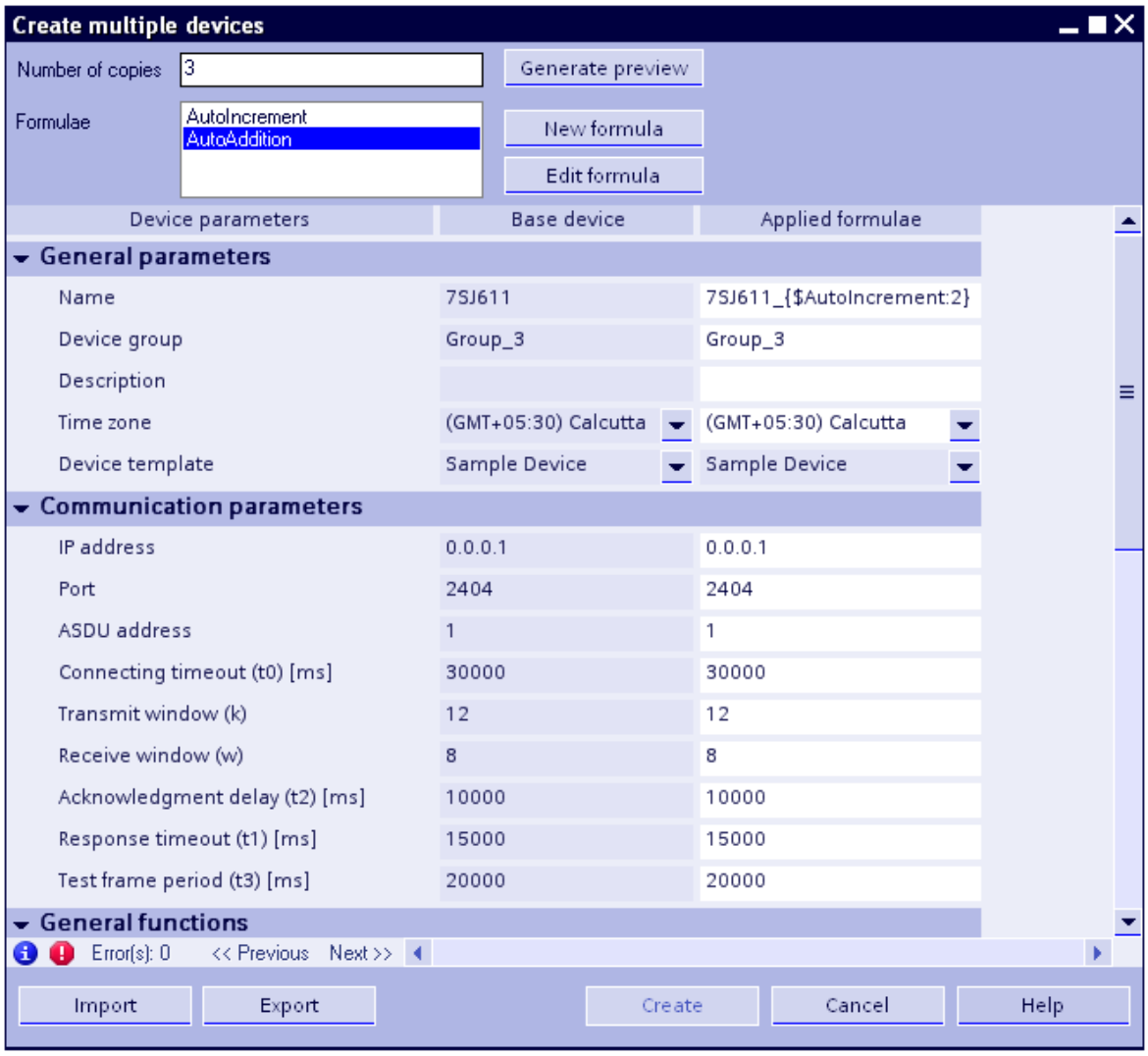
✧ Click **New formula** or **Edit formula**.
The **New formula** or **Edit formula** dialog opens.



[sc_New_Formula, 1, en_US]

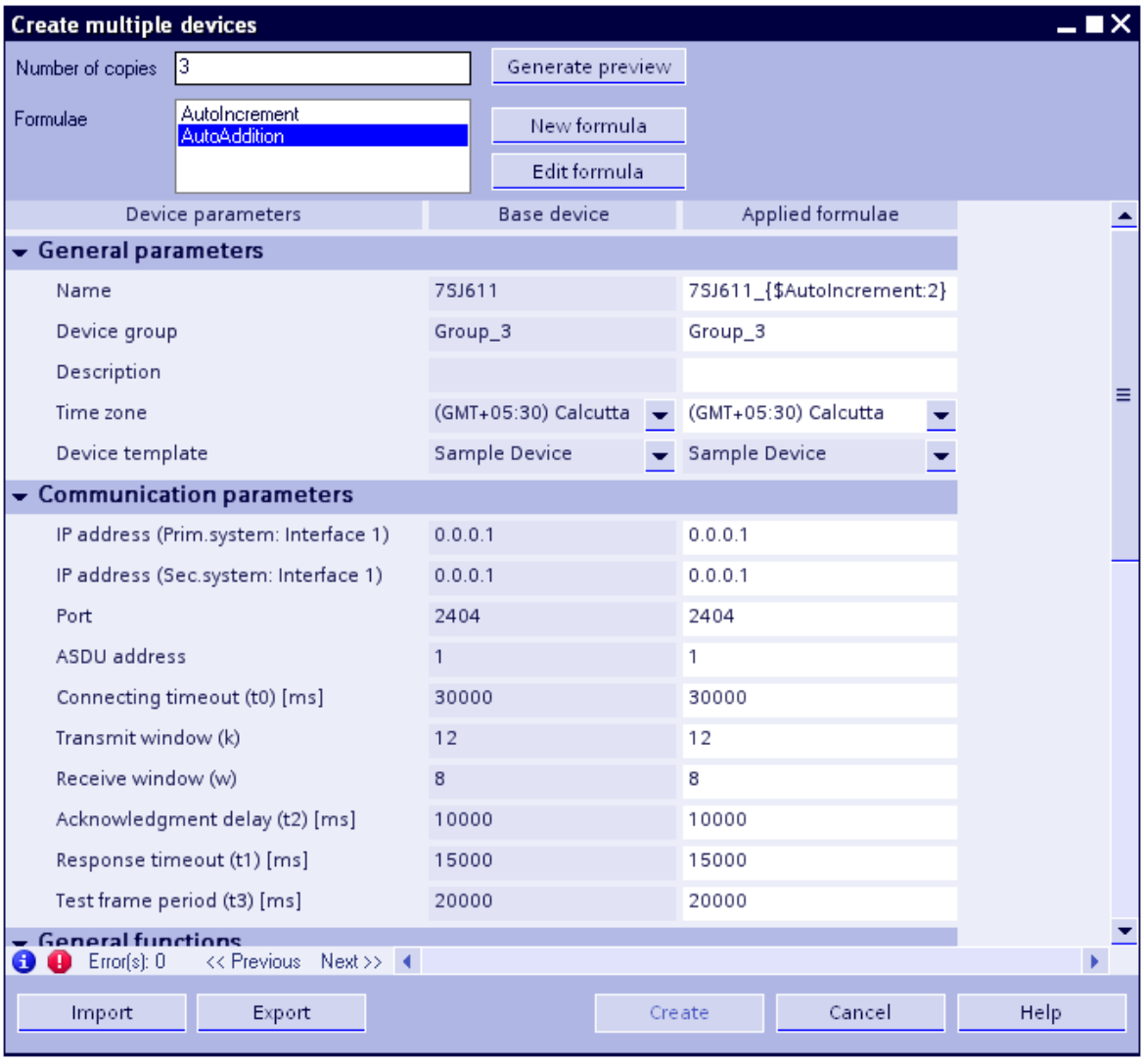
Figure 2-85 New Formula

- ✧ In the **Name** field, enter a name for the formula you want to create.
  This field is enabled only while creating a new formula.
- ✧ In the **Start value** field, enter a starting value for the formula.
- ✧ From the **Function** and **Operand** field, select an operating function and an operand to be implemented on the starting value respectively.
- ✧ Click **Apply**.
  The formula created is displayed in the **Formulae** list and can be used for parameterizing the device properties.



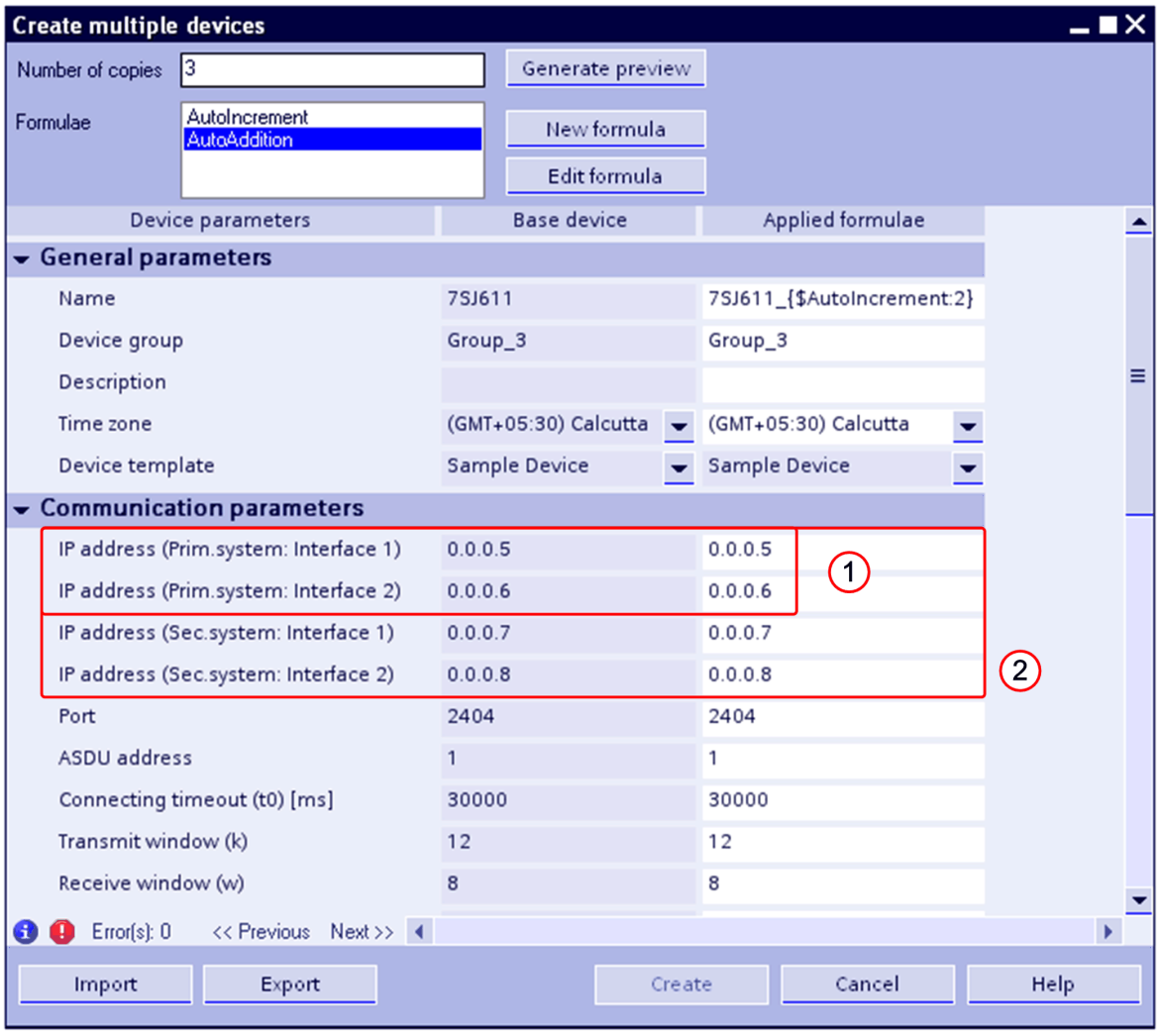
[sc_Create_Multiple_Dev_without_Redund, 1, en_US]

Figure 2-86 Creating Multiple Devices without Redundancy Enabled



[sc_Create_Multiple_Dev_with_Sys_Redund, 1, en_US]

Figure 2-87 Creating Multiple Devices with System Redundancy Enabled



[le_Create_Multiple_Devices, 1, en_US]

Figure 2-88 Creating Multiple Devices with Redundancy Enabled

(1) Interface redundancy, for example IP address in Communication parameters

(2) Interface redundancy and system redundancy, for example IP address in Communication parameters

Defining Devices by means of Formulae

To create multiple copies of the device with unique names, a formula is used as follows:

Name of the device{$Name of the formula:Formatter value}

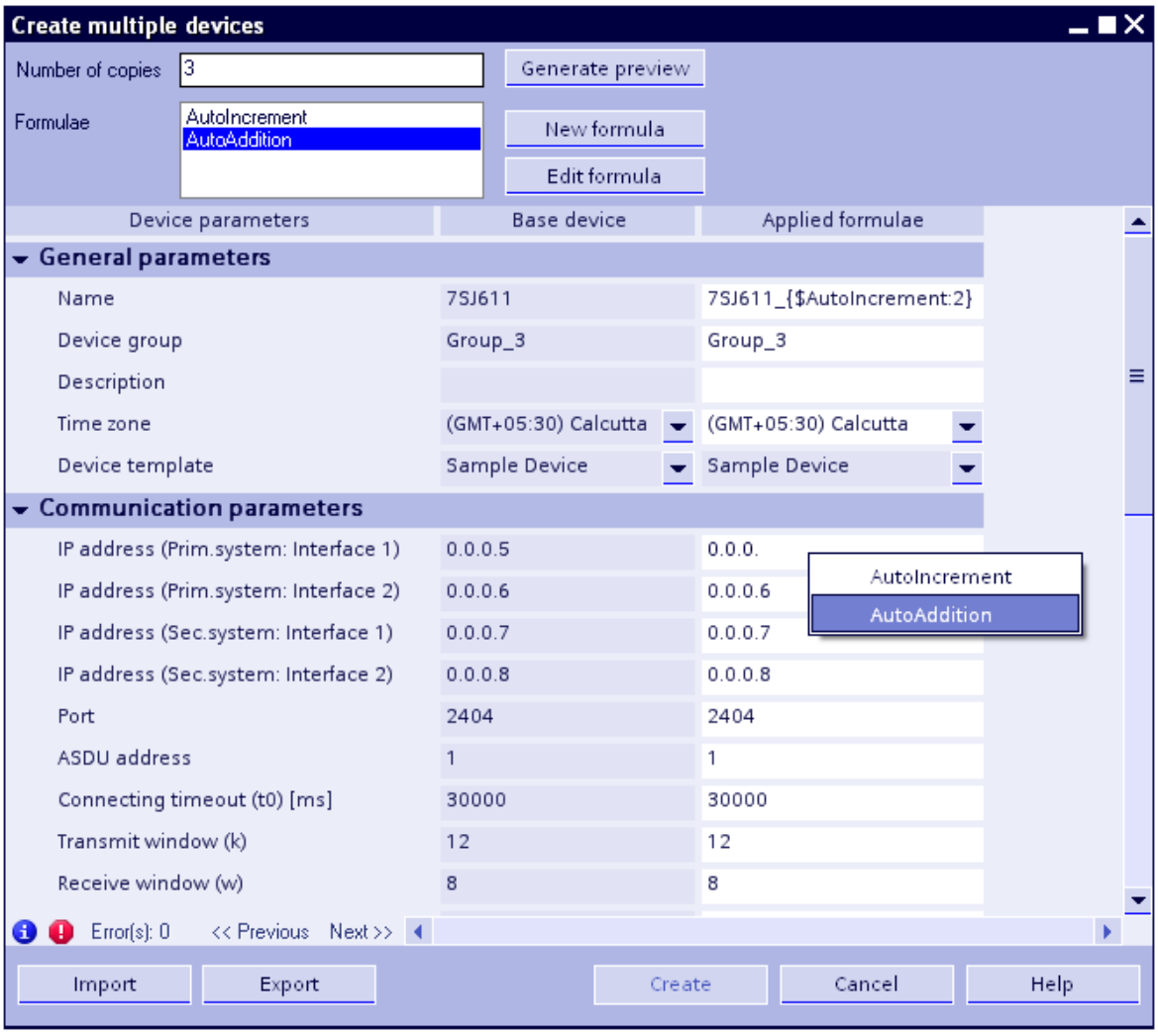
Optionally, a formatter value can be used along with the name of the formula. It gives the minimum number of numericals to be displayed after the name of the device.

✧ Under the **Applied formulae** column, in the **Name** field, enter the name of the device.

✧ Select the name and select a formula from the context menu.
A formatter value can be optionally added.

✧ In the **Device group** field, enter a name for the group.
The **Device group** is the group to which the **base device** and all the copied devices are assigned to, so they can be edited together.

✧ Select any editable field in the **Applied formulae** column and select a formula from the context menu.



[sc_Formulae_Selection, 1, en_US]

Figure 2-89 Selecting Formula from List

NOTE

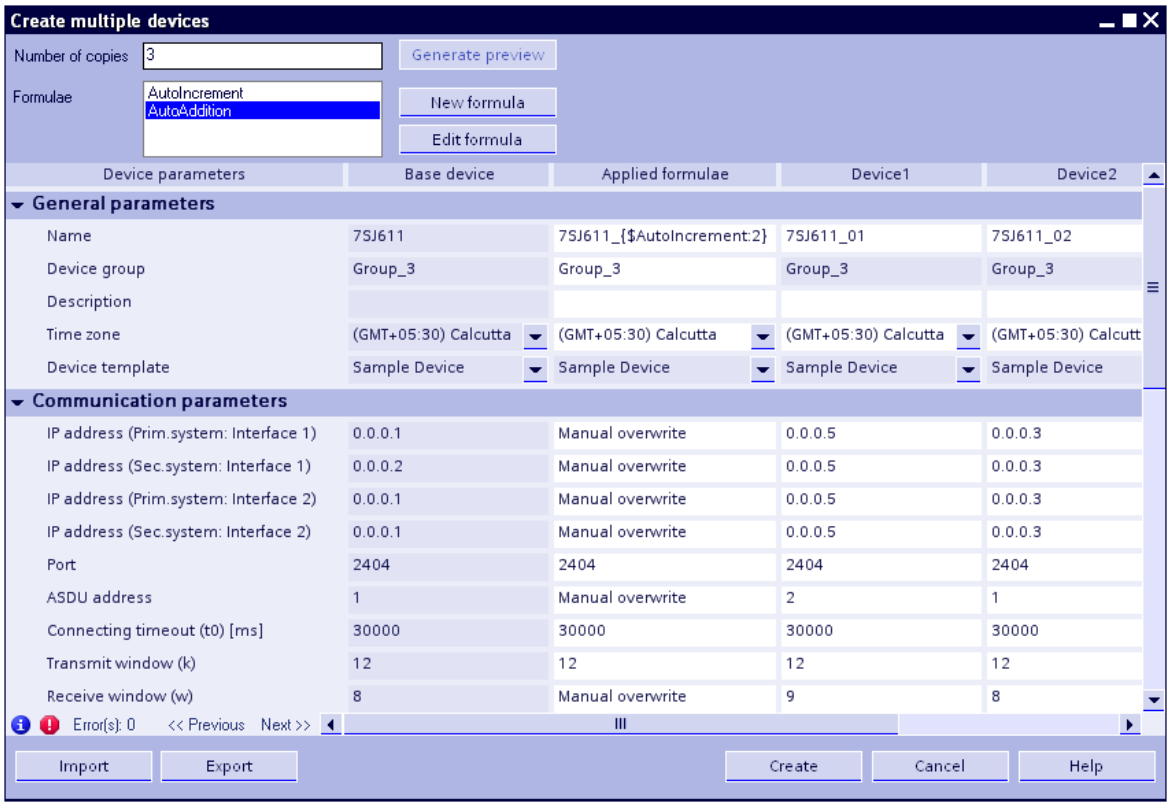
If there are no errors (red fields), **Generate preview** is enabled.

Generating Preview

Generate preview is used to display the parameter values of the devices which are meant to be created.

✧ To preview the parameter values specified for the devices, click **Generate preview**.

If you edit the editable fields of the properties of the created devices, **Manual overwrite** is displayed in the **Applied formulae** column in the corresponding row.



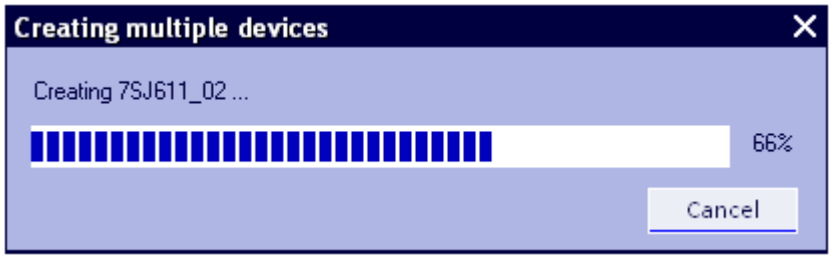
[sc_Generate_Preview, 1, en_US]

Figure 2-90 Generate Preview

NOTE

The **Create multiple devices** dialog displays all the information of the devices which are going to be created. The **Create** button is only enabled if there are no errors (red fields).

✧ Click **Create**.
During the **Creating multiple devices** process a progress bar is displayed.
The devices created are listed under the targeted interface.
The topology assignments are also copied from the **base device** to the created devices. The **base device** is specified by (yellow) symbol.



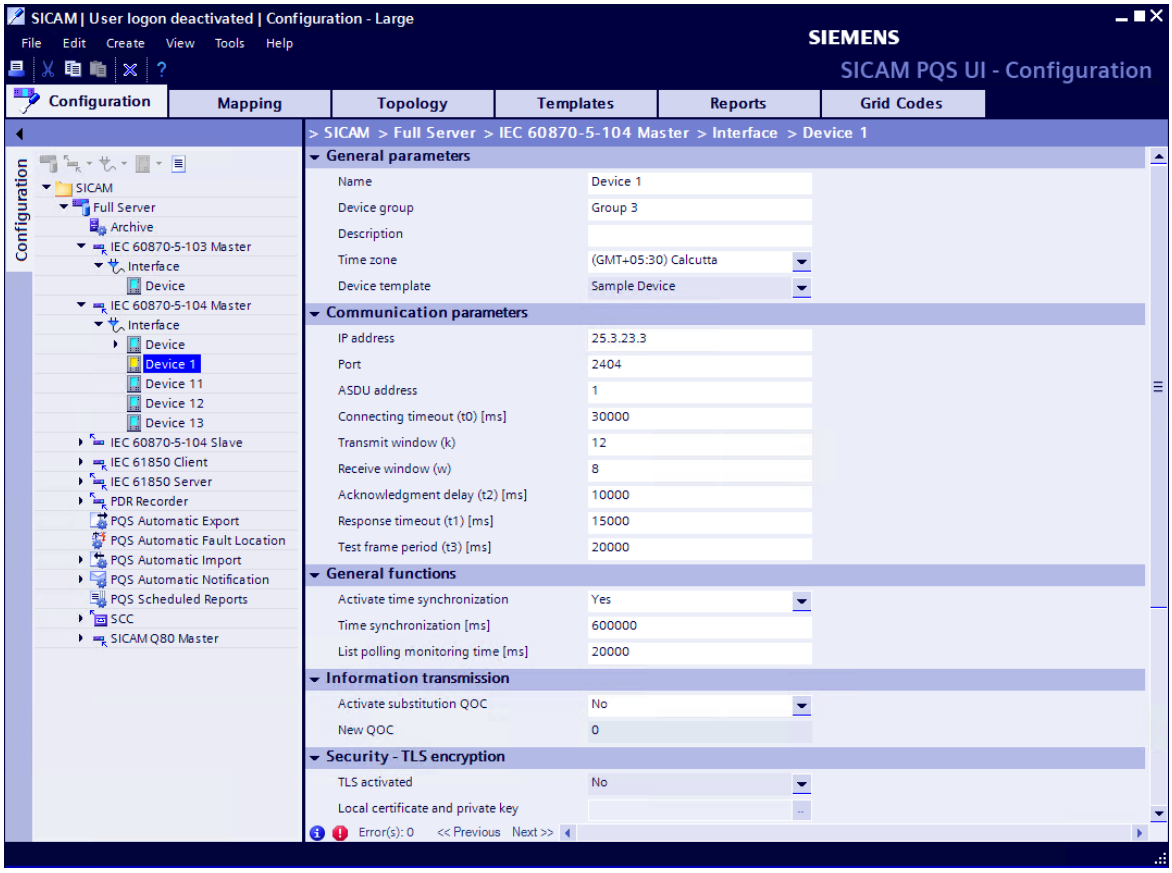
[sc_Creating_Multiple_Dev, 1, en_US]

Figure 2-91 Creating Multiple Devices

Example

To create **3** copies of **7SJ611**, namely **7SJ611_02**, and **7SJ611_03**, proceed as follows:
Enter **3** as the **Number of copies**. Create a **New formula** named **AutoAddition** with the **Start value** as **2**, **Function** as **Addition**, **Operand** as **1**, and **Formatter value** as **2**.

Edit the **Name** field to **7SJ611_{AutoAddition:2}**. On applying the created formula, the copies of the device are created and listed under the **Interface**.



[sc_Created_Dev, 3, en_US]

Figure 2-92 Created Devices

Importing/Exporting

Export/Import is used to save/retrieve all the parameters (including mapping, topological assignments, user-defined formulae, and type of the device) of the **base device** to/from a user-defined path.

- ✧ Click **Export**, to save the values of all the parameters of the **base device** as displayed in the **Applied formulae** column from **Create multiple devices** dialog to a user-defined path.
- ✧ Click **Import**, to delete all the generated data, retrieve the saved file from the user-defined path, and displays the user interface with the retrieved values.

2.10.3 Copying Control Center Mappings

The purpose of this function is to implement the mappings from the desired device to the selected devices in the same device group. For more information, refer to *2.8 Defining the Mapping*.

The **Copy control center mappings...** function can only be used for the following applications:

- IEC 60870-5-101 Slave
- IEC 60870-5-104 Slave
- IEC 61850 Server
- DNP3 Slave
- Modbus Slave

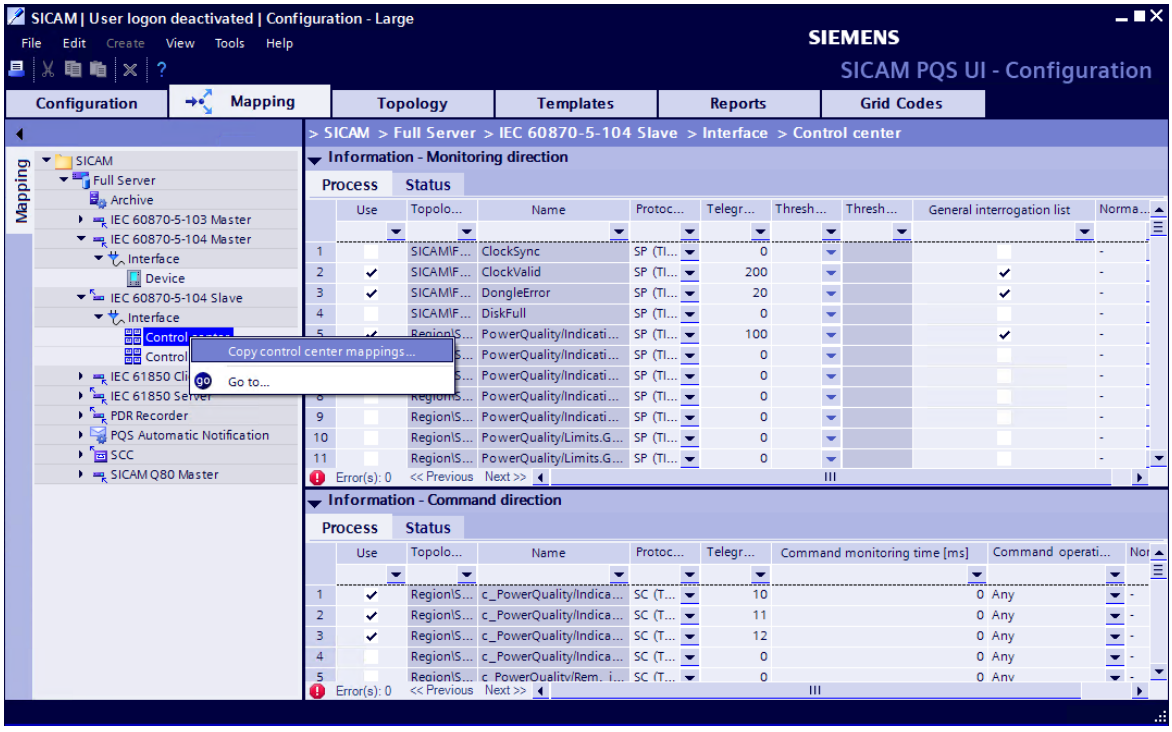
- SCC
- Automation (SoftPLC)

To copy control center mappings:

✧ Open the **Mapping** view.

✧ Configure all the items of information of the **base device**, as required.

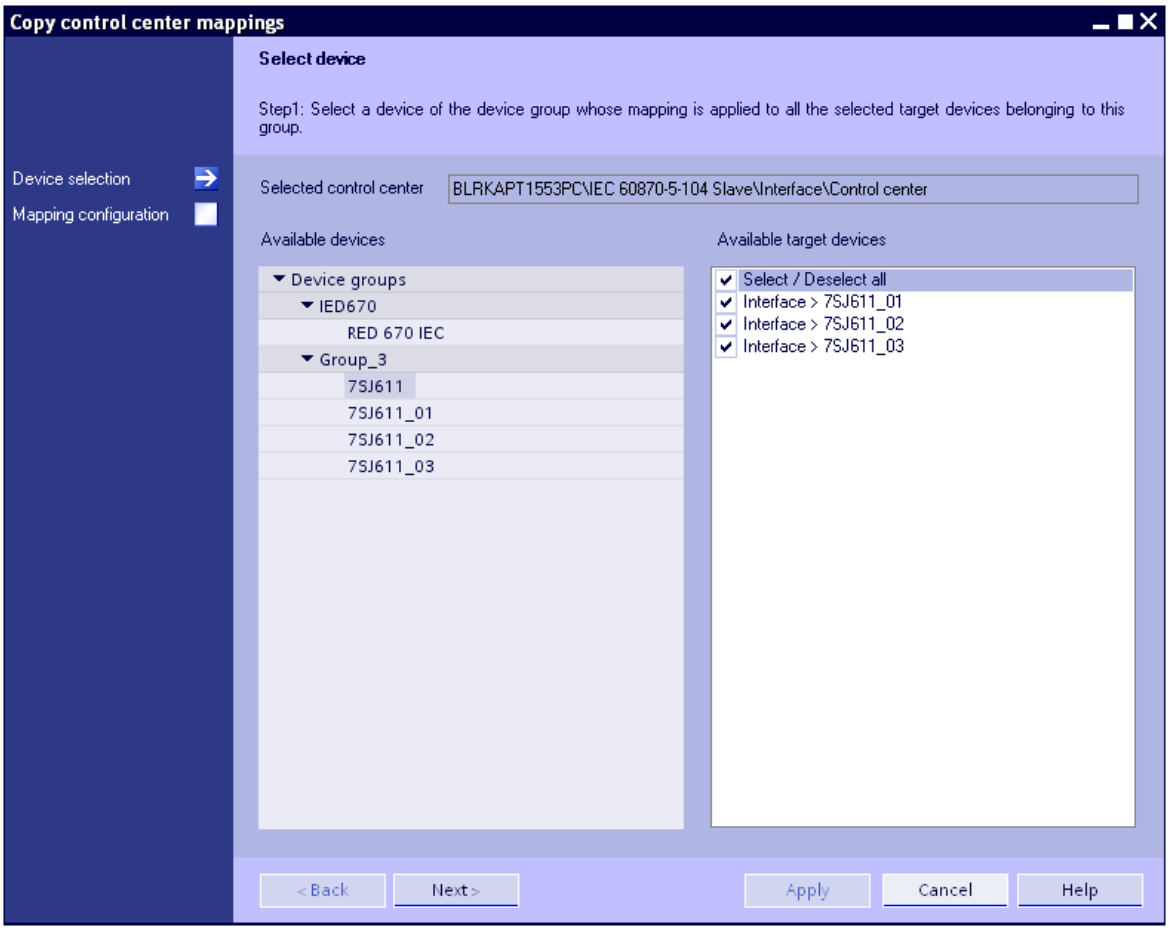
✧ Select the **Control center** of the selected device and select **Copy control center mappings...** from the context menu.



[sc_Copy_Control_Center, 3, en_US]

Figure 2-93 Selecting Copy Control Center Mappings

The **Copy control center mappings** dialog opens.



[sc_Select_Dev_Mapping, 1, en_US]

Figure 2-94 Selecting Device for Mapping

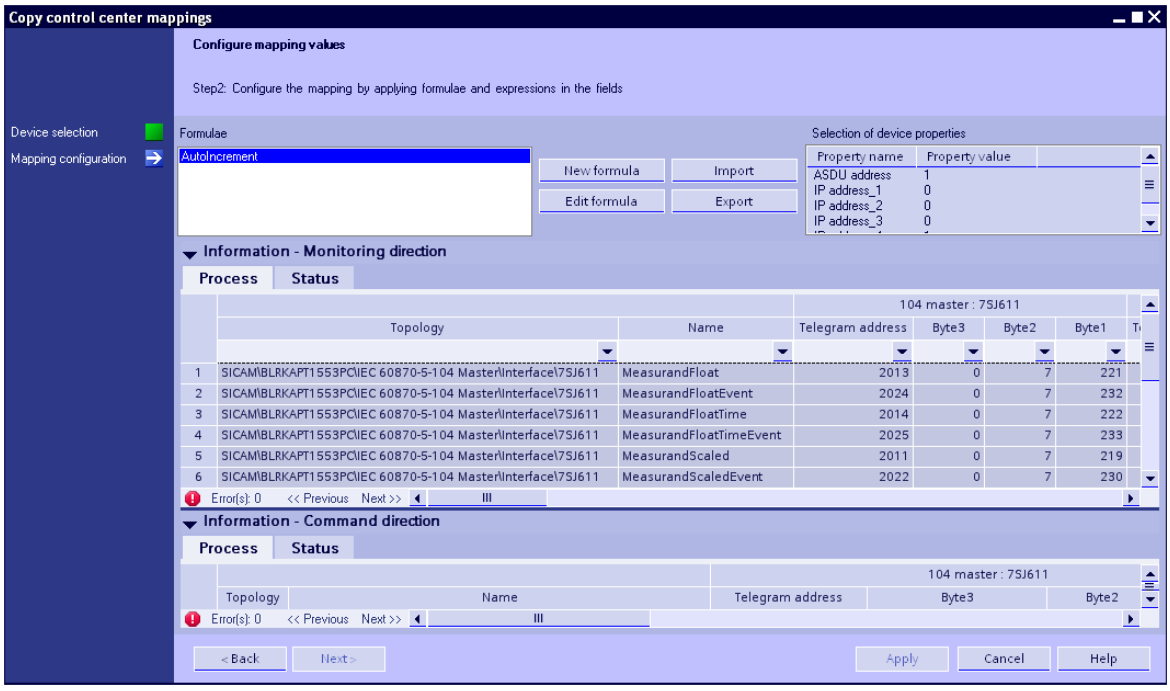
✧ Select any device from the **Available devices** list.
In the **Available devices** list, all the devices which are mapped to the control center are listed. Select the device whose mappings should be applied to the selected target devices belonging to its device group.

✧ Select the devices from the **Available target devices** list to which you want to apply the mappings of the selected device from the **Available devices** list.
In the **Available target devices** list, all the devices of the same device group (excluding the selected device) are listed.

NOTE

In case of the **SCC** application, the changes made manually in the **Message group**, **Tag group**, and **Tag logging (hierarchy)** columns are not copied or overwritten.

✧ Click **Next >**.
The **Configure mapping values** dialog opens.



[sc_Configure_Mapping_Values, 1, en_US]

Figure 2-95 Configuring Mapping Values

In the **Configure mapping values** dialog, you can create a new formula or edit a formula displayed in the **Formulae** list.

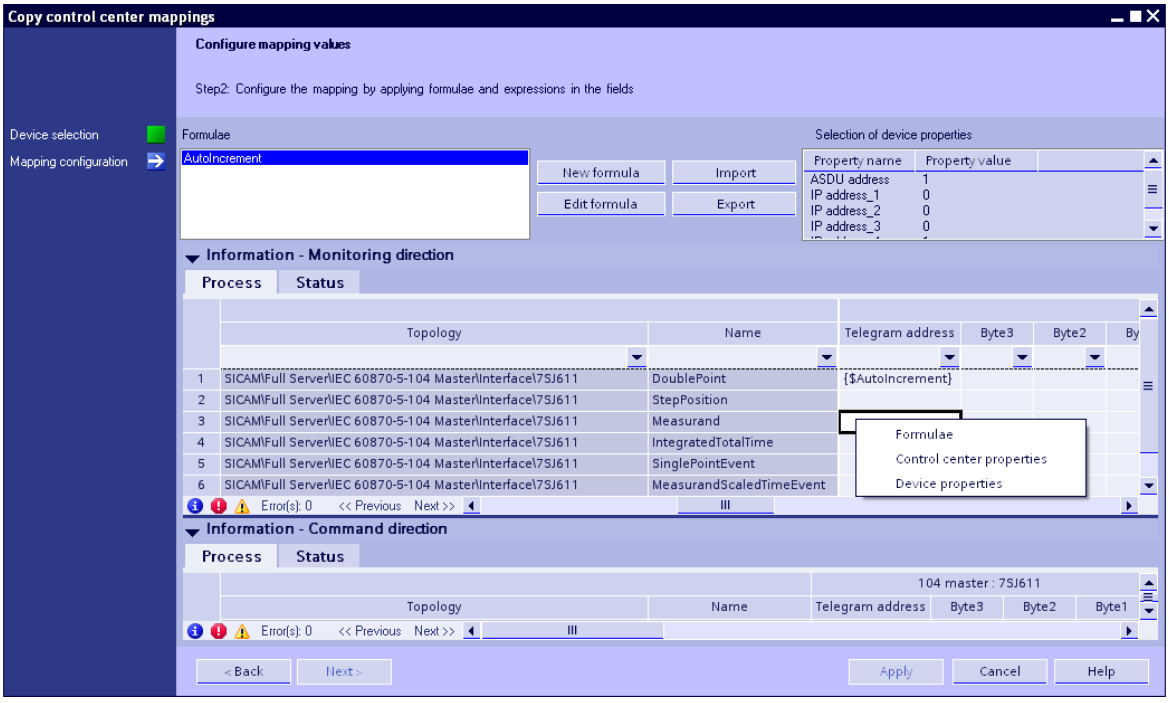
The **Selection of device properties** list only displays the address properties of the **mapped** device.

These properties are already configured and can only be edited in the **Configuration** view.

NOTE

The **Configure mapping values** dialog is not applicable for the **SCC** application.

✧ Select the editable field of the columns and edit it manually or use one of the selections from the context menu. For mapping, unique information addresses (of **Telegram address**, **Byte3**, **Byte2**, and **Byte1**) are required.



[sc_Selecting_Formulae_Mapping, 1, en_US]

Figure 2-96 Selecting Formulae for Mapping

From the **Formulae** menu, you can select a formula to create a unique address.

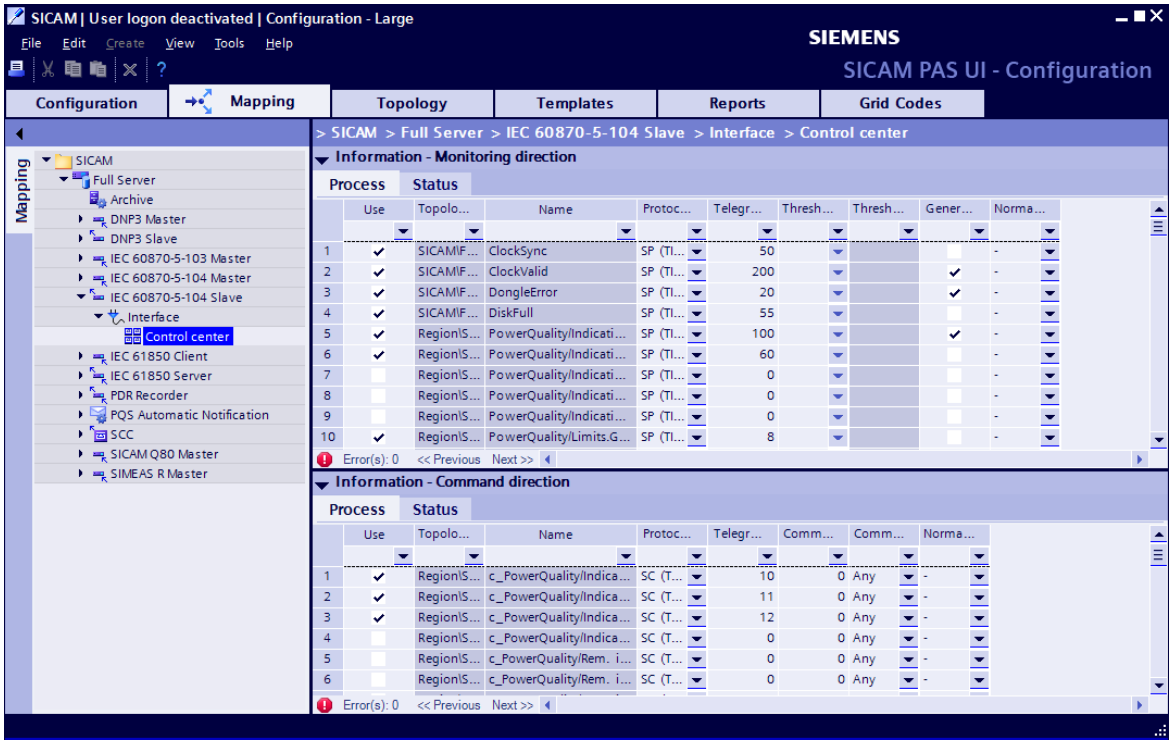
From the **Control center properties** and **Device properties** menu, you can select a property value already mapped in the **Control center**, these values can be used instead of a formula to create a unique address.

Importing/Exporting

Import/Export is used to retrieve/save the topological assignments, user-defined formulae, and user-defined parameters to/from a user-defined path.

✧ Click **Apply**.

The data is generated.



[sc_Applied_Mapping_Values, 2, en_US]

Figure 2-97 Mapped Devices

2.10.4 Updating Multiple Objects

The purpose of this function is to select the **base device** and update all the devices, which belong to the same device group.

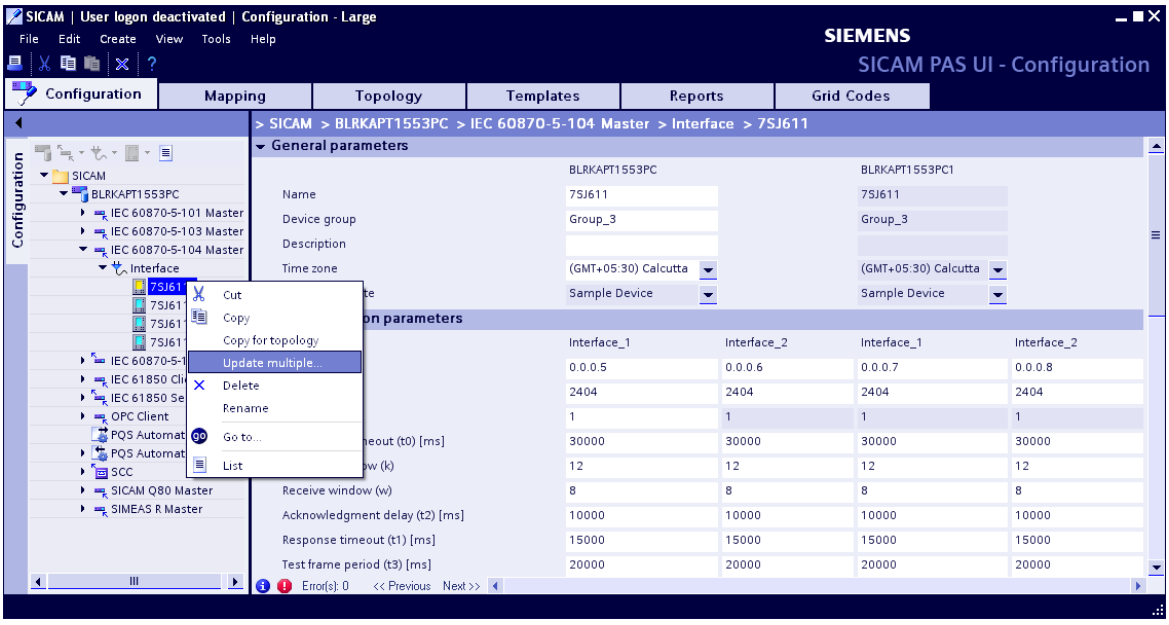
The **Update multiple...** function can only be used for the following applications:

- IEC 60870-5-101 Master
- IEC 60870-5-104 Master
- IEC 60870-5-103 Master
- DNP3 Master
- Modbus Master
- IEC 61850 Client

To update multiple devices:

✧ Open the **Configuration** view.

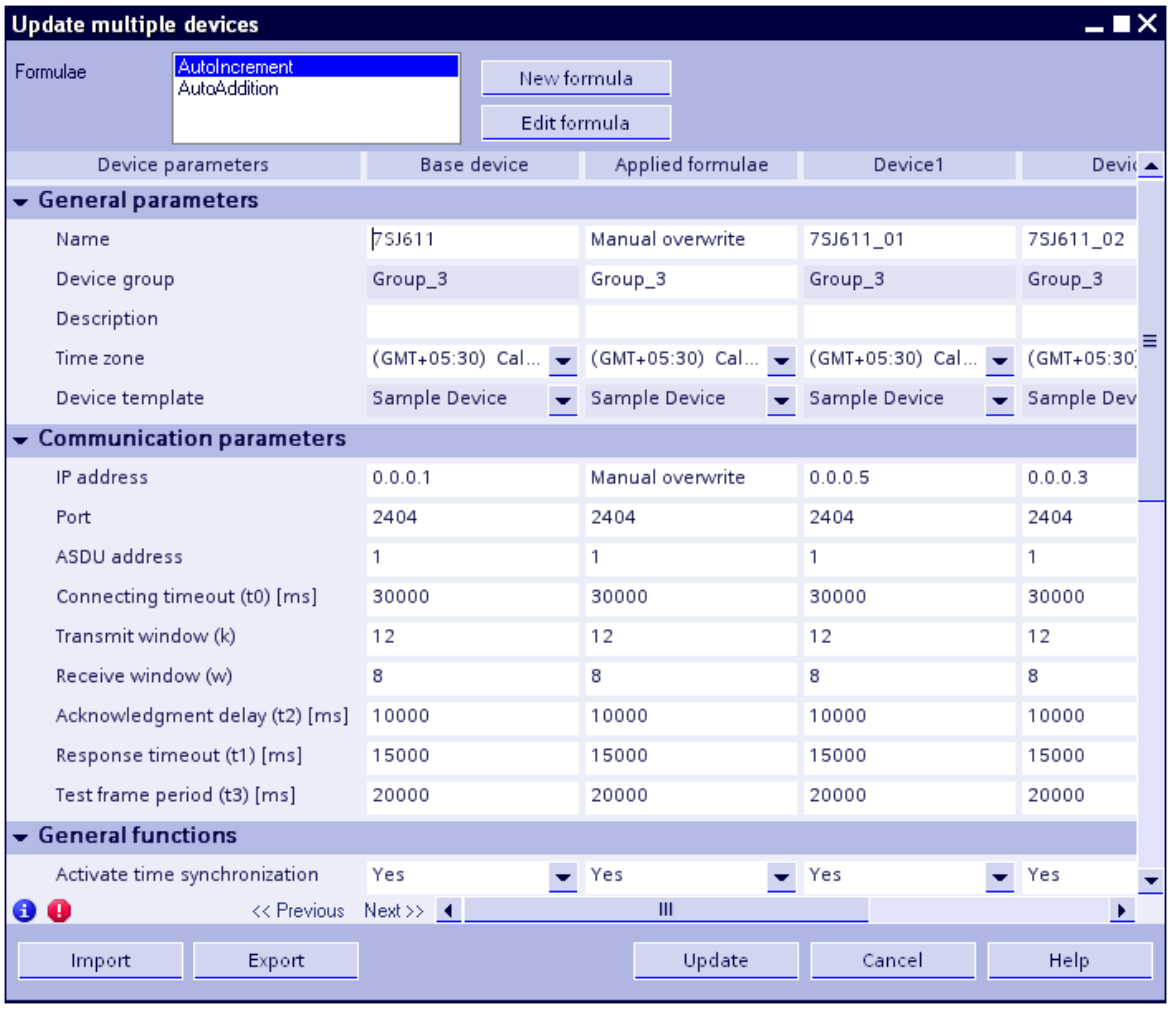
✧ Select the **base device** and select **Update multiple...** from the context menu.



[sc_Update_Multiple, 2, en_US]

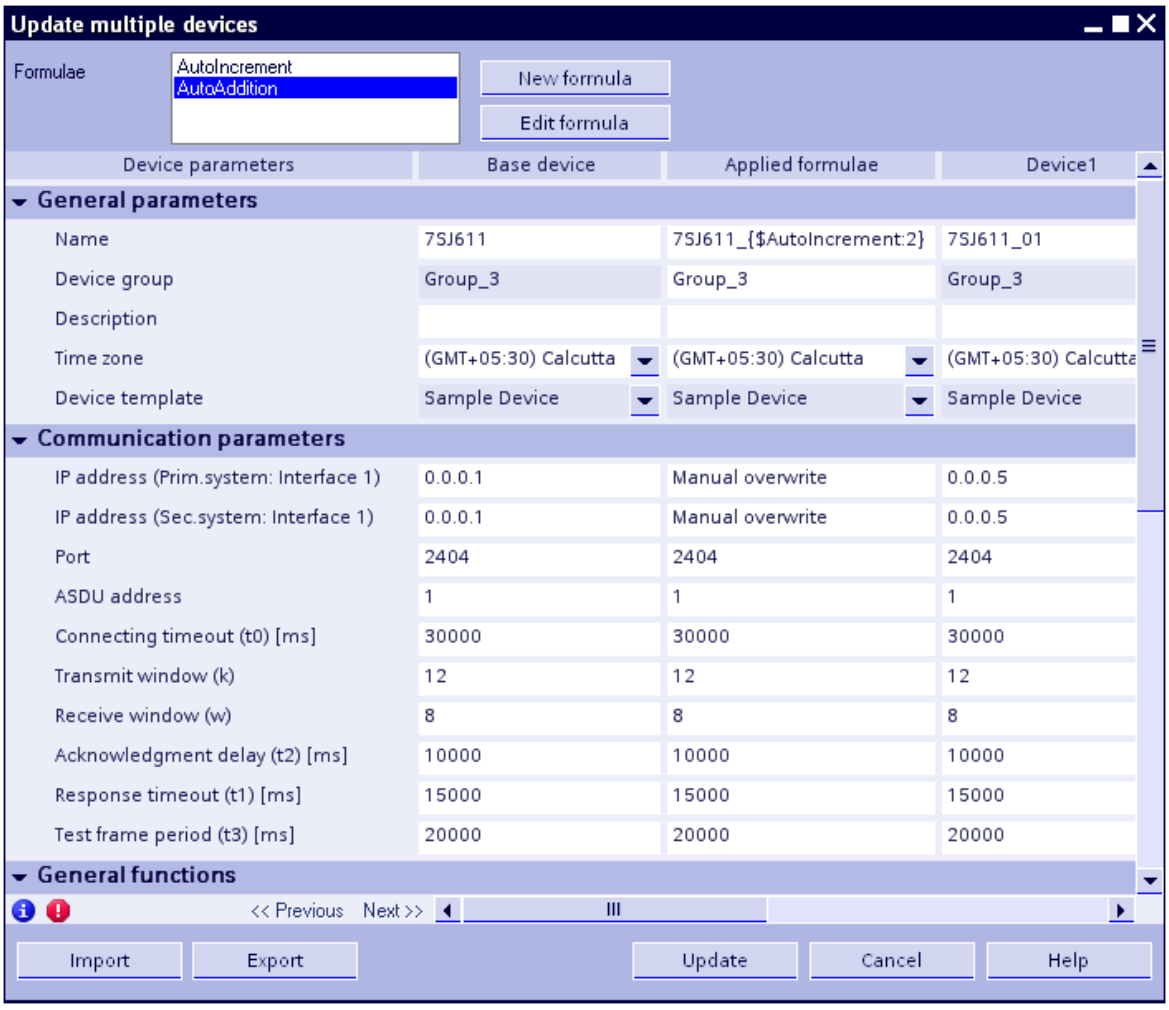
Figure 2-98 Selecting Update Multiple

The **Update multiple devices** dialog opens. The **Base device** column displays the properties of the **base device**.



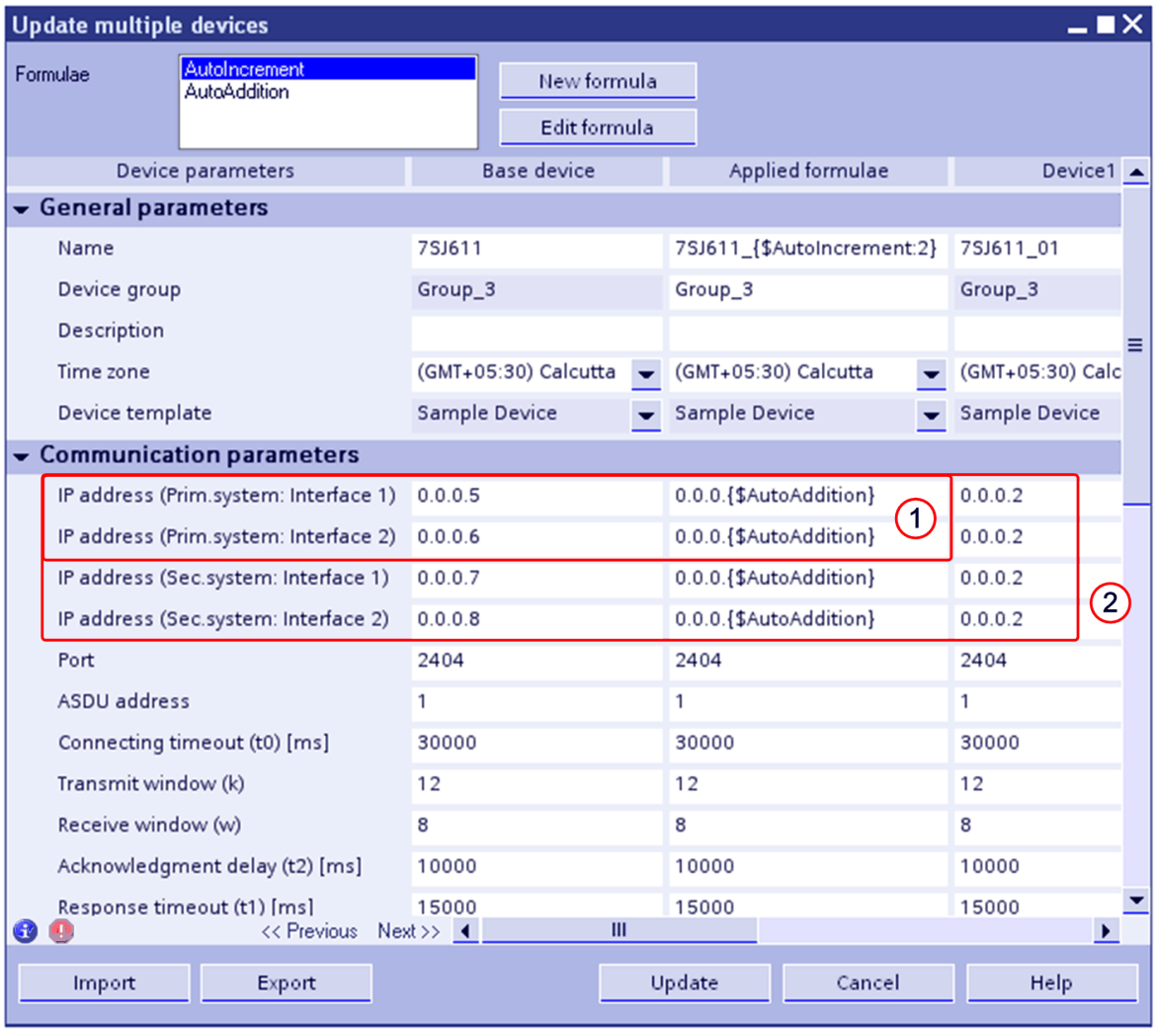
[sc_Update_Multiple_Dev_without_Redund, 1, en_US]

Figure 2-99 Update Multiple Devices without Redundancy



[sc_Update_Multiple_Dev_with_Sys_Redund, 1, en_US]

Figure 2-100 Update Multiple Devices with System Redundancy



[le_Update_Multiple_Devices, 1, en_US]

Figure 2-101 Update Multiple Devices with Redundancy Enabled

(1) Interface redundancy, for example IP address in Communication parameters

(2) Interface redundancy and system redundancy, for example IP address in Communication parameters

You can make any changes either manually or using a formula.

For more information on formula, refer to *Defining Formula, Page 126*.

NOTE

Update is enabled after validating all the device parameter values.

NOTE

If a device group does not have a **base device**, the device which was created first in that group is displayed in the **Base device** column in the **Update multiple device**. On clicking **Update**, it becomes the **base device** for the group.

NOTE

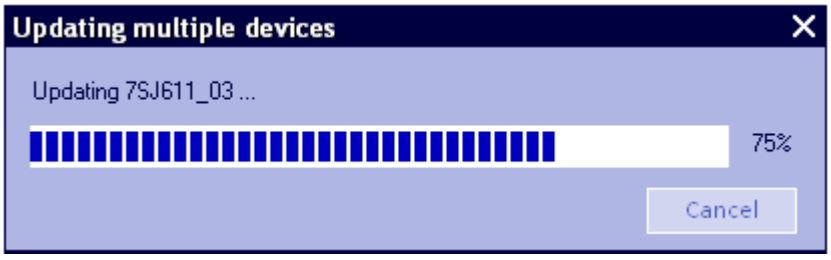
When the devices in a group are updated, the lists, the mapping information, and the topology assignments for the devices are overwritten by the entries of the **base device**.

In case of IEC 61850 Client, only the mapping information and the topology assignments are updated, lists are neither copied nor overwritten.

The device properties and names of the bays are updated according to the user-defined entries.

✧ Click **Update**.

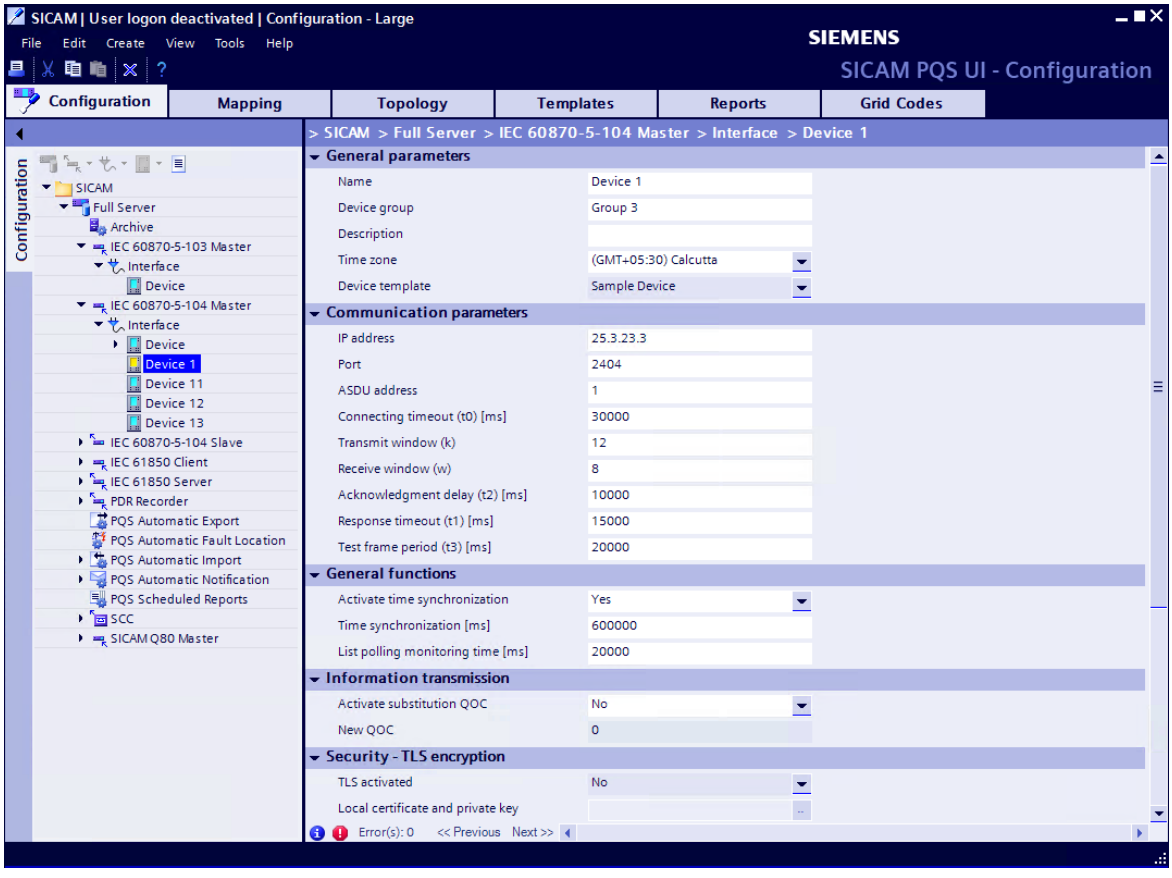
During the **Updating multiple devices** process, a progress bar is displayed.



[sc_Updating, 1, en_US]

Figure 2-102 Updating Multiple Devices

The devices are updated.



[sc_Created_Dev, 3, en_US]

Figure 2-103 Updated Devices

2.11 Working with Device Templates

2.11.1 Device Templates

A device template describes a device's volume of information in the monitoring and command direction. The volume of information includes both process information and status information of the device.

Device templates are used if no import templates for the devices' configuration data are available.

The scope of delivery of SICAM PAS/PQS UI – Configuration includes device templates for:

- Each communication protocol
- PQS Automatic Import
- SoftPLC
- OPC Client
- SNMP
- SICAM MIC Master

You can directly use these templates for the configuration of your station or customize them to your individual requirements.

Configuration data which have been imported from devices are saved as templates and used for further devices.

Device templates are also available as device descriptions (text files). Storage location:

%PUBLICDOCUMENTS%Siemens\SICAM PAS PQS\DeviceDescriptions

Using the import function of SICAM PAS/PQS UI – Configuration, you can import either these device templates or customized device templates.

Device templates should be created in the UTF-8 or ANSI format, since only these formats are supported by the import function. Do not use special characters or umlauts.

To edit your device templates, use the

- Notepad editor and save them in the ANSI format.
- Wordpad and save them as a text document.

Various device parameters can only be modified in the **Templates** view, for example, the assignment of commands and feedbacks or telegram numbers.

You can define IEC 61850 Ed.2 object models for devices which are not connected by using the IEC 61850 protocol and whose information is transmitted to a control center by using the IEC 61850 Ed.2. These object models include specific parameters and mappings which can be used for mapping the device information to an IEC 61850 Server.

In the **General recording channels** and **Triggered recording channels only** tabs, you define the measuring channels of the PQ measuring data and fault records used for fault location. Assign channels and phases and define the channel for the signal which triggers the fault recording.

How to Proceed

The following options are available for editing device templates:

- *2.11.2 Showing a Device Template*
- *2.11.3 Filtering Information Tables*
- *2.11.4 Editing Information*
- *2.11.7 Deleting a Device Template*
- *2.11.6 Updating a Device Template*

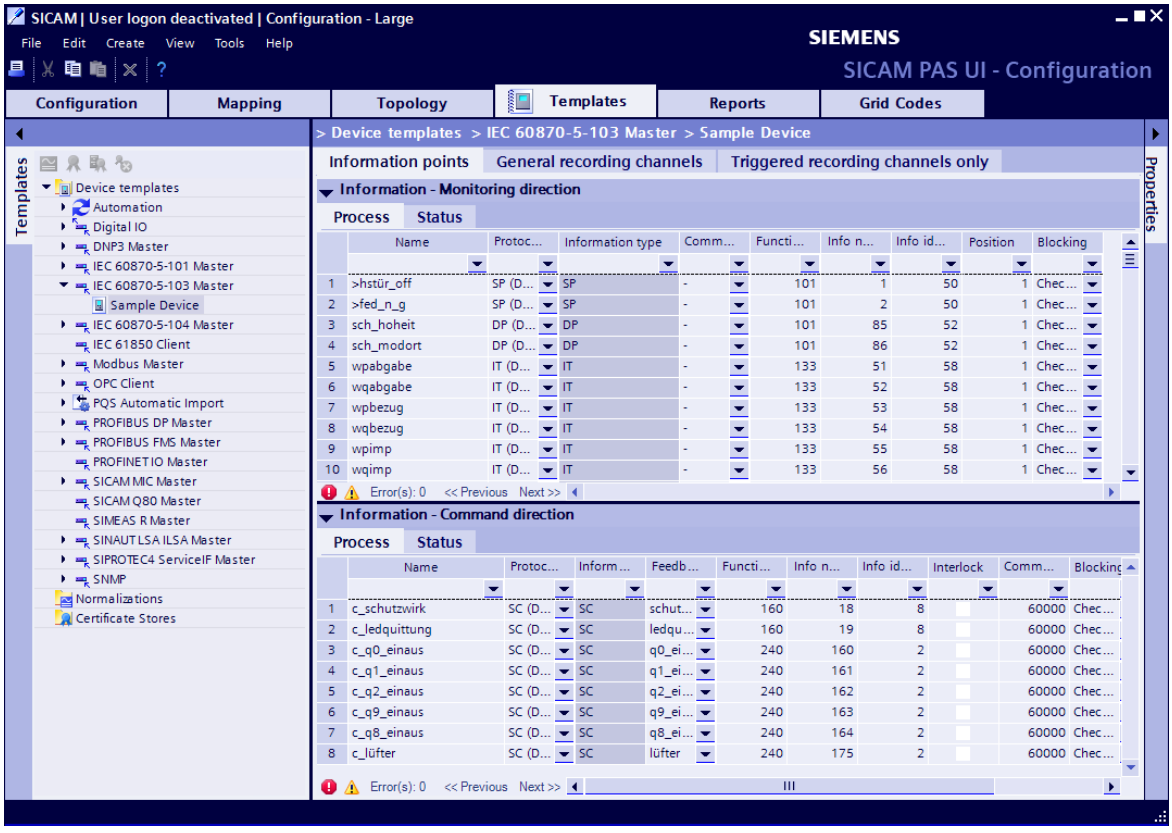
- *2.11.5 Importing/Exporting a Device Template*
- *2.11.8 Recording Channels*

2.11.2 Showing a Device Template

To show a device template:

✧ Select the communication protocol for which you want to show the device template.

✧ Click the arrow next to a communication protocol in order to open the list of device templates available for this protocol.



[sc_Dev_Template, 3, en_US]

Figure 2-104 Device Template, Example

The **Templates** view is subdivided into the following areas:

- Configuration tree
- Input area
- Properties, General parameters

The input area is subdivided into the following tabs:

- Information

  The **Information points** is available for each application. The tab includes the **process** and **status** information of the application, classified according to **Information – Monitoring direction** and **Information – Command direction**. For the IEC 61850 Ed. 2 protocol, protocol-specific process information is also summarized in the **LN state** (Logical Node) tab.

- General recording channels
  The **General recording channels** tab is available for applications which create PQ measuring data or fault records for fault location. They define for example, the assignment of the measuring channel and the phase.
- Triggered recording channels only
  The **Triggered recording channels only** tab is available for applications which create PQ measuring data or fault records for fault location. The tab shows a description of the channel assignment for the trigger signal which starts the fault recording.

2.11.3 Filtering Information Tables

A filter function is available for the individual information columns. By using this function, you can define column-specific filter criteria.

To use the filter function:

✧ Open the drop-down list box below the column header:

✧ Select an entry from the drop-down list box, for example, the **DP** filter criterion for double-point information in the **Information type** column.

The table now only shows information of the type **DP**.

✧ To show again the complete information, select **(None)** from the drop-down list box.

- or -

✧ Select **(User)** in the drop-down list box to open the **User filter**.

✧ Enter your filter criteria and click **OK** to confirm.

2.11.4 Editing Information

Using SICAM PAS/PQS UI – Configuration, you can edit the information included in a device template. Each item of information is shown in a separate row of the list and consists of several parameters. Parameters which cannot be modified are shown in gray.

The following options are available:

- *Copying Information, Page 146* and *Duplicating Items of Information, Page 147*
- *Deleting Items of Information, Page 147*
- *Changing the Names of Items of Information, Page 147*
- *Changing the Parameters of an Item of Information, Page 149*

The changes influence the project database. However, they do not influence the text files installed in the installation directory. To use the customized device templates in another project, export them in the TXT data format. For more information on export, refer to *2.11.5 Importing/Exporting a Device Template*.

Copying Information

To copy an item of information:

✧ Select the row number of the item of information which you want to copy.

✧ Select **Copy** from the context menu.

✧ Select **Paste** from the context menu.

The information is pasted. It is possible that pasted information is not displayed in the current selection if the filter and sorting criteria have been defined accordingly.

The parameters of the copied and pasted item of information are highlighted in red. Under **Name**, enter a unique name for the new item of information in order to ensure that your change becomes effective.

Place your mouse pointer on the cell highlighted in red. The cause of the error is now described in a tooltip.

✧ Open the error field or the warning field . The cause is explained line by line in this field.

If you exit the table in an invalid state with fields highlighted in red, for example, without entering a unique name, a dialog opens. In this dialog, you are prompted to confirm whether you want to correct or cancel your change.

You can also use the copy function to edit the information of an MS EXCEL table template. The filter and sorting options provided by the system support you in the selection of data to be modified, refer to *2.8.2 Optimizing the View*.

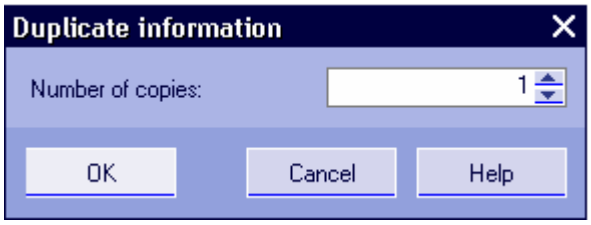
When copying back the information in the **Templates** view, make sure that the same sorting criteria are defined. This ensures that no information parameters are accidentally confused.

Duplicating Items of Information

To paste items of information of the same type at several different places, use the **Duplicate** function.

To duplicate an item of information:

✧ Select the row number of the item of information which you want to duplicate. Select **Duplicate** from the context menu.



[sc_Entering_No_Dupli, 1, en_US]

Figure 2-105 Entering the Number of Duplicates

✧ Enter the number of duplicates and click **OK** to confirm.

The duplicates are pasted at the bottom of the input area. The row numbers of the pasted items of information are highlighted in yellow. The parameters of the copied and pasted items of information are highlighted in red.

✧ Open the error field or the warning field . The cause is explained line by line in this field.

✧ Double-click the blue text in the error field in order to display the erroneous parameter.

If you exit the table in an invalid state with fields highlighted in red, a dialog opens. In this dialog, you are prompted to confirm whether you want to correct or cancel your change.

Deleting Items of Information

You can delete one or several items of information from a device template.

To delete an item of information:

✧ Select the row number of the item of information which you want to delete.

✧ Select **Delete** from the context menu.

✧ Confirm the Delete command with **OK**. The selected item of information is deleted from the device template.

NOTE

If you delete the information from templates, this information is also deleted at other positions in your station configuration where you have used and mapped the template.

Changing the Names of Items of Information

In device templates, you can browse for the names of items of information according to a defined string and replace this string by a different string.

By using the **Find/Replace** function, you can search according to the following criteria:

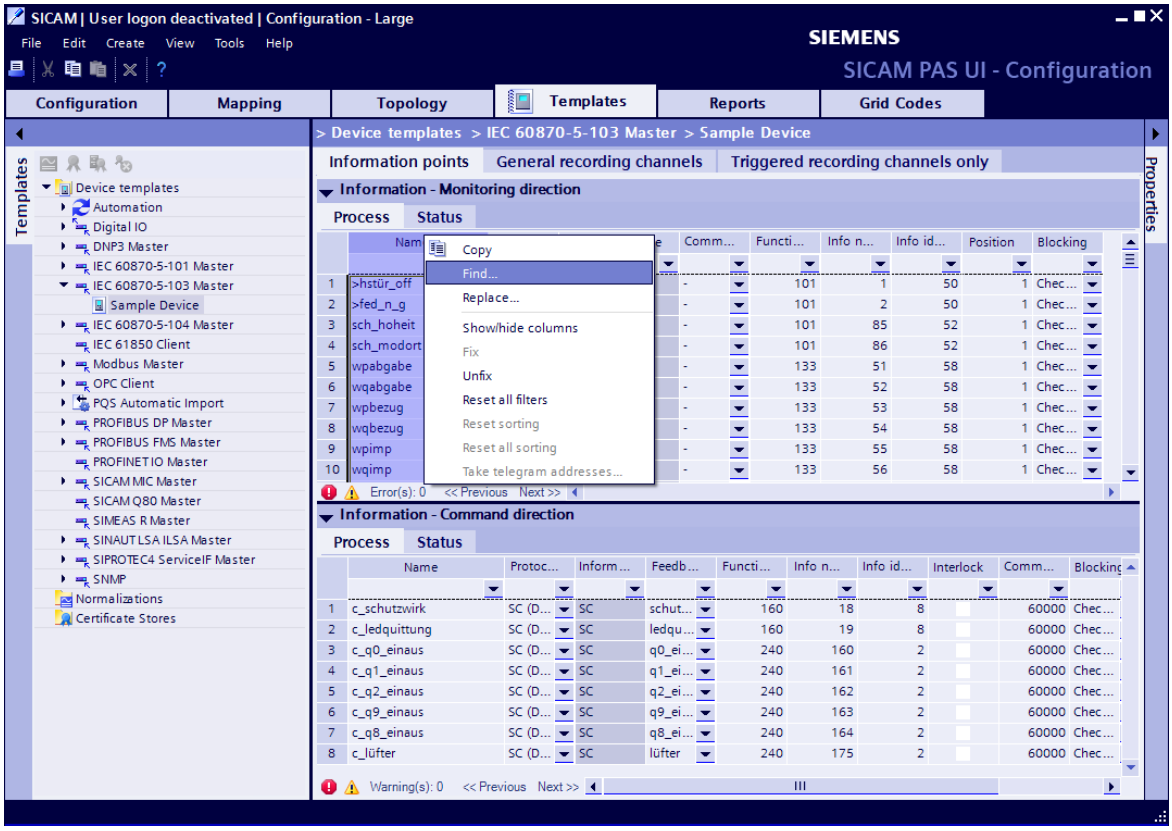
- The names of items of information in the individual tables of a device template
- All names of the items of information included in a device template
- The names of items of information in all device templates of a protocol

The search includes all lower-level areas. If you select for example, an application, all assigned device templates will be searched.

To search for a specific string in a device template:

✧ In the **Monitoring direction** tab, select for example, the **Name** column header.

✧ Select **Find...** from the context menu.
The **Find and Replace** dialog opens.



[sc_Finding_Char_String, 3, en_US]

Figure 2-106 Finding a Character String

✧ Under **Find...**, enter the string and click **Find**.
The search result is displayed in the **Report**.

To find a specific string in all device templates of an application:

✧ Select the application in the configuration tree. Select **Find...** from the context menu.
The **Find and Replace** dialog opens.

✧ Under **Find...**, enter the search string and click **Find**.
The search result is displayed in the **Report**.

To replace a specific string in a device template:

✧ Select the device template in which you want to search for a character string and select Replace from the context menu.
The **Find and Replace** dialog opens.

✧ Enter the string to be replaced under **Find:**.

✧ Under **Replace with**, enter the new character string and click **Replace**.
Prior to execution, the changes are shown in the **Report**. In the dialog, confirm your changes.

✧ In the **Confirm Find and Replace** dialog, click Yes.
The changes are executed now.

To **replace** a character string in all device templates of an application, proceed in the same way as described for the **Find** function for a character string in all device templates.

Changing the Parameters of an Item of Information

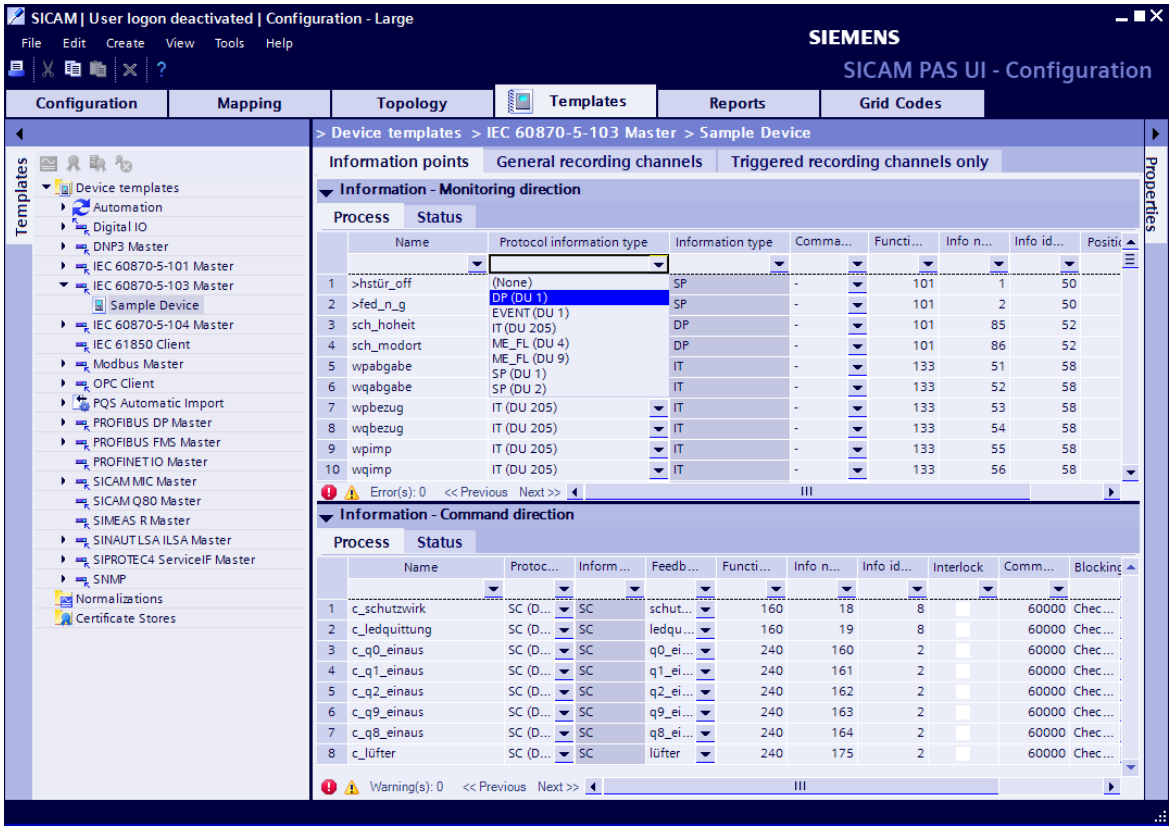
Some device parameters can only be modified in the **Templates** view, for example, the assignment of commands and feedbacks or telegram numbers.

To change a parameter of an item of information:

✧ Double-click the parameter in order to edit it or select an entry from the drop-down list box.

- or -

✧ Select the parameter and select a new entry from the context menu.



[sc_Selecting_Entry, 3, en_US]

Figure 2-107 Selecting an Entry from the Drop-Down List Box

Defining Object Models for IEC 61850 Ed.2

✧ In the **Templates** view, you can define for all device types specific object models which include the configuration for the IEC 61850 connection to a higher-level control center.

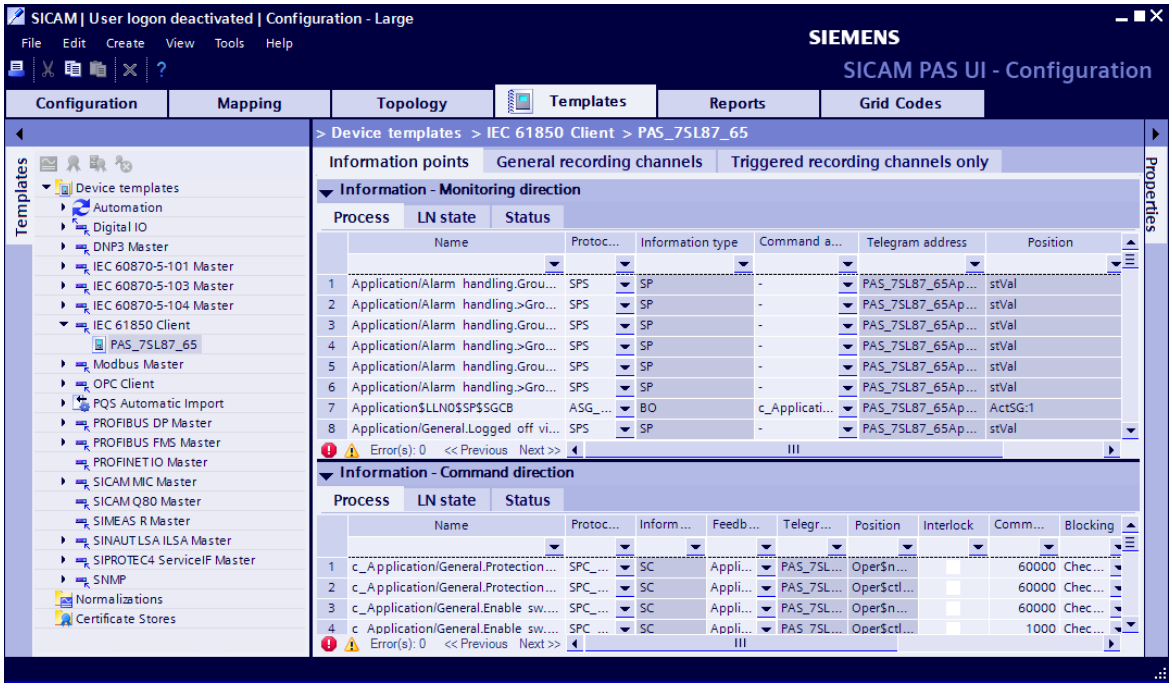
For example, an object model includes a circuit breaker with its complete configuration of the logical node assigned.

The **Templates** view allows you to generate proposed values for the MMS addresses for devices connected to SICAM PAS/PQS by using the IEC 61850. These proposed values are generated based on the available address information of the template. To generate the values, use the **Create MMS addresses** function.

For all other protocols, the definition of object models considerably facilitates the parameterization of the control center connection. The object model defined in the **Templates** view is displayed as a suggestion for the configuration of information during the mapping of the control center connection.

Some protocols do not provide all parameters expected in accordance with IEC 61850 Ed.2 standard. A warning is issued if the parameterization is incomplete. The configuration is nevertheless valid.

The columns for defining the object model (LD, LN, DO, DA) are not visible by default. You can change this option by using the context menu, refer to *Showing/Hiding Columns, Page 104*.



[sc_Templates_view_IEC 61850, 3, en_US]

Figure 2-108 Templates View, IEC 61850 Object Model Parameterization

For information on how to map the IEC 61850 Server application to the control center connection, refer to *Using Information, Page 106*.

2.11.5 Importing/Exporting a Device Template

If you require new device templates in your station configuration or if you want to save a device template which you have previously modified using SICAM PAS/PQS UI – Configuration, you proceed with:

- *Importing a Device Template, Page 150*
- *Exporting a Device Template , Page 151*

Importing a Device Template

In order to insert a device type which does not exist in your station configuration, you must first insert the corresponding device template. To do this, import a corresponding **TXT** file.

This text file can be:

- A previously exported device template
- A text file which has been saved as a sample template (sample device) in the installation directory during installation (...\DeviceDescriptions)

During the import, the device template is added to the project database.

To import a device template:

✧ In the templates tree, right-click the communication protocol for which you want to import into the new device template and select **Import...** from the context menu.

✧ In the file selection window, select the **TXT** file which you want to import as a device template.

✧ Click **Open**.

The device template is imported and the import is logged in the **Report**. Provided that the import is executed without errors, the device template is shown below the highlighted communication protocol in the template tree.

Exporting a Device Template

In order to save a modified device template, you can export it into a TXT file and continue your work in this file.

To export a device template:

✧ In the templates tree, right-click the device template which you want to export and select **Export...** from the context menu.

✧ Enter the path and the name of the destination file in the **Save as** dialog.

✧ Click **Save** to confirm. The device template is saved as a **TXT** file.

2.11.6 Updating a Device Template

If a device description has been modified, you can update the device template. The new template must be available as a text file.

During the update,

- new items of information are added
- items of information which are no longer available are deleted
- changes are overwritten in the parameters

Modifications of the basic parameters of an item of information, such as the information type or the telegram address, are processed in the same way as new items of information.

To update a device template:

✧ In the templates tree, select the device template which you want to update. Select **Update...** from the context menu.

✧ In the **Open** dialog, select the TXT file and click **Open**.

The text file is read and the progress is shown in the **Report**.

2.11.7 Deleting a Device Template

If you do not want to use existing device templates in your station configuration, you can remove it from the templates tree.

NOTE

The delete process deletes the device templates from the project database. The text files included in the scope of delivery are retained in the installation directory. If required, you can re-import the template.

Click **Export**, to save the templates modified by using SICAM PAS/PQS UI – Configuration. For more information, refer to *2.11.5 Importing/Exporting a Device Template*.

To delete a device template:

✧ In the templates tree, click the device template which you want to delete. Select **Delete...** from the context menu.

The device template is no longer shown in the template tree.

If you use the device template in your station configuration, the delete function is disabled.

2.11.8 Recording Channels

In the **General recording channels** and **Triggered recording channels only** tabs, you define the measuring channels for the following applications:

- PQ measuring data
- Fault records used for fault location
- Fault records including fault record channels with non-standardized channel texts (IEC 60870-5-103), for example, from third-party manufacturers.
- Fault records of IEC 61850 devices, that have more than 1 fault record directory.

NOTE

For recorder routing in DIGSI 5, several routing modules are available which can differ regarding the calculation method and the refresh rate of measurands. If you record the same measurands with different calculation methods and refresh rates you have to route these measurands to different recorders to enable SICAM PAS/PQS to process these measurands.

Assign for example, channels and phases and define the channel for the signal which triggers the fault recording. The measuring data is connected by using the PQS Automatic Import application, refer to *2.6.13 PQS Automatic Import*.

Tabs are provided for all applications for which PQ measuring data or fault records can be available:

- IEC 61850 Client
- IEC 60870-5-103 Master
- SINAUT LSA ILSA Master
- SIPROTEC 4 Service IF Master
- SIMEAS R Master
- SICAM Q80 Master
- PQS Automatic Import

The scope of delivery of SICAM PAS/PQS UI – Configuration includes **templates** for the parameterization of the measuring channels. Templates in the DDREC file format are available under:

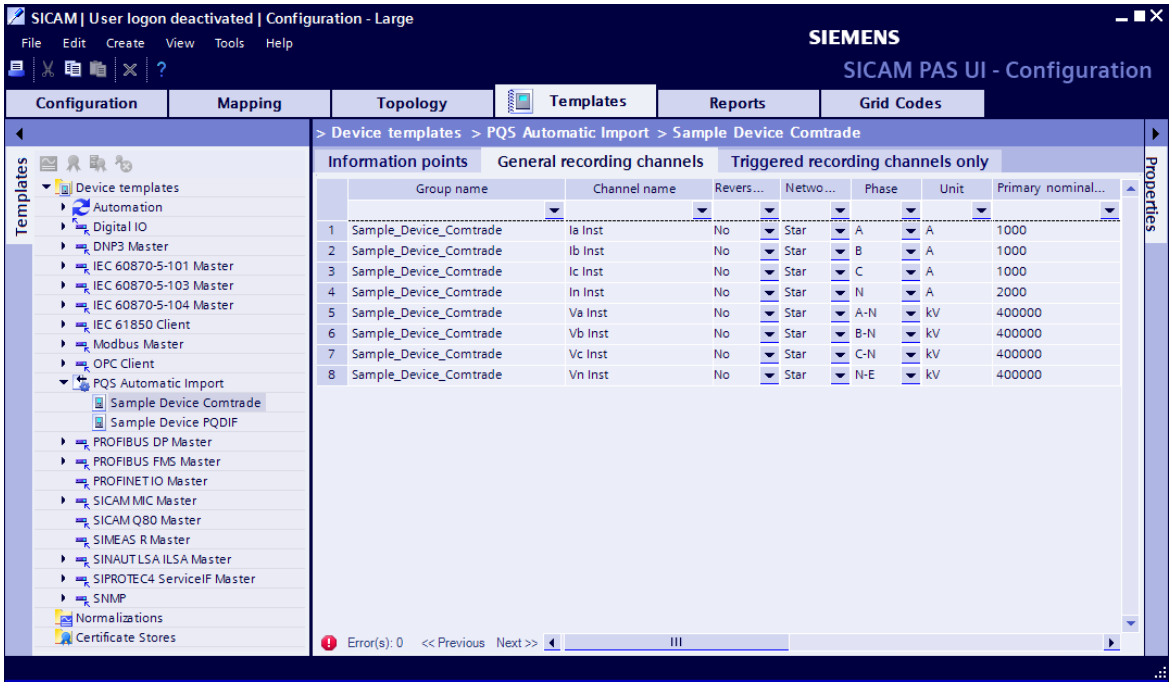
%PUBLICDOCUMENTS%\Siemens\SICAM PAS PQS\Recording

To insert pre-configured measuring channels (measuring equipment) in the **General recording channels** tab:

✧ From the configuration tree in the **Templates** view, select a device template and select **Update** from the context menu.

✧ In the dialog which opens, select the DDREC template file.

The preconfigured measuring channels are imported. The import is recorded in the Report.



[sc_Templates_view_Channels, 3, en_US]

Figure 2-109 Templates View, General Recording Channels Tab

You can also define individual recording channels. To do this, you require:

- A group
- Channels
- Attributes

You require groups and channels for PQ data and fault records. The attributes are only used for PQ data.

Group

To insert a **group**:

✧ Select a row number and select **Add group** from the context menu.

✧ In the **Group name** column, enter the name of the group.

Channel

To insert a **channel**:

✧ Select a row number and select **Add channel** from the context menu.

✧ In the **Channel name** column, enter the name of the channel.

✧ In the **Phase** column, select the channel's phase assignment from the list box.

✧ Select the unit for the measuring variable from the **Unit** column.

NOTE

For PQ data, you define the phases of the voltage channels depending on the network type.
For the **Star** network type, you assign the phase-to-ground channels.
For the **Delta** network type, you assign the phase-to-phase channels.

Attribute

To insert an **attribute**:

- ✧ Select a row number and select **Add attribute** from the context menu.
- ✧ In the dialog which opens, select the attribute, for example, operational value or average value, from the list box in the **Parameter name** field.
- ✧ Select a value from the list box in the **Characteristic** column, for example, Voltage, Harmonic, Pointer or User-defined.
- ✧ Select a value from the list box in the **Measurement value type** column, for example, Mean Value, PQ violation or Evaluated event.
- ✧ Enter a measured value number in the **Operational value** column.

Deleting a Group/Channel/Attribute

To delete a **group** or a **channel** or an **attribute**:

- ✧ Select the row number.
- ✧ Select **Remove group** from the context menu.
- ✧ Select **Remove channel** from the context menu.
- ✧ Select **Remove attribute** from the context menu.

Configuring Recording Channel for IEC 61850 Devices that have more than 1 Fault Record Directory

- ✧ Create a group.
  The name of the group can be entered individually. The attributes of the group are not evaluated and can be set individually.
- ✧ Create a new channel for each fault record directory of the device.
  The channel name must accord to IEC 61850 address of the related COMTRADE directory in the device: **<Devicename><LDname>\COMTRADE**.
- ✧ Set the channel attributes as follows:
  – Channel index: Unique value - continuous numbering, Value range: 0...499 (not validated)
  – Characteristic: Fault record
  – Scaling type: Absolute
  – Measurement value type: File

NOTE

For SIPROTC 5 devices, the **108 channel index** is used internally and is therefore not available as a fault record channel for **IEC 60870-5-103 Master**.

2.12 Working with Normalizations

In substations or industrial manufacturing plants many different data acquisition devices are used. Different components and devices transmit the captured data in many different formats.

By using normalization procedures, you can convert this data to units suitable for further processing and comparison.

How to Proceed

The data conversion concept applied by SICAM PAS/PQS consists of the following 2 steps:

- *Defining Normalization Procedures, Page 155*
- *Assigning Normalization Procedures, Page 160*

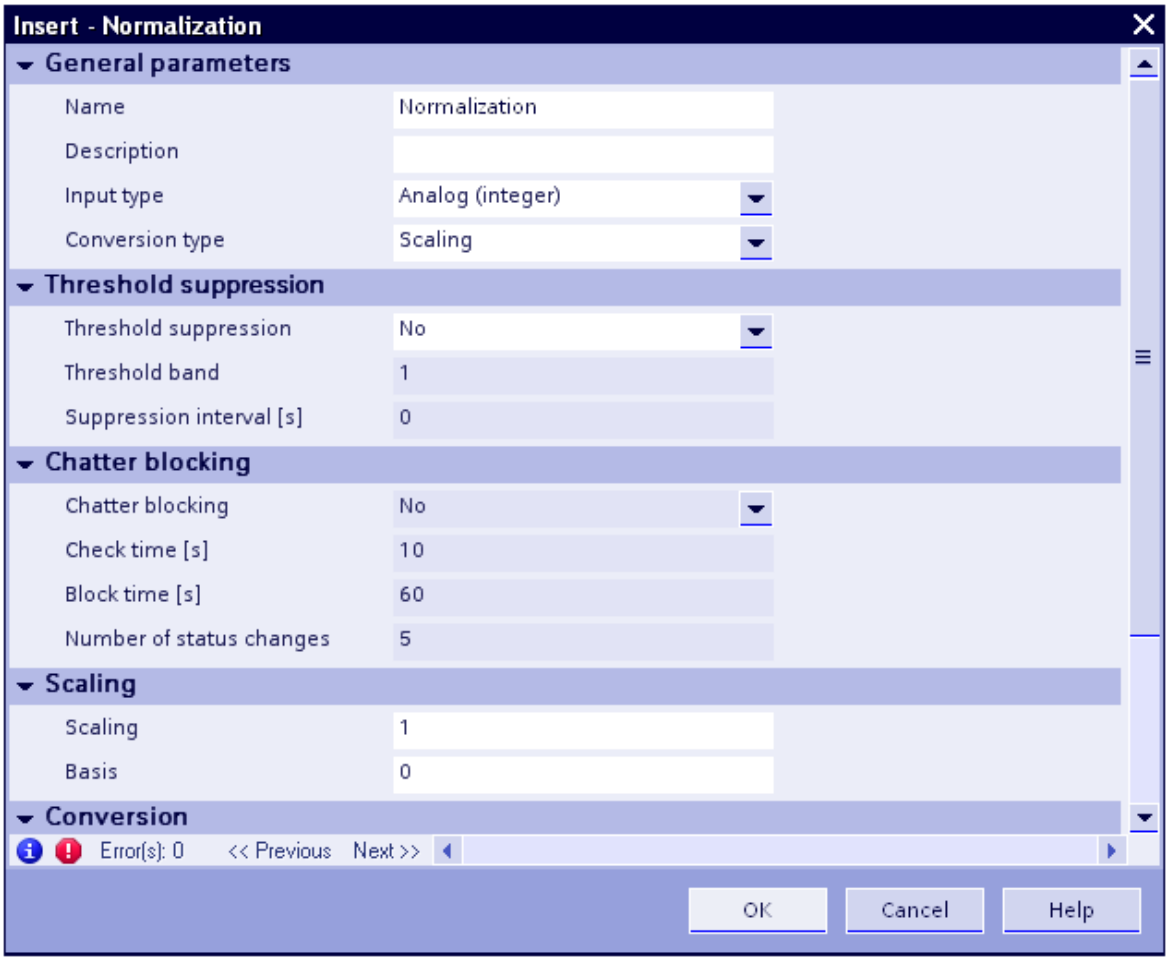
Defining Normalization Procedures

By selecting a normalization procedure, you define the type of conversion of a certain value.
For frequent requirements, you define the following normalization procedures:

- *Measured-Value Filtering, Page 156* (threshold suppression)
- *Linear Transformation, Page 157* for analog inputs/outputs (integer and floating point number)
- *Conversion, Page 157* for digital inputs/outputs
- *Chatter Blocking, Page 159*

To create a new normalization procedure:

- In the **Templates** view, select the **Normalizations** entry below the device templates.
- Select **Normalization** and define a new normalization procedure in the **Insert – Normalization** dialog.



[sc_Insert_Normal, 1, en_US]

Figure 2-110 Insert – Normalization

Table 2-5 Normalization: General parameters

Parameter Name	Explanation
Name	Unique name of the normalization procedure
Description	Brief description of the new procedure (free text input)

Parameter Name	Explanation
Input type	Data type for which the normalization procedure applies: Analog (Integer), Analog (Floating Point) or Digital
Conversion type	The conversion types available in this dialog depend on the data type (input type) which you have selected in the previous dialog. Digital: **none** or **Conversion** Analog: **none** or **Scaling**

Measured-Value Filtering

In power transmission and distribution networks, numerous minor value changes can occur which are not relevant for system operation.

A measuring and logging system must be able to filter such minor changes, but to log significant changes.

SICAM PAS/PQS filters measured values based on a normalization procedure. You can define a normalization procedure which only filters measured values or which combines measured value filtering with a threshold check.

Measured-value filtering is defined by using the **Threshold suppression** parameter group.

NOTE

With the **Threshold type**, you specify the rule which initiates a measured-value transmission when the threshold value has been reached or exceeded. In the **Mapping** view, **Information - Monitoring Direction**, you can select the following threshold types:

- **Direct**
- **Integrating**
- **Direct with dynamic adjustment**
- **Integrating with dynamic adjustment**

For more information refer to the IEC 60850-5-101 Slave and IEC 60850-5-104 Slave online help file.

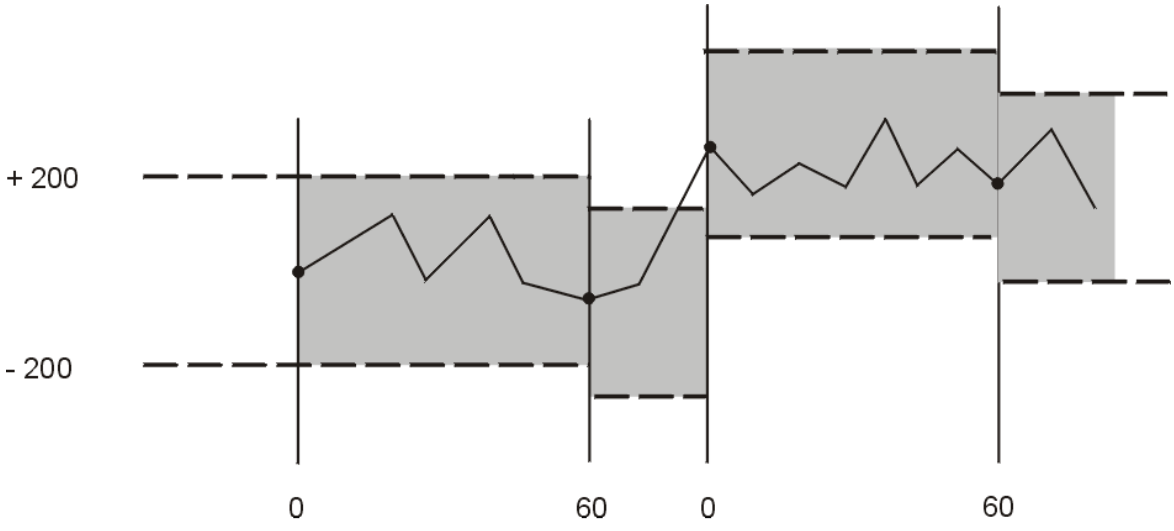
Table 2-6 Normalization: Threshold Suppression

Parameter Name	Explanation
Threshold suppression	Enables (**Yes**) or disables (**No**) measured-value filtering
Threshold band	Cyclically incoming values in the range between the upper and the lower threshold are not transferred. Values outside the measured value range are always transferred. After each transmission of a value, the threshold band is adjusted in such a way that the last valid value is in the center of the threshold band. Values which are outside the threshold band or were transmitted after the suppression interval has elapsed are not transferred.
Suppression interval [s]	The cyclically incoming value is always transferred as soon as the suppression interval has elapsed - no matter whether it is inside or outside the threshold band. **NOTE** The **Suppression interval [s]** is only evaluated in the following applications: - CDT Slave - OPC Client - OPC XML DA Server - PROFIBUS DP Master - SINAUT LSA ILSA Master - Telegyr 8979 Master

Example

Values shown in the gray zone are not transmitted since they are within the threshold band (for example, 200). As soon as the suppression interval has elapsed, for example, 60 seconds, the cyclically transmitted value is forwarded independently of the defined threshold band. The new value is used as the new reference point for the threshold band.

Values outside the threshold band are always transmitted and thus also form the new reference point of the threshold band.



[sc_Measured_Value_Filtering, 1, en_US]

Figure 2-111 Measured-Value Filtering

Linear Transformation

A **Linear transformation** can be defined in the **Scaling** parameter group. Enter the **Scaling** and the **Basis**.

Value on the output = input x scaling + basis

If the **Analog input type** (integer value and floating point value) and the **Scaling conversion type** have been selected, the input fields of this parameter group are active.

Conversion

A digital input must be converted if systems require the values transmitted from the device in another unit for further processing.

Define a **conversion** in the **Conversion** parameter group. To do this, enter the input/output values. Up to 4 value pairs can be defined.

If the **Digital input type** and the **Conversion type** have been selected, the input fields of this parameter group are active.

In SICAM PAS/PQS, values transmitted by the device have the following meaning:

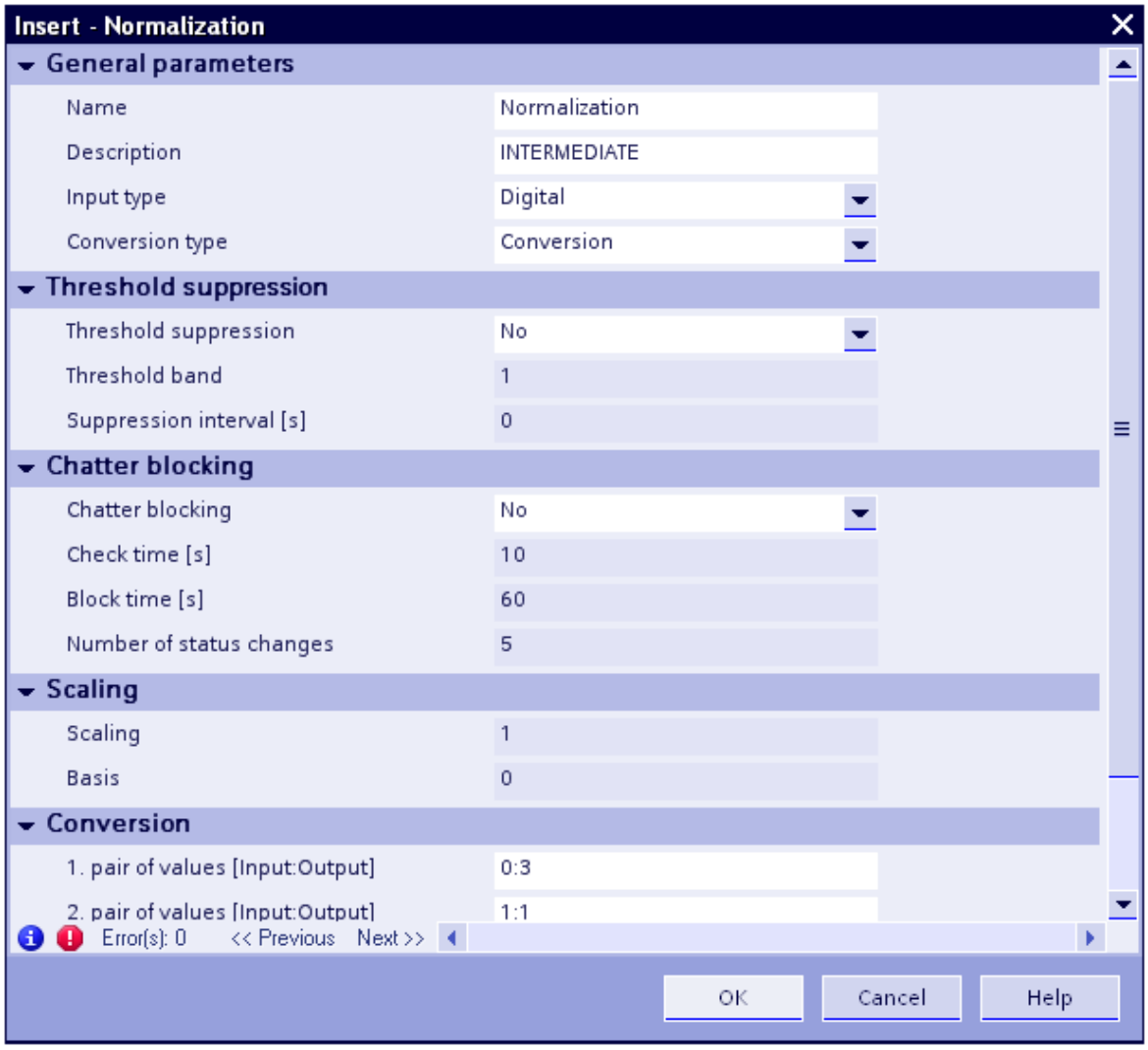
Table 2-7 Device Values in SICAM PAS/PQS

SICAM PAS/PQS	Double-point indication	Single-point indication
0	Intermediate position 00	
1	OFF	Cleared
2	ON	Raised
3	Intermediate position 11	

An output value must be defined for all input values. For a double-point indication, 4 value pairs must be defined. For a single-point indication, 2 value pairs must be defined. The input value corresponds to the process value. The output value corresponds to the value mapped in SICAM PAS/PQS.

	INTERMEDIATE (DI) example	Inversion (SI) example
1. pair of values	0:3	1:2
2. pair of values	1:1	2:1
3. pair of values	2:2	
4. pair of values	3:3	

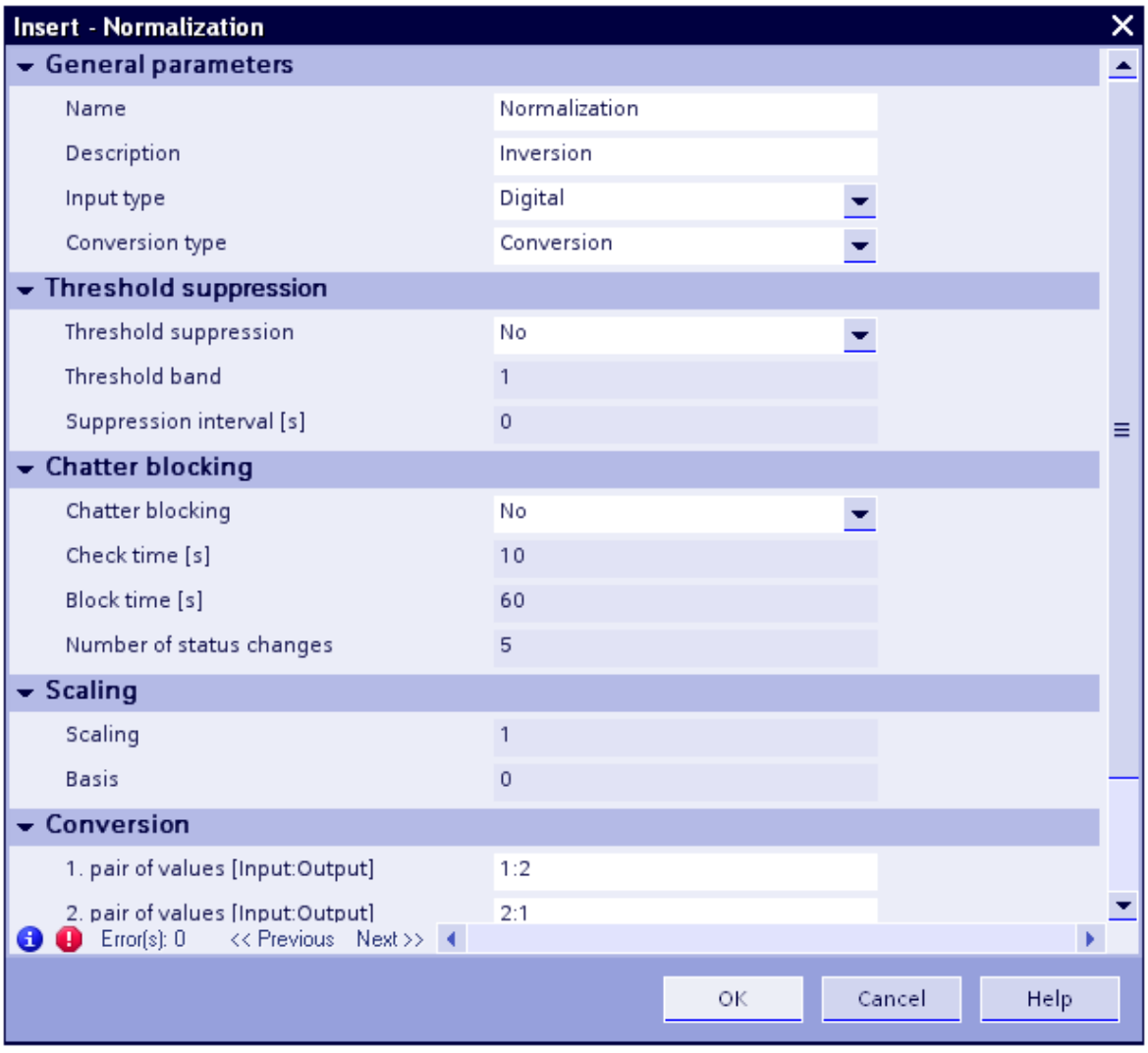
In the INTERMEDIATE example, SICAM PAS/PQS transmits all incoming intermediate positions with Intermediate position 11.



[sc_Intermediate, 1, en_US]

Figure 2-112 Example: INTERMEDIATE

In the Inversion example, an incoming value (single-point indication) is inverted prior to transmission.



[sc_Inversion, 1, en_US]

Figure 2-113 Example: Inversion

Chatter Blocking

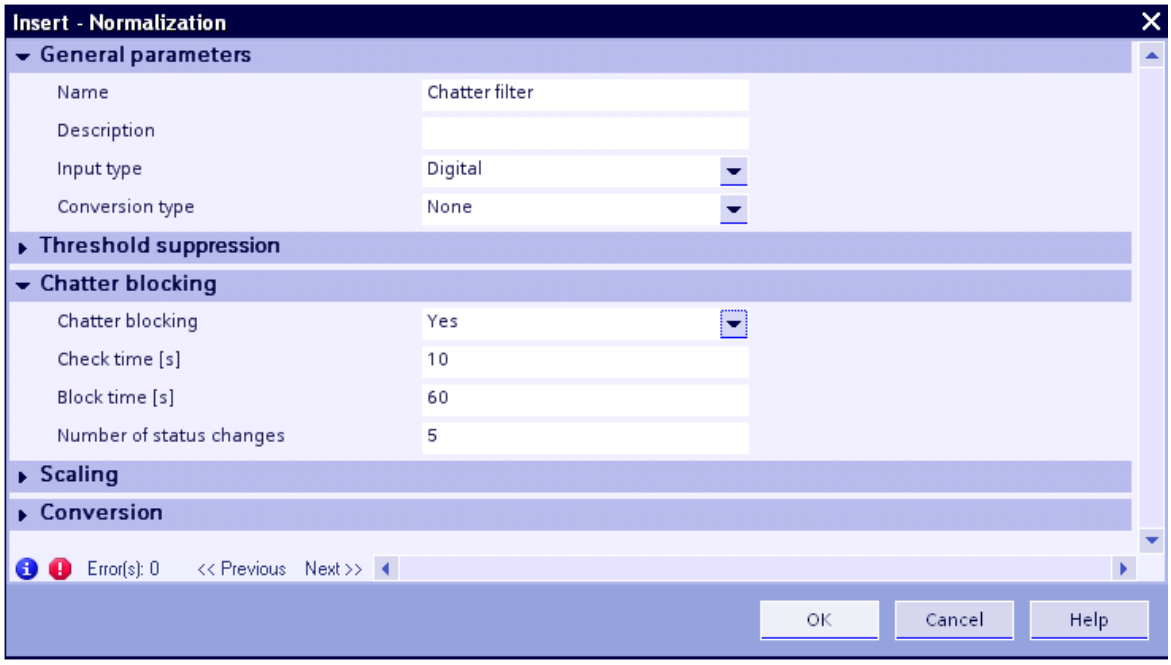
The chatter blocking prevents system overload by using contact bouncing, that is, signal changes constantly created by defective message generators. Each status change of the signal input is captured by a meter.

If the number of status changes within the configured check time is higher than the given number, the respective input is blocked and the quality of the following messages is set to **held**.

After a defined block time, the blocked input is again checked for contact-chattering. If the input chatters again, the block remains. This check is repeated cyclically as long as the input is blocked. When the input does not show contact-chattering anymore when checked, it is released and the quality of the following messages is set to **valid**.

Table 2-8 Normalization: Chatter Blocking

Parameter Name	Explanation
Chatter blocking	Switches chatter blocking on (**Yes**) or off (**No**). The chatter blocking can only be defined for a **Digital** input type and cannot be assigned to **Slave** data points.
Check time [s]	During this time the number of status changes of the input signal gets counted. If the value set in **Number of status changes** is reached or exceeded during this time, the respective input is blocked and the quality of further messages is set to **held** within the time set in **Block times**.
Block time [s]	During this time the transmission of messages and values is blocked to avoid chatter. After the block time is over the blocked input is checked again.
Number of status changes	Maximum number of status changes during the time set in **Check times**.



[sc_Chatter_filter, 1, en_US]

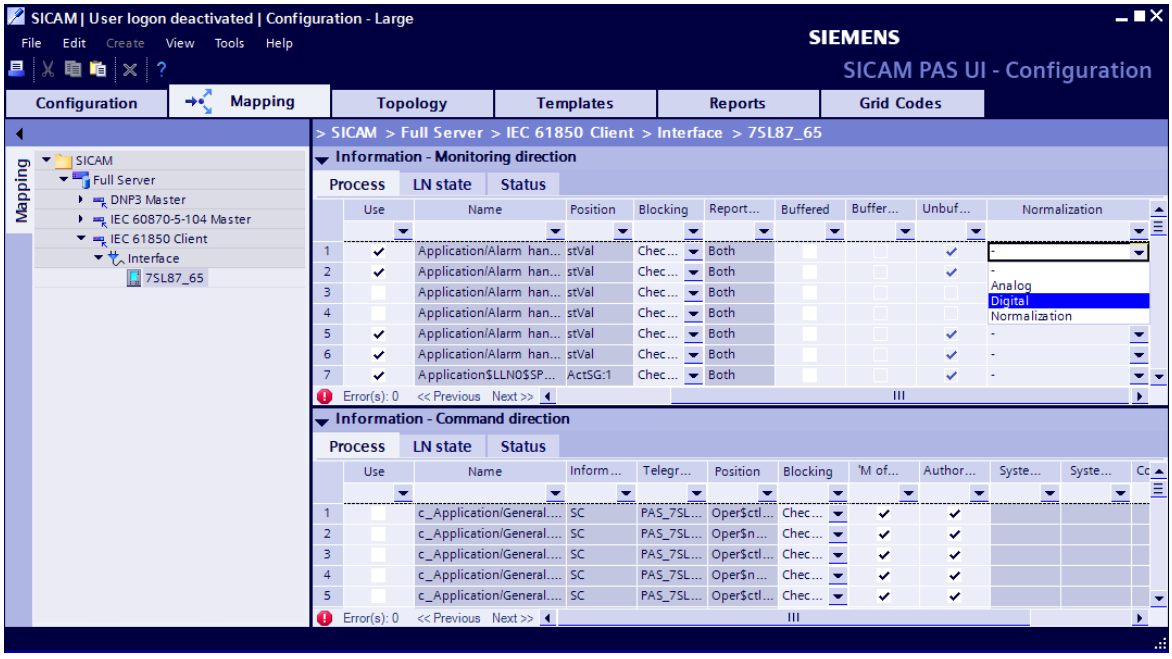
Figure 2-114 Example: Chatter Filter

Assigning Normalization Procedures

A normalization procedure which you have previously defined and named can be assigned when mapping an item of information.

To assign a normalization procedure in the **Mapping** view of an item of information:

- Select one of the normalization procedures available in the **Normalization** drop-down list box.



[sc_Normalization_Procedures, 3, en_US]

Figure 2-115 Assigning Normalization Procedures

2.13 Supporting IEDs in Test Mode

Some communication protocols (for example IEC 61850) support the exchange of information marked as test information. IEDs supporting and running in test mode use such protocols to:

- Exchange monitoring information marked as test information
- Accept only those commands marked as test information

The main focus in sending monitoring and control information marked as test information is to test and verify whether the information sent/received serves its intended purpose.

SICAM PAS supports the routing of information items marked as test information both in monitoring and command direction. Based on the protocol properties, the following SICAM PAS applications support forwarding of test information through the system:

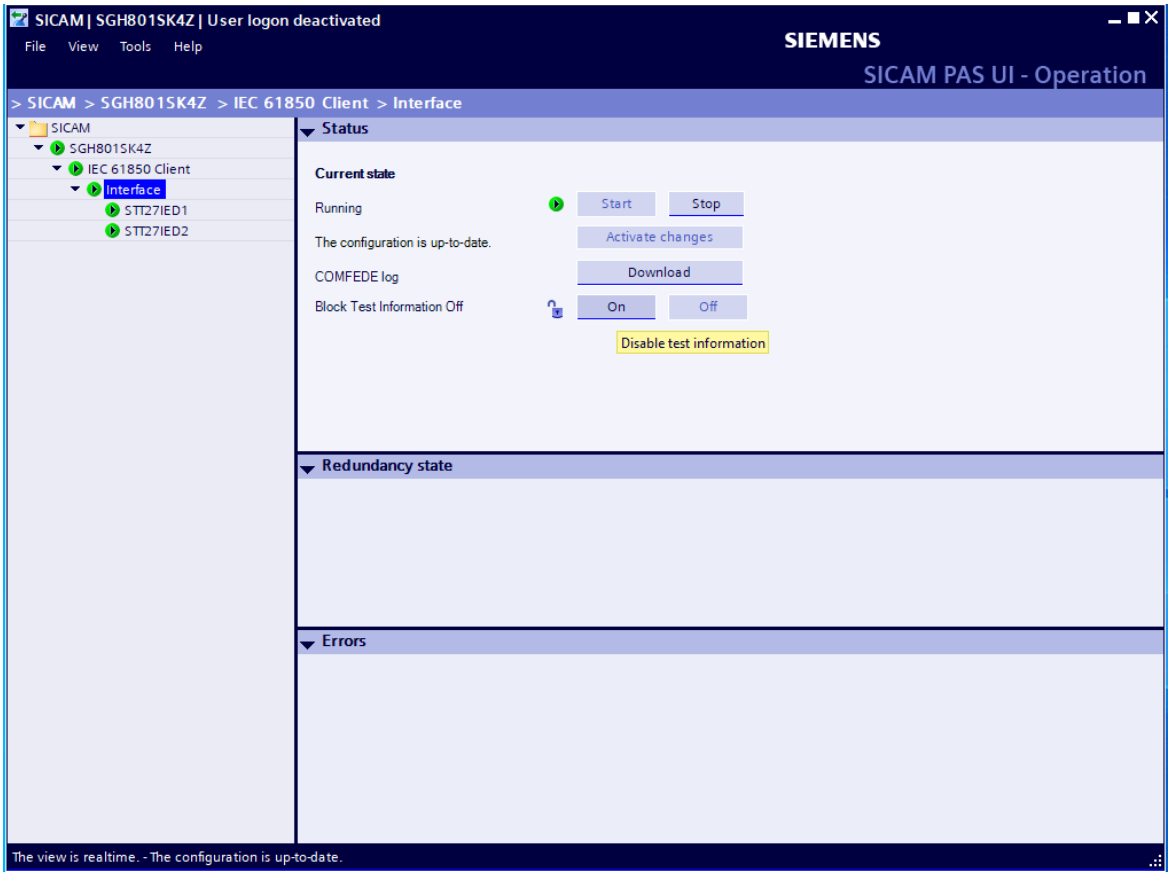
- IEC 60870-5-101 Master/Slave
- IEC 60870-5-103 Master (monitoring direction only)
- IEC 60870-5-104 Master/Slave
- IEC 61850 Client/Server

Additionally, the following applications support test mode:

- DNP3 Master/Slave
- Modbus Master/Slave
- PROFINET IO Master

Through the configuration in SICAM PAS, the information marked as test information can either be forwarded or discarded. For example, it can be configured whether a command marked as test information (sent from the control center using IEC 60870-5-104 protocol) can be forwarded as a normal command to an IED connected with DNP3 Master or discarded.

From V8.18 onwards, test tagged information is handled from runtime using PAS UI Operation and UI Operation Client.

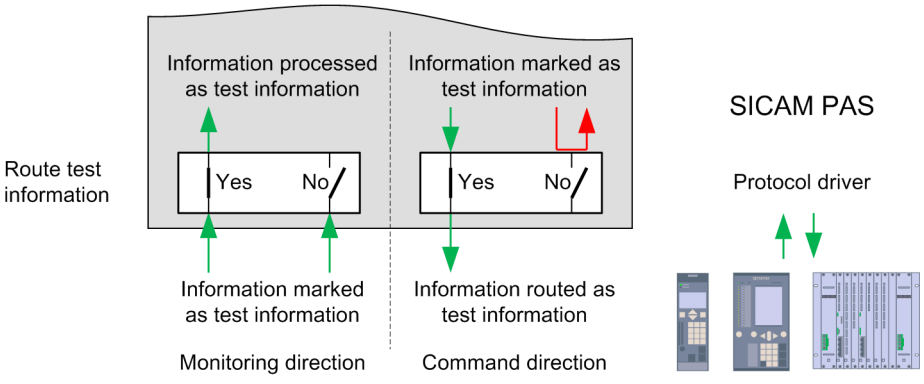


[sc_PAS UI Operate, 1, en_US]

Master Applications Supporting Test Mode

The figure shows the behavior of the protocols:

- IEC 60870-5-101 Master
- IEC 60870-5-103 Master (only monitoring direction)
- IEC 60870-5-104 Master
- IEC 61850 Client

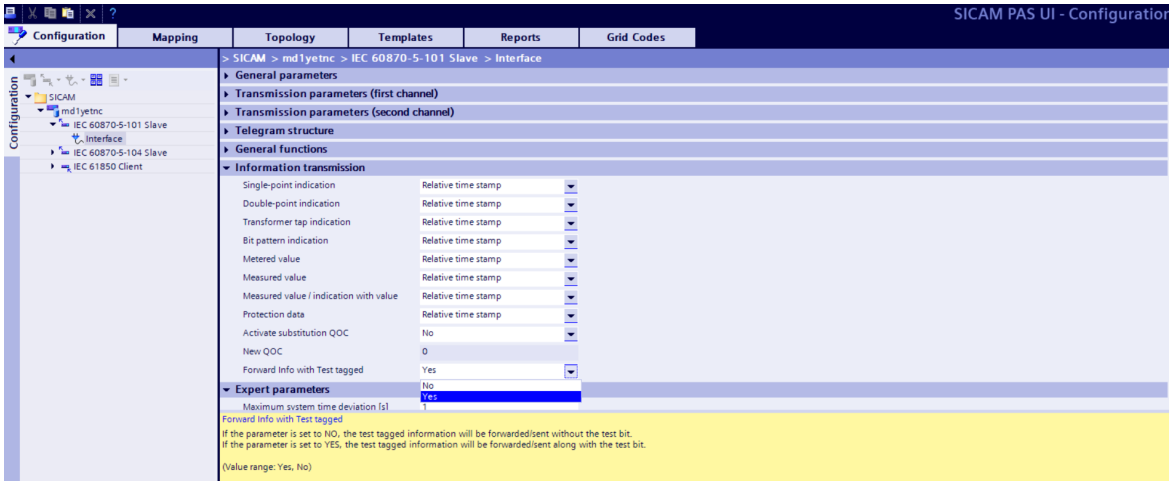


[dw_Test mode Master supporting test mode, 1, en_US]

Figure 2-116 Master Applications Supporting Test Mode

Users with IEC 60870-5-101 Slave and IEC 60870-5-104 Slave have the flexibility to forward/send test tagged information with or without a set test bit. If the parameter is set to **No**, the test tagged information will be

forwarded/sent without the test bit set. If the parameter is set to **Yes**, the test tagged information will be forwarded/sent with the test bit set.

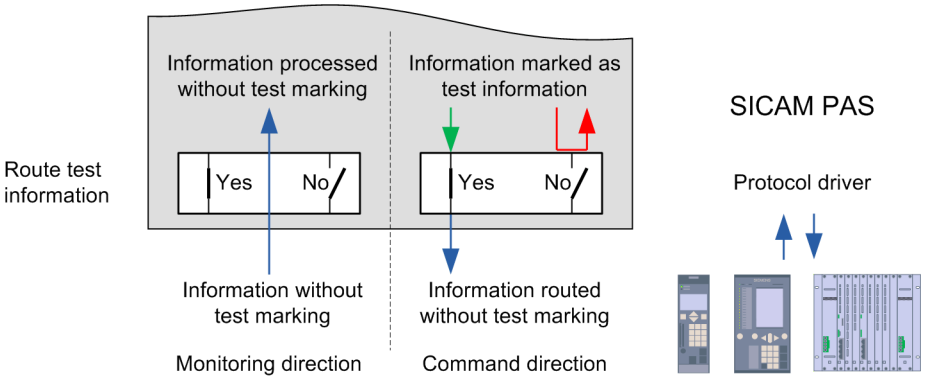


[sc_Forward Info with test tagged, 1, en_US]

Master Applications Not Supporting Test Mode

The figure shows the behavior of the protocols:

- DNP3 Master
- Modbus Master
- PROFINET IO Master



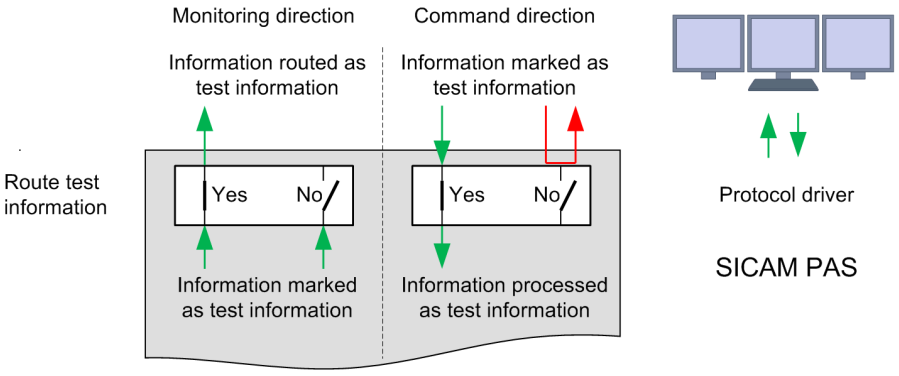
[dw_Test mode Master not supporting test mode, 1, en_US]

Figure 2-117 Master Applications Not Supporting Test Mode

Slave Applications Supporting Test Mode

The figure shows the behavior of the protocols:

- IEC 60870-5-101 Slave
- IEC 60870-5-104 Slave
- IEC 61850 Server



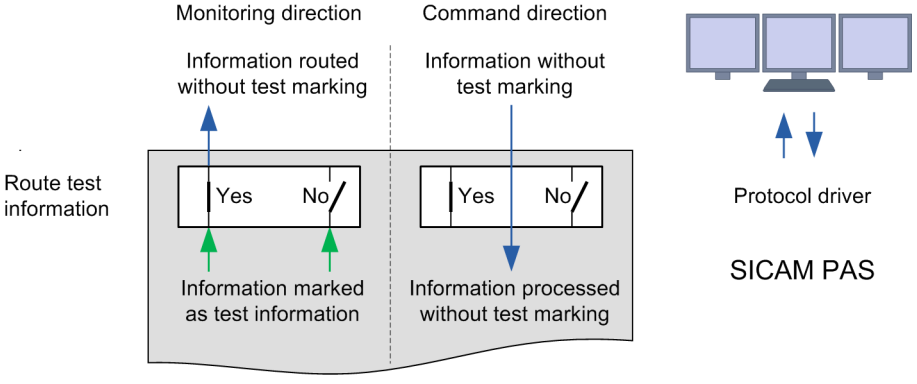
[dw_Test mode Slave supporting test mode, 1, en_US]

Figure 2-118 Slave Applications Supporting Test Mode

Slave Applications Not Supporting Test Mode

The figure shows the behavior of the protocols:

- DNP3 Slave
- Modbus Slave



[dw_Test mode Slave not supporting test mode, 1, en_US]

Figure 2-119 Slave Applications Not Supporting Test Mode

Fault Records

Fault records from a device running in test mode connected via **IEC 61850 Client** can be visualized via the **Test mode data archive** in SICAM PQ Analyzer.

If **Block test information** is disabled, the fault records are not saved.

Fault records from a device running in test mode connected via **IEC 60870-5-103 Master** are saved in the configured archive.

Automation

SICAM PAS SoftPLC processes information marked as test information. If an automation block used receives information marked as test information, the test information mark is also added to the output.

Human Machine Interface

Information marked as test information is forwarded to SICAM SCC as an operational information and is visualized as usual.

Other Applications

The routing of information marked as test information can not be configured for the following **Master** applications:

- OPC Client
- PROFIBUS DP Master
- SINAUT LSA ILSA Master

Information marked as test information is not routed in command direction.

The routing of information marked as test information can not be configured for the following **Slave** applications:

- OPC Server and OPC DA XML Server
- Telegyr 8979 Slave
- CDT Slave

Information marked as test information is not routed in monitoring direction.

2.14 Reports

You insert the templates for scheduled reports in the **Reports** view. The reports include measuring data for determining the network quality. Their contents can be freely defined.

NOTE

If you delete the **PQS Scheduled Reports** application, all the configured report templates are also deleted.

By using the **PQS Automatic Notification** application, you can define to be notified by e-mail on the completion of a report. For more information, refer to *2.6.16 PQS Automatic Notification*.

For each template, you can define when a report is created, that is, Every day, Every week, Every month, or Every year. Additionally, you have the option to insert diagrams.

Different examples for report template files are included in the scope of delivery of SICAM PAS/PQS. The report template files are available under:

%PUBLICDOCUMENTS%Siemens\SICAM PAS PQS\ReportTemplatesScheduled.

In addition, you can create customized templates. For more information on the structure and contents of a report template, refer to *A.4 Report Templates*.

2.14.1 Inserting a Generic Report Template

A generic report template allows you to configure the number of scheduled reports at once based on the valid combinations of the selected measurement points, Grid Codes, and reporting period. This allows you to create multiple report templates easily.

To insert a generic report template:

✧ In the **Reports** view, right-click the **Generic report templates** and select **Generic report template** from the context menu.

The **Insert - Generic report template** dialog opens.

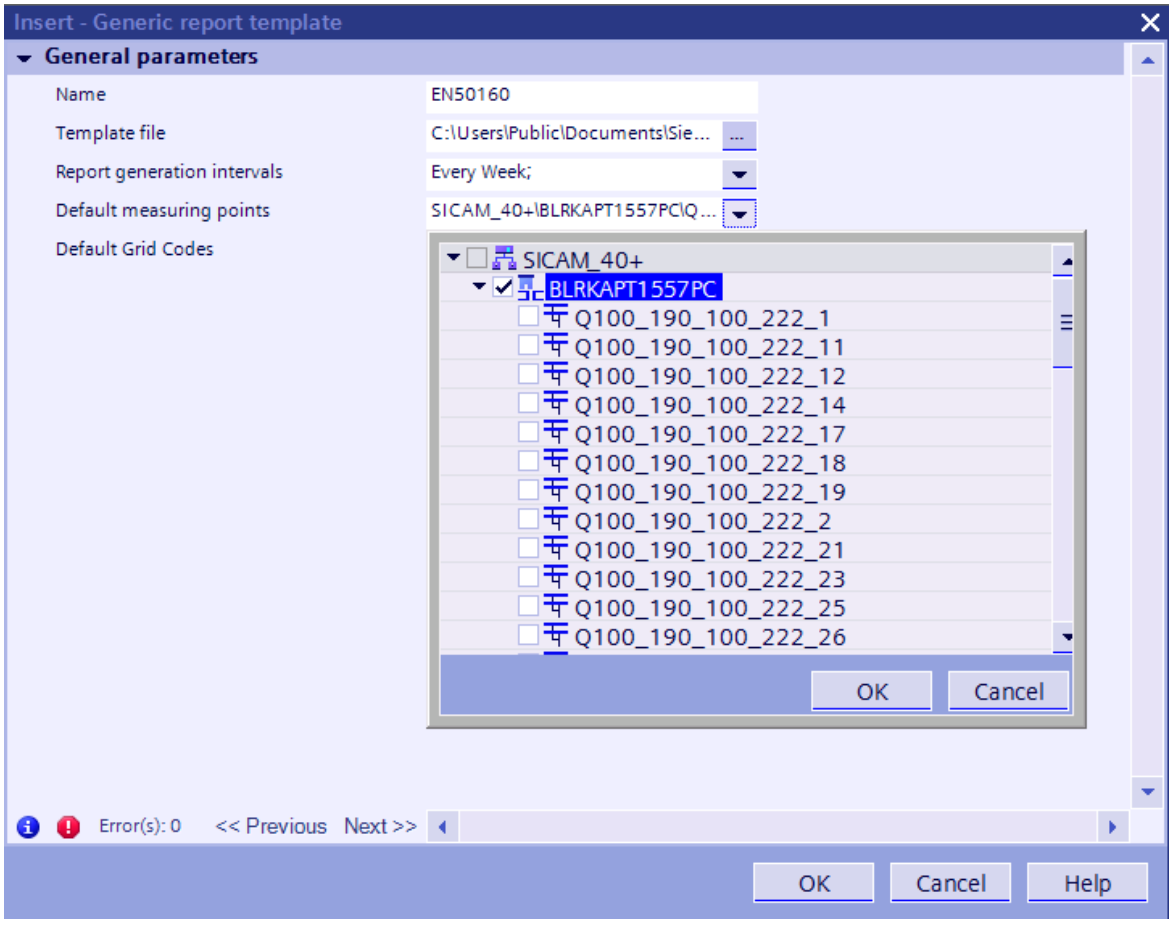
✧ In the **Template file** field, click **...** to select the report template file.

✧ Select one or more measuring points, report generation intervals, and Grid Codes and click **OK**.

Based on the selection, individual report templates are created for each of the valid combinations of an interval, a default measuring point, and a Grid Code.

The automatic assignment of measuring points for each diagram will happen as follows:

- For measured data diagrams, the most relevant measuring group that is found first by matching the corresponding measurement value type, characteristics, and phase will be assigned.
- For evaluated data diagrams, the selected measuring point will be assigned.



[sc_Insert Generic Report Template, 1, en_US]

Figure 2-120 Inserting a Generic Report Template

NOTE

If the scheduled report template consists of measured and evaluated diagrams, Siemens recommends you assign the bay level as default measuring point/group for the report template.

2.14.2 Updating a Generic Report Template

To update a generic report template:

✧ In the **Reports** view, right-click the generic report template and select **Update...** from the context menu.
An **Update** dialog opens with all the current general parameter selections. You can modify any of these parameters.

✧ Click **OK**.

The generic report template is updated accordingly.

While updating a generic report template:

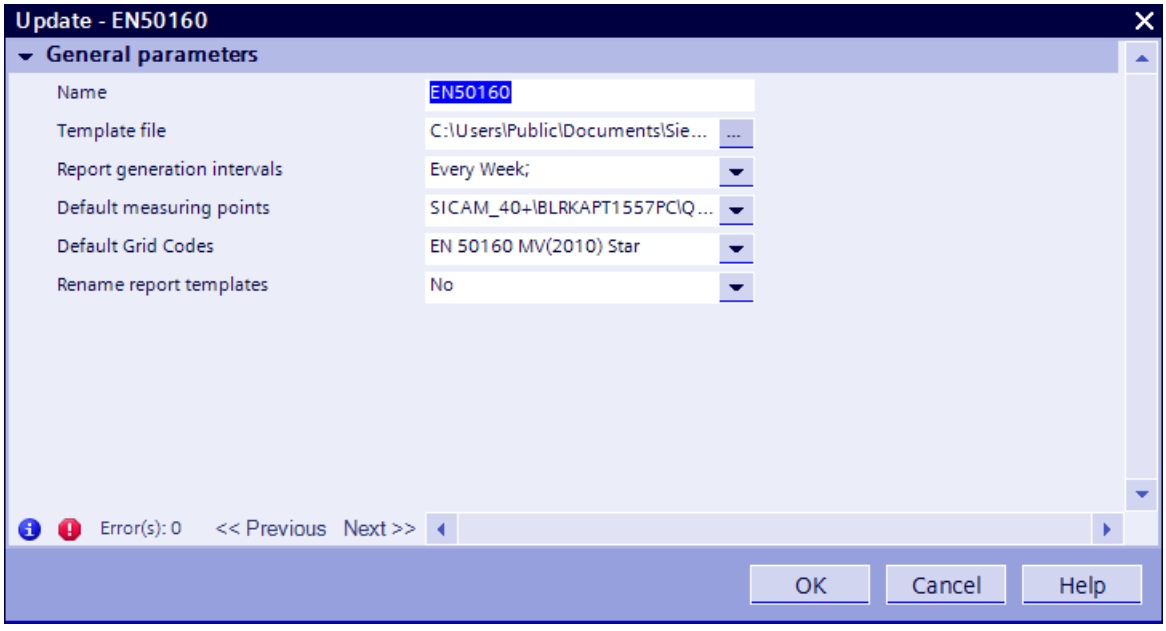
- New report templates are created according to the latest selection in the **General parameters** section.
- Existing report templates are updated based on the configuration changes, if it is required.
- If one or more combinations are removed from the **General parameters** section, the corresponding report template is deleted.

NOTE

After the conversion of a project (created with a version ≤ V8.10) when you update a generic report template for the first time, all the existing generic report templates are updated. On subsequent updates, the system decides on its own whether the existing generic report templates require an update.

The generic report templates can be updated under the following conditions:

- 1 or more report generation intervals, measuring points, and Grid Codes are selected
- 1 or more report generation intervals, measuring points, and Grid Codes are deselected.
- Changes from the latest template file are adapted or a different template file is selected
- The existing template configuration has to be made consistent with the overall configuration of devices, topology, templates, and Grid Codes.



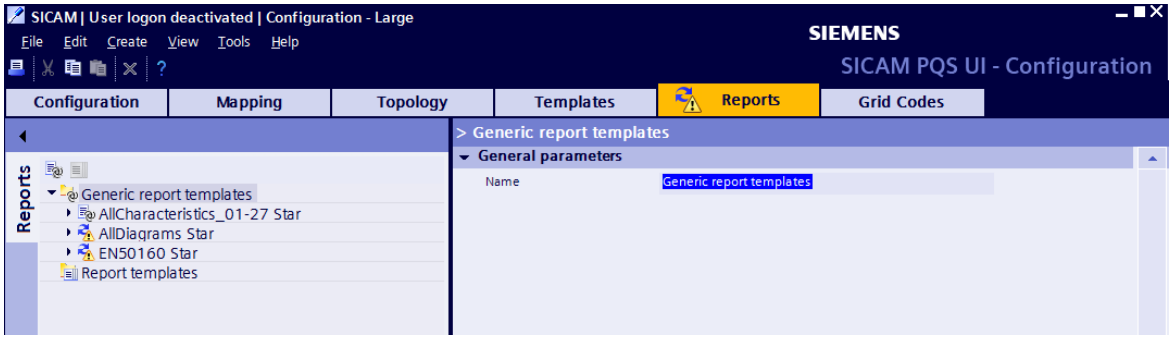
[sc_Update the Generic Report Template, 1, en_US]

Figure 2-121 Updating Generic Report Template

2.14.3 Updating a Generic Report Template Affected by Changes in Other Views

Configuration changes made in other views may affect the existing generic report template configuration. In this case, Siemens recommends you update the respective generic report templates.

You are notified via warning signs as follows to identify the generic report templates that require an update.



[sc_Highlight, 1, en_US]

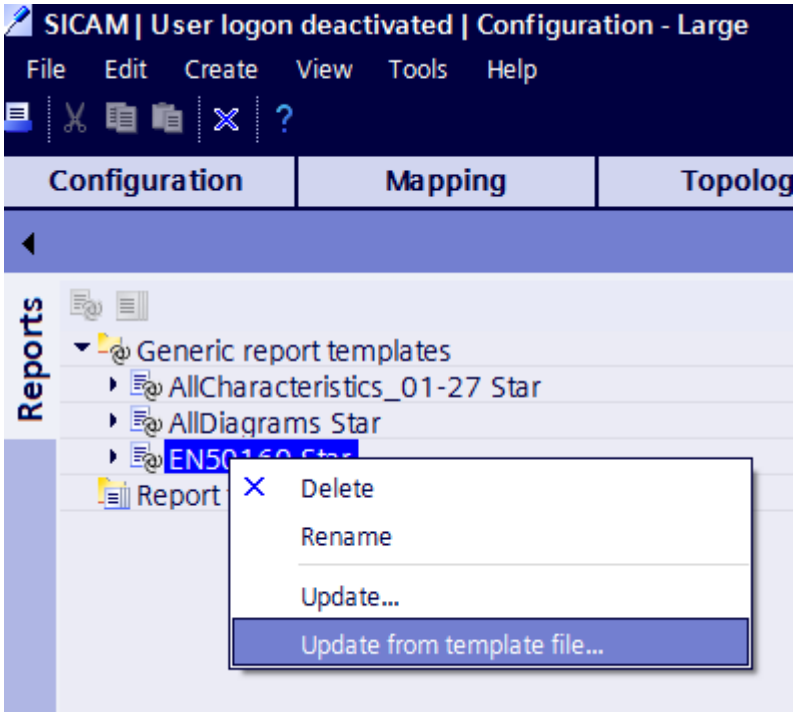
Figure 2-122 Notification for Generic Report Template

2.14.4 Updating a Generic Report Template when a New Version of Template File is Available

If you are using a template file shipped by the product for the generic report templates, you are notified if a new version of the template file is available.

To update the template file:

✧ In the **Reports** view, right-click the affected **Generic report templates** and select **Update from template file...** from the context menu.



[sc_UpdatefromTemplatefile, 1, en_US]

Figure 2-123 Update from Template File

The generic report templates are updated with the new version of the template file available.

2.14.5 Inserting a Report Template

The report template file defines the general layout and the possible diagrams of the reports. It can be used as a basis for different report templates.

To insert a report template file:

✧ In the **Reports** view, right-click the **Report templates** and select **Report template** from the context menu.

The **Insert - Report template** dialog opens.

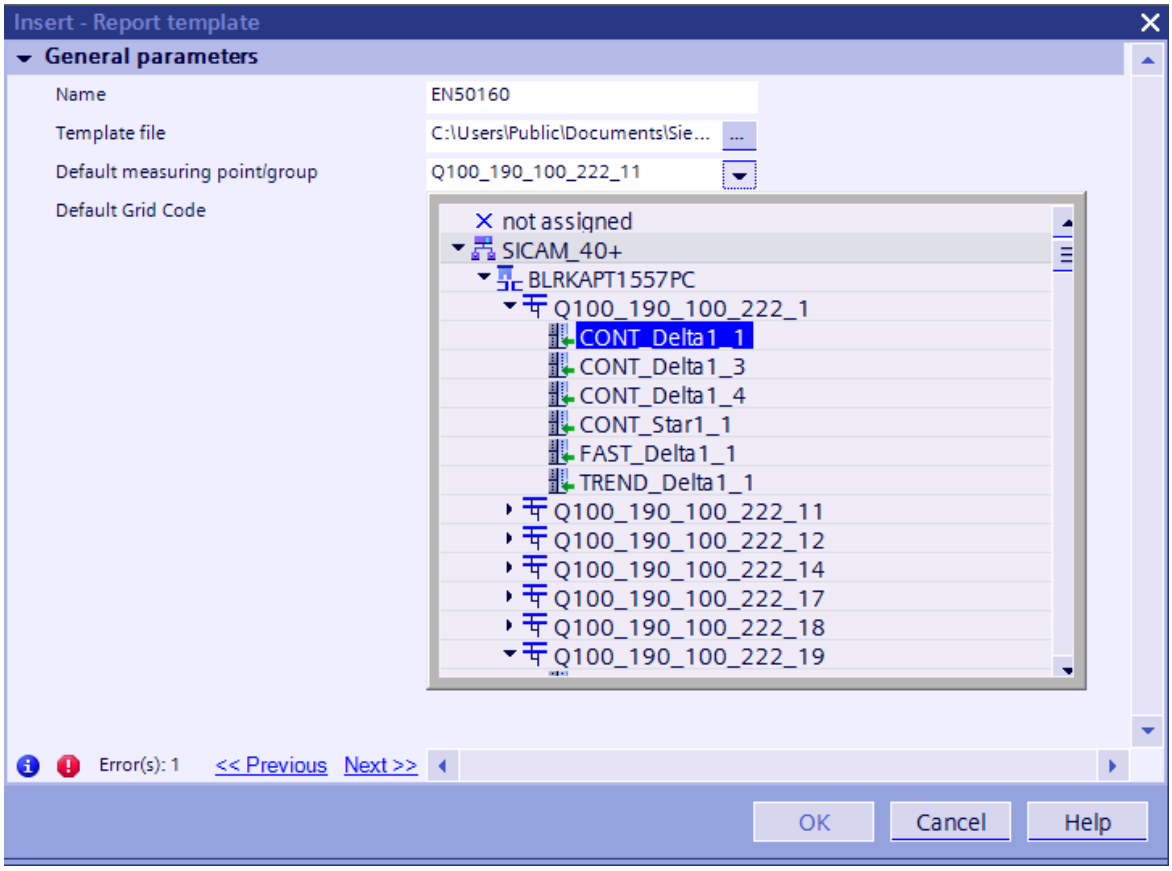
✧ In the **Template file** field, click **...** to select the report template file.

✧ Select the **Default measuring point/group**. After inserting the report template, this measuring point/group is used as a default for all diagrams and can be later edited for each diagram individually.

If a measuring group is selected, it will be assigned for all the diagrams in the template as measuring point/group.

If a measuring point is selected (for example, Bay, User defined group, Voltage level), the measuring point/group assignment for diagrams will happen as follows:

- For measured data diagrams, the most relevant measuring group that is found first by matching the corresponding measurement value type, characteristics, and phase will be assigned.
- For evaluated data diagrams, the selected measuring point will be assigned.



[sc_Insert_Rep_Temp, 2, en_US]

Figure 2-124 Inserting a Report Template

NOTE

All measuring groups of the devices which provide PQ measuring data can be selected, only if they have been assigned to the topology. The measuring groups are created after the devices have been configured and parameterized. For more information on measuring groups, refer to *2.9.3.4 Measuring Channels* and *2.11.8 Recording Channels*.

✧ If evaluated diagrams are included in the report template file, select the **Default Grid Code** which can be individually edited later.
For more information on the structure and contents of Grid Codes, refer to *A.1 Structure of Grid Codes*.

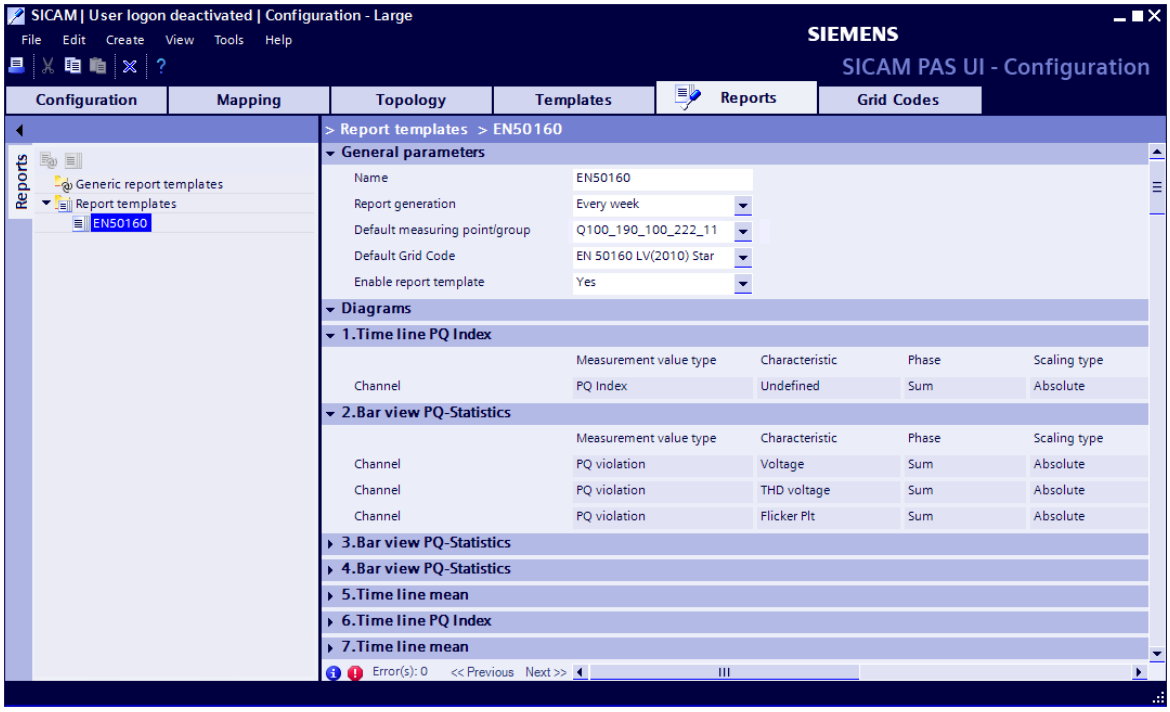
✧ Confirm with **OK**.
The report template file is inserted.

NOTE

You can also enable or disable automatic generation of a report template.

2.14.6 Editing a Report Template

In the report template, the measuring group (PQ device) and the Grid Code are defined separately for each diagram. The report generation interval is also defined in the report template.



[sc_Editing_report_template, 1, en_US]

Figure 2-125 Report Template, Example

To edit a report template:

✧ In the **General parameters** input area, select the time interval for the report generation, for example, every day or every week, from the **Report generation** list box.

✧ From the **Default measuring point/group** list box, select the measuring point/group for which you want to enter measuring variables in the report.

✧ From the **Default Grid Code** list box, select the Grid Code whose limit values are used for checking the PQ measuring data.

NOTE

When updating the report template file, the **Default measuring point/group** and the **Default Grid Code** are assigned to all diagrams. If you need diagram specific measuring groups or Grid Codes, you can select these accordingly.

2.14.7 Creating Scheduled Reports Manually

The **SICAM PQS – Scheduled Report Creation** tool serves to manually create scheduled reports based on the report templates. This tool allows you to verify the report templates created and create missing reports. The reports created can be viewed using the tool or the **Report Browser** view of the **SICAM PQ Analyzer**.

To be able to use the SICAM PQS – Scheduled Report Creation tool, the following applies:

- The **PQS Scheduled Reports** feature must be enabled.
- A report template must have been created and the system must have been updated.

In order to be able to view the reports, the **SICAM PQ Analyzer Standard** license must be activated.

Existing reports will be overwritten. The overwritten reports will not be collected by the Collector.

Starting SICAM PQS – Scheduled Report Creation

Start the SICAM PQS – Scheduled Report Creation tool from the Windows Start menu.

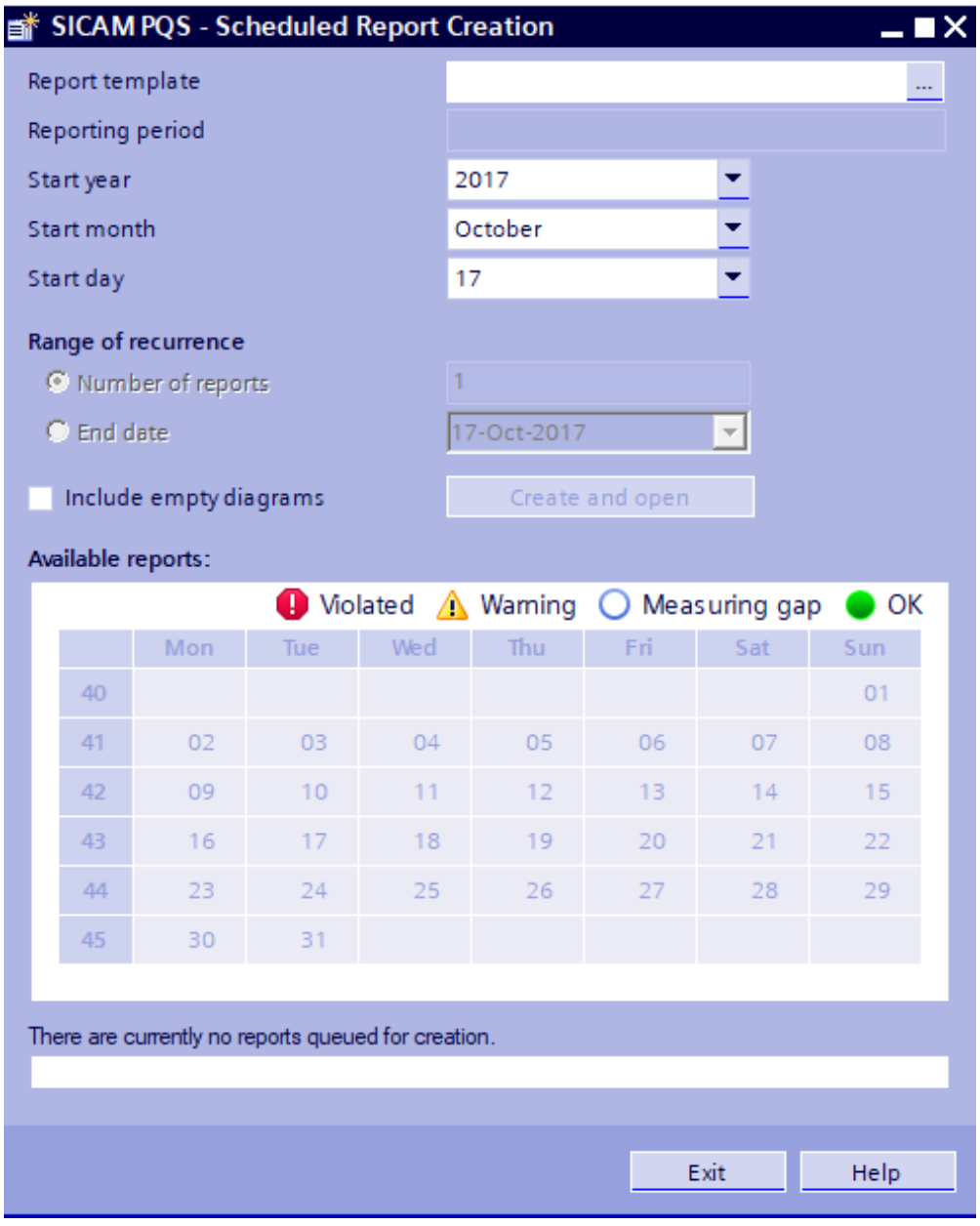
✧ Click **Start** and scroll through the app list.

✧ Select **SICAM PAS/PQS > Tools**.

The **Tools** folder opens.

✧ Double-click **Scheduled Report Creation**.

The **SICAM PQS – Scheduled Report Creation** tool opens.



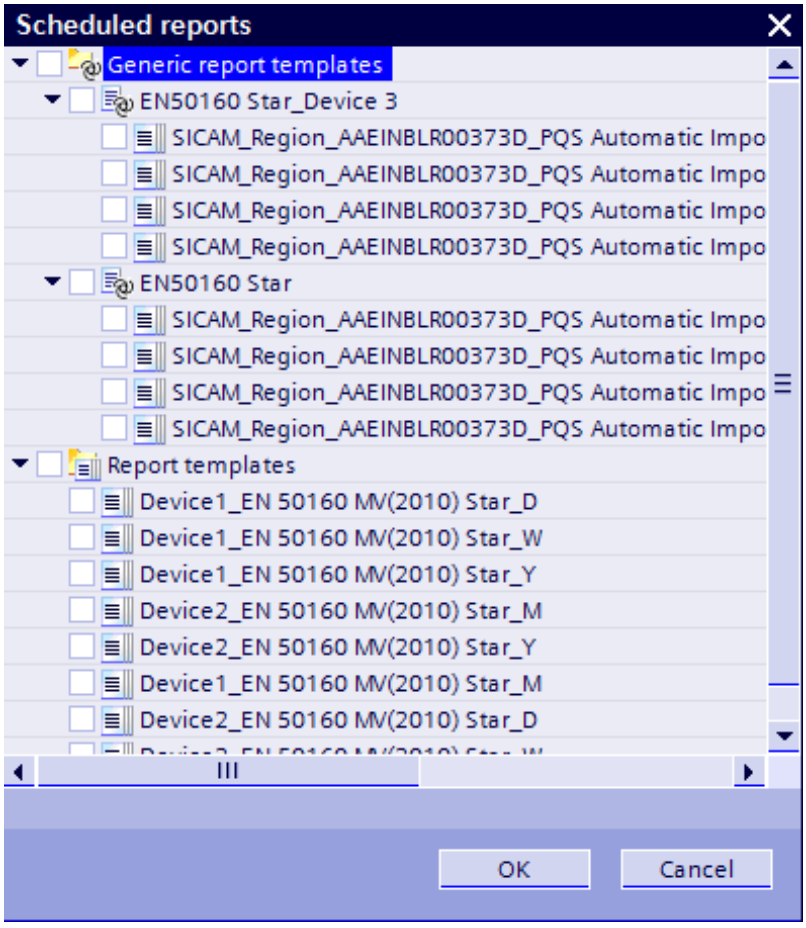
[sc_Sch_Rep_Creat, 2, en_US]

Figure 2-126 SICAM PQS – Scheduled Report Creation Tool

How to Proceed

To manually create scheduled reports:

✧ In the **Report template** field, click **...** to select the report templates which you have defined.
The **Scheduled reports** dialog opens.



[sc_selectingreports, 1, en_US]

Figure 2-127 Selecting Report Templates

✧ Select the report templates for which you want to create the scheduled reports and click **OK**.

The **Reporting period** is displayed depending on the settings of the **Report generation** parameter defined in the report template. It shows the time format (day, week, month, or year) of the report to be created.

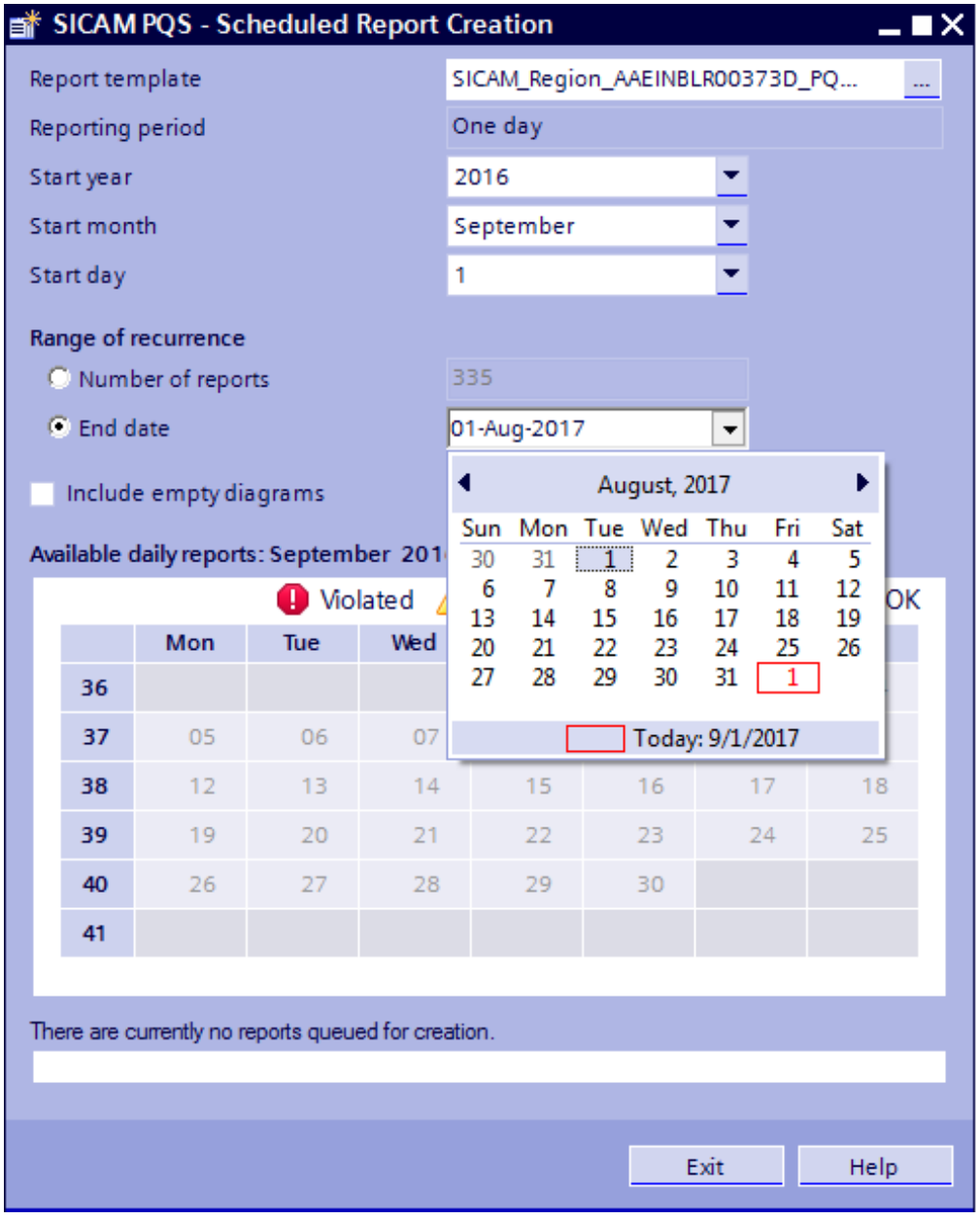
✧ In the **Start year** field, select the first year from which the reports will be required.
If you select a yearly report template, the start month and the start day are pre-defined.

✧ In the **Start month** field, select the first month from which the reports will be required.
If you select a monthly report template, the start year can be entered, but the start day is pre-defined.

✧ In the **Start day** field, select the first day from which the reports will be required.
To create a daily report, the start year, start month, and start day must be selected accordingly.

A weekly report is created for the period from Monday to Sunday. If you select a weekly report template, the Start day field only displays the dates of the Mondays. The Start year, Start month, and Start day must be selected.

✧ To define the reports to be created, enter the **Number of reports**. Alternatively you can specify the last reporting period for which you want a report to be created by selecting the corresponding dates in the **End date** field.



[sc_Month_selection, 2, en_US]

Figure 2-128 Defining Range of Recurrence

The reports which can be created within the defined period are displayed in the **Available reports** section.

The icon next to the report indicates its status.

Select/Deselect the **Include empty diagrams** check box to show/hide the empty diagrams in the reports to be generated. By default the empty diagrams are not included. When you select **Include empty diagrams**, you can verify the format of the report when a new report template is created.

The status icons have the following meaning:

Icon	Explanation
	The following conditions are met: • No limit violations within the period • The data for the period is complete
	The following conditions are met: • No limit violations within the period • An event occurs within the period
	At least 1 limit violation has occurred within the period
	The data for the period is not complete
If no icon is displayed, no report is available for the selected period.	

✧ If you require just one report, click **Create and open** in order to create and display it.
If you require several reports, click **Create reports**.
To view a report on screen, double-click it in the **Available reports** section.
You can also generate additional reports while another report is already being created. The selected reports will be added to the report generation queue.

While a report is being created, the **Cancel** button is available instead of the **Exit** button. Clicking **Cancel** closes the tool after you have confirmed this action. The current report is finished; any further reports in the waiting queue will be rejected.

✧ To exit the SICAM PQS – Scheduled Report Creation tool, click **Exit**.

2.15 Creating Fault Events Manually

NOTE

If the **Fault Events** feature is enabled, configured, and activated, fault event criteria are checked automatically during runtime. Incoming fault record data for the previous 24 hours is considered in the fault event creation.

The **Fault Event Creation** tool provides the possibility to manually start the fault event check and creation especially in the following use cases:

- Additional devices are connected to SICAM PQS, which have fault records prior to the elapsed 24 hours.
- The device connection was interrupted for more than 24 hours and provides fault records which have been created in the meantime.
- PQ archive (SICAM PAS/PQS) or Collector archive (SICAM PQ Analyzer) contains fault records from the past, when the Fault Events feature was not available or not yet activated.

The **SICAM PAS/PQS – Fault Event Creation** tool is used to manually create fault events for the fault records occurred during a selected time range. The created fault events are stored in the archive.

In this tool, you define the start and the end date for creating fault events with the **Pre-trigger duration [s]** and the **Post-trigger duration [s]** time defined in the archive.

For information on creating fault events for a (Collector) archive, refer to */14/ SICAM PQ Analyzer, Incident Explorer*.

To be able to use the **SICAM PAS/PQS – Fault Event Creation** tool, the following applies:

- The **Event List / Fault Events** feature must be enabled.
- The **Archive** application including the **Fault event Information** must be configured, refer to *2.6.9.3 Configuring Fault Events*.

Starting SICAM PAS/PQS – Fault Event Creation

Start the SICAM PAS/PQS – Fault Event Creation tool from the Windows Start menu.

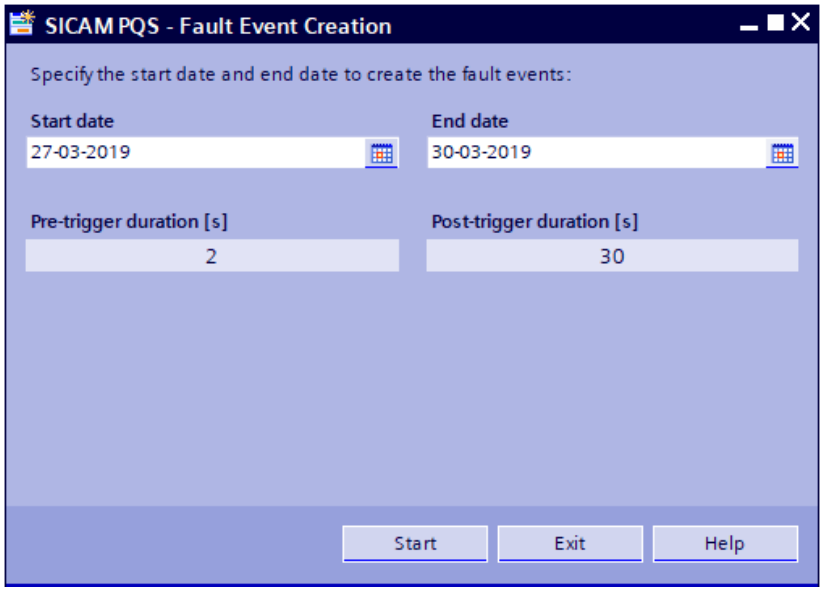
✧ Click **Start** and scroll through the app list.

✧ Select **SICAM PAS/PQS > Tools**.

The **Tools** folder opens.

✧ Double-click **Fault Event Creation**.

The **SICAM PAS/PQS – Fault Event Creation** tool opens.



[sc_Fault_Event_Creation, 1, en_US]

Figure 2-129 SICAM PAS/PQS – Fault Event Creation Tool

How to Proceed

To manually create fault events:

✧ Enter the start date and the end date into the corresponding input boxes.

- or -

✧ Select the specific period in the calendar.

NOTE

The **Pre-trigger duration [s]** and the **Post-trigger duration [s]** are taken from the values configured in the **Fault event information** under the **Archive** application.

✧ Click **Start**.

The fault events for the specified time period are created and stored in the archive.

2.16 Grid Codes

The Grid Codes include normalized or customer-specifically defined limit values for checking measuring data. Based on the limit value violations, SICAM PQS determines the PQ Index which provides a quick and concise overview of the network quality.

The automatic flagging feature which is implemented as per the IEC 61000-4-30 standard is available for each Grid Code to either enable or disable flagging. When flagging is enabled, measurements overlapping with

voltage events are not evaluated against Grid Code limits. As a result, violation reports are generated only for voltage events for that time range.

If there are PQ violations, you can define to be notified by e-mail and/or SMS by using the **PQS Automatic Notification** application. For more information, refer to *2.6.16 PQS Automatic Notification*.

The Grid Codes included in the scope of delivery and based on standards (for example, EN50160LV, EN50160MV) cannot be modified. For Grid Codes which can be customized to meet customer-specific requirements, you receive a template which can be edited in the **Grid Codes** view. You will find the Grid Codes under **%publicdocuments%Siemens\SICAM PAS PQS\GridCodes**.

2.16.1 Grid Codes View

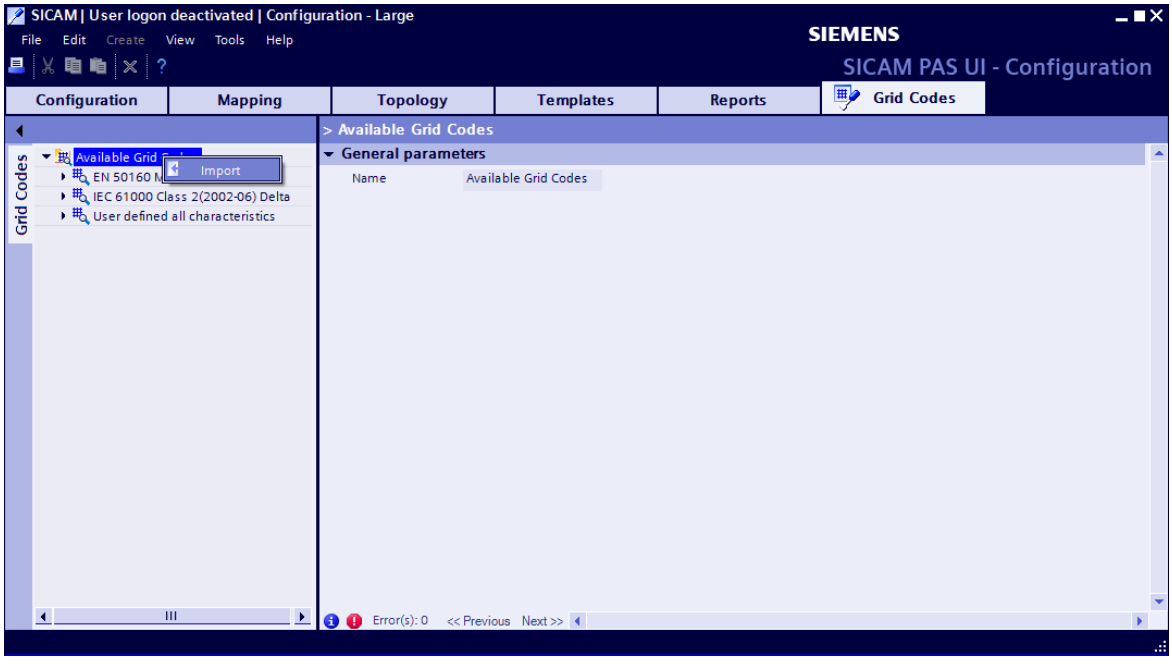
In the **Grid Codes** view, you can do the following:

- *Importing Grid Codes, Page 177*
- *Exporting Grid Codes, Page 178*
- *Updating Grid Codes, Page 178*
- *Modifying Grid Codes, Page 179*
- *Deleting Grid Codes, Page 179*

Importing Grid Codes

To insert a **Grid Code**:

✧ In the configuration tree in the **Grid Codes** view, right-click **Available Grid Codes** and select **Import** from the context menu.

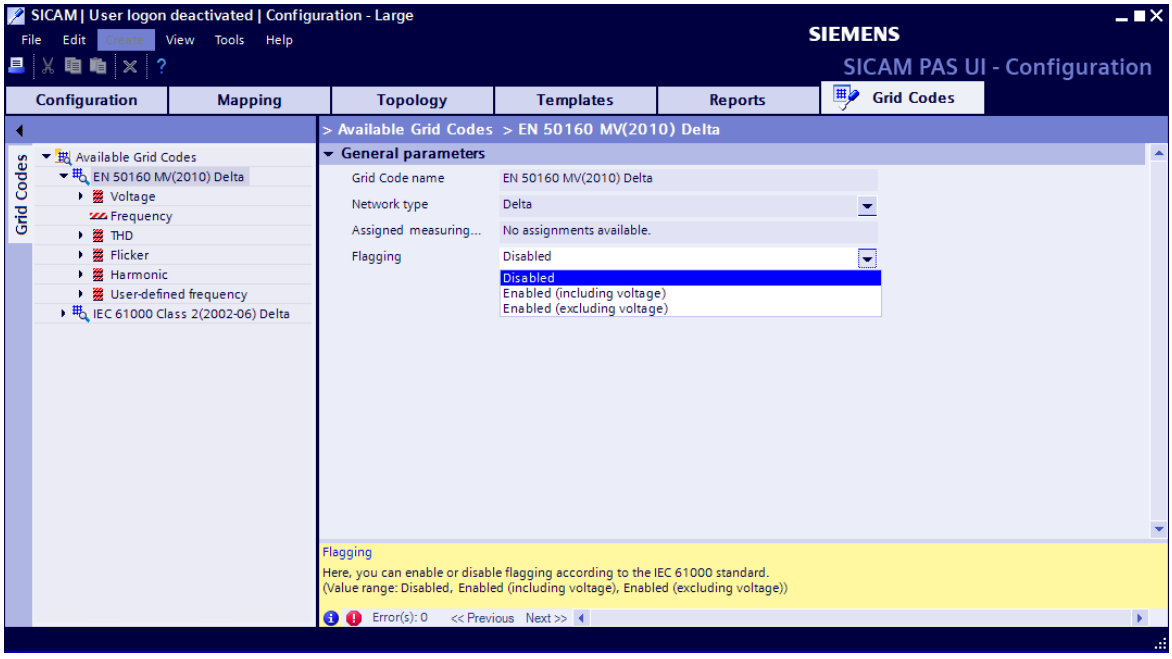


[sc_Importing_Grid_Code, 3, en_US]

Figure 2-130 Importing a Grid Code

✧ Select the Grid Code in the dialog which opens.

✧ Select a **Flagging** option.



[sc_Grid_Codes, 4, en_US]

Figure 2-131 Grid Codes

NOTE

For IEC TS 62749 Grid Codes, you have to manually set the **Flagging** option to **Enabled (excluding voltage)**.

- **Disabled**
  All the limit violations (Period limits and Operational limits) are reported.
- **Enabled (including voltage)**
  Limit violations within a voltage event time range are not reported, even not for voltage limit violation.
- **Enabled (excluding voltage)**
  Voltage limit violations only are reported within a voltage event time range.

Exporting Grid Codes

If you have modified the limit values of a Grid Code, you can export the Grid Code.

To export a Grid Code:

✧ In the navigation window, right-click the Grid Code and select **Export** from the context menu.

✧ In the dialog which opens, enter the name and the storage path of the Grid Code.

You can re-import the exported Grid Code, for example, as a template for further Grid Codes, or import it into another SICAM PAS/PQS system.

If an archive includes data from several PAS/PQS Systems, the Grid Code specific evaluations can only be performed by using both the systems if the same Grid Code has been used for evaluation.

Updating Grid Codes

If you have modified the limit values of a Grid Code used, you can update the Grid Code.

To update a Grid Code:

✧ In the navigation window, right-click the Grid Code and select **Update** from the context menu.

✧ In the dialog which opens, select the name and the path of the Grid Code which you want to update.

After the update, the PQ measuring data is evaluated with the modified limit values.

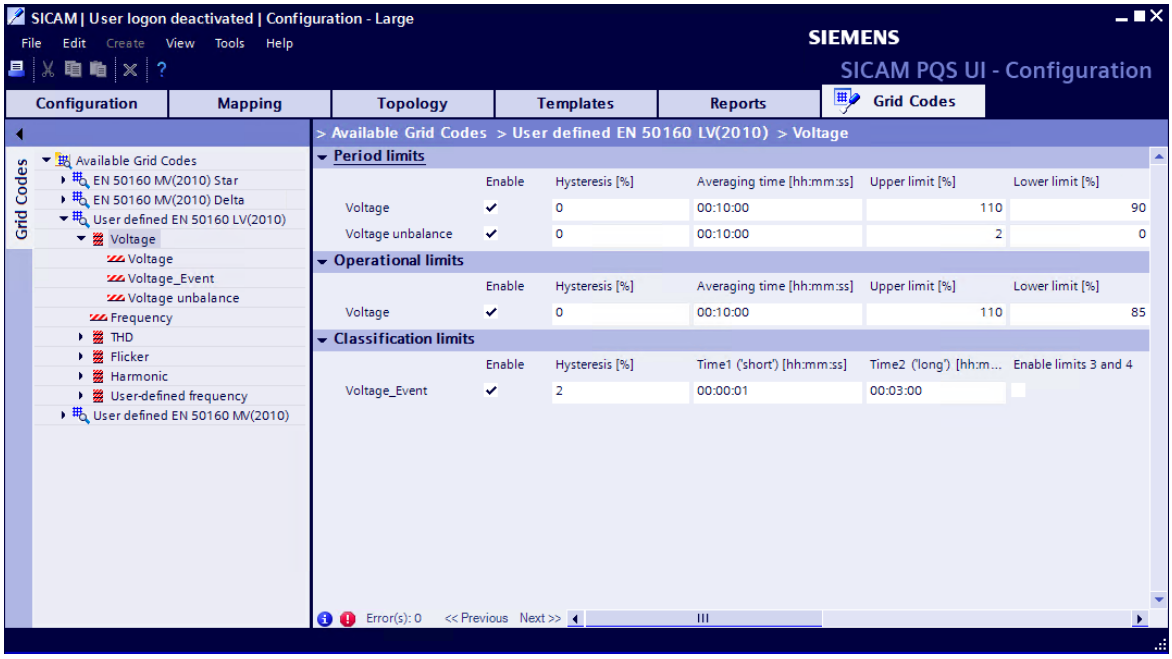
Modifying Grid Codes

For modifiable Grid Code templates, you can customize the parameters defined in the input area in order to meet project-specific requirements. Changes to the Grid Code structure or the definition of additional parameters are not possible. For more information on the structure and contents of a Grid Code, refer to *A.1 Structure of Grid Codes*.

To modify the parameters of a Grid Code template:

✧ In the configuration tree, select the area of the Grid Code which you want to modify.

✧ Enter the new values in the different input areas. for example, you can modify limit values, activate or deactivate rules or modify time specifications.



[grid_code_bearbeiten, 4, en_US]

Figure 2-132 Modifying a Grid Code

Deleting Grid Codes

If you have not assigned a Grid Code to any topological structure, you can delete the Grid Code.

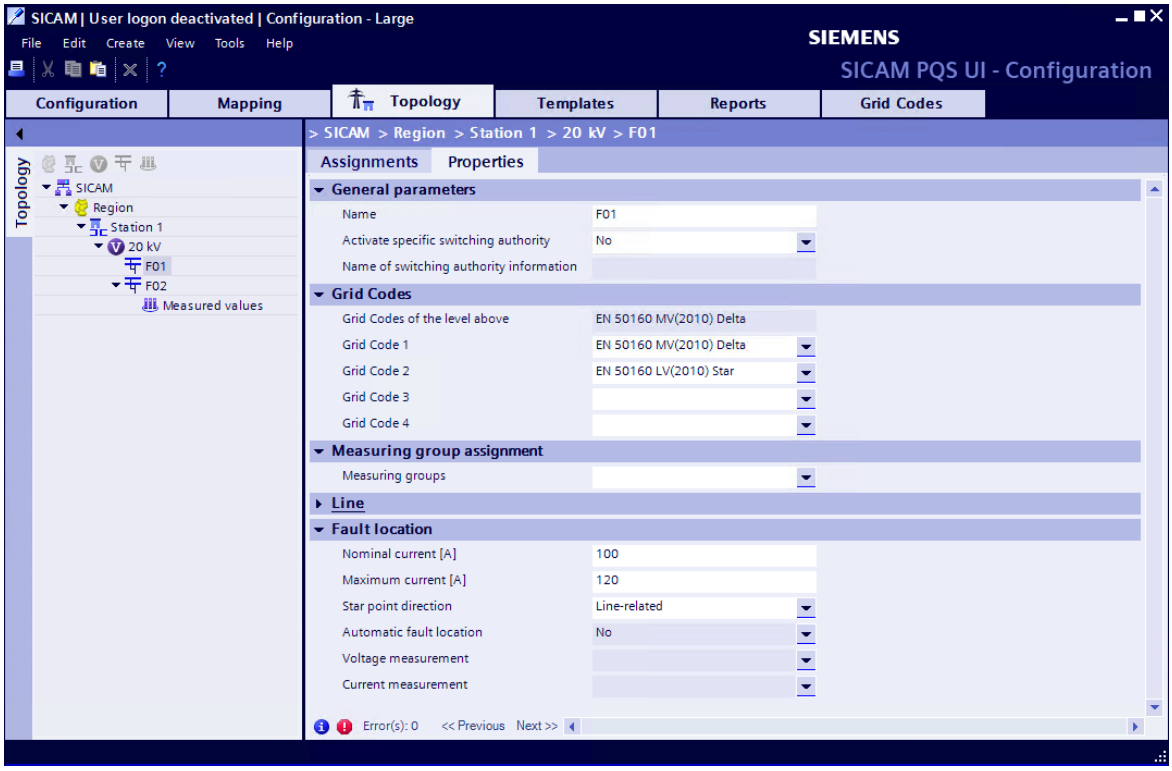
To delete a Grid Code:

✧ In the navigation window, right-click the Grid Code and select **Delete** from the context menu.

However, the evaluation results for the deleted Grid Code are available for analysis in **SICAM PQ Analyzer** (**PQ Explorer**, **PQ Inspector**, and **Report Browser**). If the evaluation results are still available in the archive for a deleted Grid Code, the respective Grid Code is displayed in brackets in the **Grid Code** view.

2.16.2 Topology View

In the **Topology** view, you can assign the individual topological levels up to 4 Grid Codes.



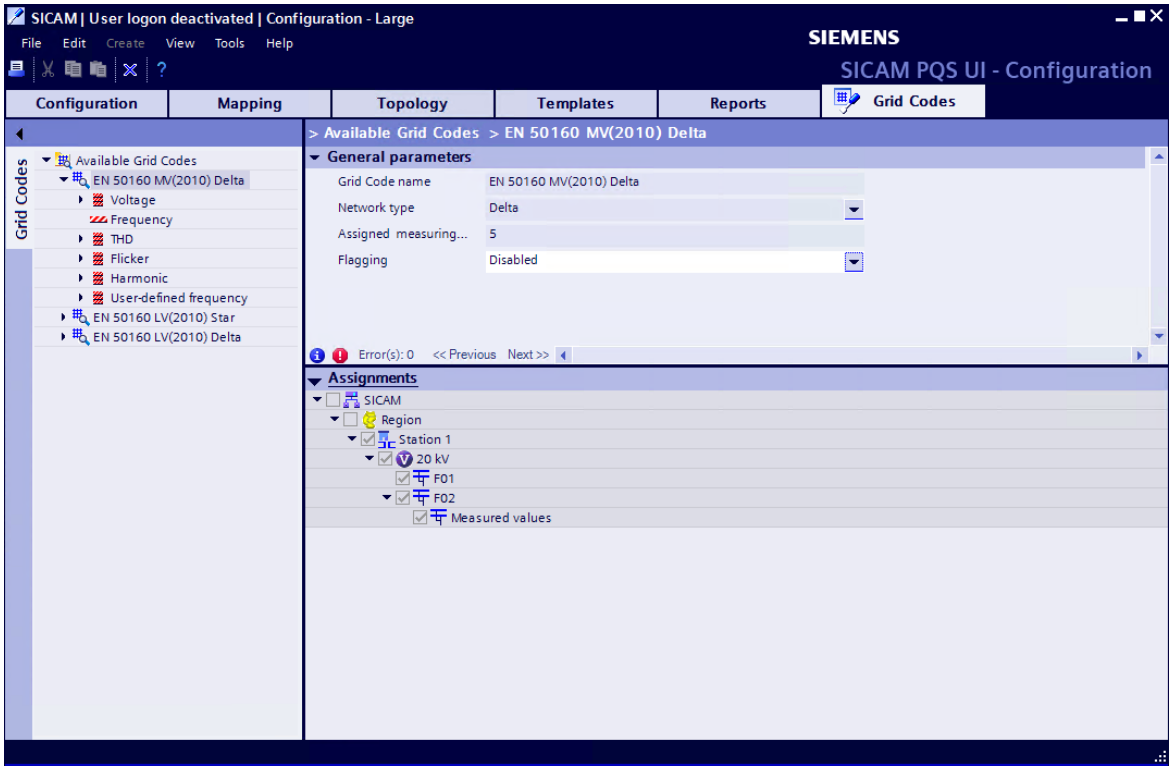
[sc_Assigning_Grid_Codes_Topology, 4, en_US]

Figure 2-133 Topology View, Assigning Grid Codes

If you have assigned the measuring groups to the topological levels, the **Grid Codes** view shows for each Grid Code which PQ measuring data items are evaluated with which Grid Codes.

The assignment can only be modified in the **Topology** view.

✧ In the configuration tree in the **Grid Codes** view, select the name of a Grid Code.
The assignments are displayed in the right-hand section.



[sc_Grid_Code_Assigned_Topological, 4, en_US]

Figure 2-134 Grid Code with Assigned Topological Levels

2.16.3 Reevaluating PQ Data

The **SICAM PAS/PQS – PQ Data Reevaluation** tool allows you to update all evaluation results caused by the following changes:

- A new Grid Code has been assigned.
- A rule/limit has been changed in an existing Grid Code.
- The assignment of measuring groups has been changed.
- The topological structure has been changed.

The PQ data is reevaluated depending on the start date and the Grid Codes selected. PQ Index and PQ violation reports are generated depending on the new configuration in SICAM PAS/PQS UI – Configuration.

To be able to use the SICAM PAS/PQS - PQ Data Reevaluation tool, the following applies:

- The **PQS Grid Code Evaluation** feature must be enabled.
- The archive must be configured and started on the system on which the SICAM PAS/PQS – PQ data reevaluation is running.
- At least 1 Grid Code and one measurement group must be configured and assigned to a topology.
- For redundant systems SICAM PAS/PQS – PQ Data Reevaluation must be opened on the system configured in the left-hand section of SICAM PAS/PQS UI – Configuration.
- The archive must contain historical data, otherwise reevaluation is not possible.

Starting SICAM PAS/PQS – PQ Data Reevaluation

Start the SICAM PAS/PQS – PQ Data Reevaluation tool from the Windows Start menu.

✧ Click **Start** and scroll through the app list.

✧ Select **SICAM PAS/PQS > Tools**.

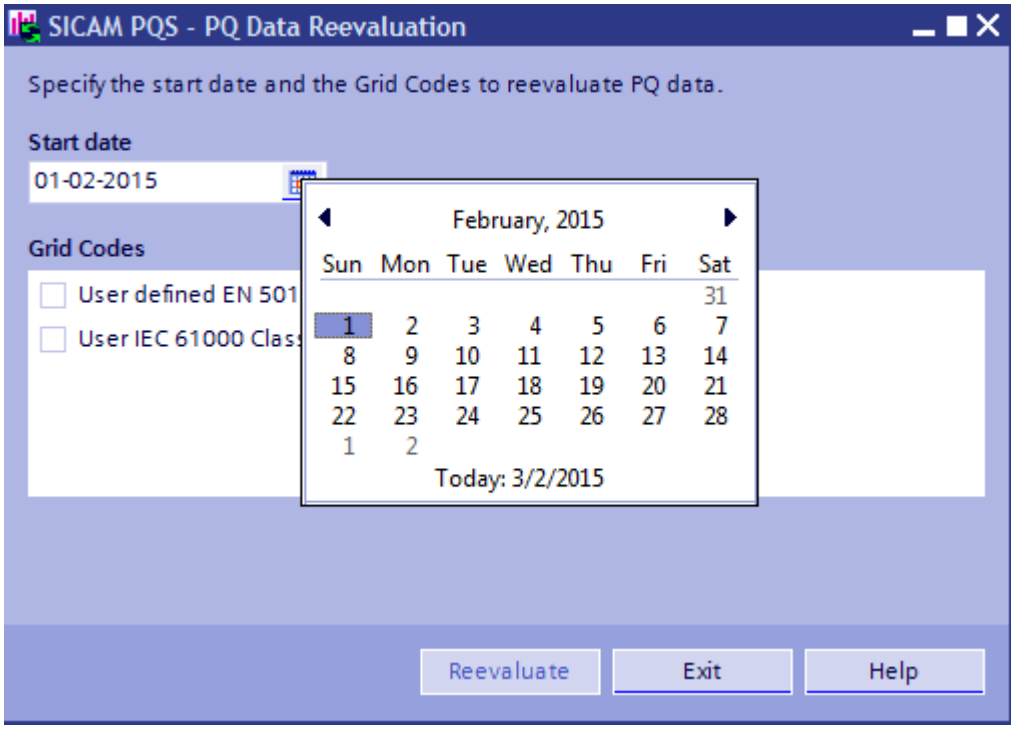
The **Tools** folder opens.

✧ Double-click **PQ Data Reevaluation**.

The SICAM PAS/PQS – PQ Data Reevaluation tool opens and displays the Grid Codes configured.

Reevaluating PQ Data

✧ Select the **Start date** for PQ data reevaluation from the **Calendar**.



[sc_Select_start_date, 1, en_US]

Figure 2-135 Selecting the Start Date

✧ Select the Grid Codes for reevaluation.

✧ Click **Reevaluate**.
The reevaluation progress for each Grid Code is shown.
All the dates between the selected start date and the current date are reevaluated.

Canceling the Reevaluation

While reevaluating PQ data the Exit button is replaced by the Cancel button.

✧ Click **Cancel**.
The **Canceling the PQ data reevaluation** dialog opens.

✧ Click **Yes** to cancel the reevaluation.

- or -

✧ Click **No** to continue the reevaluation.

If you open the tool once again after canceling a reevaluation, the previously defined start date is shown.

The Grid Code for which the reevaluation has not been completed successfully remains selected in order to avoid an inconsistent archive.

The Grid Codes for which no reevaluation has been started or for which the reevaluation has been successfully completed remain deselected.

The Grid Codes and the start date can be modified.

NOTE

Canceling the reevaluation leads to an inconsistent archive. The following applies in order to avoid inconsistencies in the archive when opening the tool:

- The start date remains unchanged or is older than the start date defined.
- The automatically selected Grid Code is not deselected.

2.17 Certificates

For the DNP3 Master/Slave, IEC 60870-5-104 Master/Slave, and IEC 61850 Server/Client protocols, the data can be transmitted in encrypted format. The certificates required for this purpose are added in the **Templates** view.

The function can only be used if you have enabled the **Secure Communication** feature.

The certificate store includes the following areas:

- **Protocol related** to add DNP3 and IEC 60870-5-104 protocol certificates
  - **Certificate Store** with user certificates
  - **Certificate Authority Store** with root certificates
  - **Certificate Revocation Store** with invalid certificates
- **EST communication** can be manually created to add EST protocol certificates
  - **Client Certificate** with EST client cerificate
  - **EST Certificate Authority** with EST Certificate Authority certificate

For more information, refer to */8/ SICAM PAS/PQS, Security*.

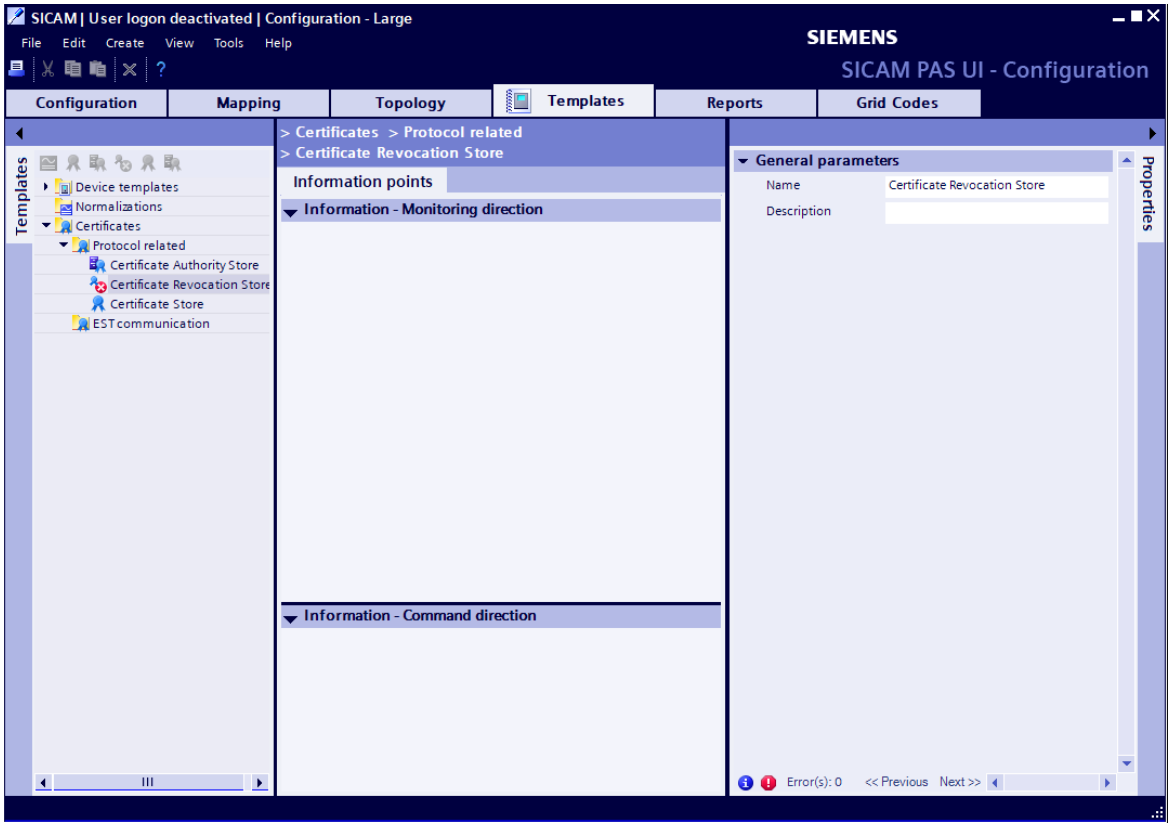
For more information on EST communication, refer to */24/ SICAM GridPass V1.30, Manual*.

Adding Protocol Related Certificate

✧ Select the **Templates** view.

✧ Select **Certificates** > **Protocol related**.

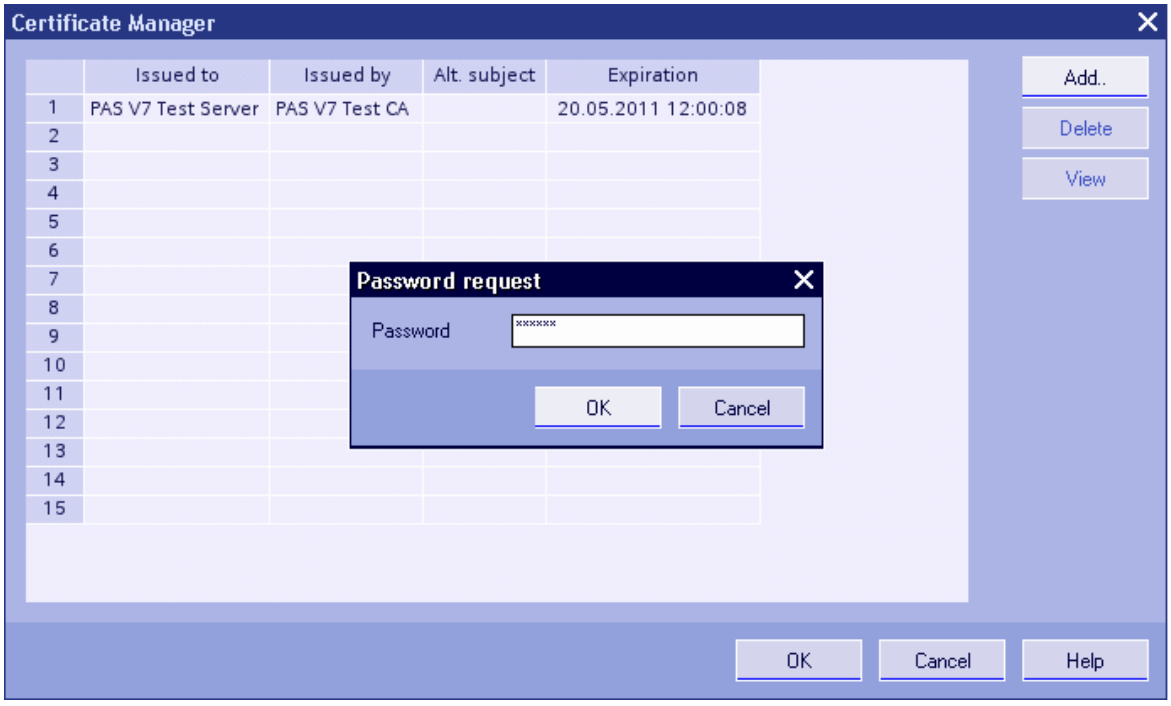
✧ Insert the **Certificate Store**, the **Certificate Authority Store**, and the **Certificate Revocation Store** one after the other.



[sc_Certificate Store, 5, en_US]

Figure 2-136 Certificate Store

- ✧ Right-click **Certificate Authority Store** and select **Open...** from the context menu.
  The Certificate Manager opens.
- ✧ Insert the root certificates. The function is protected by a password.
- ✧ Right-click **Certificate Revocation Store** and select **Open...** from the context menu.
  The Certificate Manager opens.
- ✧ Insert all invalid certificates. The function is protected by a password.
- ✧ Right-click **Certificate Store** and select **Open...** from the context menu.
  The Certificate Manager opens.
- ✧ Insert the user certificates for the protocols.
- ✧ Enter the password with which the private key is protected in the certificate.



[sc_Inserting_Certif, 1, en_US]

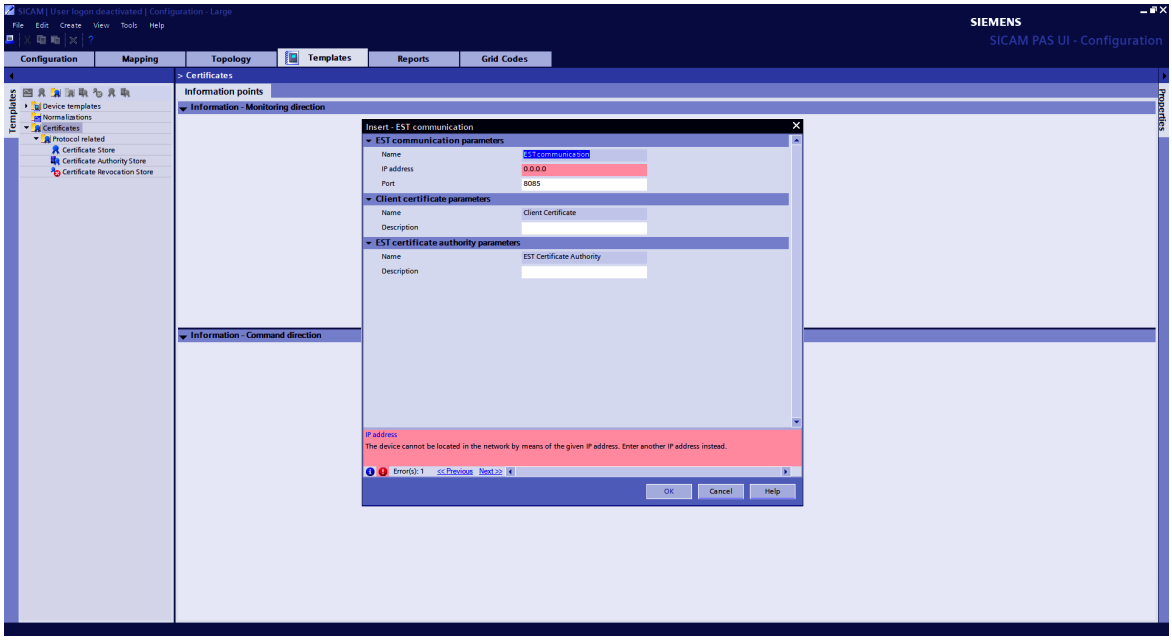
Figure 2-137 Inserting Certificates

Configuring EST Communication

- ✧ Select the **Templates** view.
- ✧ Right-click **Certificates** and select **EST communication** from the context menu.

The Insert EST Communication dialog opens.

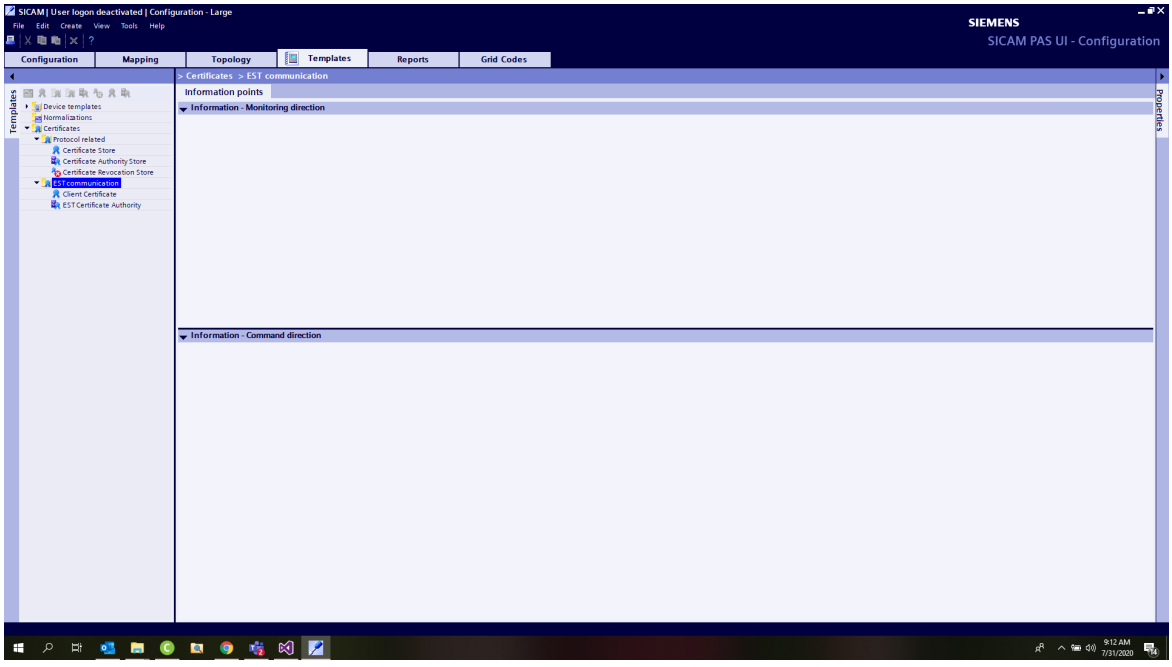
- ✧ Enter the **IP address** and **Port** of the EST server under **EST Communication parameters**.
- ✧ Optionally, enter a description for the **Client Certificate Parameter** and the **EST Certificate Authority Parameter**.



[sc_EST_Properties, 2, en_US]

Figure 2-138 Inserting EST Communication Certificate

✧ Insert the **Client Certificate** and the **EST Certificate Authority**.

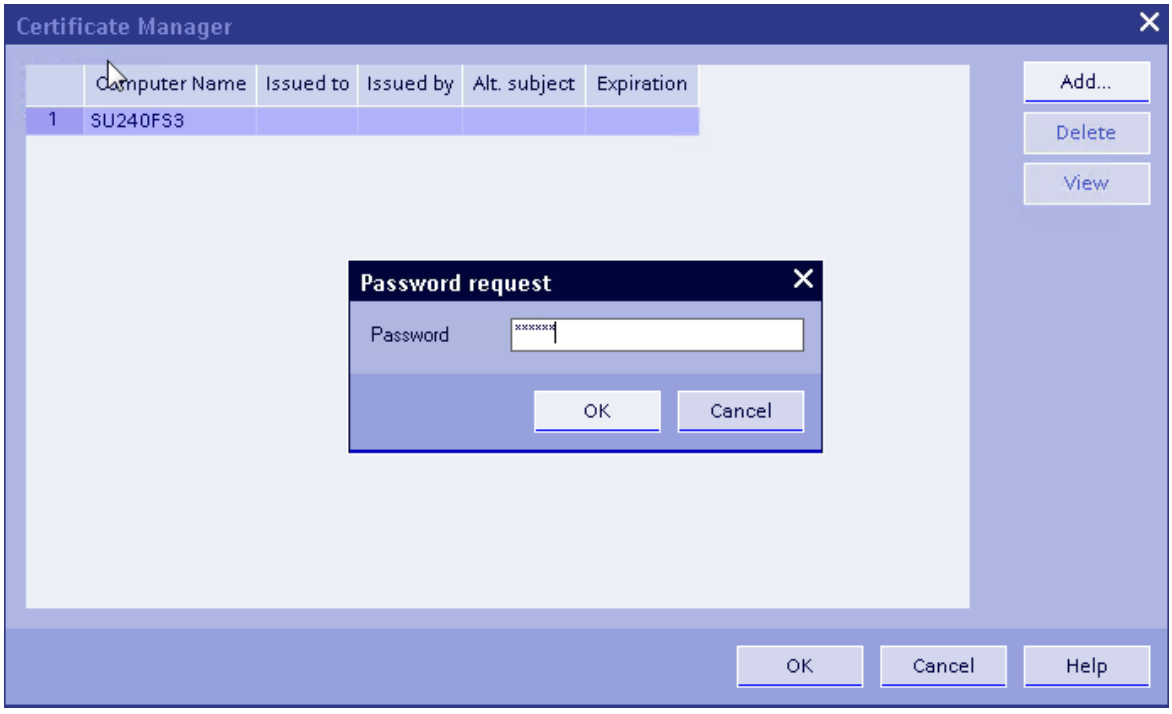


[sc_EST_Certificate, 2, en_US]

Figure 2-139 EST Certificates

✧ Right-click **Client Certificate** and select **Open...** from the context menu.
The Certificate Manager opens.

✧ Insert the client certificate. The function is protected by a password.



[sc_Inserting_EST_cert, 1, en_US]

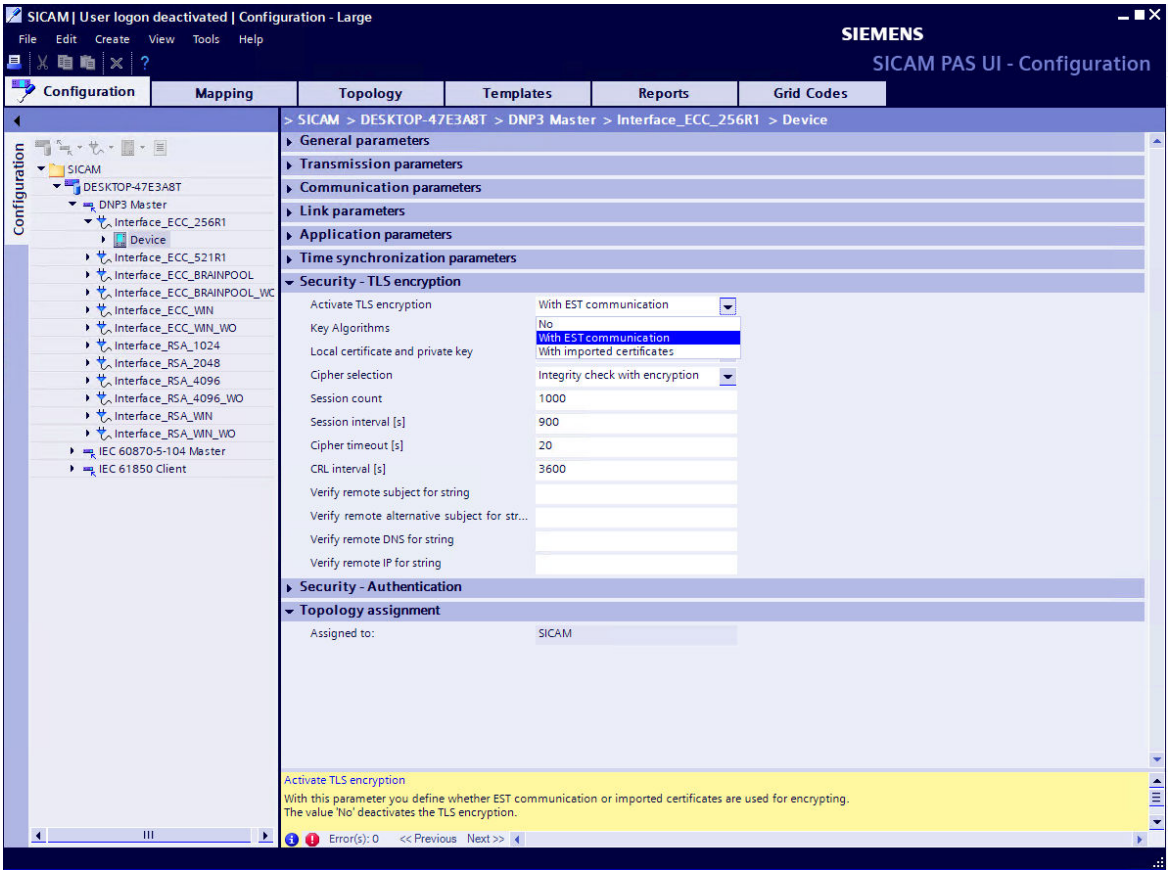
Figure 2-140 Inserting EST Certificates

- ✧ Right-click **EST Certificate Authority** and select **Open...** from the context menu.
  The Certificate Manager opens.
- ✧ Insert the EST certificate authority certificate.

Assigning Certificates

- ✧ Open the **Configuration** view.
- ✧ For the **DNP3 Master** and **IEC 60870-5-104Master** applications, select the corresponding **Device**.

  - or -
- ✧ For the **DNP3 Slave**, **IEC 60870-5-104 Slave**, and **IEC 61850 Server/Client** applications, select the corresponding **Interface**.
- ✧ Under **Security – TLS encryption** in the **Activate TLS encryption** list box, select whether you want to use an imported certificate or EST for secure communication.



[sc_Assigning_Certif, 6, en_US]

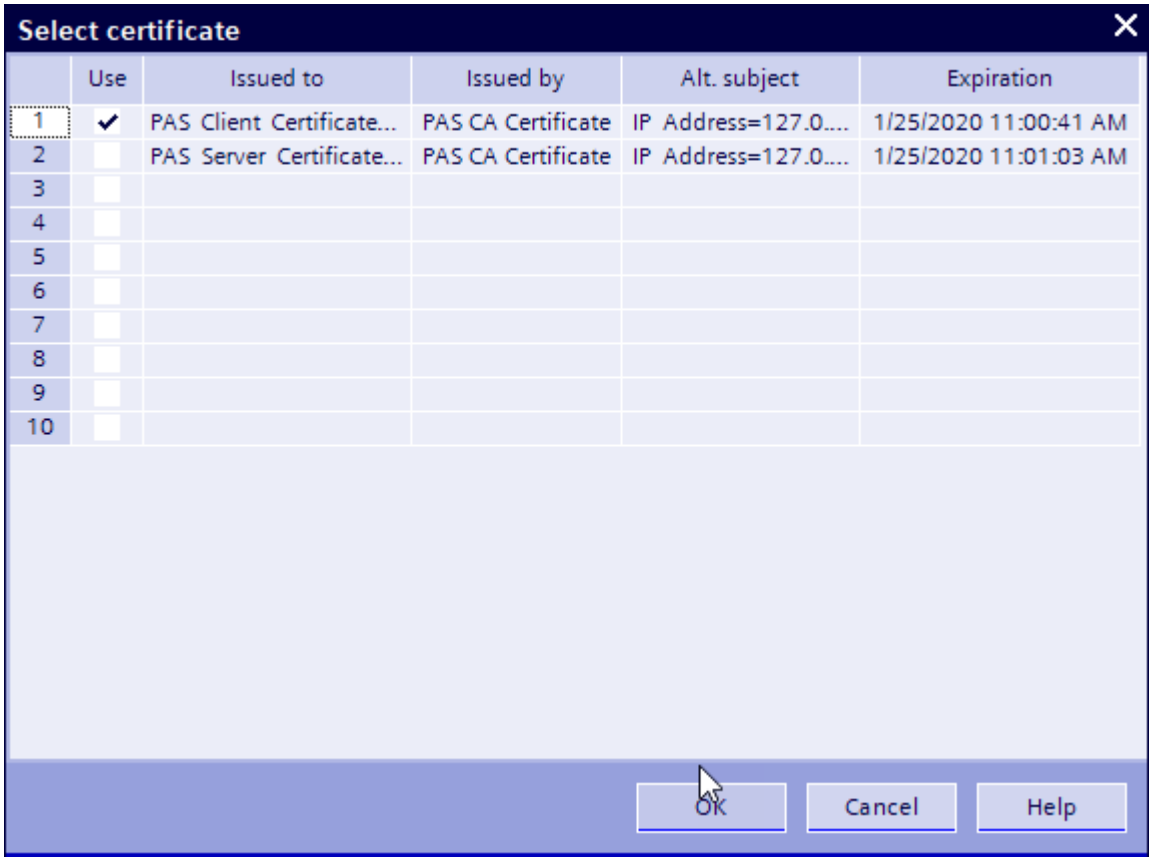
Figure 2-141 Assigning a Certificate

NOTE

The IEC 61850 protocol supports only EST communication.
The IEC 61850 client supports TLS and A-Profile using EST Communication.

✧ If you select **With imported certificates**, click **...** in the **Local certificate and private key** field.

In the **Select certificate** dialog that opens, select the certificate.



[sc_select-cert, 1, en_US]

Figure 2-142 Select Certificate

✧ If you select **With EST communication**, insert the **Client Certificate** and the **EST Certificate Authority** in the **Templates** view under **EST communication**.

Authentication

For the **DNP3 Slave** and **DNP3 Master** protocols, you can define a specific authentication for each command.

NOTE

The Authentication function without encryption can also be configured for serial connections. When setting up a TCP/IP connection without encryption, make sure that the connection is secure.

To do this, you create the corresponding users and a default user in the User Administration.

✧ In the input area of the **Configuration** view, enter a default user for the interface under **Security Authentication**.

✧ In the **Mapping** view, select - for the information of the control center in the **DNP User** column - users with switching permissions for each command.

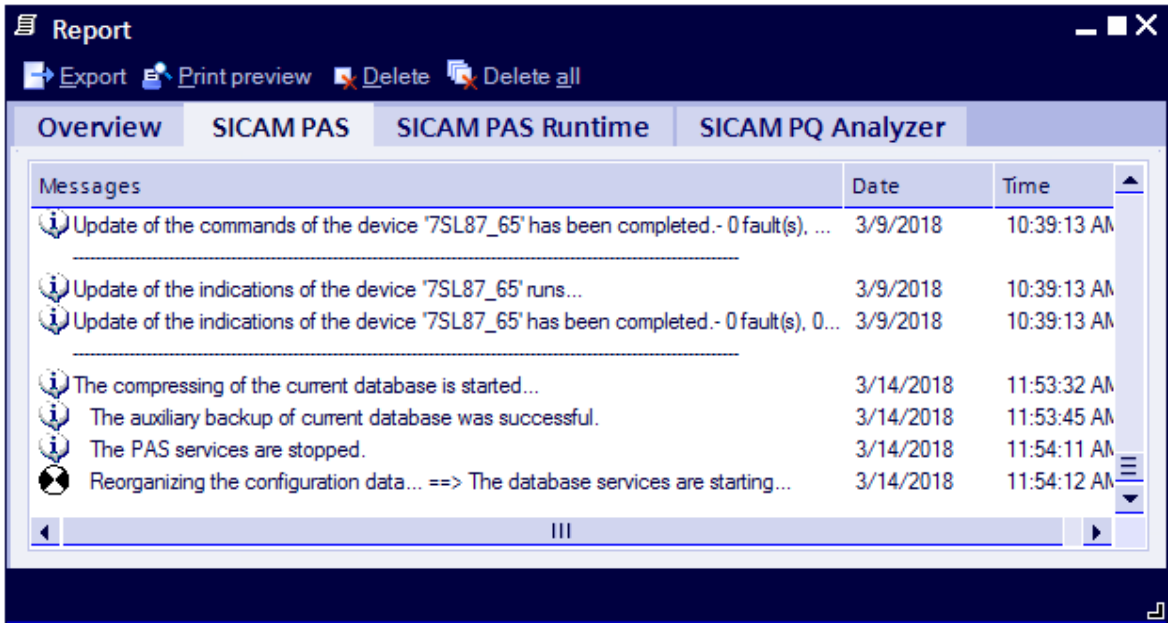
For more information on User Administration, refer to *6.1 Starting User Administration* and the online help of the User Administration.

For more information on security measures in SICAM PAS/PQS, refer to */8/ SICAM PAS/PQS, Security*.

2.18 SICAM System Outputs

2.18.1 Report

Report logs of import and update procedures in SICAM PAS/PQS can be found in the Report.



[sc_report, 2, en_US]

Figure 2-143 Report

Tabs

If you have installed several software products from the SICAM family on your system, all of them are displayed in the **Report** dialog.

A separate tab is available for each SICAM software component.

The **Overview** tab provides a summary of the protocols of all tabs.

Status Icons

The icons displayed to the left of the text explanations in the rows of the log highlight the status of the log rows:

Standard information (white-blue), for example, procedure completed

Warning (yellow-black), for example, parameter not required

Problem occurred (red-white), for example, severe error

Rotating icon (black-white), process in progress

Opening the Report

The **Report** starts automatically as soon as an import or update has been initiated.

You can also open the dialog manually (**View > Report**).

Buttons of the Report Dialog

To print the log displayed in the dialog:

✧ Click **Print**.

To save the log displayed in the dialog:

✧ Click **Export**.

✧ Select a directory path for saving the note texts.

To delete the log displayed in the dialog:

✧ Click **Delete**.

Only the log displayed in the currently active tab card is deleted.

To delete the log summary:

✧ Click **Delete all**.

All logs (that is, all tabs and the log summary shown in the Overview tab) are deleted.

To close the **Report**:

✧ Click **Close**.

The dialog closes. All messages and notes shown in this dialog are saved and will be available when the dialog is opened again.

2.18.2 Windows Event Viewer

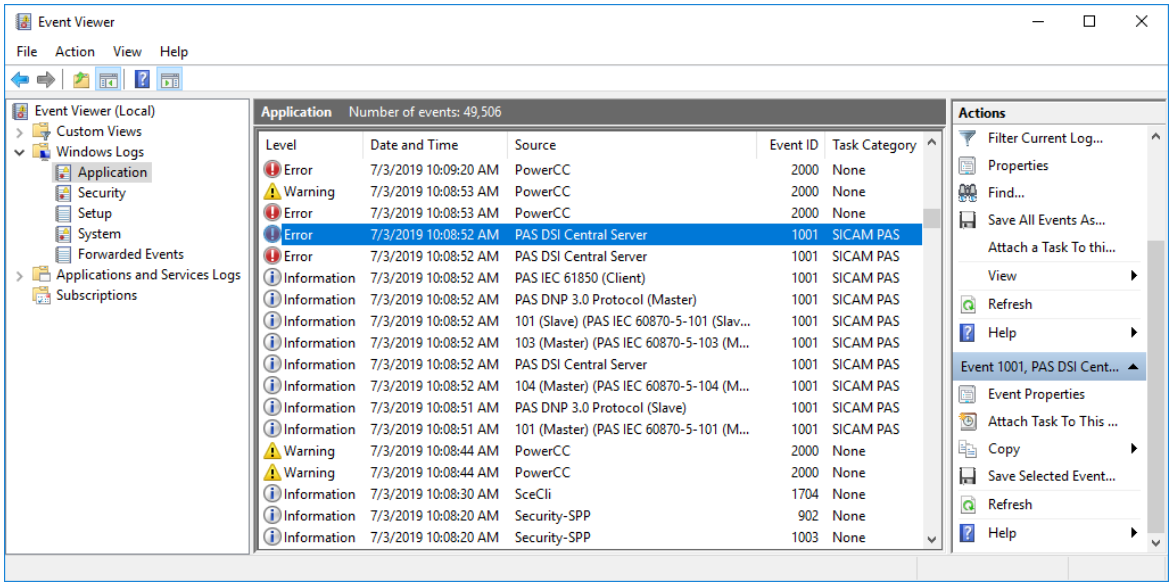
The SICAM PAS/PQS runtime components store diagnostic entries (warnings and errors) in the Windows event log. These entries can support you in finding the causes of errors.

To read the entries out of the Windows Event Viewer:

✧ Click **Start**, type **eventvwr** and confirm by pressing <Enter>.

The Event Viewer opens.

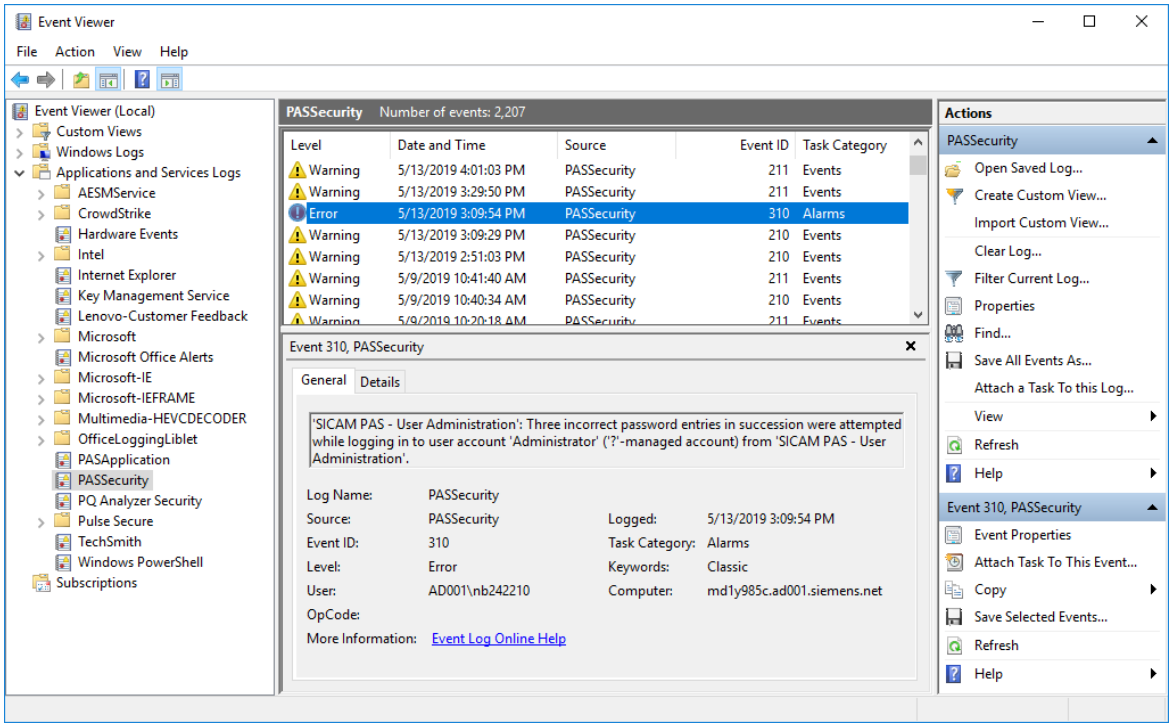
Under **Windows Logs** > **Application**, the warnings and error messages are displayed under the name of the runtime component.



[sc_eventlog, 3, en_US]

Figure 2-144 Windows Event Viewer, Example

Security-related logs, for example, user login/logout, start/stop of system components, modifications in the archive (import records, import PQDIF, delete records, delete reports, add or edit traffic lights), are displayed under **Applications and Services Logs** in the **PASSecurity** and **PQ Analyzer Security** folders.



[sc_eventlog_security, 2, en_US]

Figure 2-145 Windows Event Viewer, Security-Related Events

For a list of possible events, refer to *A.16 Security-Related Messages*.

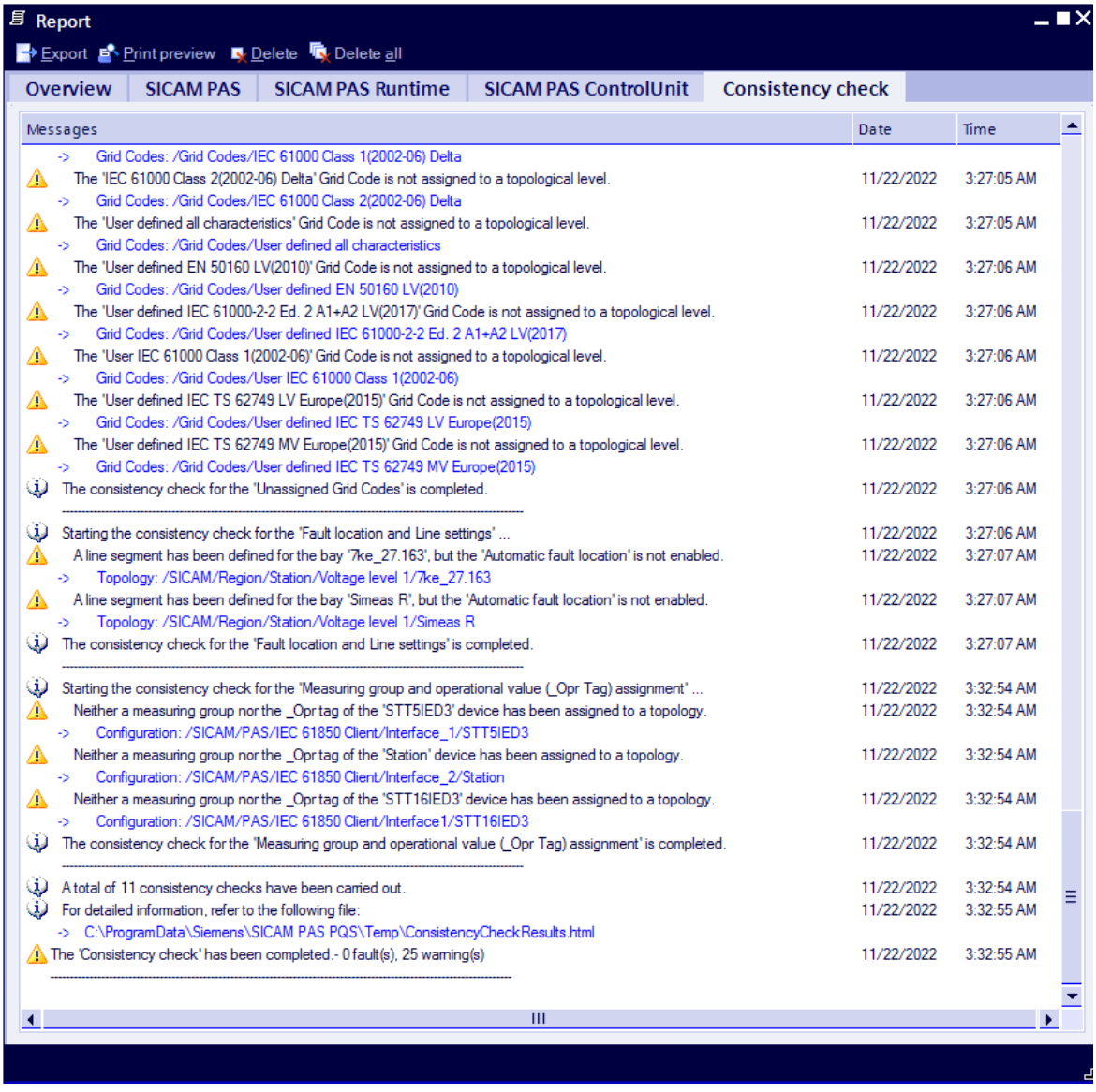
2.18.3 Consistency Check

Before you start the SICAM PAS/PQS runtime, you can validate the current configuration. The scope of the consistency check functionality is expanded gradually.

To start the consistency check:

✧ Click **Consistency check...** from the **Tools** menu.

The consistency check results are displayed in the **Report**.



[sc_Consistency Check, 2, en_US]

Figure 2-146 Consistency Check

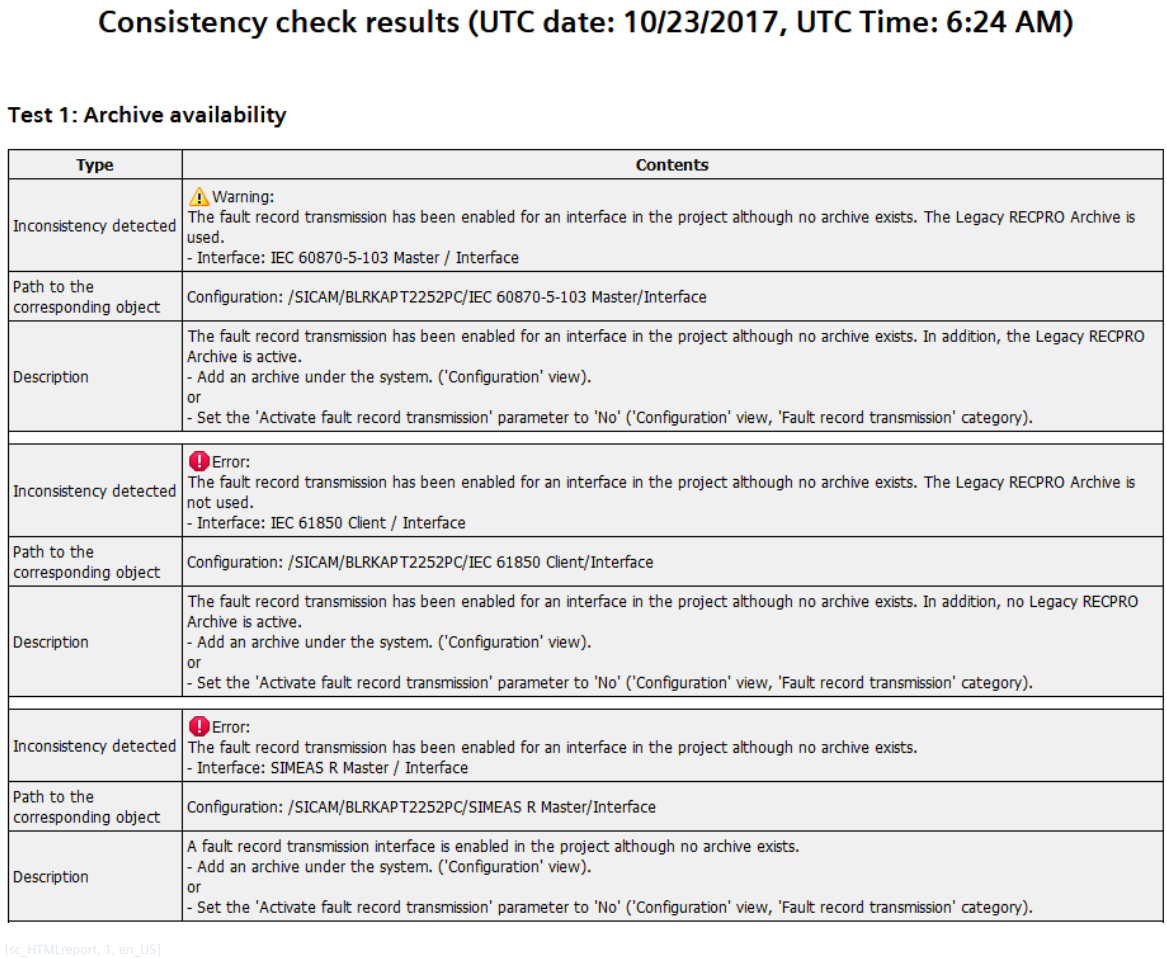
✧ For more detailed information, click the link at the end of the **Consistency check** tab.

An HTML file opens providing the following information:

– Inconsistencies detected

– Path to the corresponding inconsistency

– Steps to troubleshoot the corresponding inconsistency



Consistency check results (UTC date: 10/23/2017, UTC Time: 6:24 AM)

Test 1: Archive availability

Type	Contents
Inconsistency detected	⚠ Warning: The fault record transmission has been enabled for an interface in the project although no archive exists. The Legacy RECPRO Archive is used. - Interface: IEC 60870-5-103 Master / Interface
Path to the corresponding object	Configuration: /SICAM/BLRKAPT2252PC/IEC 60870-5-103 Master/Interface
Description	The fault record transmission has been enabled for an interface in the project although no archive exists. In addition, the Legacy RECPRO Archive is active. - Add an archive under the system. ('Configuration' view). or - Set the 'Activate fault record transmission' parameter to 'No' ('Configuration' view, 'Fault record transmission' category).
Inconsistency detected	❗ Error: The fault record transmission has been enabled for an interface in the project although no archive exists. The Legacy RECPRO Archive is not used. - Interface: IEC 61850 Client / Interface
Path to the corresponding object	Configuration: /SICAM/BLRKAPT2252PC/IEC 61850 Client/Interface
Description	The fault record transmission has been enabled for an interface in the project although no archive exists. In addition, no Legacy RECPRO Archive is active. - Add an archive under the system. ('Configuration' view). or - Set the 'Activate fault record transmission' parameter to 'No' ('Configuration' view, 'Fault record transmission' category).
Inconsistency detected	❗ Error: The fault record transmission has been enabled for an interface in the project although no archive exists. - Interface: SIMEAS R Master / Interface
Path to the corresponding object	Configuration: /SICAM/BLRKAPT2252PC/SIMEAS R Master/Interface
Description	A fault record transmission interface is enabled in the project although no archive exists. - Add an archive under the system. ('Configuration' view). or - Set the 'Activate fault record transmission' parameter to 'No' ('Configuration' view, 'Fault record transmission' category).

[sc_HTMLreport, 1, en_US]

Figure 2-147 HTML File Providing Detailed Information

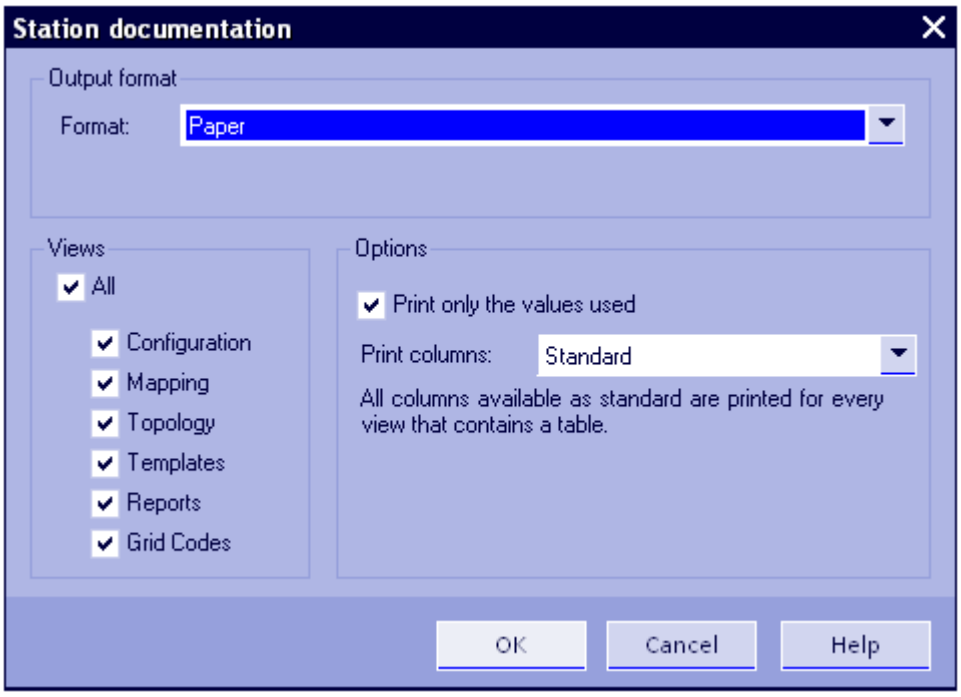
2.19 Documenting a Project

The following functions are available for the documentation of your configuration and parameterization:

- *2.19.1 Station Documentation*
- *2.19.2 Printing*
- *2.19.3 Project Statistic*

2.19.1 Station Documentation

✧ Click **File > Station documentation > Print**.



[sc_Station_Documentation, 1, en_US]

Figure 2-148 Station Documentation Selection Dialog

✧ In the **Station documentation** dialog, select which parts of your configuration you want to print.

✧ Select whether you want to print out the data on **paper** or save it in the **HTML** or **XML** format.

You can display your configuration via **Station documentation > Print preview...**.

NOTE

If more than 3000 pages are to be printed, select lesser views for printing.

2.19.2 Printing

The print function allows you to print your SICAM PAS/PQS project data on paper or save it in multiple formats, for example, PDF.

The active section is printed. If you have for example, highlighted an element in the configuration tree, the function prints the configuration tree.

How to Proceed

The SICAM PAS/PQS print function consists of the following steps:

- *Print, Page 195*
- *Print Preview, Page 196*

Print

To set up the printer:

✧ Select **File > Print**.

✧ Select the printer and the printer settings in the dialog that opens.

Print Preview

To show a print preview and print the display contents:

✧ Select the section (for example, the configuration tree) which you want to display in the print preview.

✧ Select **File > Print preview...**.
A page view of the currently possible print output is shown on screen.

✧ To print the display, click **Print**.

In the print preview, you can set up the page, page up or down, enlarge or minimize the view and define settings of the page preview.

2.19.3 Project Statistic

The project statistic serves for analyzing your project's configuration and displays a summary of the following project data:

- Total number of devices and control centers
- Total number of master data points
- Total number of slave data points
- Total number of data points mapped, but not used
- Total number of license-relevant data points.

For each level of the configuration tree, you can also see how many items of information are available and mapped, and how many items of information are not used. In Master and Slave applications, the columns have a different significance.

Application	Available	Mapped	Unused
Master	Number of available data points	Number of data points selected in the **Mapping** view, **Use** column	Number of data points selected in the **Use** column, but not yet mapped to a Slave application
Slave	Number of data points of the Master applications selected in the **Mapping** view, **Use** column, including system values	Number of Slave data points highlighted in the **Mapping** view, **Use** column	0

For more information on how to use and map the data points, refer to *2.4.4 Mapping*.

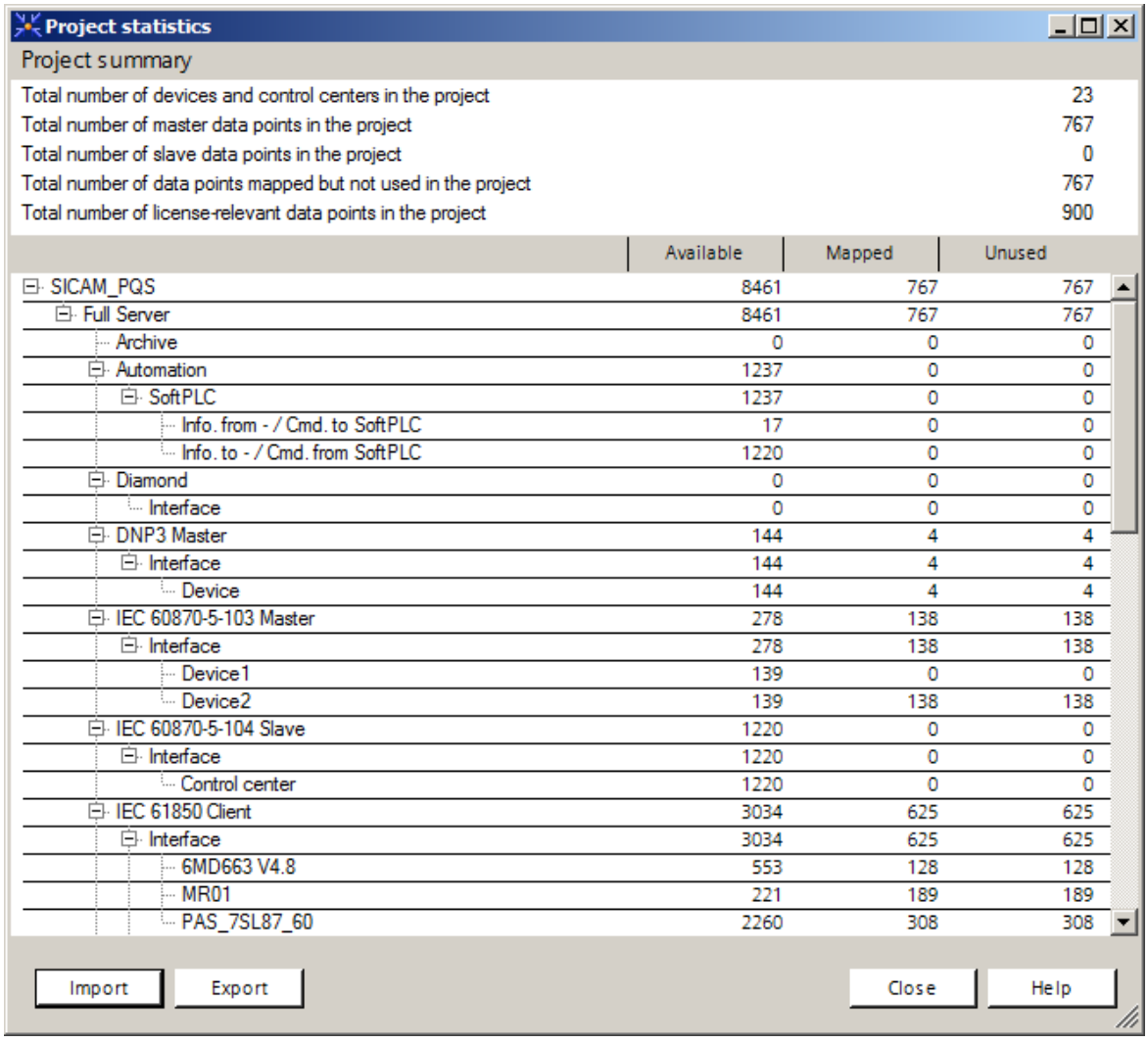
The following applications are considered for counting the license-relevant data points:

- IEC 61850 Client
- IEC 60870-5-103 Master
- IEC 60870-5-104 Master (also SICAM MIC Master)
- IEC 60870-5-101 Master
- DNP3 Master
- Modbus Master
- PROFIBUS DP Master
- SINAUT LSA ILSA Master
- SICAM Q80 Master
- SIMEAS R Master

The data points of the following applications are not considered:

- SNMP
- SoftPLC (Automation)
- OPC Client
- Digital I/O (SICAM Station Unit)

For the **SICAM SCC Slave** applications (switching authority values are not displayed in SICAM PAS/PQS UI – Configuration) and SoftPLC (individual **SoftPLC** values are not displayed in SICAM PAS/PQS UI – Configuration), inadequately high values might be displayed for the number of **available** information for system reasons.



[sc_sicamPAS05, 2, en_US]

Figure 2-149 Project Statistics

Export

The data of the project statistic is exported in the following data formats:

- **stat**
  Data exchange format of the Project Statistic Viewer
- **txt**
  Text file for further processing in Excel. The text file includes a list of data separated by commas.

Import

For diagnostic purposes, you can import a **stat** file in the Project Statistic Viewer.

2.20 SICAM PQS – Easy Configuration

The SICAM PQS – Easy Configuration tool simplifies the process of configuring a SICAM PAS/PQS project. This project can be used as-is or modified further using SICAM PAS/PQS – UI Configuration thus reducing the total amount of time spent in creating a project.

SIPROTEC devices and 3rd party devices which communicate via the IEC 61850 Client application are scanned. If the scanned devices are SIEMENS power quality devices like SICAM P855, SICAM Q100, and SICAM Q200, then the IID files are automatically downloaded from the devices and imported into the project. For all other types of scanned devices, IID files which contain minimal entries like the device name, OSI protocol parameters, a logical node and a logical device, and the device type are created and imported into the project.

NOTE

To be able to download an IID file, the self-signed certificates of the device must be added to the Web browser.

For more information refer to the **Trusting Self-Signed Certificates in Browsers** application note which can be downloaded from *https://new.siemens.com/global/en/products/energy/energy-automation-and-smart-grid/grid-security.html*.

Additionally, you can select the following features which are imported into the project:

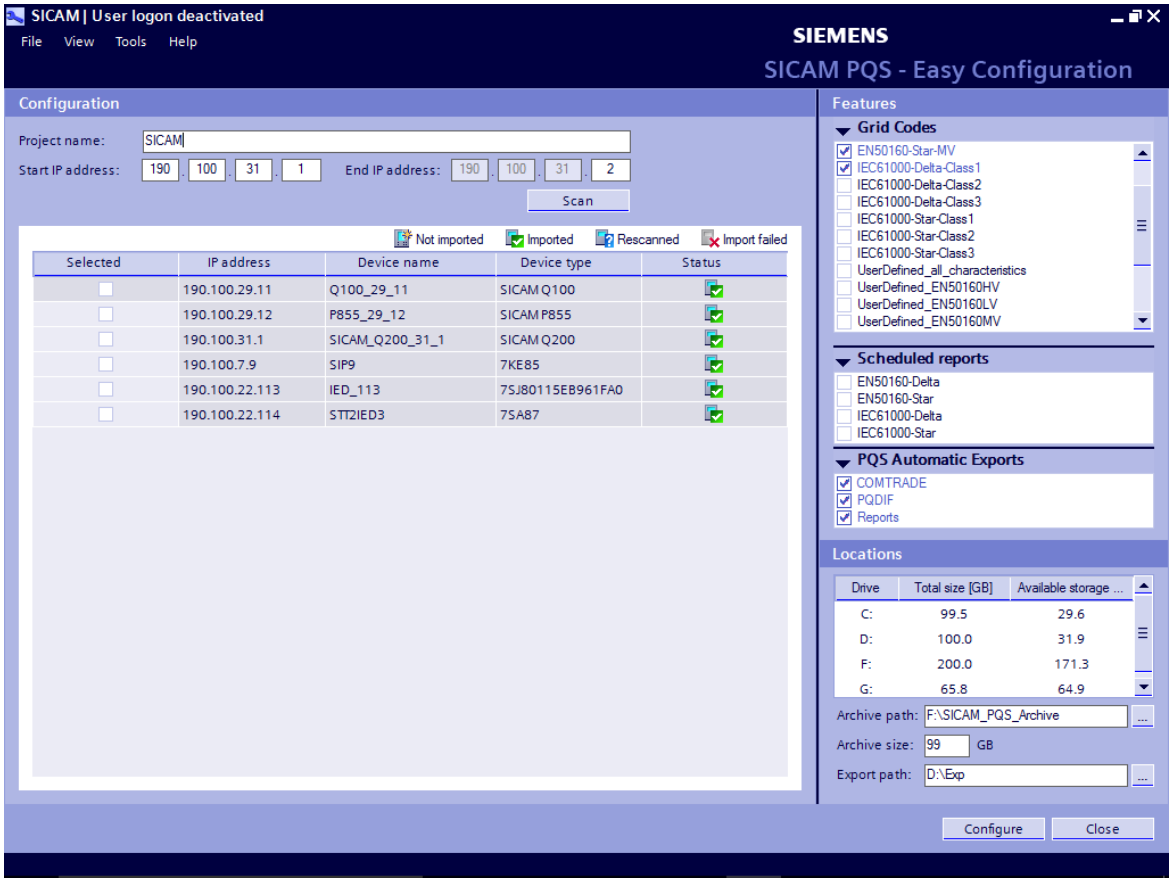
- Grid Codes
- PQS Scheduled Reports
- PQS Automatic Export
- Archive

By automatically importing Grid Codes, creating the Topology assignments based on the PQ devices and generating report templates, the tool reduces the effort for the data engineer. Also, it is not required to have an in-depth knowledge about SICAM PAS/PQS configuration techniques for using these basic SICAM PAS/PQS features.

Starting SICAM PAS/PQS – Easy Configuration

Start the Easy Configuration tool from the Windows Start menu.

- Click **Start** and scroll through the app list.
- Select **SICAM PAS/PQS > Tools**.
  The **Tools** folder opens.
- Double-click **Easy Configuration**.



[sc_EasyConfiguration, 2, en_US]

Figure 2-150 SICAM PAS/PQS – Easy Configuration

Custom Scheduled Report Template Naming Guidelines

The report templates that are created manually are available for configuring in SICAM PAS/PQS – Easy Configuration. The creation of report templates is skipped in SICAM PAS/PQS – Easy Configuration if the report template name is not compatible with the Grid Code name.

For example, report template is not created for the combination of EN50160 report template file and IEC 61000 family of Grid Codes.

When creating a report template, the name of the report template file should start with the Grid Code file name for the valid combination.

For example, if the report template is created for EN50160 standard, Low voltage and Star connection, the valid standard Grid Code file name is EN50160-Delta-LV. Therefore, the report template file name should start with **EN50160-Delta-LV**.

You can have any text or identifier separated by a dot (**.**). The report template file name is read till the separator (**.**) and it will be compared with the Grid Code file name to check the compatibility.

Following table is an example of custom report template names and their corresponding Grid Codes for which report templates can be created using SICAM PAS/PQS – Easy Configuration.

Report template file name	Compatible Grid Codes in SICAM PAS/PQS – Easy Configuration
EN50160-Star.CutomReportTemplate.txt	EN50160-Star-MV, EN50160-Star-LV
IEC61000-Star-Class1.txt	IEC61000-Star-Class1
IEC61000-Delta-Class1.txt	IEC61000-Delta-Class1
UserDefined_EN50160.CustomReportTemplate.txt	UserDefined_EN50160HV, UserDefined_EN50160LV, UserDefined_EN50160MV

Report template file name	Compatible Grid Codes in SICAM PAS/PQS – Easy Configuration
New report template.txt	None
EN50160_NewTemplate.txt	None

For more information on configuration options and the workflow, refer to the SICAM PAS/PQS – Easy Configuration online help.

2.21 Working with COMFEDE Logs

Common Format for Event Data Exchange (COMFEDE) for Power Systems

This standard defines a common format for the data files needed for the exchange of various types of power system events in order to facilitate event data integration and analysis from multiple data sources and from different vendor devices. This feature enables you to download and view COMFEDE logs from the IEC 61850 devices which will make it easier to integrate and analyze different types of event data.

2.21.1 Configuring COMFEDE Logs

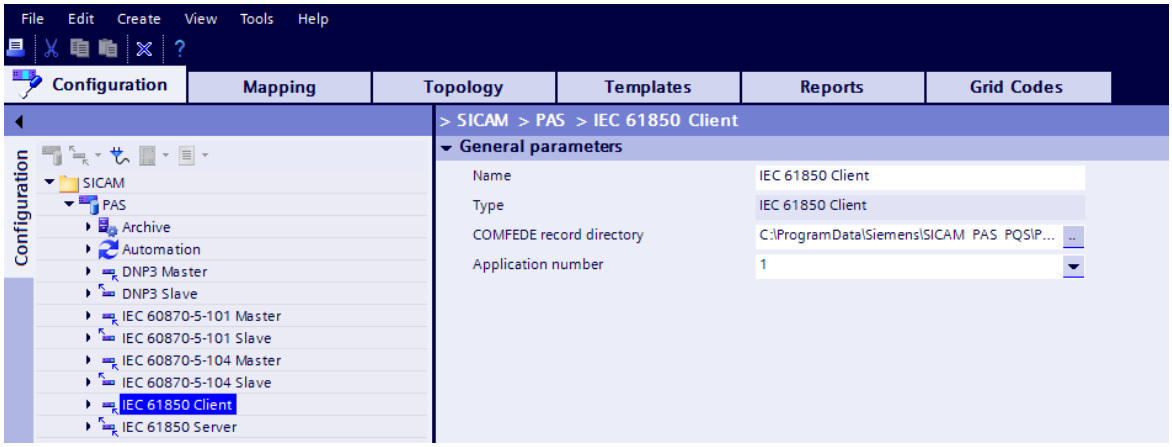
To use this feature, you must configure the following 2 parameters:

- COMFEDE record directory
- Activate COMFEDE record transmission

COMFEDE Record Directory

This parameter determines the location where the COMFEDE log is stored in the system.

The default storage path is **C:\ProgramData\Siemens\SICAM PAS PQS\Persistent**. The COMFEDE file is saved as "<computer>_<application>_<interface>_<device>.ced". For example, **DESKTOP-CMRAD8Q_IEC 61850 Client_Interface1_E1Q1SB1**.



[sc_COMFEDE record directory, 2, en_US]

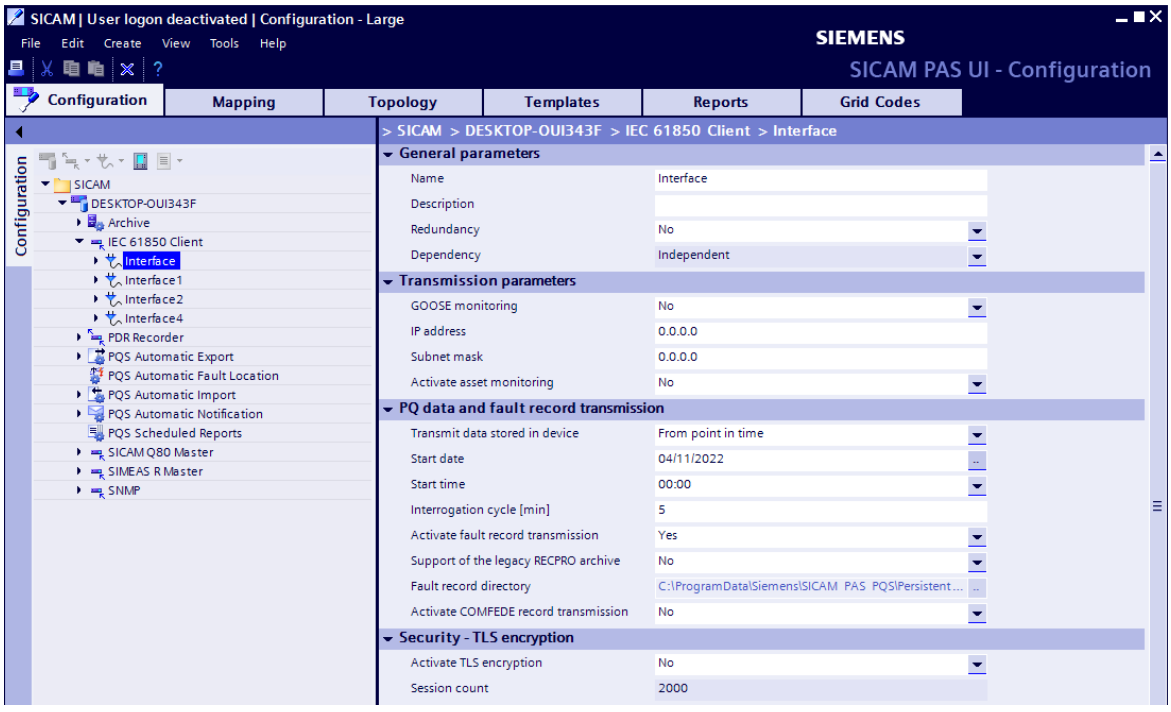
Figure 2-151 COMFEDE record directory

Activate COMFEDE Record Transmission

If this parameter is set to **Yes**, SICAM PAS will automatically download the COMFEDE log from a device (any device under the interface) whenever the **STRcdMade** value is set to high for the device, also when a device is initiallly connected. By default, the value is set to **No**.

(Value range: Yes, No)

(Default value: No)



[sc_Activate COMFEDE record transmission, 2, en_US]

Figure 2-152 Activate COMFEDE record transmission

2.21.2 Downloading/Viewing COMFEDE Logs

NOTE

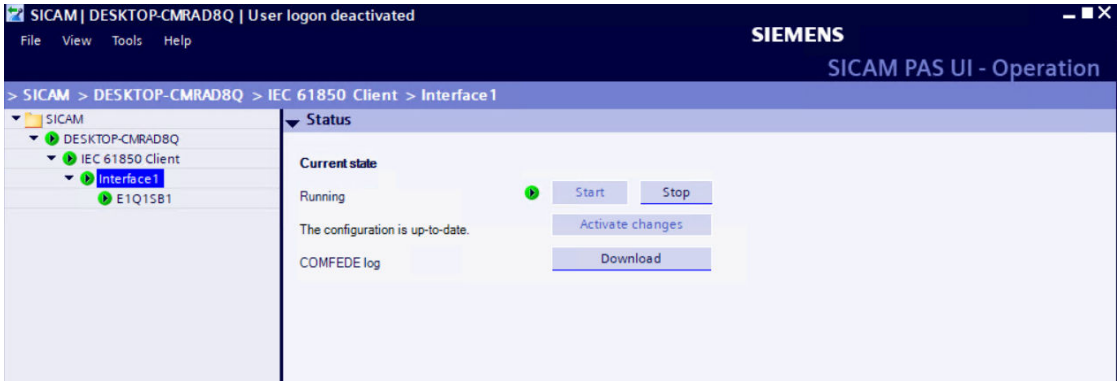
This feature is supported only for IEC 61850 Client Protocol.

This feature is used to download the COMFEDE logs manually for all the devices within the selected interface or the selected device.

To download or view COMFEDE logs:

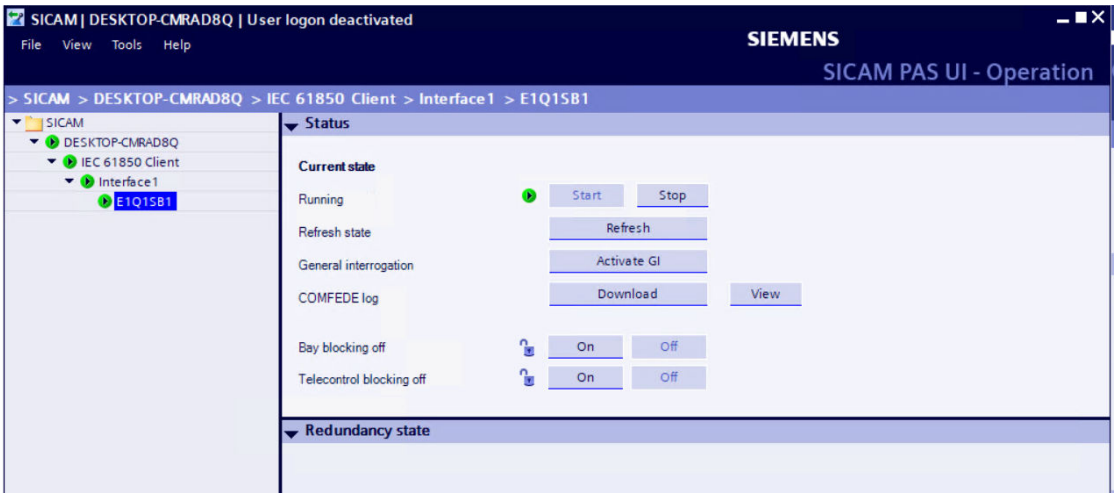
✧ Select an interface or the device in the configuration tree.

✧ In the **Status** section, next to **COMFEDE Log**, click **Download** to download the COMFEDE log.



- or -

✧ Click **View** to view the COMFEDE log.



2.21.3 Configuring COMFEDE Client

COMFEDE client enables to download COMFEDE logs from multiple devices.
The logs can be downloaded using a batch file or a **ComfedeClient.exe** file.
To download the logs using a batch file:

✧ Go to **Start** in Microsoft Windows, use the **Run** command and enter **`%pas_bin%ui`**.

✧ Click **OK**.

The File Explorer opens.

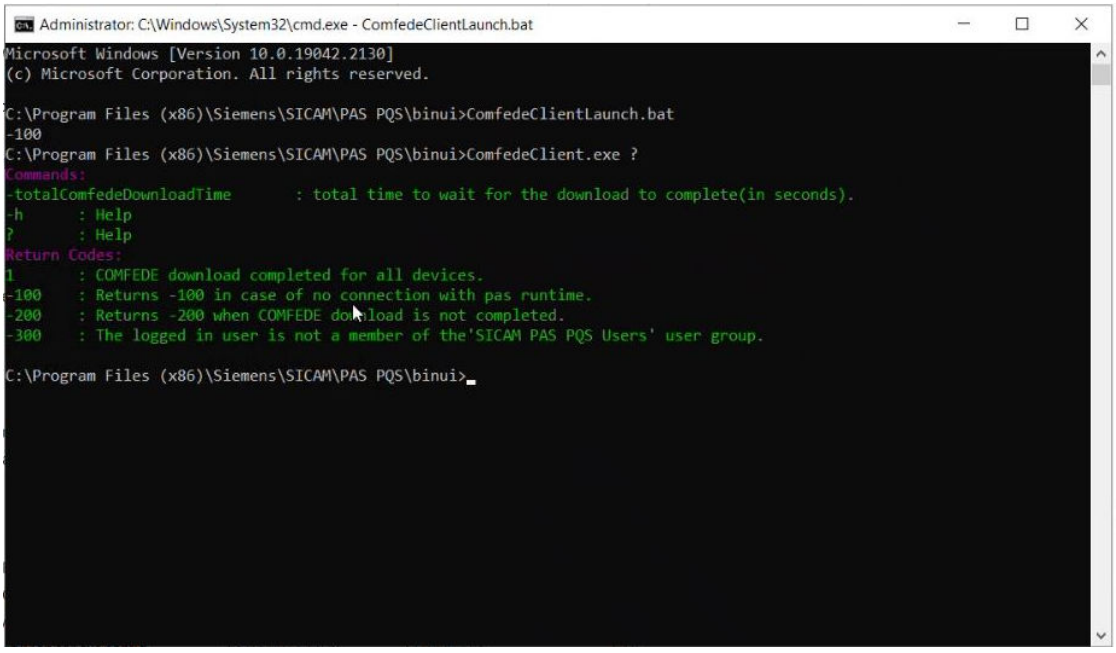
✧ Now run the **Command Prompt** from this folder.

✧ Enter *`ComfedeClientLaunch.bat`* to launch the batch file.

The following values are displayed:

- *`1:`* if the download is successful
- *`-100:`* No connection with PAS runtime
- *`-200:`* Download not completed
- *`-300:`* User is not a member of the *`SICAM PAS PQS Users`* user group

✧ To display the **Commands** and the **Return Codes**, type *ComfedeClient.exe ?* in the command prompt.



Once the operation of COMFEDE client is completed, the file containing the summary of the logs is created in the same location as the COMFEDE logs.

NOTE

Also, if one of the devices fails while downloading the logs, the COMFEDE client will still download the logs for the rest of the devices. Downloaded logs are stored in the same location as the COMFEDE record directory: `C:\ProgramData\Siemens\SICAM PAS PQS\Persistent.`

3 Operation

This chapter explains how to use SICAM PAS/PQS UI – Operation.

SICAM PAS/PQS UI – Operation provides you with an overview of the runtime status of your station. The configuration is displayed in the tree structure. The different colors show the status of interfaces, devices, and other applications.

With **SICAM PAS/PQS UI – Operation** you activate and deactivate individual components, set a bay block or telecontrol block and also update device information. In redundant systems, you see which component is active. SICAM PAS/PQS UI – Operation allows you to switch over individual components, for example, the interface for the data traffic to devices or control centers.

With **SICAM PAS/PQS UI – Operation Client** you can start and stop all redundant connections independently from each other. SICAM PAS/PQS UI – Operation Client provides the functions of SICAM PAS/PQS UI – Operation from a local computer or a remote computer with improved performance by an Internet browser.

For the diagnosis of pending faults, useful notes on possible fault causes are displayed.

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3.1 Requirements for SICAM PAS/PQS UI – Operation Client

Internet Browser

To access SICAM PAS/PQS UI – Operation Client, Siemens recommends you use the latest versions of the following browsers:

- Firefox
- Chrome
- Internet Explorer
- Microsoft Edge

NOTE

To run SICAM PAS/PQS UI – Operation Client on Internet Explorer 9 or 10, you must download a KB2888505 patch from *http://technet.microsoft.com/en-us/security/bulletin/ms13-088*, according to the operating system and execute it.

Enabling JavaScript

To access SICAM PAS/PQS UI – Operation Client, JavaScript must be enabled in the browser.

To enable JavaScript in **Internet Explorer**:

✧ Select **Internet options** from the **Tools** menu.

The **Internet options** dialog opens.

✧ In the **Security** tab, select **Internet** and click **Custom level...** in the **Security level for this zone** section.

The **Security Settings - Internet Zone** dialog opens.

✧ In the **Settings** section, activate **Active Scripting** below the **Scripting** topic.

✧ Click **OK** to apply the selected settings and exit the **Security Settings - Internet Zone** dialog.

✧ Click **OK** in the **Internet Options** dialog.

JavaScript is enabled.

To enable JavaScript in **Firefox**:

✧ Click **Firefox** from the toolbar and select **Options/Settings** from the **Options** menu.

The **Options** dialog opens.

✧ Select the **Content** tab.

✧ Enable **JavaScript**.

✧ Click **OK**.

JavaScript is enabled.

NOTE

From **Firefox** V22 the JavaScript is always enabled.

To enable JavaScript in **Chrome**:

✧ Click the **Customize and control Chrome** icon.

The **Settings** dialog opens.

✧ Click **Show advanced settings...**.

The advanced settings are displayed.

✧ Under **Privacy** click **Content settings...**.

The **Content Settings...** dialog opens.

✧ Under **JavaScript** enable **Allow all sites to run JavaScript (recommended)**.

✧ Click **Done**.

JavaScript is enabled.

To enable JavaScript in **Microsoft Edge**:

✧ Click **Start** and enter **gpedit.msc**.

The **Local Group Policy Editor** dialog opens.

✧ Click **Local Computer Policy** > **Computer Configuration** > **Administrative Templates** > **Windows Components** > **Microsoft Edge**.

✧ In the **Microsoft Edge** section, double click the option **Allows you to run scripts, like Javascript**.

✧ In the dialog which opens, select **Enabled** and click **OK**.

JavaScript is enabled.

Viewing the Online Help Content

Due to security aspects, the operating system deactivates the displaying of CHM files. If only the navigation structure in the left frame of a Windows online help file (CHM) is shown, but not the content in the right frame, this probably results from a Microsoft security update.

The additional Windows registry key **MaxAllowedZone** has to be added to determine the desired security zone in order to view the online help correctly. To do this:

✧ Double-click the **MaxAllowedZone.reg** file located in the **<path>\RegFiles** directory of the SICAM PAS/PQS DVD. The <path> corresponds to the letter of your DVD drive.

The **MaxAllowedZone** value is set to 4, that means the security zone **Limited Sites** is permitted.

For more information, refer to Microsoft report KB896054, *http://support.microsoft.com/kb/896054*.

NOTE

To use SICAM PAS/PQS UI – Operation Client, the logged in or active user must be a member of the **PASRuntimeUser** group.

Required Settings for Internet Explorer

To view SICAM PAS/PQS UI – Operation Client in Internet Explorer:

✧ Select **Compatibility View Settings** from the **Tools** menu.

The **Compatibility View Settings** dialog opens.

✧ Uncheck the **Display intranet sites in Compatibility View** option and click **Close**.

You can view SICAM PAS/PQS UI – Operation Client.

NOTE

This setting is not applicable in **Firefox** and **Chrome**.

Required Settings for Microsoft Edge

To view SICAM PAS/PQS UI – Operation Client in Microsoft Edge:

✧ Click **Start**and enter **Internet Options**.

The **Internet Properties** dialog opens.

✧ In the **Security** tab, click the **Local intranet** option and click **Sites**.

The **Local intranet** dialog opens.

✧ Select **Automatically detect intranet network** and click **OK**.

You can start the SICAM PAS/PQS UI - Operation Client from the **Start** menu to open via Microsoft Edge.

Validating Security Certificates

For **Internet Explorer** and **Firefox**, the security certificates must be validated on the first access of SICAM PAS/PQS UI – Operation Client.

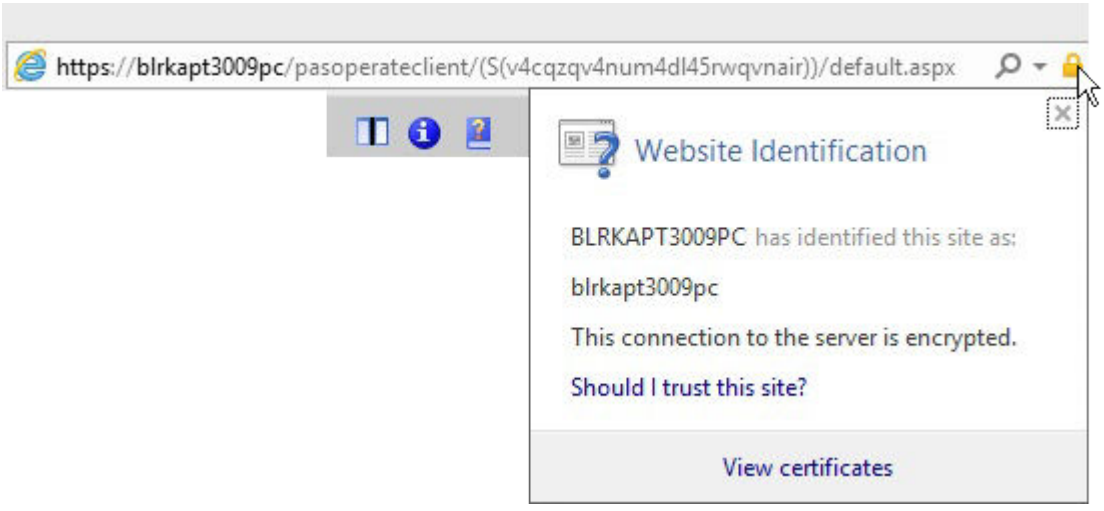
NOTE

Chrome validate certificates issued by third party only and not other certificates, hence to which the **https** text in the address bar will appear to be struck off.

To import the security certificate to Internet Explorer:

✧ Click the lock icon in the address bar.

The **Website Identification** dialog opens.

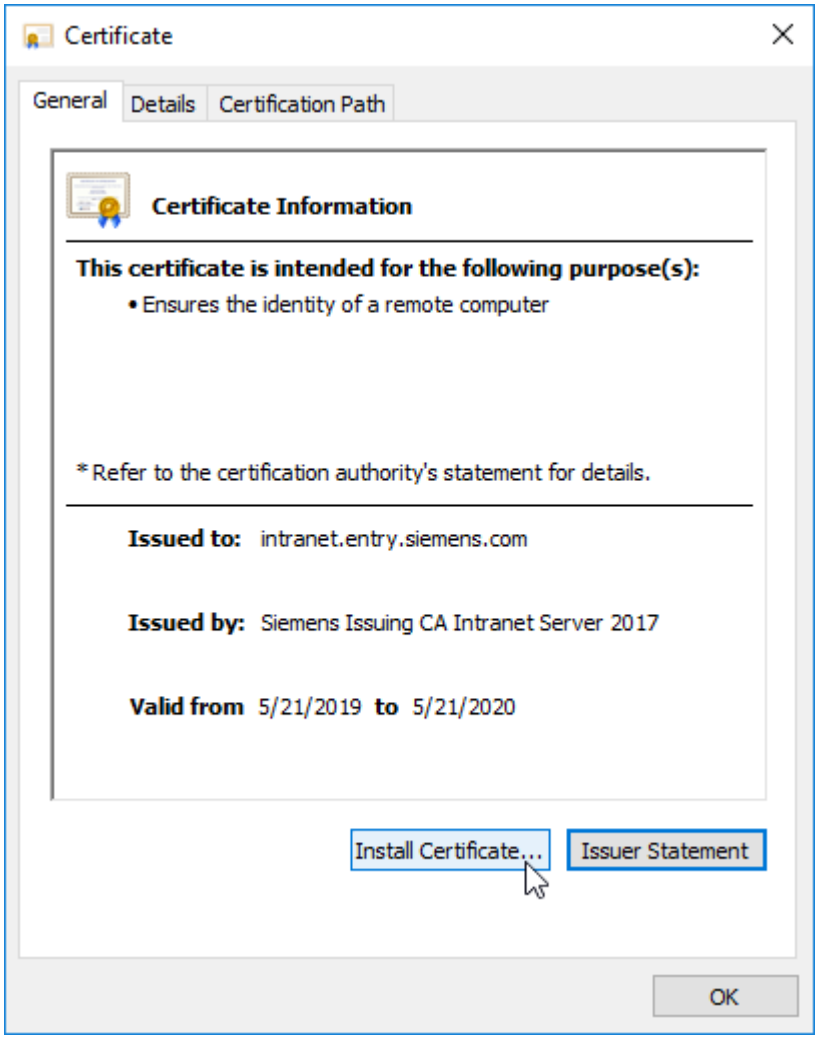


[sc_Web_Identification, 1, en_US]

Figure 3-1 Website Identification

✧ Click **View certificates** from the dialog.

The **Certificate** dialog opens.



[sc_Certificate, 2, en_US]

Figure 3-2 Certificate

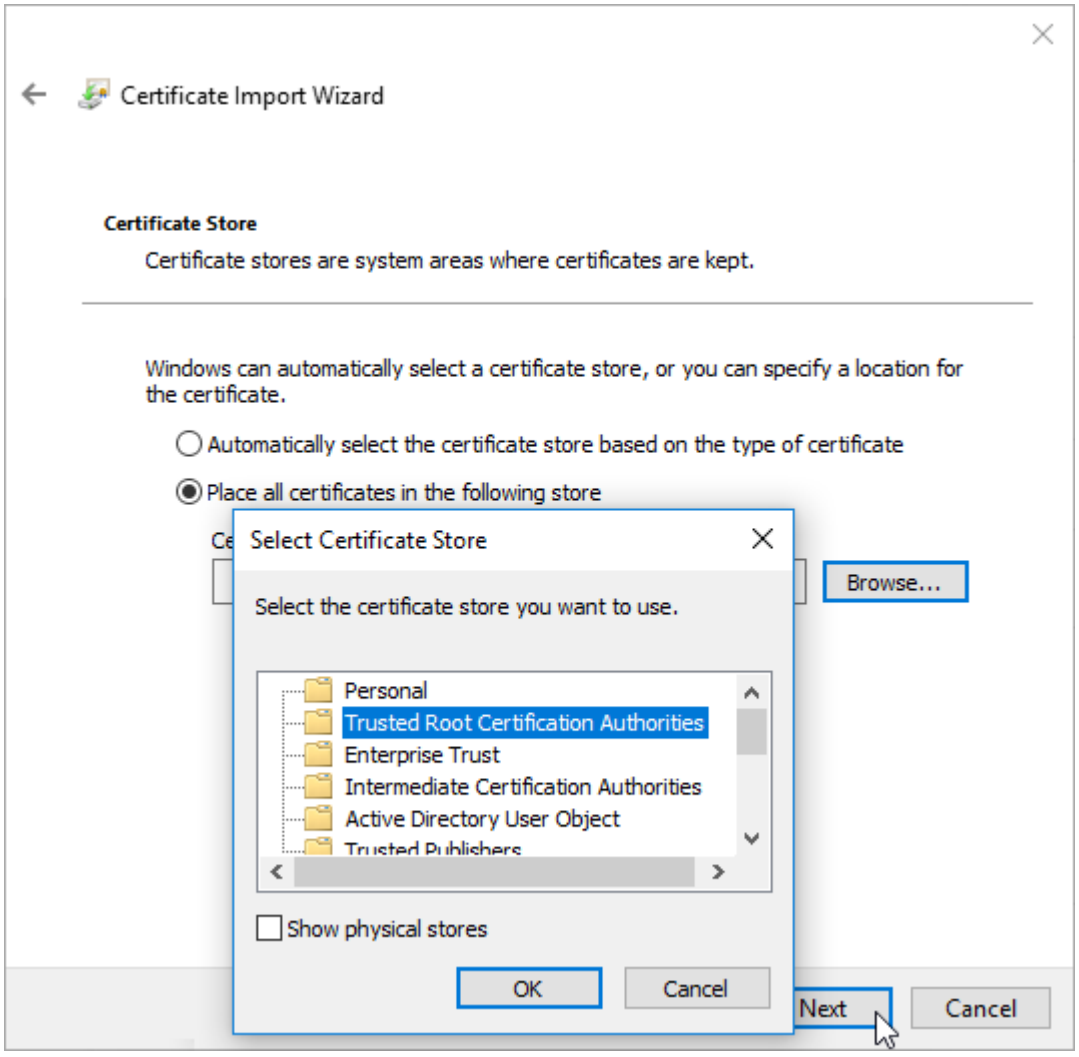
✧ Click **Install Certificate...**.

The **Certificate Import Wizard** dialog opens.

✧ Select **Current User** from the list box and click **Next**.

✧ Select **Place all certificates in the following store** and click **Browse...**.

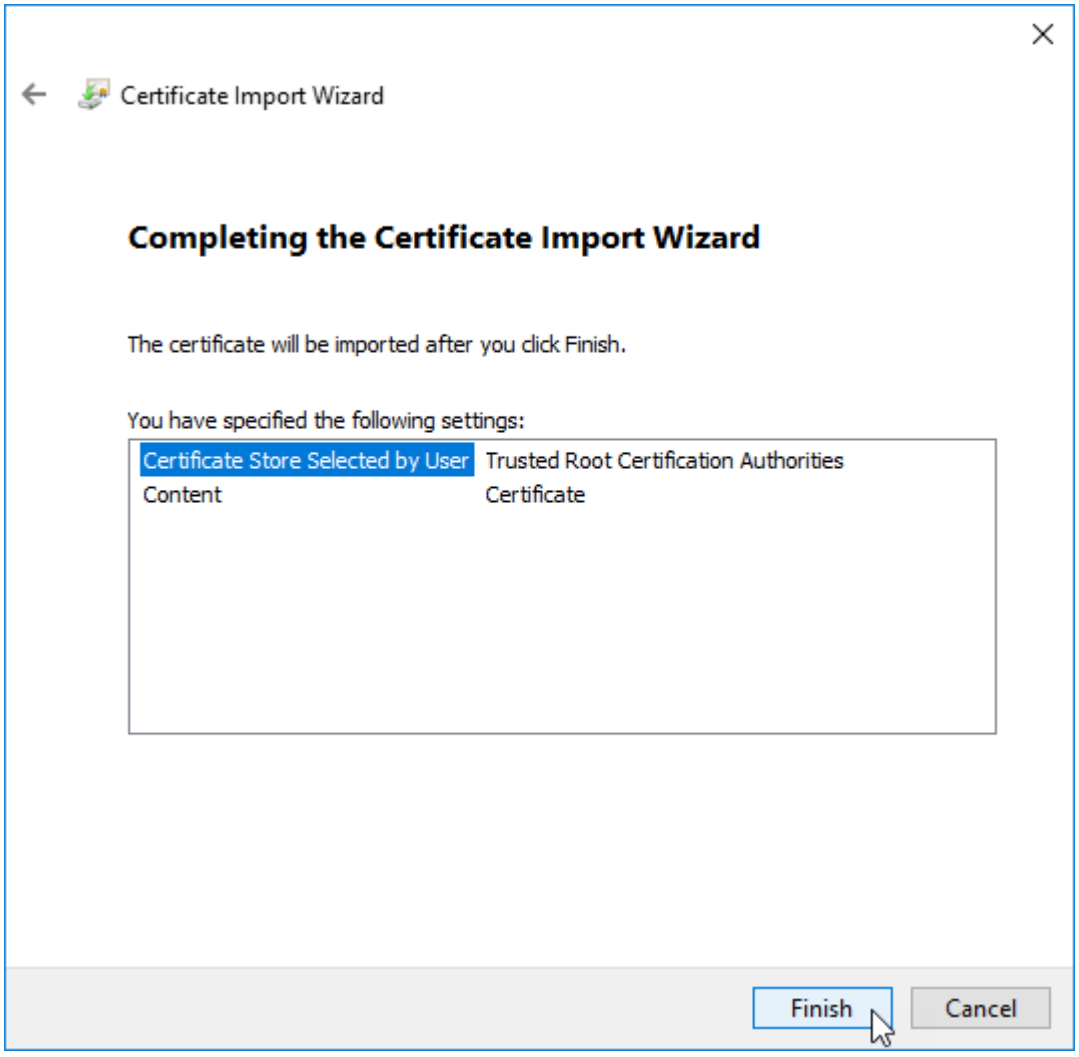
The **Select Certificate Store** dialog opens.



[sc_Cert_Store, 2, en_US]

Figure 3-3 Select Certificate Store

- ✧ Select **Trusted Root Certification Authorities** from the list box, click **OK**, and click **Next**.
- ✧ Select **Certificate Store Selected by User** from the list box and click **Finish**.



[sc_Importing_Certificate, 2, en_US]

Figure 3-4 Importing Certificate

✧ Confirm the **The import was successful** message with **OK**.

The certificates are imported successfully.

✧ Click **OK**, to exit the dialog.

Downloading Files Using Internet Explorer 9 on Windows Sever 2008

To use a secure site (for example, SICAM PAS/PQS UI – Operation Client) or download files from the site using Internet Explorer 9 on Windows Server 2008:

✧ Select **Internet options** from the **Tools** menu.

The **Internet Options** dialog opens.

✧ Select the **Advanced** tab.

✧ In the **Security** section, deselect the **Do not save encrypted pages to disk** check box and click **OK**.

You can view SICAM PAS/PQS UI - Operation Client and download the CHM help file.
For more information, refer to Microsoft report, *http://support.microsoft.com/kb/2549423*.

Changing Date/Time Format

If you have changed the date/time format of the operating system, you must change these formats accordingly in the Internet Information Services (IIS), to have the data displayed in the same format.

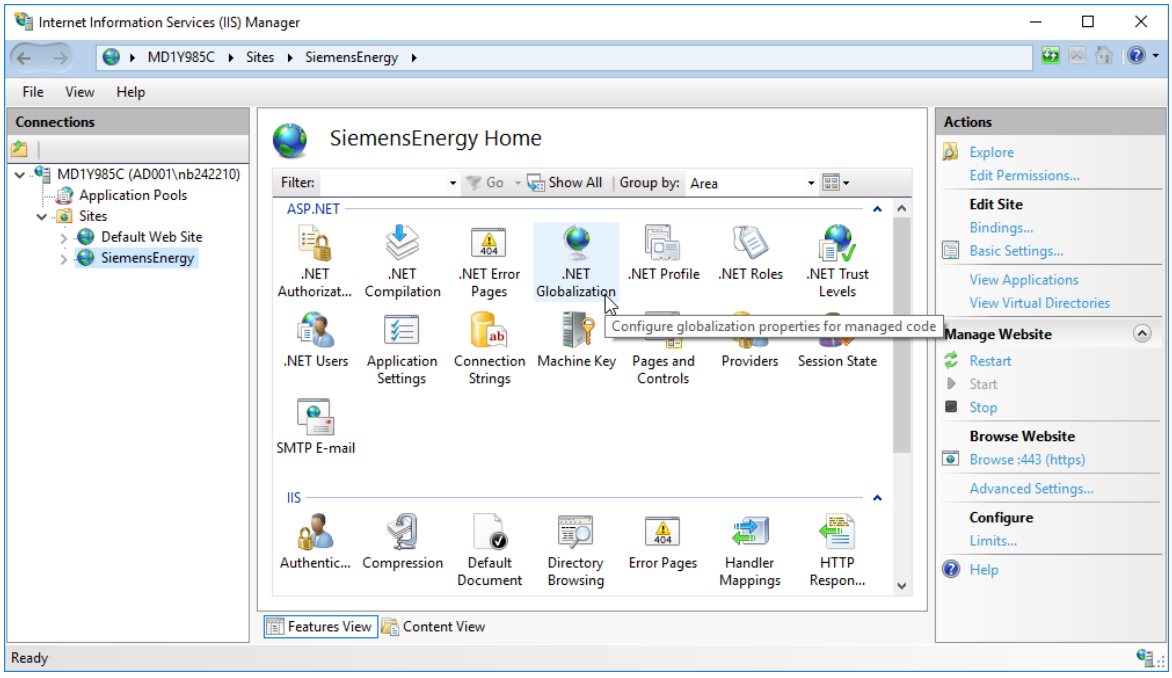
To change the date/time format:

✧ Click **Start** and enter **IIS**.

The **Internet Information Services (IIS) Manager** window opens.

✧ In the **Connections** section, select **SiemensEnergy** in the **Sites** folder.

The **SiemensEnergy Home** section is displayed.



[sc_SiemensEnergy_Home, 2, en_US]

Figure 3-5 SiemensEnergy Home Section

✧ Double-click **.NET Globalization**.

The **.NET Globalization** section is displayed.

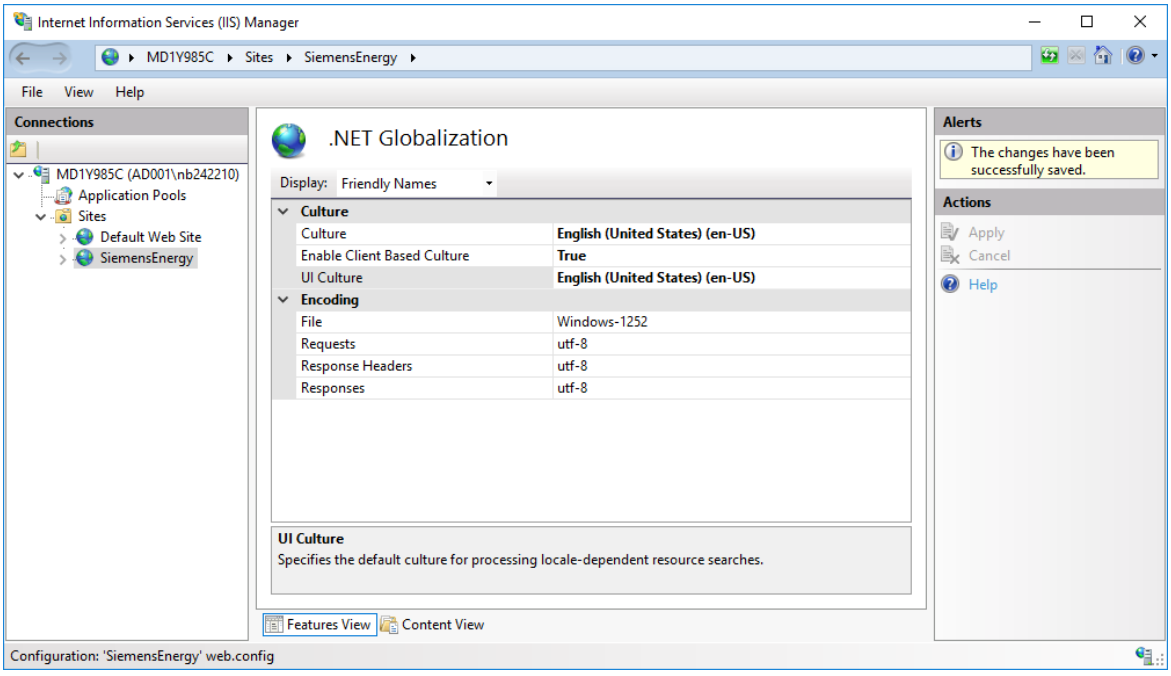
✧ Select the preferred **Culture** and **UI Culture** from their respective list box.

NOTE

Select the country specific culture and not the neutral culture from their respective list box.

✧ In the **Actions** section, click **Apply**.

The date/time format is saved.



[sc_NET_Global, 2, en_US]

Figure 3-6 .NET Globalization Section

✧ Close the **Internet Information Services (IIS) Manager** window.

✧ Restart the system.

The date/time format is changed.

Enabling Windows Security for Internet Explorer on Windows 8.1 or Windows Server 2012 R2

To enable the **Windows Security** dialog:

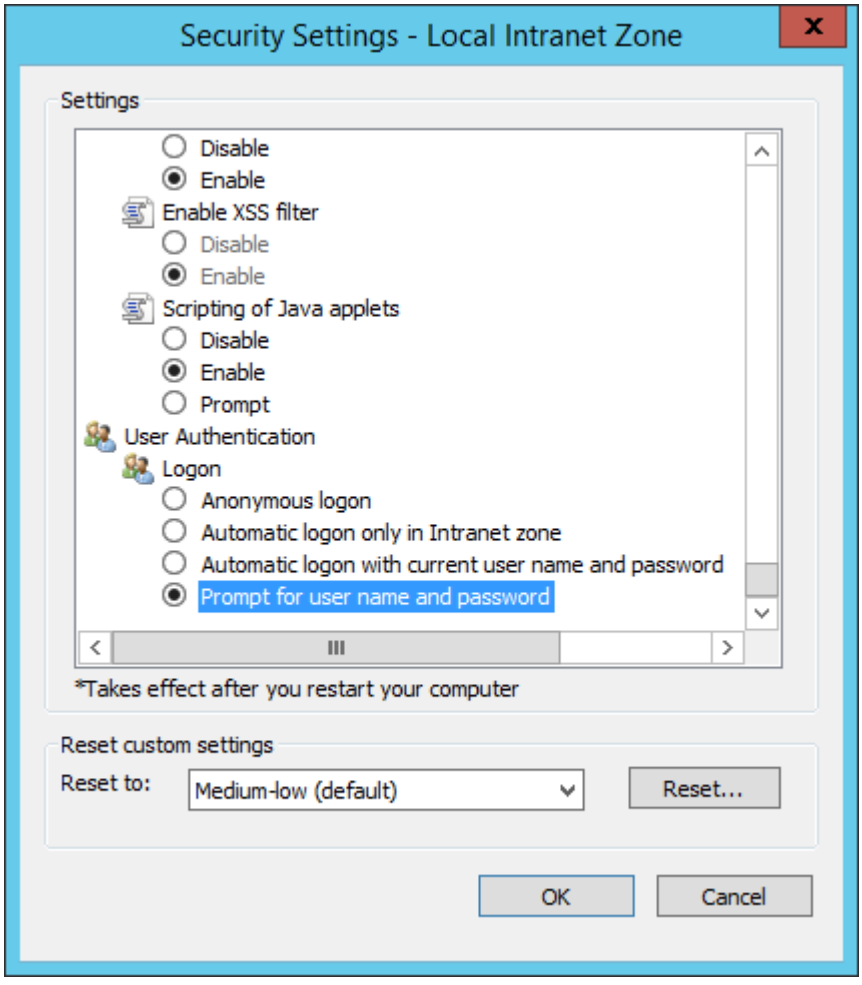
✧ Select **Internet options** from the **Tools** menu.

The **Internet Options** dialog opens.

✧ In the **Security** tab, select **Local intranet** and click **Custom level...** in the **Security level for this zone** section.

The **Security Settings - Local Intranet Zone** dialog opens.

✧ Select **Prompt for user name and password** in the **User Authentication** section.



[sc_Security_settings_Local_Intranet_zone, 2, en_US]

Figure 3-7 Security Settings

✧ Click **OK** to confirm.

3.2 Starting SICAM PAS/PQS UI – Operation and SICAM PAS/PQS UI – Operation Client

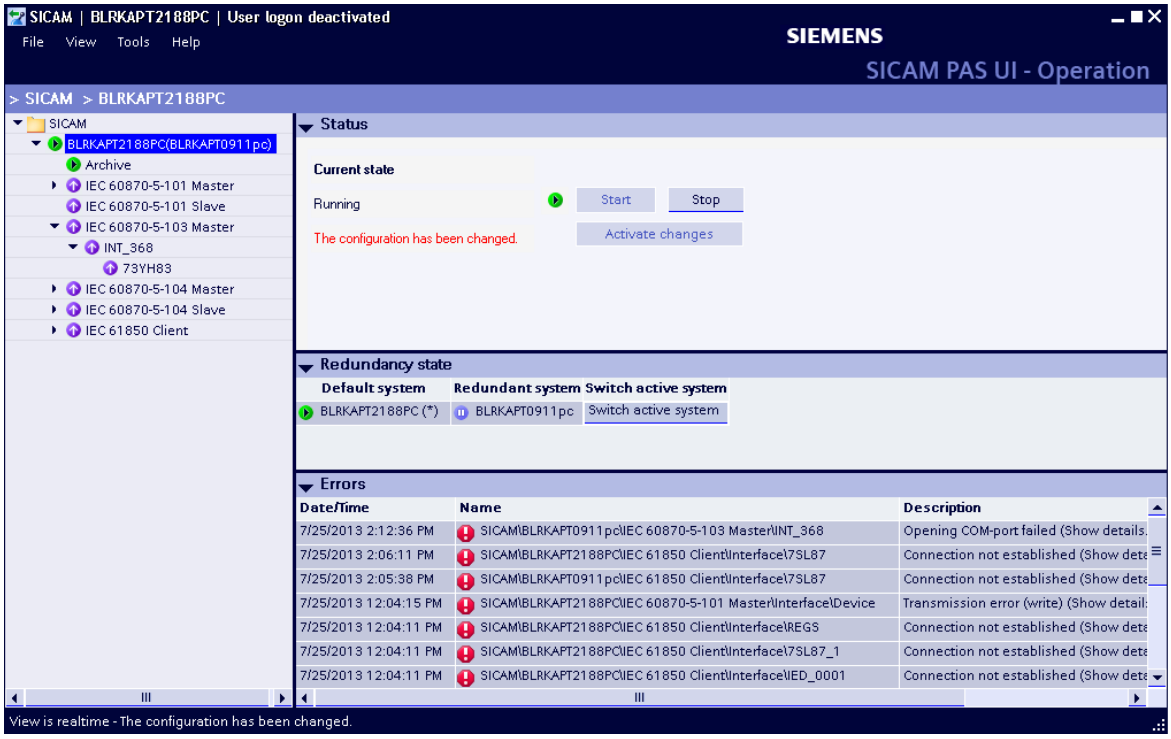
Starting SICAM PAS/PQS UI – Operation

Start SICAM PAS/PQS UI – Operation by using the Windows Start menu:

✧ Click **Start** and scroll through the app list.

✧ Select **UI - Operation** from the **SICAM PAS/PQS** folder.

SICAM PAS/PQS UI – Operation opens and the current station configuration is displayed.



[sc_Sicam_Operation, 2, en_US]

Figure 3-8 SICAM PAS/PQS UI – Operation

The configuration tree displays the station's configuration in the structure in which it has been set up in SICAM PAS/PQS UI – Configuration.

The **Status** section shows the current status of the connection, which you have selected from the configuration tree.

In the **Redundancy state** section, you can see which of the redundant components is active.

The **Errors** section displays information which supports you in determining the cause of the problem.

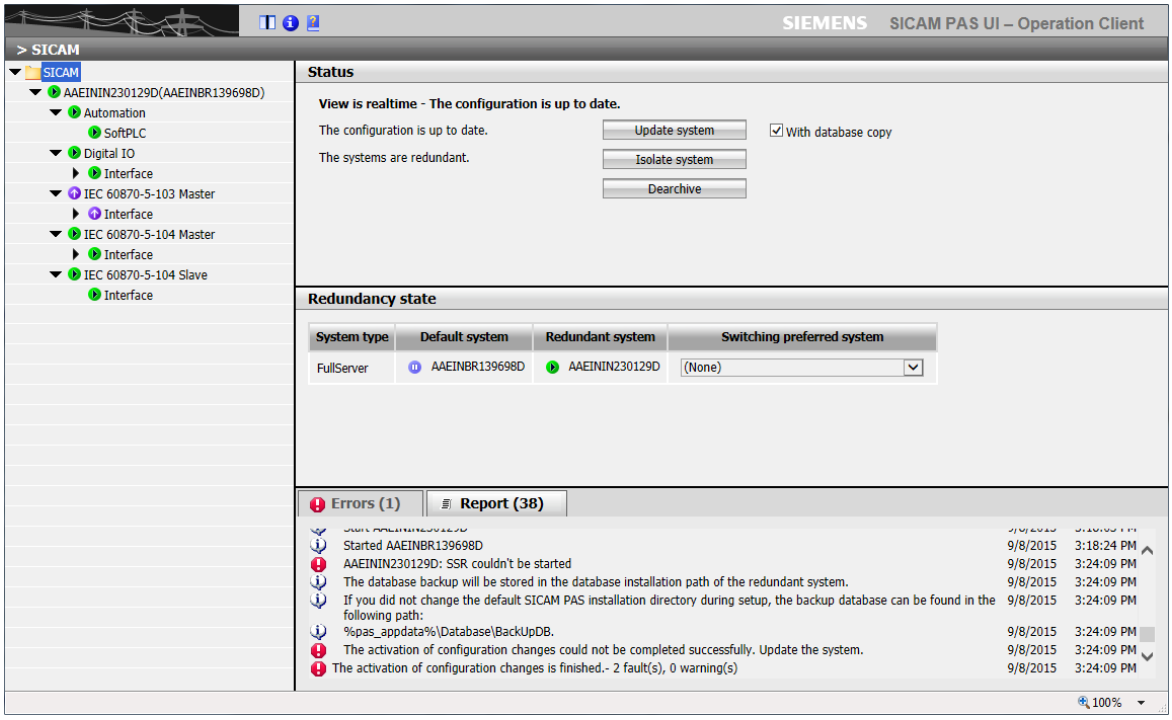
Starting SICAM PAS/PQS UI – Operation Client

On a computer with a SICAM PAS/PQS installation start SICAM PAS/PQS UI – Operation Client by using the Windows Start menu:

✧ Click **Start** and scroll through the app list.

✧ Select **UI – Operation Client** from the **SICAM PAS/PQS** folder.

SICAM PAS/PQS UI - Operation Client opens and the current station configuration is displayed.



[sc_Operation_Client, 1, en_US]

Figure 3-9 SICAM PAS/PQS UI – Operation Client

The configuration tree displays the station's configuration in the structure in which it has been set up in SICAM PAS/PQS UI – Configuration.

The **Status** section shows the current status of the connection, which you have selected from the configuration tree.

In the **Redundancy state** section, you can see which of the redundant components is active.

The **Errors** tab displays information which supports you in determining the cause of the problem.

The **Report** tab displays the report logs of procedures in SICAM PAS/PQS runtime

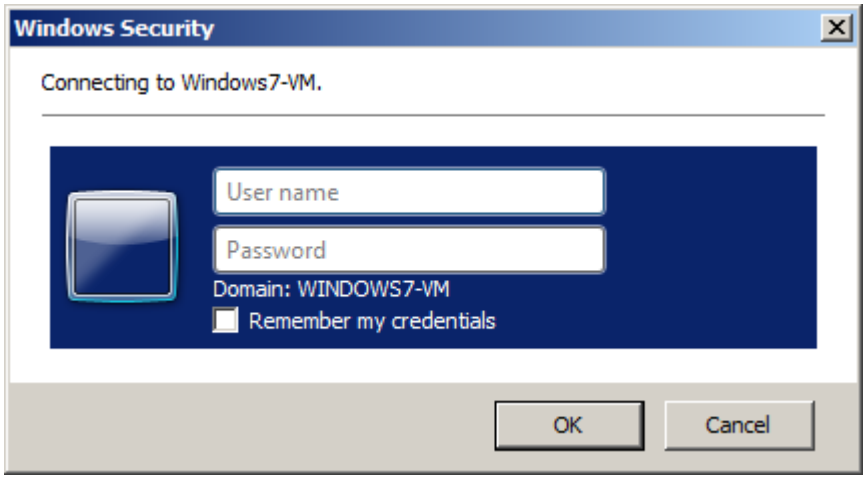
Starting SICAM PAS/PQS UI – Operation Client on a Remote Desktop

On a computer without a SICAM PAS/PQS installation start SICAM PAS/PQS UI – Operation Client entering the required URL in an Internet browser.

✧ Open a browser.

✧ In the address bar, enter the name of PAS/PQS computer and the name of the application as follows: https://computername/PASOperateClient/.

The Windows Seurity dialog opens.



[sc_Authentication, 1, en_US]

Figure 3-10 Authenticating User

✧ Enter the SICAM PAS/PQS **User Name** and **Password** to access SICAM PAS/PQS UI – Operation Client.

NOTE

In Internet Explorer 10, if you are not able to select the components in the configuration tree, proceed with the following steps:

- Enter the following URL in the address bar:
  http://support.microsoft.com/hotfix/KBHotfix.aspx?kbnum=2600100&kbln
- Click **Show hotfixes for all platforms and languages (7)**.
- Request for the hotfix according to the operating system and the platform.
- Install the hotfix that is sent to your e-mail address.

3.3 Working with SICAM PAS/PQS UI – Operation and SICAM PAS/PQS UI – Operation Client

The following sections explain how to work with SICAM PAS/PQS UI – Operation and SICAM PAS/PQS UI – Operation Client.

3.3.1 Updating the Display

Updating the View

Updating view is used to view the newly added devices, interfaces, and applications in the user interface. For example, inserting a device is indicated by a red icon on the left of the project name. This icon is also shown for the initial parameterization of the project. The **Current state** of the project which is displayed in the **Status** section changes to **The view must be updated**.

The **Update view** function can be executed on the project level.

To update the view:

✧ Select the **project** in the configuration tree.

✧ Click **Update view** in the **Status** section (in SICAM PAS/PQS UI – Operation).

- or -

✧ Press **<F5>** (in SICAM PAS/PQS UI – Operation Client).

The configuration tree is displayed according to the last changes.

Updating the System

In the configuration tree, the icon on the left shows the status of each component. Updating system is used to transfer the current state of the configuration to the runtime system.

The **Update system** function must be carried out upon the initial system configuration and to update any changes in the configuration.

NOTE

Clicking **Update system** stops and restarts the whole system.

✧ Select the **project** in the configuration tree.

✧ Click **Update system** in the **Status** section.

The system update is logged in the **Report**. If you update the system for the first time, you are prompted in the **Report** to restart the Full Server and all DIPs connected.

Activating the Changes

After changing parameters in the configuration, for example, the baud rate of an interface, click **Activate changes** to apply the changes.

Changes to the configuration data can be activated on the following levels:

- Project
- Application
- Interface/Device group

To update the configuration:

✧ Select a level in the configuration tree.

✧ Click **Activate changes** in the **Status** section.

The function is not available in redundant configurations. In this case, changes are activated by using the **Update system** function **With database copy** enabled.

3.3.2 Updating a Device

After an interruption of the communication with a device, you have different options to update the display of the operating state:

- Refresh
- Activate GI

To update a device:

✧ Select a **device** from the configuration tree.

Refreshing the Status

✧ Click **Refresh** in the **Status** section.

The device information is updated from the internal image.

Activating a General Interrogation

✧ Click **Activate GI** in the **Status** section.

This starts a general interrogation. The data of the selected device is updated from the process.

The update is logged in the **Report**.

3.3.3 Enabling/Disabling Bay/Telecontrol Blocking

If you have selected a device in the configuration tree, you can set a bay or telecontrol block.

A **bay block** interrupts the exchange of the device related data with all the slave applications which are mapped in the **Information - Monitoring direction** and **Information - Command direction** sections.

A **telecontrol block** interrupts the exchange of the device related data with all the control centers which are mapped in the **Information - Monitoring direction** and **Information - Command direction** sections.

To activate or deactivate **bay** or **telecontrol blocking**:

✧ Select a **device** in the configuration tree.

✧ In the **Status** section, click **ON**.

- or -

✧ In the **Status** section, click **OFF**.

NOTE

Exceptions can be defined in the **Mapping** view of SICAM PAS/PQS UI – Configuration. In the **Blocking** column, you can influence the effectiveness of the bay/telecontrol block for each individual item of information. You can define whether only the bay or telecontrol block is to be checked or whether all blocks are ignored and the corresponding items of information shall be transmitted despite a block. For more information, refer to the online help.

NOTE

With **Value Viewer** or **SICAM SCC**, the **Bay blocking/Telecontrol blocking** can be applied for individual items of information. The object specific activation/deactivation is available in the **Information - Monitoring direction** section.

3.3.4 Block Test Information

Block Test Information is available at Interface level, this will be available once the system is updated.

Block Test Information interrupts the exchange of the interface-related data with the applications supporting test-tagged information.

To use **Block Test Information**, following is the procedure:

✧ Select an **interface** in the configuration tree.

✧ In the **Status** section, under the **Block Test Information** label, click **ON** to stop processing/forwarding the test information.

- or -

✧ In the **Status** section, under the **Block Test Information** label, click **OFF** to process/forward the test information.

3.3.5 Diagnosis

The diagnostic function supports you in determining the cause of an error occurred.

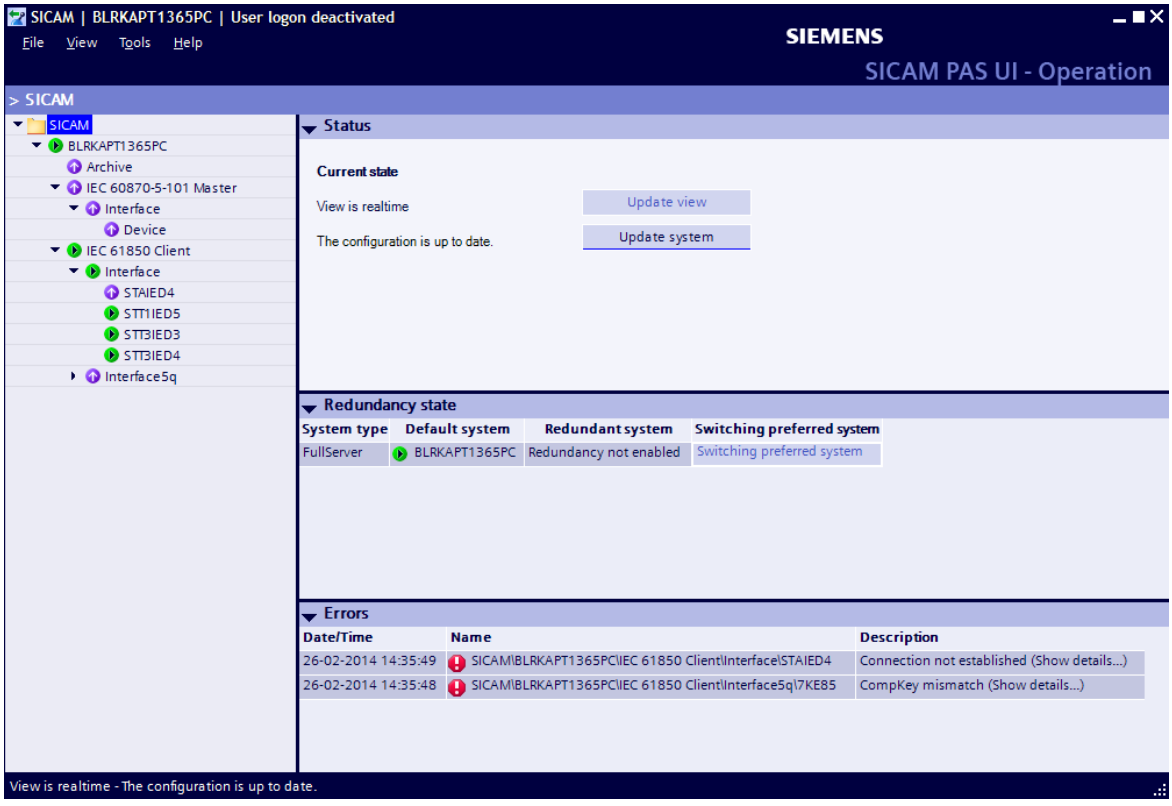
For communication connections, the function is available for the following applications:

- IEC 61850 Server/Client
- IEC 60870-5-101 Slave
- IEC 60870-5-103 Master

- IEC 60870-5-104 Master/Slave
- DNP3 Master/Slave
- Modbus Master/Slave
- PROFIBUS DP Master
- SICAM MIC Master
- SIMEAS R Master
- SICAM Q80 Master
- SIPROTEC 4 Service IF Master
- OPC Server/Client
- OPC XML DA Server
- PQS Automatic Notification

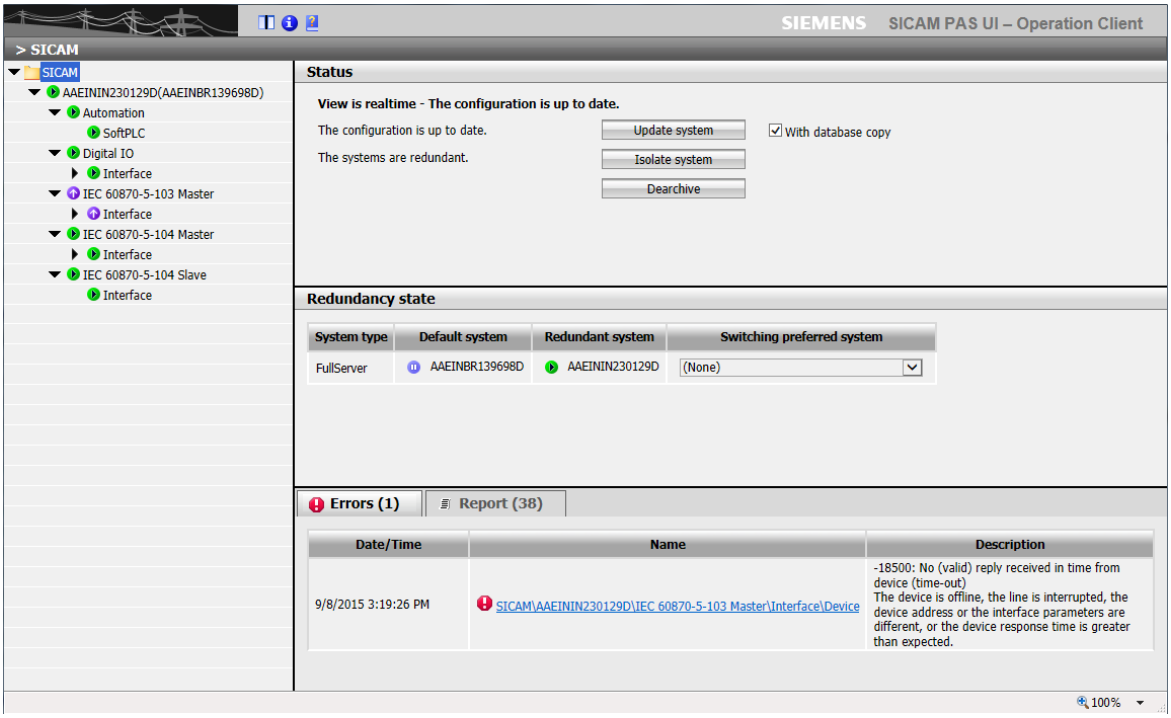
The error information always refers to the component selected in the configuration tree, for example, an interface or a device/control center.

The display type depends on the system configuration. If there are redundant components, information on potential errors is displayed separately for each individual component.



[sc_Operation_Diagnosis, 2, en_US]

Figure 3-11 SICAM PAS/PQS UI – Operation - Diagnosis



[sc_Operation_Client_Diagnosis, 1, en_US]

Figure 3-12 SICAM PAS/PQS UI – Operation Client - Diagnosis

The diagnostic function provides you with valuable information on potential sources of error which might have caused the pending fault. The cause can for example, be a communication fault or a missing license. For the interpretation of the useful notes provided, it is important to consider the current operating state of your system.

During commissioning, an error such as **No connection to the device** usually has a different cause than during operation. If such a message is displayed during the commissioning phase, you must first check the power supply, the plug connections and the configuration of the communication parameters. During operation, errors which might occur during the configuration of connection parameters, such as incorrect IP addresses or port numbers, can almost be excluded. In this state, however, problems with monitoring times defined too short can occur.

As soon as you have eliminated a potential cause of error, restart the component affected. In this way, you will find out whether the problem has been successfully eliminated or whether another error is reported, which was previously hidden by the first error.

If you cannot eliminate the problem, please contact the hotline. The hotline technicians will support you in determining the cause (for example, initiation of a trace run).

3.4 Redundancy

You can operate the SICAM PAS/PQS system components in a redundant configuration. Redundancy can be configured for:

- System
- Interfaces to devices and substations
- Interfaces to control centers
- Devices/Substations

For more information on redundancy and the different configuration options, refer to */9/ SICAM PAS, Redundancy*.

3.4.1 Deploying a Project Database to a Redundant SICAM PAS/PQS System

In redundant configurations, the database of the partner Full Server is updated by using the **Update system** function **With database copy** enabled. The function is valid for initial configuration and successive configuration changes.

- ✧ Start SICAM PAS/PQS UI – Operation on the Full Server.
- ✧ In the **Status** section, select the **With database copy** option.
- ✧ Select **Update system**.

The database is updated on the redundant Full Server.

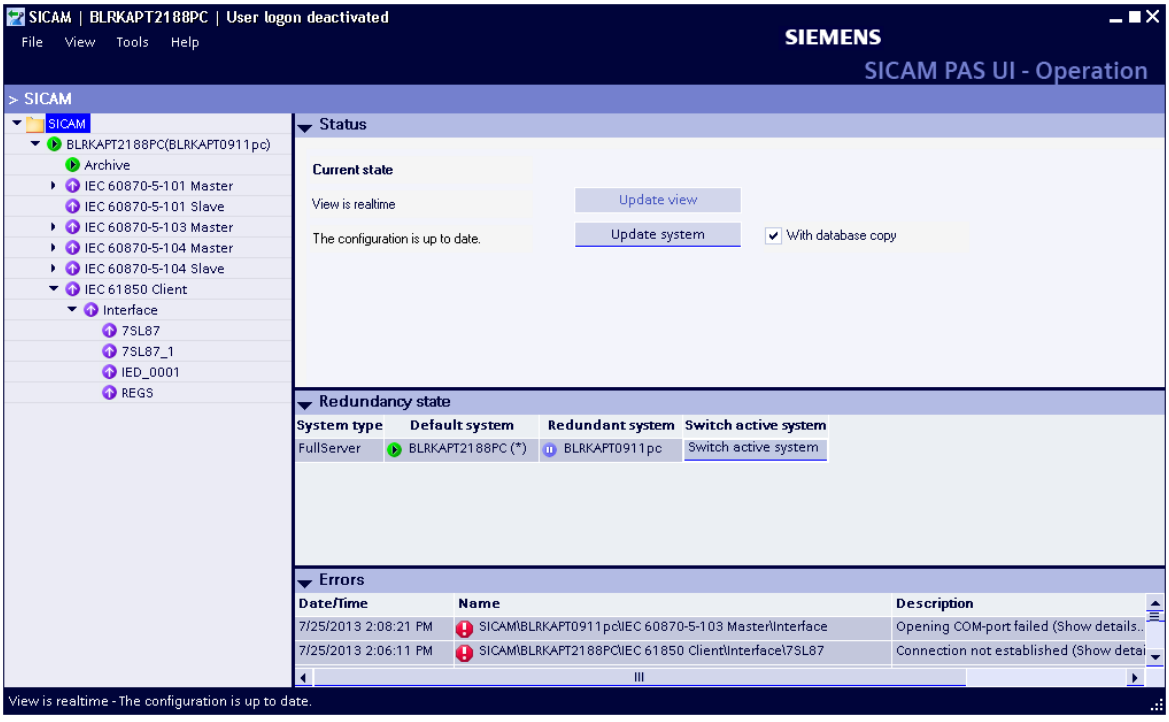
The system update is logged in the **Report**.

If you update the system for the first time, you are prompted in the **Report** to restart the redundant Full Server and all DIPs connected. If the system is updated after a change, the redundant Full Server and the DIPs are restarted.

3.4.2 Redundancy State

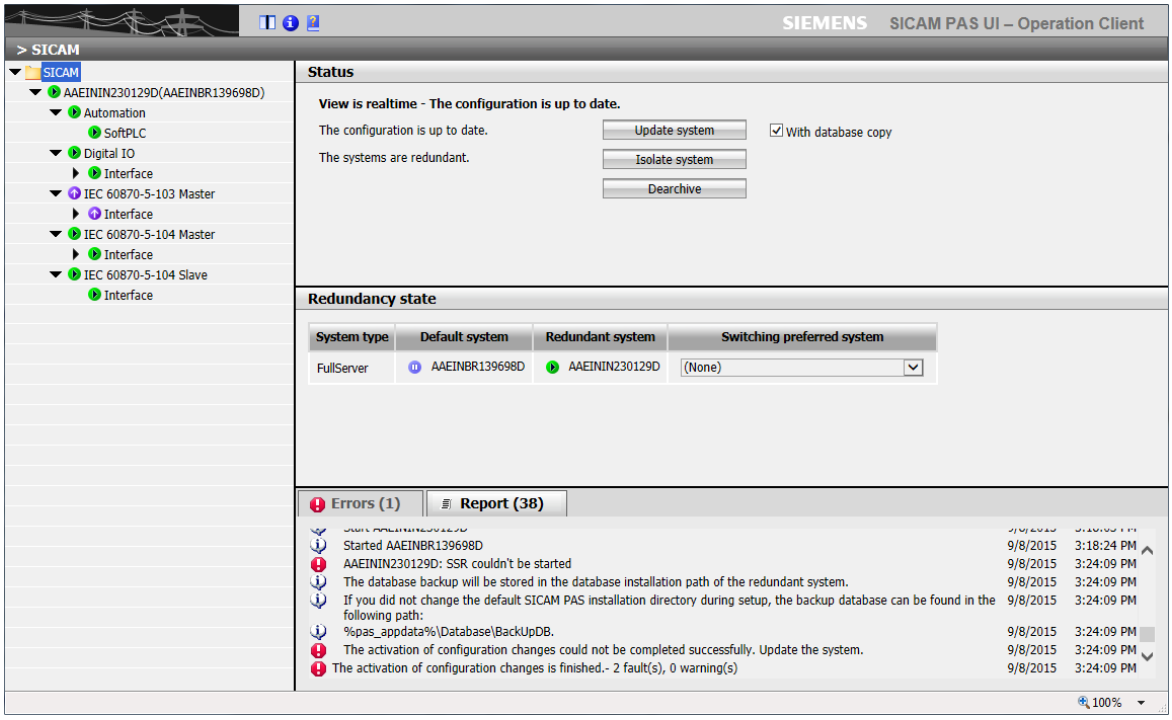
Depending on the selection of a system component in the configuration tree, the operation and connection status of the redundant component is shown in the **Redundancy state** section.

In this view, you can switch over individual components, for example, an interface.



[sc_Redund_Config_Sys, 2, en_US]

Figure 3-13 Redundant Configured Systems and Interfaces in SICAM PAS/PQS UI – Operation



[sc_Operation_Client, 1, en_US]

Figure 3-14 Redundant Configured Systems and Interfaces in SICAM PAS/PQS UI – Operation Client

With **isolating systems** in SICAM PAS/PQS UI - Operation Client you cancel the redundancy function. In this case you can apply changes to the configuration of one computer while the other computer continues to perform the runtime functionality.

3.5 Controlling Connections

You can activate and deactivate connections and reactivate them later. To do so, click **Start** or **Stop** in the **Status** section. Respectively only one button is active depending on the current operating status of the connection.

In a redundant configuration be aware of the following difference:

- With SICAM PAS/PQS UI – Operation you cannot start and stop connections of all partner systems independently.
- With SICAM PAS/PQS UI – Operation Client you can start and stop all redundant connections independently from each other in the **Redundancy state** section.

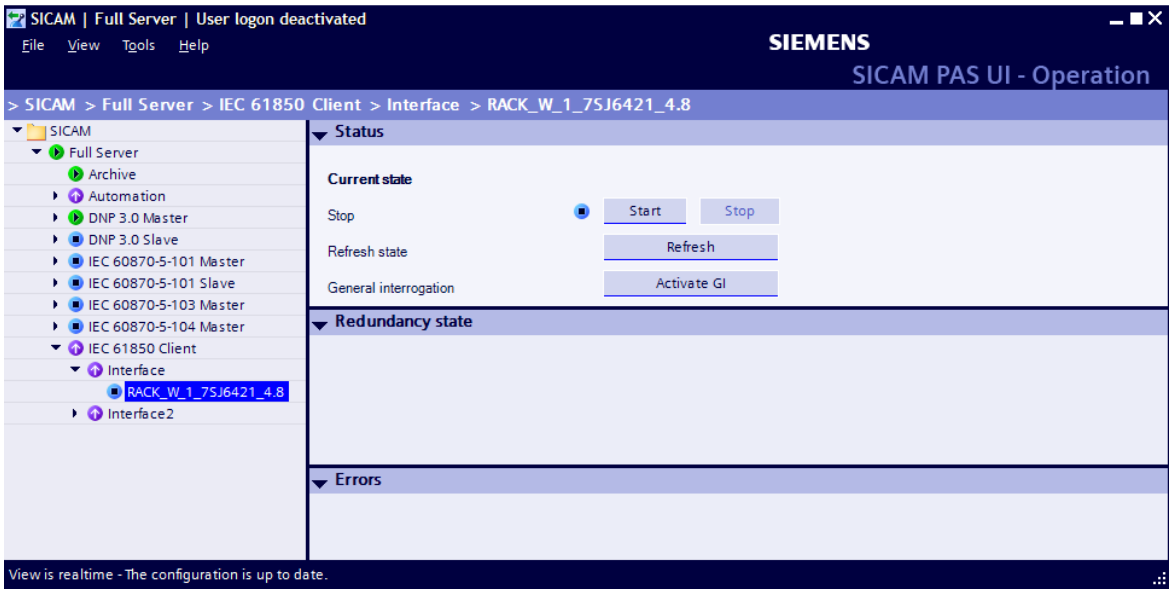
For more information on how to update the system, refer to *Updating the System, Page 217*.

Starting and Stopping Data Links

To activate a data link:

✧ Select the inactive link in the configuration tree.

✧ Click **Start** in the **Status** section.



[sc_Start_Stop_Oper, 2, en_US]

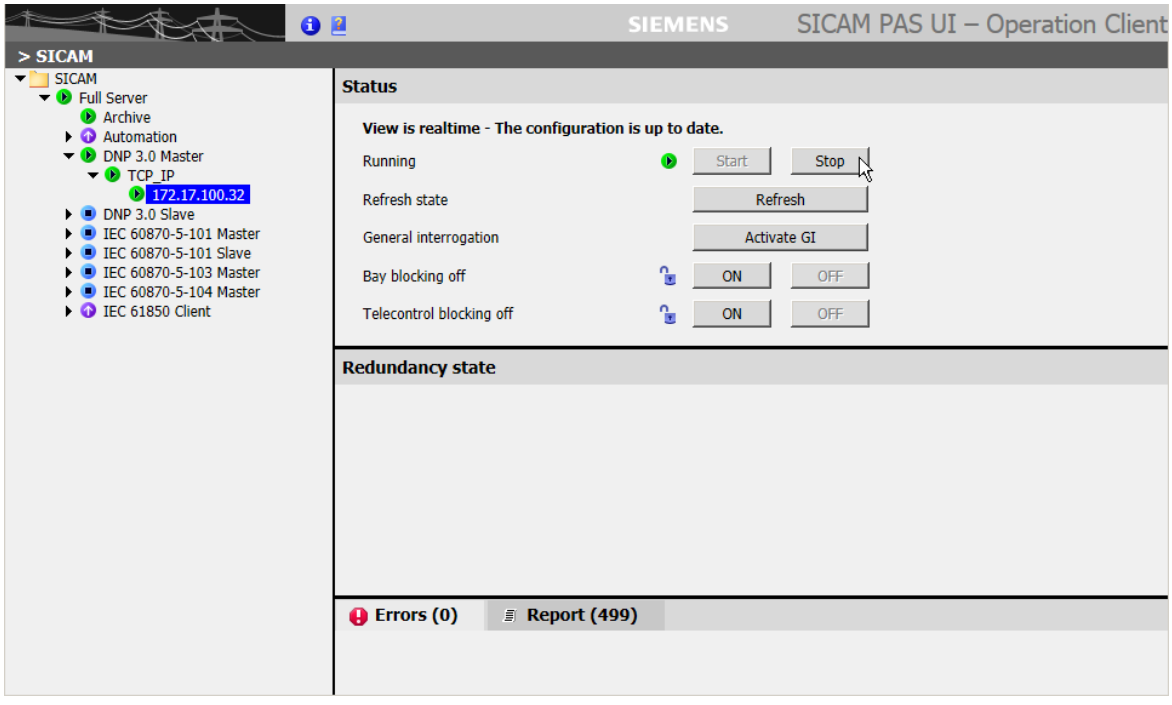
Figure 3-15 Starting a Data Link in SICAM PAS/PQS UI – Operation

If you have selected a system, an application, or an interface, the communication to all subordinate connections is started, for example, to all devices of an interface.

To deactivate a data link:

✧ Select the active link in the configuration tree.

✧ Click **Stop** in the **Status** section.



[sc_Stop_Oper_Client, 1, en_US]

Figure 3-16 Stopping a Data Link in SICAM PAS/PQS UI – Operation Client

If you have selected a system, an application or an interface, the communication to all subordinate connections is interrupted, for example, to all devices of an interface.

Starting and Stopping Data Links with Redundancy Enabled

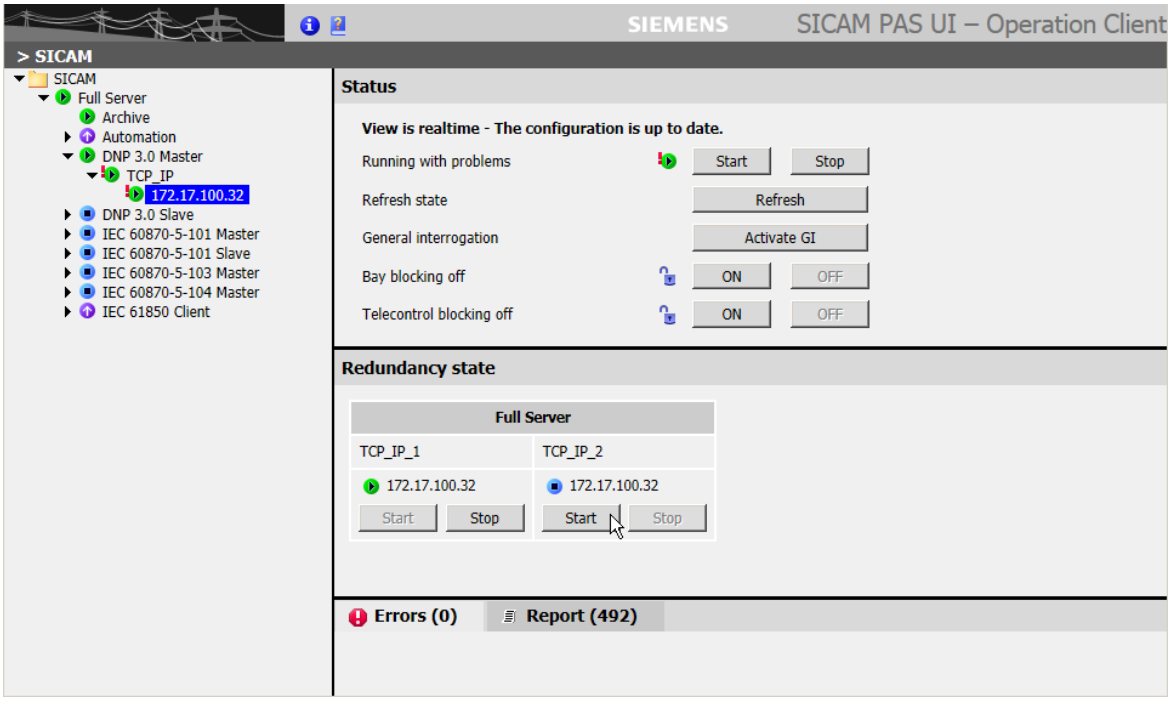
Starting and stopping data links at the interface or device level is applicable in SICAM PAS/PQS UI – Operation Client for the following protocols:

- IEC 60870-5-101 Master/Slave
- IEC 60870-5-103 Master
- IEC 60870-5-104 Master/Slave
- IEC 61850 Server/Client
- DNP3 Master/Slave
- Modbus Master/Slave
- SIMEAS R Master
- SICAM Q80 Master
- SNMP Master
- SICAM MIC Master

To activate a data link:

✧ Select the inactive link at the application, interface, or device level in the configuration tree.

✧ Click **Start** for the required link in the **Redundancy state** section.



[sc_Start_Oper_Client, 1, en_US]

Figure 3-17 Starting a Data Link in SICAM PAS/PQS UI – Operation Client in Redundant Systems

If you activate a link, all the communications to the level starts.

To stop a data link:

✧ Select the active link in the configuration tree.

✧ Click **Stop** for the required link in the **Redundancy state** section.

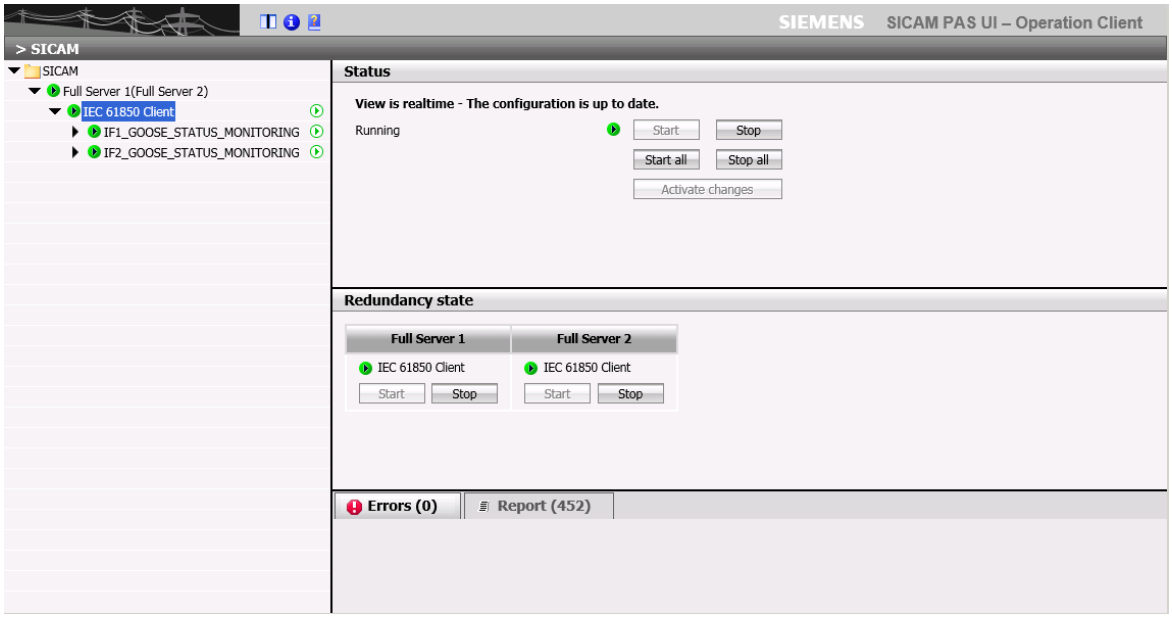
If you stop a link, all the communications to the level stops.

3.6 GOOSE Status Monitoring

In SICAM PAS/PQS UI – Operation Client, you can monitor the status of GOOSE data transmission. The following is displayed for every GOOSE list of a device:

- The transmission of the GOOSE list is enabled.
- The GOOSE list is periodically received within a defined time range.

The GOOSE status is shown to the right of the application in the configuration tree and on the lower levels.

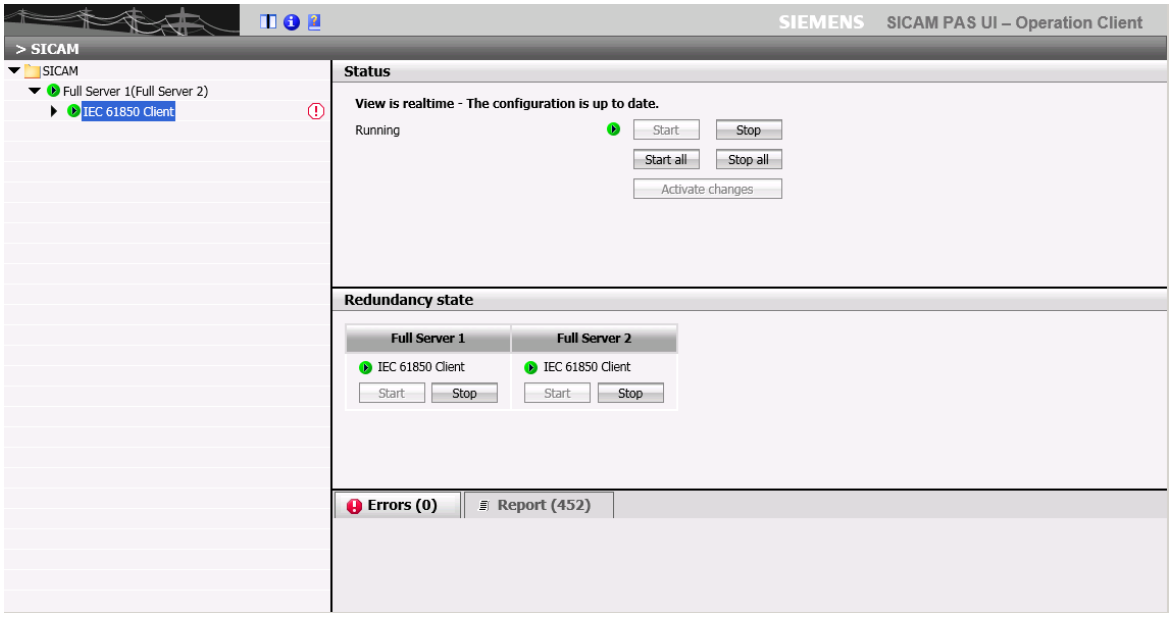


[sc_GOOSE status application level, 1, en_US]

Figure 3-18 GOOSE Status Monitoring, Error-free Transmission of GOOSE Lists

If you disable the transmission of the GOOSE list in a device, the status is not shown on the higher levels as long as at least 1 device is transmitting GOOSE lists.

If no GOOSE list has been transmitted within the specified time range (3 x TTL), the error status is shown on all levels.

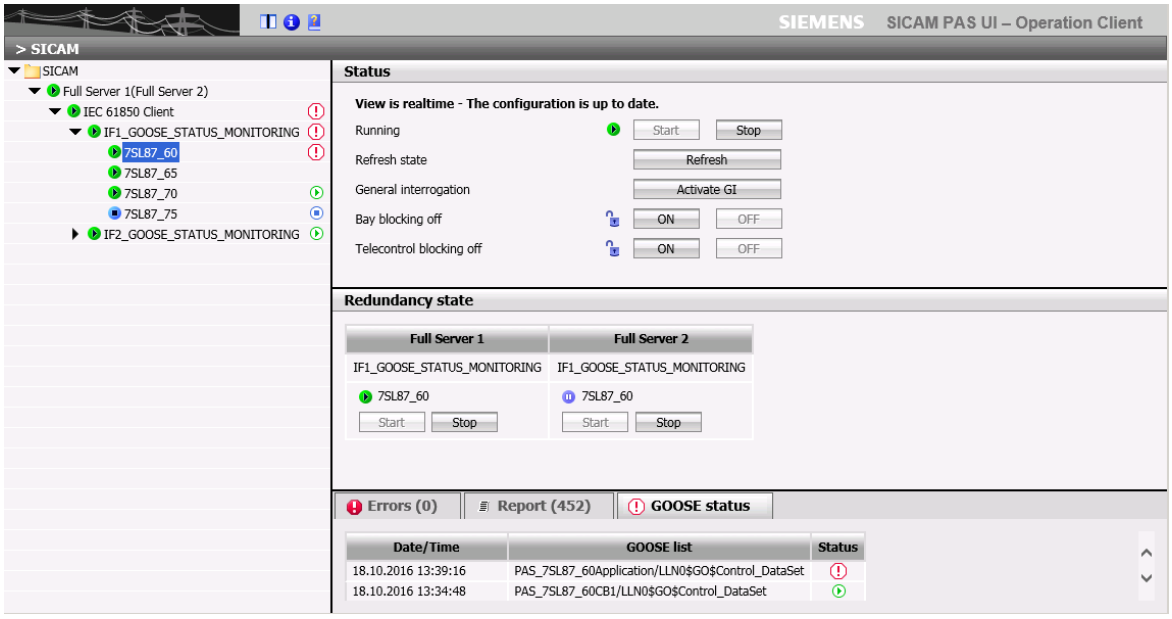


[sc_GOOSE status error application level, 1, en_US]

Figure 3-19 GOOSE Status Monitoring, Error Shown on the Application Level

✧ Navigate to the device with the incorrect GOOSE status.

The status of the GOOSE lists is shown in the **GOOSE status** tab.



[sc_GOOSE status error device level, 1, en_US]

Figure 3-20 GOOSE Status Monitoring, GOOSE Status of a Device

3.7 Operating State

The icons to the left of the entries in the configuration tree show the current status of the individual data links.

- Click the arrow next to the project, a system, an application, or an interface in order to view subordinate data links.
- Click the icon or the name of an entry in the tree structure in order to view details on the system status in the Status section (that is, the right-hand window section).

Table 3-1 Status Displays

Icon	Status display	Color	Explanation
	Project folder	Red	The project configuration was changed while SICAM PAS/PQS UI – Operation was displayed.
	Incorrect compatibility key	Yellow/ black	The parameterization of the application (for example, SoftPLC, exchanged IP address) does not match the current SICAM PAS/PQS project.
	Values invalid	Yellow	The connection currently does not provide valid values.
	Starting	Violet	System start-up: The connection was activated by SICAM PAS/PQS, but the device or system does not yet respond. Possible causes: Temporary status: The component responds shortly afterwards, and the connection is then active (running). The component has failed. The component has been disabled on the hardware side.
	Stopping	Violet	The connection is being shut down. The connection is deactivated, but the component has not yet responded. Temporary status, the connection is interrupted shortly afterwards (stopped).
	Starting (blocked)	Violet	System start-up The connection is blocked by a bay/telecontrol block.
	Stopping (blocked)	Violet	The connection is being shut down. The connection is blocked by a bay/telecontrol block.
	Running	Green	The connection is active.
	Stopped	Blue	The connection has stopped.
	Running (blocked)	Green	The connection is active. The connection is blocked by a bay/telecontrol block.
	Stopped (blocked)	Blue	The connection is stopped. The connection is blocked by a bay/telecontrol block.
	Bay/telecontrol block (ON)	Blue	The bay block or telecontrol block is enabled.
	Bay/telecontrol block (OFF)	Blue	The bay block or telecontrol block is disabled.

Table 3-2 Status Displays – Redundancy

Icon	Status display	Color	Explanation
	Active	Green	One redundant component is active, the other component is not active.
	Active (blocked)	Green	One redundant component is active and blocked by a bay or telecontrol block. The other component is inactive.
	Inactive	Blue	The connection of the redundant component is inactive.
	Inactive (blocked)	Blue	The connection of the redundant component is inactive and blocked by a bay or telecontrol block.
	Standby mode	Violet	The redundant component runs in standby mode.
	Invalid state	Red	Both redundant components are turned to master or run in standby mode concurrently.

The following GOOSE status indications are available in SICAM PAS/PQS UI – Operation Client only.

The icons to the right of the entries in the configuration tree show the current GOOSE status of the individual data links.

- In order to view subordinate data links, click the arrow next to the application or an interface.
- In order to view details on the GOOSE list status, select the **GOOSE status** tab for the corresponding device.

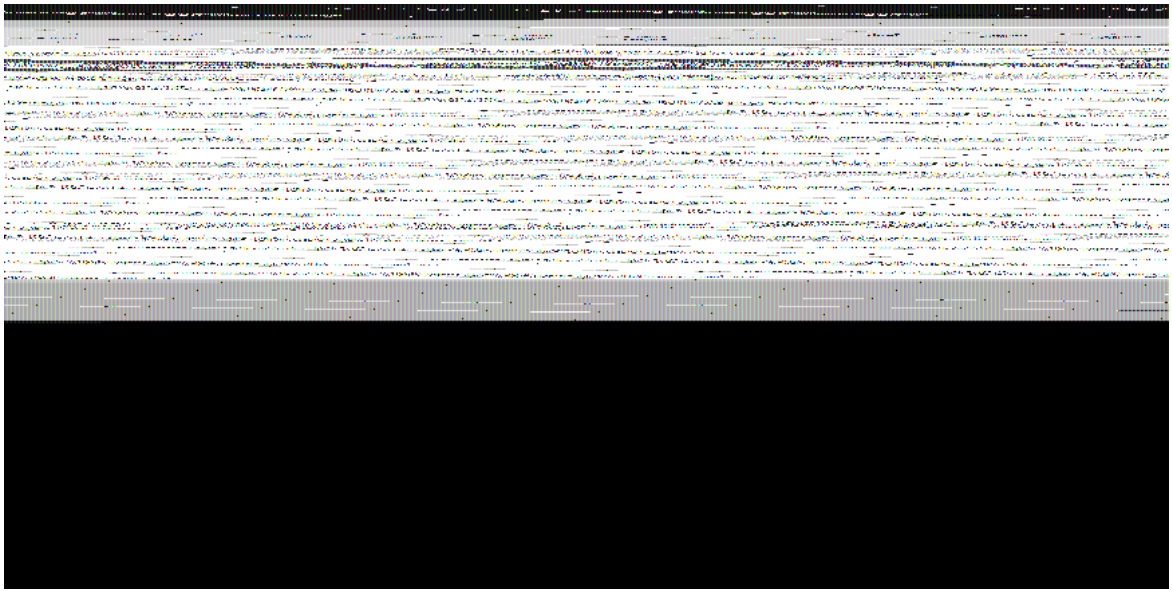
Table 3-3 Status Displays – GOOSE Status Monitoring

Icon	Status display	Color	Explanation
	GOOSE list working fine	Green	The GOOSE lists are periodically received from the device within the defined time range (3x TTL). Values of the system indications: • SysGooseEna_[ListName] = 2 • SysGooseStat_[ListName] = 2
	Starting	Violet	The connection was activated by SICAM PAS/PQS, but the device or system does not yet respond.
	GOOSE list disabled	Blue	The GOOSE list has been stopped by the user. Values of the system indications: • SysGooseEna_[ListName] = 1 • SysGooseStat_[ListName] = 1
	GOOSE list not received	Red	The GOOSE lists are enabled, but at least 1 GOOSE list has not been received. Values of the system indications: • SysGooseEna_[ListName] = 2 • SysGooseStat_[ListName] = 1
	Values invalid	Yellow	The connection currently does not provide valid values.

3.8 Archive Activity Monitor

The **Archive Activity Monitor** shows the current activities of an archive, that is, all the information sent to the archive from a **Power Quality** or a **Fault Recording** device. All the devices are listed in the **Device** column. The data stored by the archive is displayed in the **Activity** column. The date and time of the corresponding

activity is displayed in the **Date/Time** column. The elapsed activity information along with the date and time is displayed in gray. The elapsed activity information is available as long as the **Archive Activity Monitor** is running. The grayed out information is replaced if the next activity is started for that device.



[sc_Archive_activity_monitor, 3, en_US]

Figure 3-21 Archive Activity Monitor

To start the **Archive Activity Monitor**:

- From the **SICAM PAS/PQS UI – Operation** menu, select **View > Archive Activity Monitor...**.
  - or -
- From the Windows Start menu:
  - Click **Start** and scroll through the app list.
  - Select **SICAM PAS/PQS > Tools**.
    The **Tools** folder opens.
  - Double-click **Archive Activity Monitor**.

The **Archive Activity Monitor** dialog opens which displays the current activities of the archive.

4 Value Viewer

The Value Viewer provides a well-structured overview of all the information from your station.
Using the options available in the Value Viewer, you can test data links and modify information for test purposes, for example, within the framework of commissioning.

4.1	Starting the Value Viewer	231
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4.1 Starting the Value Viewer

Start the Value Viewer from the Windows Start menu:

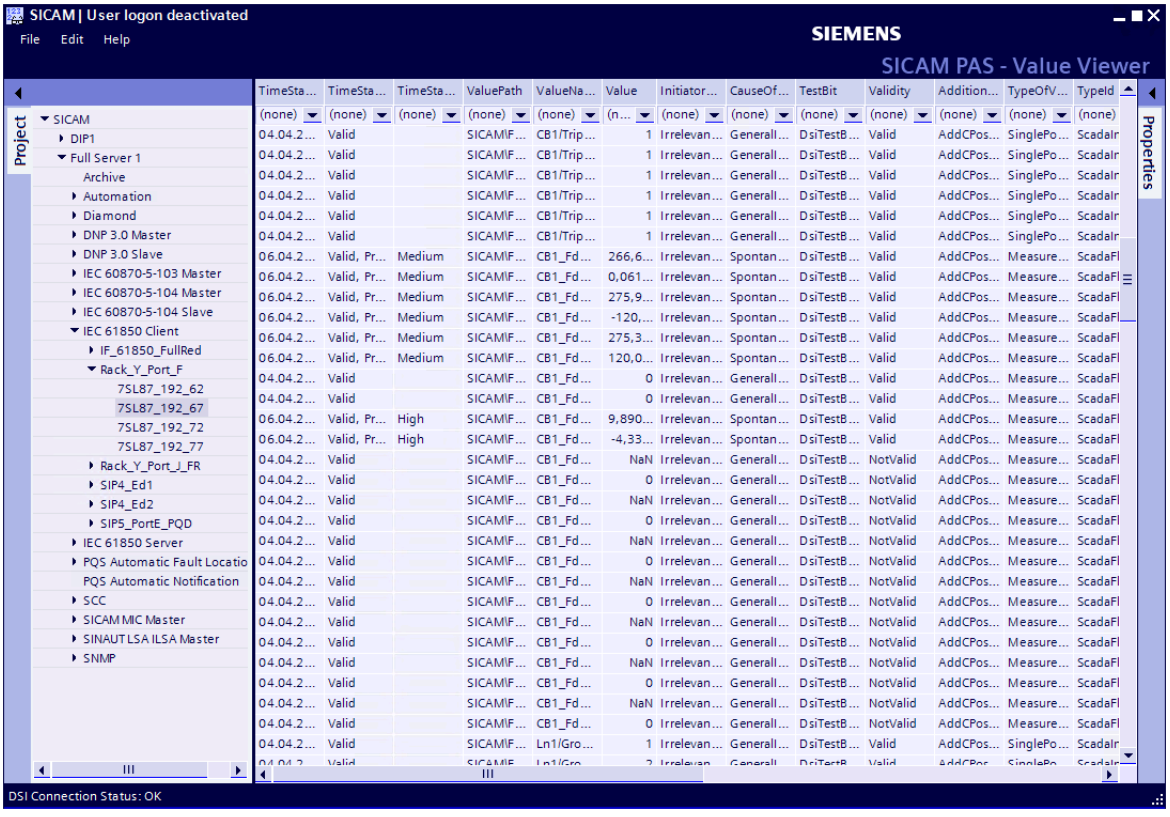
✧ Click **Start** and scroll through the app list.

✧ Select **Value Viewer** from the **SICAM PAS/PQS** folder.

The Value Viewer opens and displays your current station configuration as defined in SICAM PAS/PQS UI – Configuration.

For more information on the individual columns, refer to *4.4 Columns of the Value Viewer*.

The program is only available in the English user interface language.



[sc_Value_Viewer, 2, en_US]

Figure 4-1 Value Viewer

4.2 Showing Information

Selecting a Data Link

To show the information transmitted by a device or an interface:

✧ In the **Project** section, click the data link which you want to view.

The table on the right of the project section shows specifically the information related to this data link.

The display is refreshed automatically.

Filtering Information

To restrict the display of information, specify filter criteria for one or several columns. In addition to column-specific filter criteria, you can also define and apply user filters.

To filter information:

✧ To view information relevant at a certain time, click the drop-down list of the column including the filter criterion (for example, TimeStamp).

✧ Select a filter criterion, for example, date.

The table now shows only the information which has arrived at the specified time.

✧ Select the filter criterion in another column. For example, select the Valid criterion in the TimeStamp-Status column.

The table shows only the information which has arrived at the specified time with the valid time stamp.

Resetting a Filter

✧ Select the **(None)** filter criterion in order to show all information in this column again.

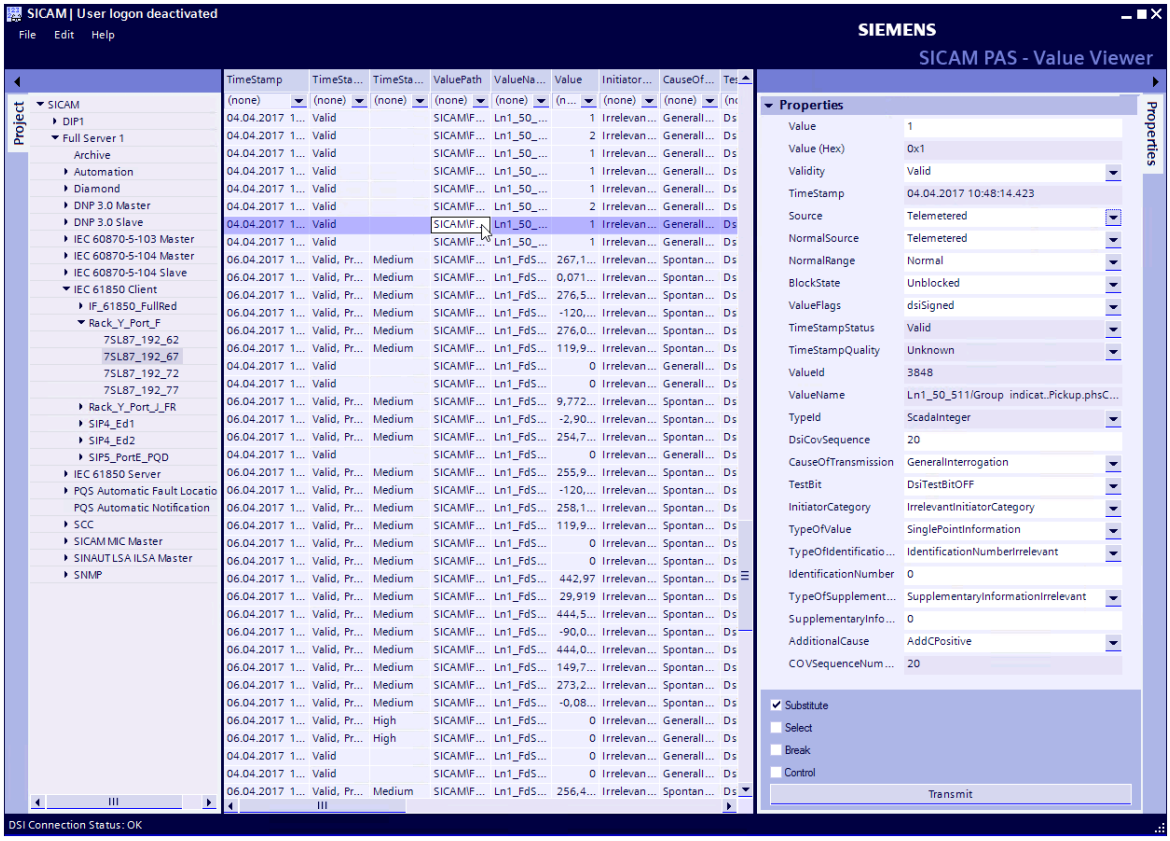
Showing Details of an Item of Information

To show details of an item of information:

✧ Click **Properties** on the right-hand window margin.

✧ Select a table row.

The properties of this item of information are now displayed in the **Properties** window.



[sc_Pror_Item_Info, 2, en_US]

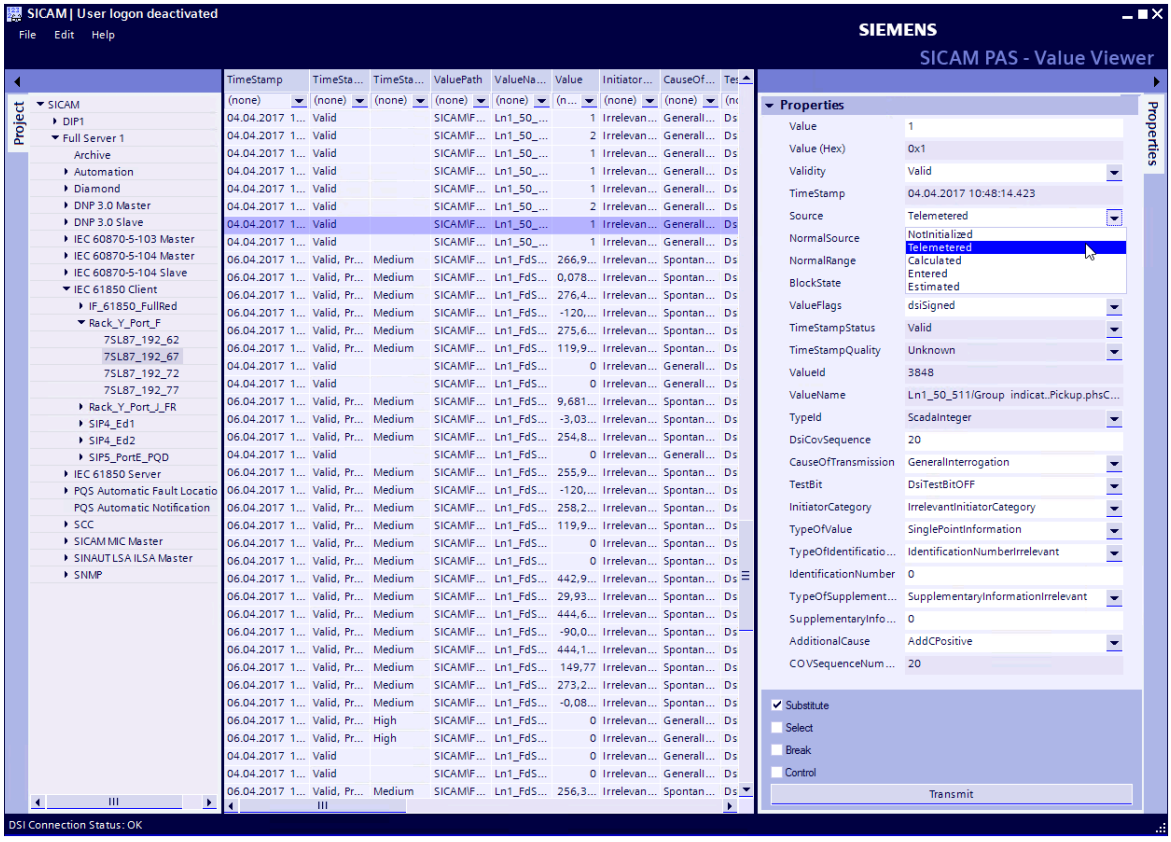
Figure 4-2 Window Showing the Properties of an Item of Information

For more information on the individual columns, refer to *4.4 Columns of the Value Viewer*.

4.3 Editing Information

For test purposes, you can modify information in the Value Viewer and transmit it to the device.

- ✧ Select the item of information which you want to edit.
- ✧ Open the **Properties** window.
- ✧ In the Properties window, select the field which you want to modify.
- ✧ Select an entry from the drop-down list of this field or overwrite the entry in the input box.



[sc_Modify_Items_Info, 2, en_US]

Figure 4-3 Modifying Items of Information

Testing Data Links

You can perform specific operator actions in order to test whether an interface or a device transmits correct values.

- ✧ Activate **Substitute** in order to manually update an information state, for example, the switch position of an equipment component.
- ✧ Activate **Control** in order to send a command.
- ✧ Deactivate **Control** in order to send a command message.
- ✧ Activate **Select** in order to define “Select before operate” for the command.
  This option is not available for all protocols.
- ✧ To transmit information, click **Transmit**.
- ✧ Activate **Break** in order to cancel the selection command.

Commands are sent to the connected devices and substations. Messages are forwarded to the mapped destinations by using the DSI server.

NOTE

The commands and messages which the Value Viewer sends to the process cannot be distinguished from actual process changes in the control center.

The command output is secured by a password.

To use the Windows access rights for user administration, you must use the default password 000000 for the Value Viewer.

4.4 Columns of the Value Viewer

The Value Viewer is only available in English user interface language. The following list describes the meanings of the individual columns.

Table 4-1 Columns of the Value Viewer

Column Designation	Explanation
TimeStamp	Time stamp of the last update of an item of information
TimeStampStatus	Validity of the time stamp • **Valid**: Time stamp valid • **Process**: Time stamp received from the process • **Replaced**: Time stamp replaced • **ClockSync**: Clock synchronized • **ClockValid**: Time stamp provided by the clock
TimeStampQuality	Classification of the quality of the time stamp • **High**: Deviation from the reference time < 10 ms • **Low**: Deviation from the reference time > 2 s • **Medium**: Deviation between High and Low The field remains empty if this classification is not possible. The quality of the time stamp depends on the synchronization type and the transmission protocol.
ValuePath	Address of the item of information
ValueName	Name of the item of information
Value	Value of the item of information
InitiatorCategory	Command origin (source)
CauseOfTransmission	Cause of transmission
TestBit	To identify whether the item of information sent/received is marked as test information. • **DsiTestBitOFF**: Item of information is an operational information • **DsiTestBitON**: Item of information is a test information
AdditionalCause	Additional transmission cause
Validity	Status of the item of information
TypeOfValue	Type of the item of information
TypeId	Value type (ScadaInteger or ScadaFloat)
ValueId	Internal ID
Source	Origin of the item of information, for example, transmitted or calculated
NormalSource	Expected origin of the item of information, for example, transmitted, substituted, and calculated

Column Designation	Explanation
NormalRange	• **NotInitialized**: Value not initialized • **Normal**: Value in normal range • **Abnormal**: Value outside the normal range (measured-value overflow)
ValueFlags	• **dsiSigned**: A signed value is sent/received • **dsiUnsigned**: An unsigned value is sent/received
DsiCovSequence	Counter for the number of transmissions of the value since the start of the DSI server 0 = server overflow, 80000000 = invalid
IdentificationNumber	• Fault number or • Finterrogation cycle number or • Feedback identification
TypeOfIdentificationNumber	Identification type
SupplementaryInformation	• Irrelevant • Implicit, additional information depending on the type of information, for example, relative time
TypeOfSupplementaryInformation	Type of the item of information

5 Archives

This chapter provides general notes on archives and illustrates how you can monitor an archive using the **SNMP Server** Windows feature and the **SNMP** application.

You can perform a back-up of the runtime archive at regular intervals in order to prevent the loss of historical data due to restricted storage capacity.

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5.4	Backup Archive	245

5.1 General Notes on Archives

The drives required for operation the of SICAM PAS/PQS system (Windows, Export service, SICAM PAS/PQS temp files, and Recpro archive) are monitored for the available space. After update system, a minimum storage capacity of 500 MB has to be available on all the required drives. When the available storage capacity of one of the drives used is less than this threshold value, the archive remains stopped and a warning message is displayed in the **Report**.

When the archive is stopped, data is no longer stored in the archive and it is not exported from the archive. To restart the archive, a minimum storage capacity of 1 GB should be available for each of the drives.

To monitor the storage capacity of the drives, an alarm in the form of an e-mail and/or the SMS can be configured, refer to *2.6.16 PQS Automatic Notification*. Additionally, this alarm can be routed to SICAM SCC or any control center.

NOTE

The network drives are not monitored for the available space.

Archive Maintenance

The storage capacity of the archive is displayed in the status bar of the SICAM PQ Analyzer. Once the archive is 100 % full, archiving of the data is stopped and 10 % of the oldest archived data is deleted. The data from the archive is deleted until sufficient storage space has been created to store the incoming data. Once sufficient storage capacity is available, the archiving of the data is resumed. The deletion of the archive is a time-consuming activity and can take a few hours depending on the data uniformity (linear to time range), fragments in the archive, size of the fragment files, and so on.

In rare cases, earlier versions of SICAM PAS/PQS allow the archive size to be larger than the configured limit. If the archive size is larger than the configured archive size, after upgrading from the earlier versions of SICAM PAS/PQS to V8.03, the oldest data from the archive is deleted until the archive size becomes less than the configured limit. The process of deletion can take a long time depending on the amount of data. If the archive is more than 150 % full (as displayed in the status bar of the SICAM PQ Analyzer), you can prevent the long running deletion of the archive by increasing the value of **Archive size** for the **Archive** application in SICAM PAS/PQS UI – Configuration before updating the system in SICAM PAS/PQS UI – Operation.

✧ Save the data before its deletion with the **SICAM Archive Backup** tool.

For more information, refer to *5.4 Backup Archive*.

For more information on the handling of the archives, refer to */13/ SICAM PQ Analyzer*.

Read-/Write Speed of the Archive

The read-/write speed of the archive might be degraded if the advanced attribute **Compress contents to save disk space** is selected for the archive folder.

To verify the folder setting:

✧ Select the archive folder and select **Properties** from the context menu.
The **Properties** dialog opens.

✧ Select the **General** tab and click **Advanced...**.
The **Advanced Attributes** dialog opens.

✧ Deselect **Compress contents to save disk space**.

5.2 Monitoring the Archive

When monitoring an archive, you must be aware whether the archive is installed on the SICAM PAS/PQS computer or on an archive computer.

Archive and SICAM PAS/PQS on the Same Computer

If you have configured an archive within a SICAM PAS/PQS system in order to store fault records or PQ data, this archive data is published by an archive server for the SICAM PQ Collector or SICAM PQ Analyzer.

This archive server is automatically started by the **Archive Server monitoring service**.

You use the **SNMP Server** Windows feature and the **SNMP** application in order to detect an unexpected failure of the archive server.

Archive Computer with SICAM PQ Collector and Archive Server

The SICAM PQ Collector allows you to combine the archives of several SICAM PAS/PQS systems into a shared Collector archive on an archive computer. This ensures that the SICAM PQ Analyzer can directly access the data from all the SICAM PAS/PQS systems.

The SICAM PQ Collector provides the **Collector runtime** and **Archive server** functions.

You use the Windows **SNMP server** feature and the **SNMP** application in order to transfer status information from the Collector runtime and archive server to the SICAM PAS/PQS system:

How to Proceed

The following steps are required in order to access the monitoring functions:

- *5.3.1 Installing the SNMP Server Windows Feature*
- *5.3.2 Installing SNMP Feature for Windows 10 and Above*
- *5.3.3 Configuring SICAM PAS/PQS*
  The configuration consists of the following steps:
  - Importing the device description
  - Inserting the SNMP application, an interface and a device for each Collector
  - Mapping the information to a control center or an operator station.

5.3 Accessing the Monitoring Functions

5.3.1 Installing the SNMP Server Windows Feature

Depending on the monitoring functions required in the individual case, the SNMP Server Windows Feature must be installed:

- on the computer on which SICAM PAS/PQS is installed
- on the computer on which the Collector archive is installed

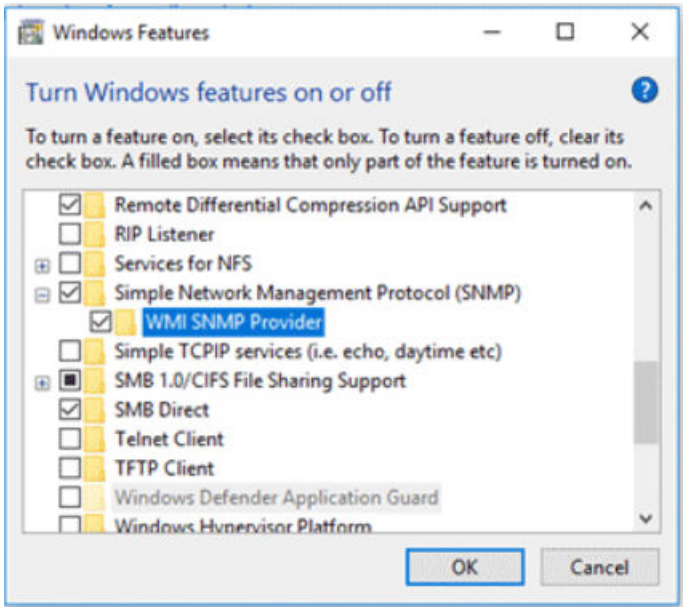
NOTE

The Windows Feature only supports SNMP V1 and V2.

You require administrator rights in order to be able to install the SNMP server Windows feature.

✧ Click **Start**, type **Turn Windows features on or off**, and confirm by pressing <Enter>.

The **Windows Features** dialog opens.



[sc_turn_SNMP_windows_feature_on, 3, en_US]

Figure 5-1 Activating SNMP

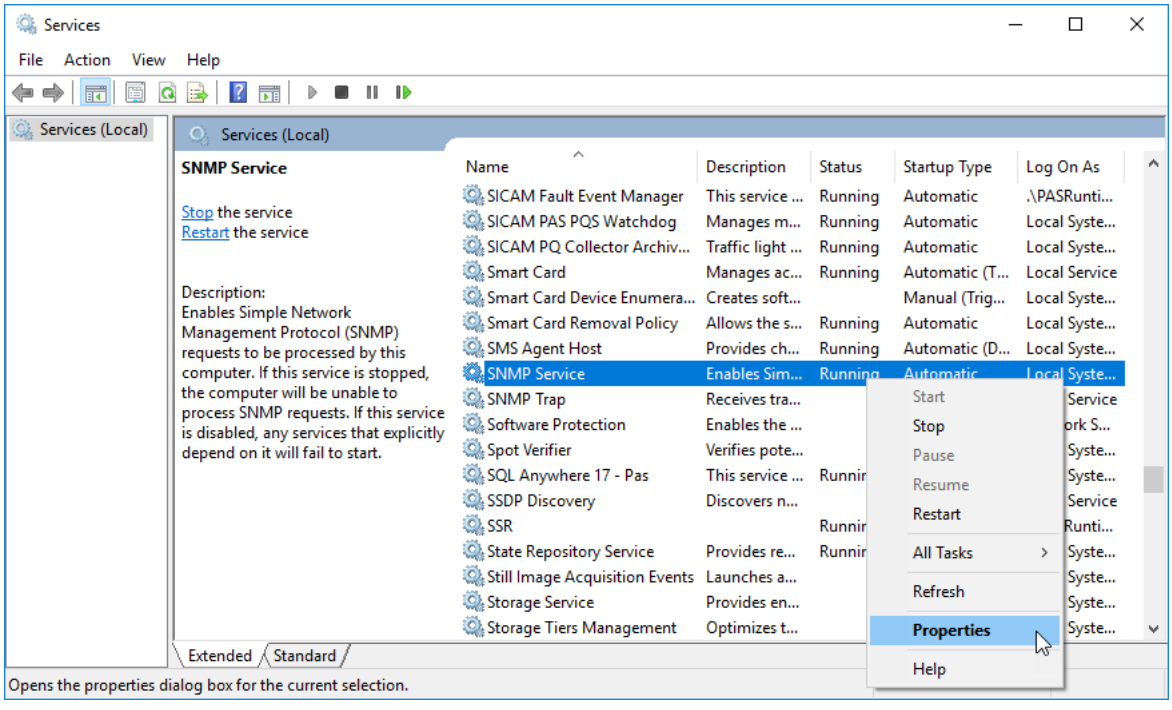
✧ Activate the **Simple Network Management Protocol (SNMP)**. The WMI SNMP Provider feature is optional and not required.

✧ Click **OK** to exit the dialog.

Changing the Windows feature can take a few minutes.

✧ Click **Start**, type **Services**, and confirm by pressing <Enter>.

The **Services** dialog opens.

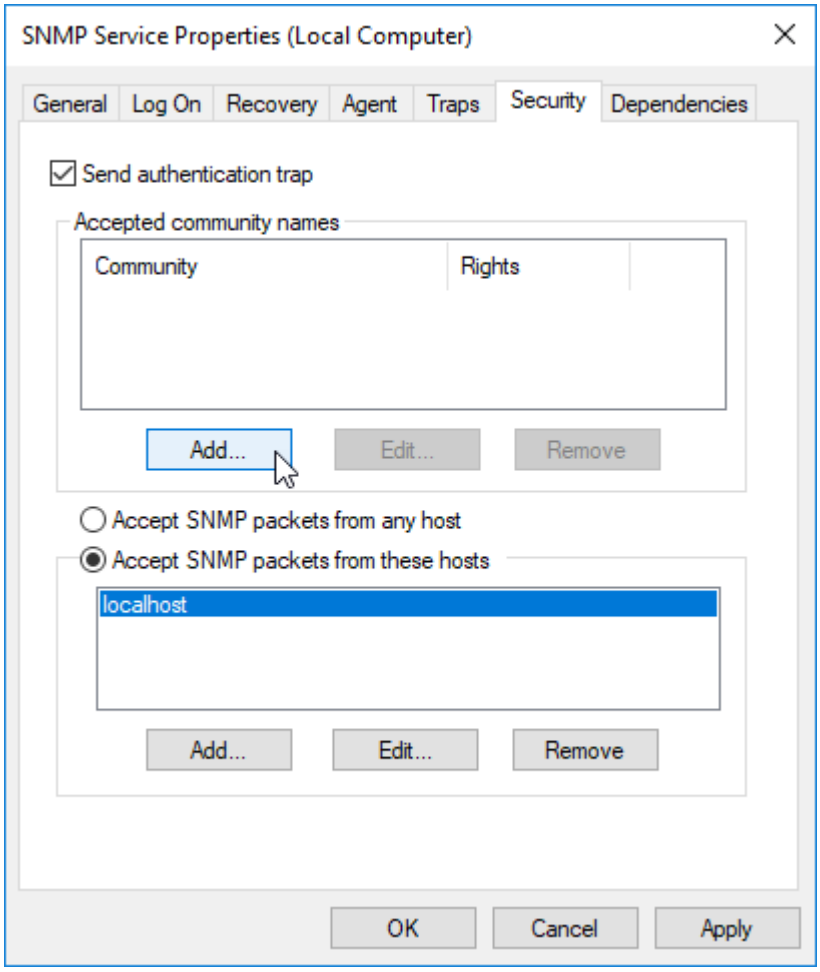


[sc_SNMP_Service, 2, en_US]

Figure 5-2 SNMP Service

✧ Select the **SNMP Service** and select **Properties** from the context menu.

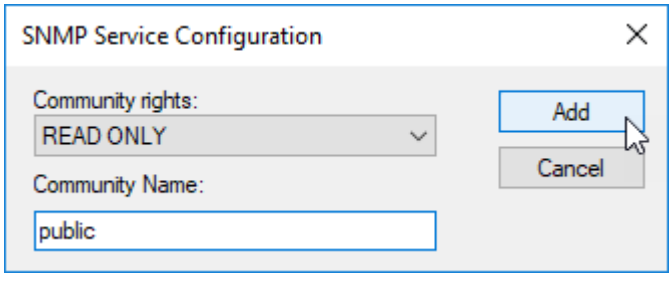
✧ Select the **Security** tab.



[sc_Accepted_communities_names, 2, en_US]

Figure 5-3 SNMP Service

✧ In the **Accepted community names** section, click **Add...**.



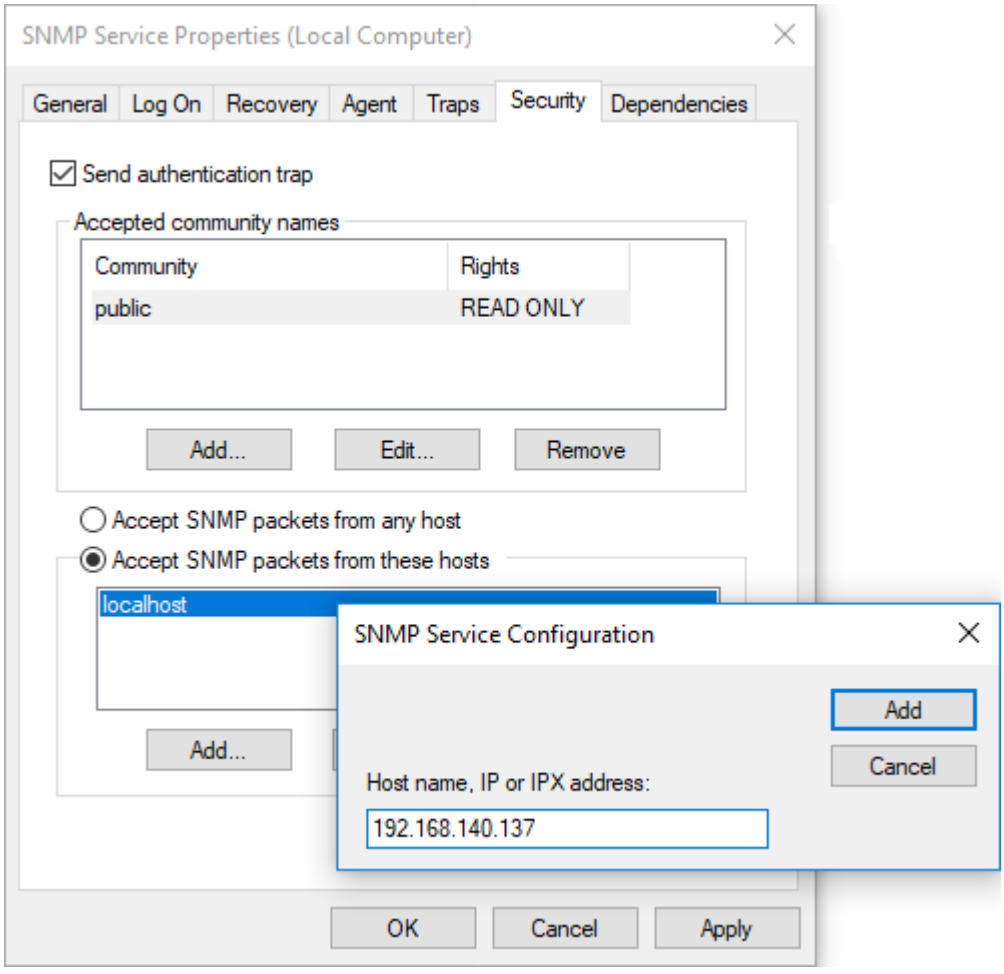
[sc_community_name, 2, en_US]

Figure 5-4 SNMP Community Name

✧ Retain the **READ ONLY** default setting and enter the **public** community name.
The community name is also the default setting for inserting a device into the interface of the SNMP application.

✧ Click **Add** to confirm.

✧ In the **Accept SNMP packets from these hosts** section, click **Add...**.



[sc_SNMP_IP_address, 2, en_US]

Figure 5-5 SNMP Community Name

✧ Enter the host depending on the archive storage location:

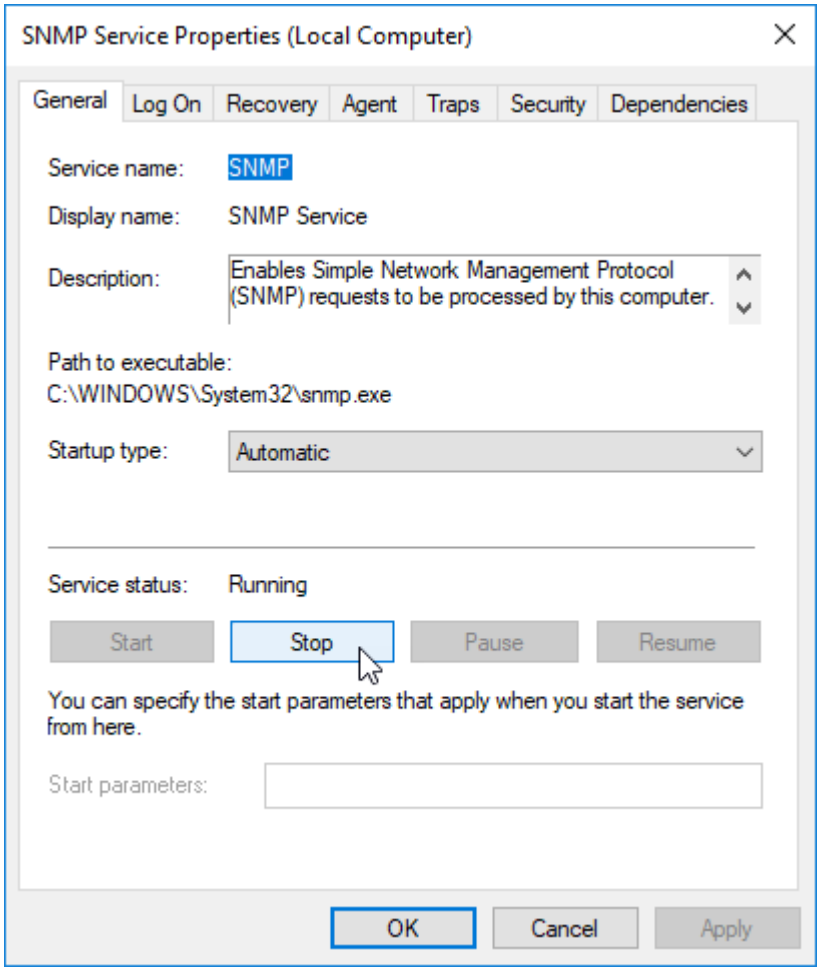
- **Archive and SICAM PAS/PQS on the same computer**
  For a redundant configuration enter the host name, the IP, or the IPX address of the redundant SICAM PAS/PQS system.
- **Archive computer with SICAM PQ Collector and archive server**
  Enter the host name and the IP or IPX address of the SICAM PAS/PQS system which monitors the runtime of this Collector and this archive server. For a redundant configuration add the host names, the IP, or the IPX addresses of both systems.

✧ Click **Add...** to confirm your entries.

✧ Click **Apply** to save your changes.

In order to make the changes effective, restart the SNMP service.

✧ Select the **General** tab.



[sc_stop_SNMP_service, 2, en_US]

Figure 5-6 Restarting the SNMP Service

✧ Click **Stop** and then **Start**.

✧ Next, click **OK** to exit the dialog.

The SNMP Server Windows feature is installed.

5.3.2 Installing SNMP Feature for Windows 10 and Above

In Windows 10 and above, the SNMP service is available as a separate Windows feature and it is not installed by default.

To install the SNMP service for Windows 10 and above, perform the following steps:

✧ Select **Settings** > **Apps** > **Apps & Features** > **Optional features** > **Add a feature**. The **Add a feature** dialog opens.

✧ Select the following features from the list:
- Simple Network Management Protocol (SNMP)
- WMI SNMP Provider (to get all SNMP service configuration tabs).

✧ Click **Install**.

The SNMP service appears in the **services.msc** console.

Refer to section *5.3.1 Installing the SNMP Server Windows Feature* for further steps on installing SNMP Server Windows Feature.

5.3.3 Configuring SICAM PAS/PQS

Perform the following steps in **SICAM PAS/PQS UI – Configuration**:

- Importing the Device Description
- Inserting an Application, Interface, and Device
- Mapping Information

Importing the Device Description

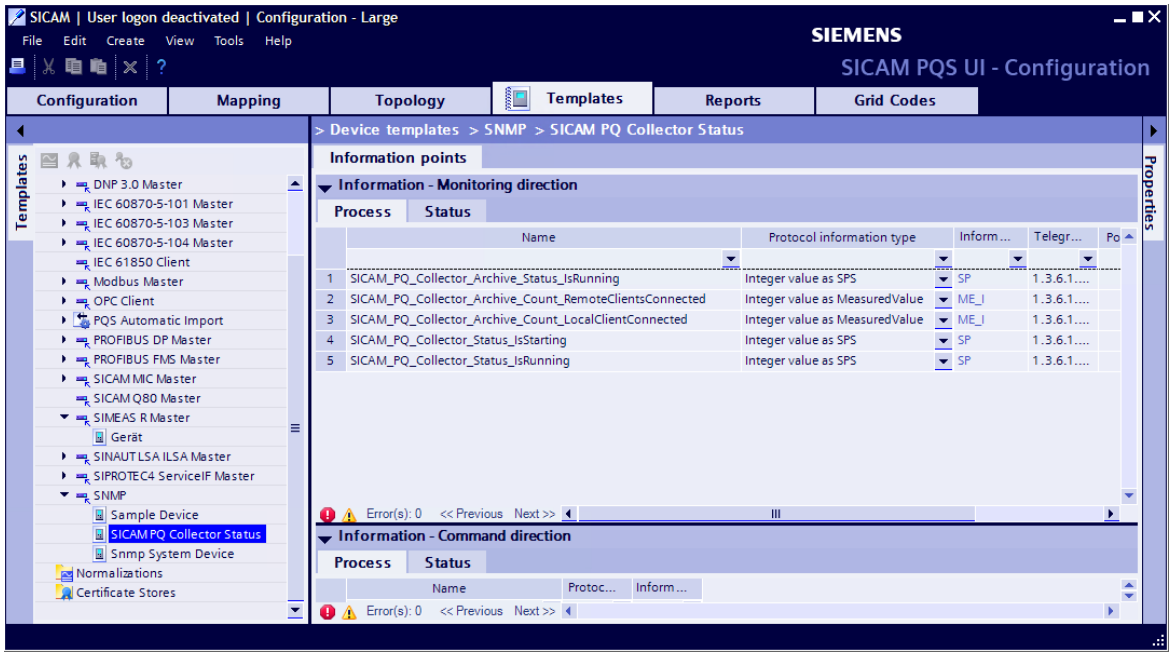
To import the device template for monitoring the archive:

✧ Open the **Templates** view.

✧ Select **SNMP** and then select **Import...** from the context menu.

✧ Select the device description depending on the archive storage path in the **%publicdocuments%Siemens\SICAM PAS PQS\DeviceDescriptions\snmp** directory:

- Archive and SICAM PAS/PQS on the same computer
  SICAM_PQS_Archive_Status.txt device description
- Archive computer with SICAM PQ Collector and archive server
  SICAM_Collector_Status.txt device description.



[sc_importdevicedescription, 2, en_US]

Figure 5-7 Importing the Device Template (Archive Computer)

Inserting an Application, Interface, and Device

✧ Open the **Configuration** view.

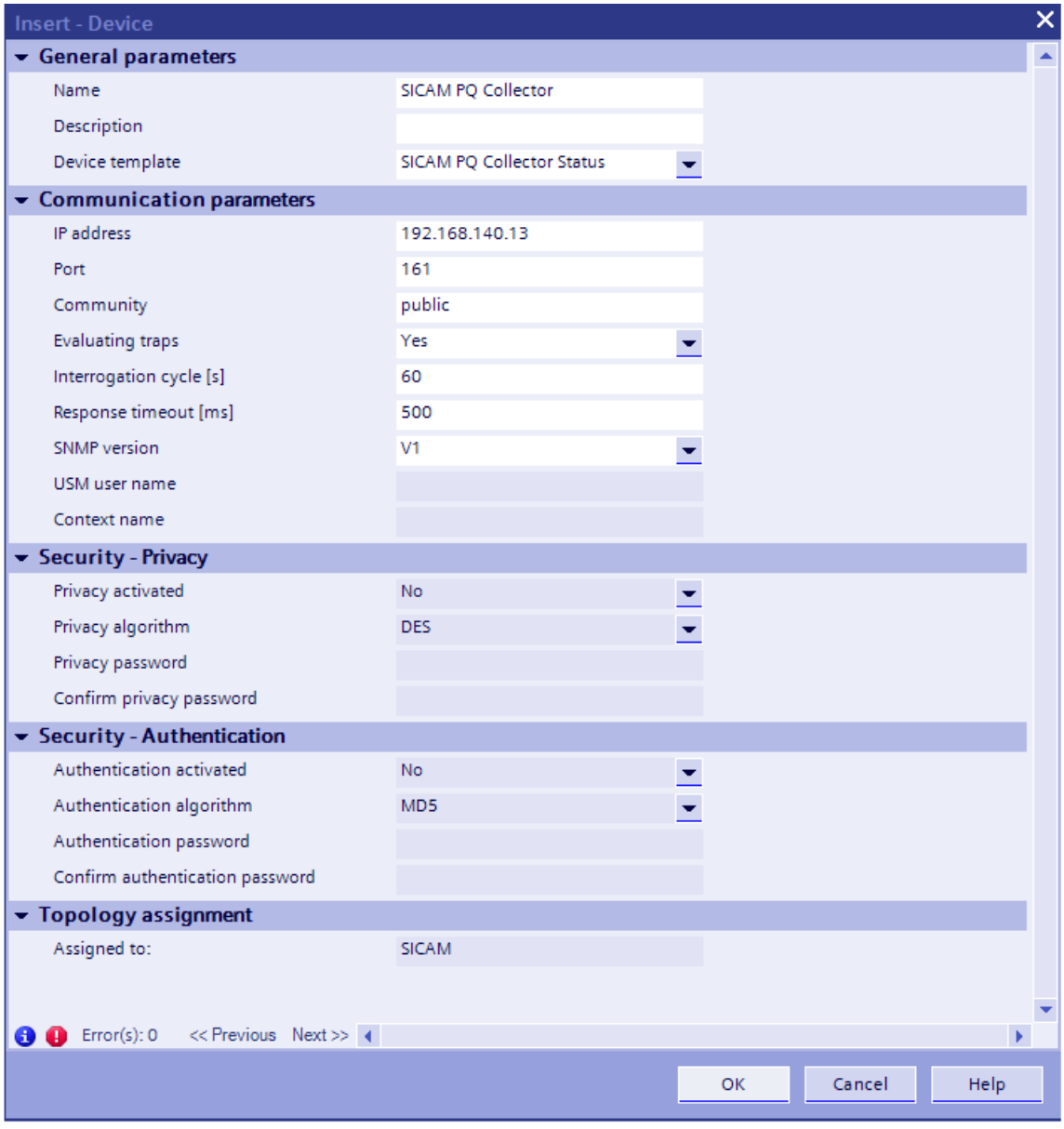
✧ Insert the **SNMP** application, an interface, and a device for the archive on the same computer and the Collector archive on separate computers.

✧ Enter a **name**.

✧ Next, select the **SICAM PQ Collector Status** device template or **SICAM PQS Archive Status**.

✧ Enter the IP address of the respective computer in the **IP address** field.

✧ Check the **Community** field. The entry must match the **community name** which you have defined for the **Windows SNMP service**.

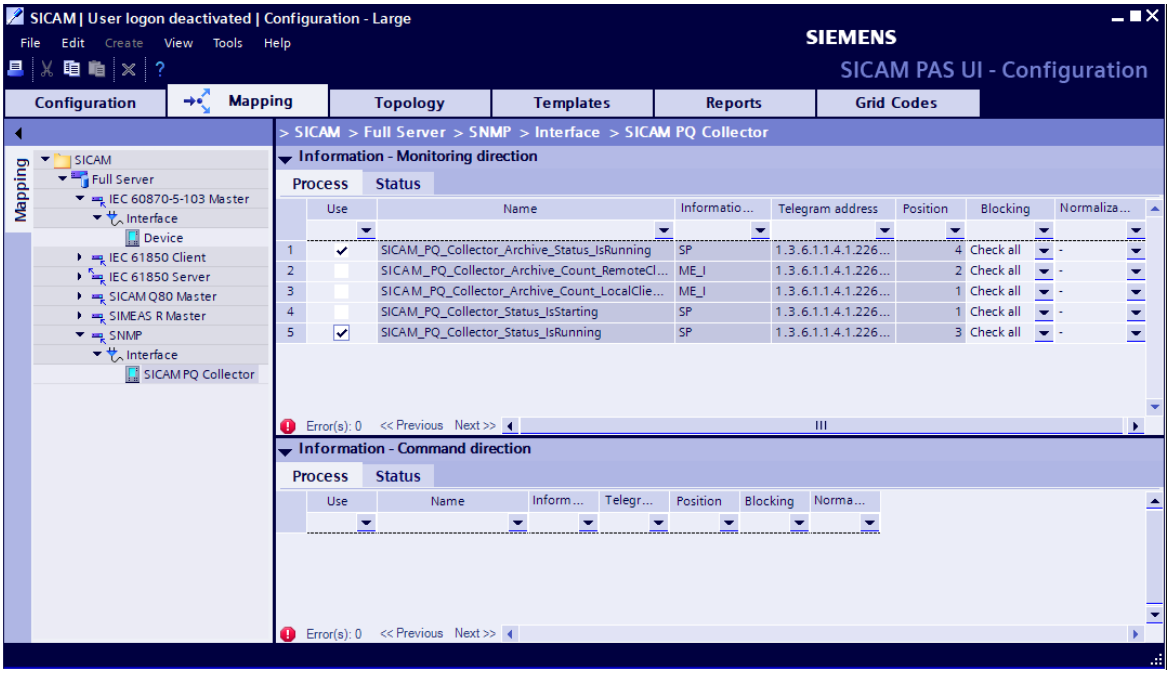


[sc_addSNMPdevice, 2, en_US]

Figure 5-8 Inserting a PQ Collector System

Mapping Information

✧ Open the **Mapping** view and select the desired status information.



[sc_SNMPmapping, 3, en_US]

Figure 5-9 Inserting a PQ Collector System

✧ This status information can now be mapped to a control center, substation, or an HMI system (SCC), processed in the **SoftPLC**, or sent by e-mail/SMS using the **PQS Automatic Notification** function.

5.4 Backup Archive

To avoid the loss of historical data due to restricted storage capacity, Siemens recommends you create backups of the runtime archive at regular intervals. The backup can be used to view historical data via SICAM PQ Analyzer and restore the archive in situations where hardware faults or software errors lead to a corruption of the runtime system.

NOTE

Instead of creating a backup of the runtime archive (backup archive) you can use the SICAM PQ Collector which continuously synchronizes the (Collector) archive with the runtime archive. In this way you create a copy of the archive data. The advantage of this approach is that there is only one archive and that you do not need to care about deleting obsolete backup copies due to restricted storage capacity.

For more information on the SICAM PQ Collector, refer to */14/ SICAM PQ Analyzer, Incident Explorer*.

5.4.1 Creating a Backup Archive

The SICAM Archive Backup tool serves to back up the SICAM PAS/PQS archive in a selected target folder.

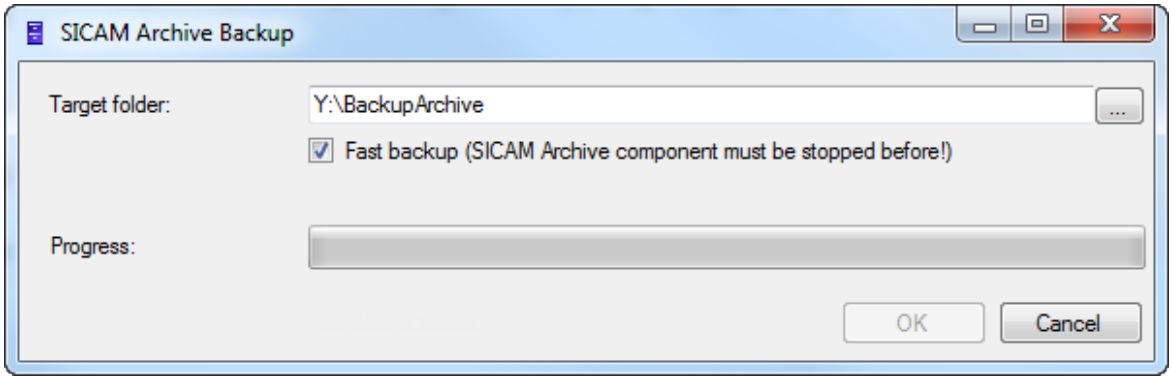
Start the SICAM Archive Backup tool from the Windows Start menu:

✧ Click **Start** and scroll through the app list.

✧ Select **SICAM PAS/PQS > Tools**.
The **Tools** folder opens.

✧ Double-click **Archive Backup**.

The **SICAM Archive Backup** tool opens.



[sc_Backup_Archive, 1, en_US]

Figure 5-10 SICAM Archive Backup

✧ Click **...** to select the **Target folder**.

NOTE

The selected **Target folder** can be located on a SICAM PAS/PQS system, a backup server, or a SICAM PQ Analyzer system. Make sure you have sufficient storage capacity available to create a backup archive. If the backup archive is on a backup server or a SICAM PQ Analyzer system, make sure that the path is assigned to a drive.

✧ Select **Fast backup** if you want to speed up the backup process.

NOTE

If you select **fast backup**, all the applications must be stopped in SICAM PAS/PQS UI – Operation before starting the backup process.

✧ Once the backup process is completed, click **OK** to exit the dialog.

NOTE

If you click **Cancel**, the data already copied to the target folder is not deleted.

NOTE

You can schedule a backup process at regular intervals, by using **%pas_bin%\SICAMArchiveBackup.exe <target folder path>**.

5.4.2 Restoring a Backup Archive

To restore a backup archive, execute the batch file to restore the content of the archive and the session management and EAArch files.
To restore a backup archive, perform the following steps:

- Executing the **Restore_Backup.bat** batch file
- Further Steps

Executing the Batch File

Steps to be performed on the SICAM PAS/PQS system:

✧ Stop the SICAM PAS/PQS system in SICAM PAS/PQS UI – Operation / SICAM PAS/PQS UI – Operation Client.

✧ Close SICAM PAS/PQS UI – Configuration and SICAM PAS/PQS UI – Operation / SICAM PAS/PQS UI – Operation Client.

✧ Stop the **Archive Server monitoring service**, the **SSR**, and the **Defragmentation Agent** services.
For more information on these services, refer to */3/ SICAM PAS/PQS, Installation*.

✧ Execute the batch file, **Restore_Backup.bat** located at the **<SICAM Archive Backup target folder path>** with administrator rights.
The batch file restores the content of the archive and the required session management, user, and EAArch files.

NOTE

If the location of the archive in the runtime system has changed compared to the backup archive, the EAArch file must be modified in order to be suitable for the archive.
Therefore the following steps must be performed:

- Open the EAARch file at **%COMMONAPPDATA%Siemens\SICAM PQ Analyzer\RuntimeArchive\Siemens.Energy.Archives.EAArch** with a text editor.
- Change the path variables to the new location.

Further Steps

Proceed with the following steps on the SICAM PAS/PQS system

✧ Verify that the SICAM PAS PQS Users group has the required access rights for the runtime archive directory in the **Security** tab of **Internet Properties** dialog and the EAArch file at **%COMMONAPPDATA%Siemens\SICAM PQ Analyzer\RuntimeArchive\Siemens.Energy.Archives.EAArch**.

✧ Start the **Archive Server monitoring service**, the **SSR**, and **Defragmentation Agent** services.
For more information on these services, refer to */3/ SICAM PAS/PQS, Installation*.

✧ Start SICAM PAS/PQS UI – Configuration and SICAM PAS/PQS UI – Operation / SICAM PAS/PQS UI – Operation Client.

Any PQ data created between the backup date and the restore date are not included in the archive. To retrieve this data, configure a **Start date** 1 day before the backup date on the interface of all the PQ devices in SICAM PAS/PQS UI – Configuration.

✧ Update/Start the SICAM PAS/PQS system in SICAM PAS/PQS UI – Operation / SICAM PAS/PQS UI – Operation Client.

✧ Start the archive and all the devices.

6 User Administration

This chapter explains you how to work with the **SICAM PAS/PQS User Administration**.
You can use this system component to assign user rights for your employees. These rights are classified according to user roles which provide access to various fields of application.

NOTE

The User Administration is not applicable for SICAM PAS/PQS UI – Operation Client.

6.1	Starting User Administration	249
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6.1 Starting User Administration

To start the SICAM PAS/PQS User Administration from the Windows start menu:

✧ Click **Start** and scroll through the app list.

✧ Select **User Administration** from the **SICAM PAS/PQS** folder.

Setting up the User Administration

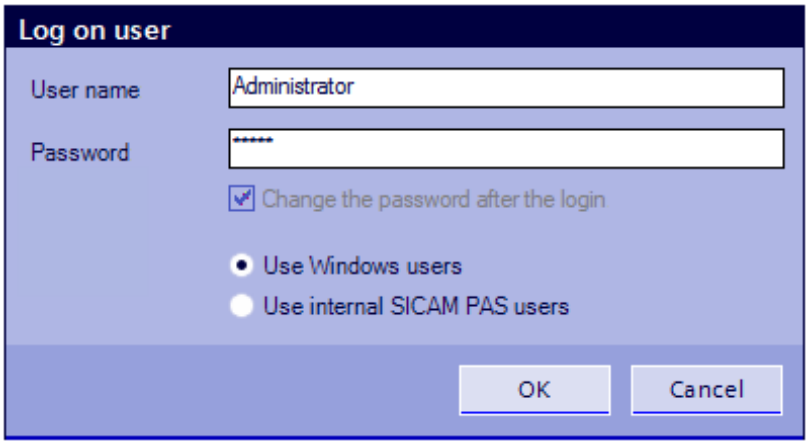
The User Administration opens in a dialog for the initial login as an administrator.
An administrator is set up in the default setting.

✧ For the initial login after the new installation of SICAM PAS/PQS, enter the **Administrator** user name and the default **Admin** password.

✧ To use the Windows access rights, select **Use Windows users**.

- or -

✧ To define individual access rights, select **Use internal SICAM PAS/PQS users**.



[sc_Log_on_user_initial, 1, en_US]

Figure 6-1 Logging on as an Administrator

NOTE

The **Use Windows users** and **Use internal SICAM PAS/PQS users** options are visible only when the user logs on for the first time. For all following logins, the action defined in this dialog can be modified in the **User Administration** by clicking **Tools > Type of User Administration > ...**. The **Type of User Administration** menu is enabled only for domain users.

✧ In the dialog which opens, enter and confirm your new password.

NOTE

The default password must be changed, because it is public.
Your new password will be maintained even if you have secured all other user rights by using the Windows access rights.

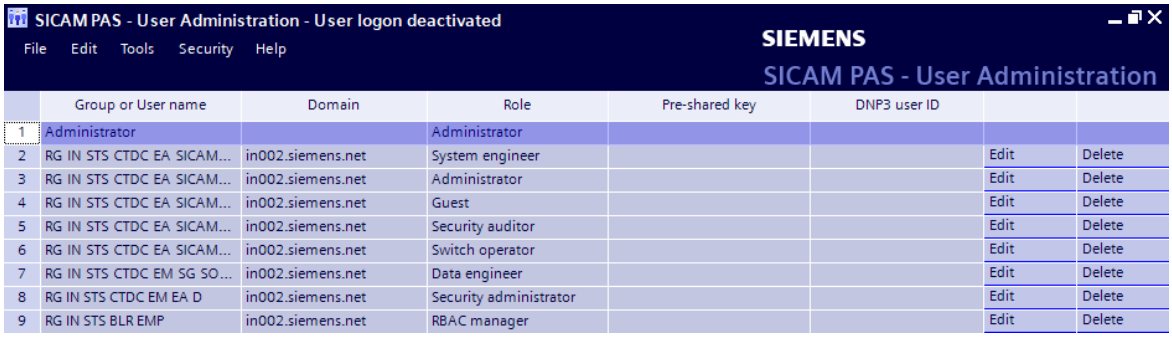
The User Administration dialog opens.

6.2 User Roles and User Groups

User Administration

A user can log on with one of the following user roles:

- **Administrator** with full rights
- **System engineer** with full rights, no access to the User Administration
- **Data engineer** with full rights for SICAM PAS/PQS UI – Configuration and Feature Enabler, read-only rights for SICAM PAS/PQS UI – Operation and Value Viewer
- **Switch operator** with full rights for SICAM PAS/PQS UI – Operation and Value Viewer, read-only rights for SICAM PAS/PQS UI – Configuration and Feature Enabler
- **Guest** with read-only rights for all SICAM PAS/PQS system components with exception of the User Administration
- **Security administrator** with full rights for the User Administration, read-only rights for all SICAM PAS/PQS system components
- **RBAC manager** creates users and assigns roles in the User Administration, with read-only rights for all SICAM PAS/PQS system components
- **Security auditor** audits the security logs, with read-only rights for all SICAM PAS/PQS system components



	Group or User name	Domain	Role	Pre-shared key	DNP3 user ID		
1	Administrator		Administrator				
2	RG IN STS CTDC EA SICAM...	in002.siemens.net	System engineer			Edit	Delete
3	RG IN STS CTDC EA SICAM...	in002.siemens.net	Administrator			Edit	Delete
4	RG IN STS CTDC EA SICAM...	in002.siemens.net	Guest			Edit	Delete
5	RG IN STS CTDC EA SICAM...	in002.siemens.net	Security auditor			Edit	Delete
6	RG IN STS CTDC EA SICAM...	in002.siemens.net	Switch operator			Edit	Delete
7	RG IN STS CTDC EM SG SO...	in002.siemens.net	Data engineer			Edit	Delete
8	RG IN STS CTDC EM EA D	in002.siemens.net	Security administrator			Edit	Delete
9	RG IN STS BLR EMP	in002.siemens.net	RBAC manager			Edit	Delete

[sc_User_Administration, 4, en_US]

Figure 6-2 User Administration, Example

Nesting User Groups within the Same Domain

When SICAM PAS PQ is installed in a domain, the following groups corresponding to the same domain can access SICAM PAS PQ applications.

Also, the users nested under these subgroups can access SICAM PAS PQ applications.

- Domain Local group
- Global group
- Universal group

NOTE

As a prerequisite, **Main group** must be added to **SICAM PAS PQS** user group to support nesting.

Nesting User Groups in 2 Different Domains

Users from another domain are allowed to access SICAM PAS PQ applications only when the Active Directory domain declares the other domain as a trusted domain.

NOTE

Only the users of Global group and Universal group from the other domain are allowed to access SICAM PAS PQ applications.

6.3 Administrating Users

Setting up New Users

To set up a new user:

✧ Click **Edit > Create user** from the User Administration menu bar.

✧ Enter the different users with their corresponding user roles.

Selecting Windows Users

Consider the following prerequisites:

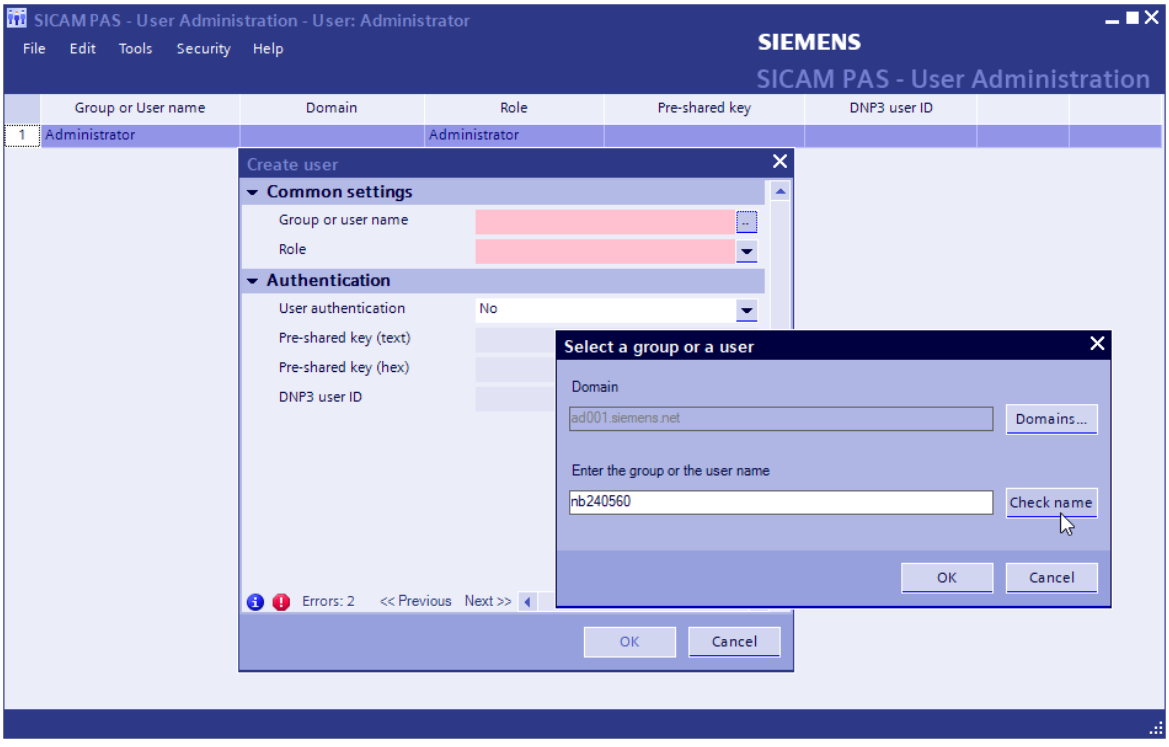
- The system must be connected to a domain.
- The user must log on with a domain-user account and not with a Windows local-user account.
- The user which is used for login must be part of the **SICAM PAS PQS Users** user group.

To select a Windows user:

✧ In the **Create user** dialog in the **Common settings** section, click **...** next to the **Group or user name** field.

✧ In the **Select a group or a user** dialog, click **Domains...** in order to select the network domain.

✧ Enter the **group** or the **user name** to be used and click **Check name** to check it.



[sc_Creating_Win_user, 1, en_US]

Figure 6-3 Creating a Windows User

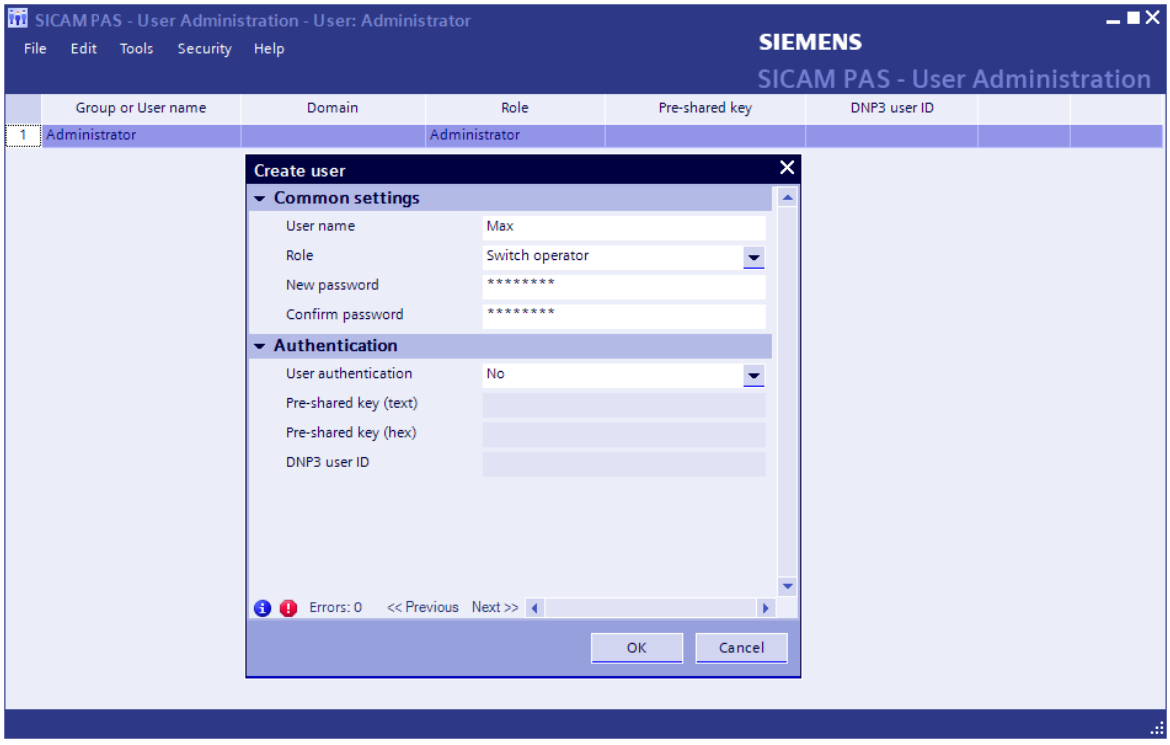
✧ In the **Common settings** section, select a **Role** from the list box.

Creating SICAM PAS/PQS Users

To create a SICAM PAS/PQS user:

✧ Enter the **User name** in the **Common settings** section.

✧ Select a **Role** from the list box.



[sc_Creating_PAS_user, 1, en_US]

Figure 6-4 Creating a SICAM PAS/PQS User

✧ Enter a **password** and confirm it.

Authenticating a User

If you communicate with a control center through the DNP3i Slave protocol, you can authenticate the user for individual commands.

✧ In the **Authentication** input area in the **User authentication** box, select**Yes** from the list box.

✧ Enter your **Pre-shared key**.
The **Pre-shared key (text)** must consist of 16 characters.
The **Pre-shared key (hex)** must consist of 32 characters.

✧ Enter the **DNP3 user ID**.
The DNP default user is assigned user ID **1**.
To all other users a user ID **>1** is assigned.

✧ Click **OK** to confirm your entries.

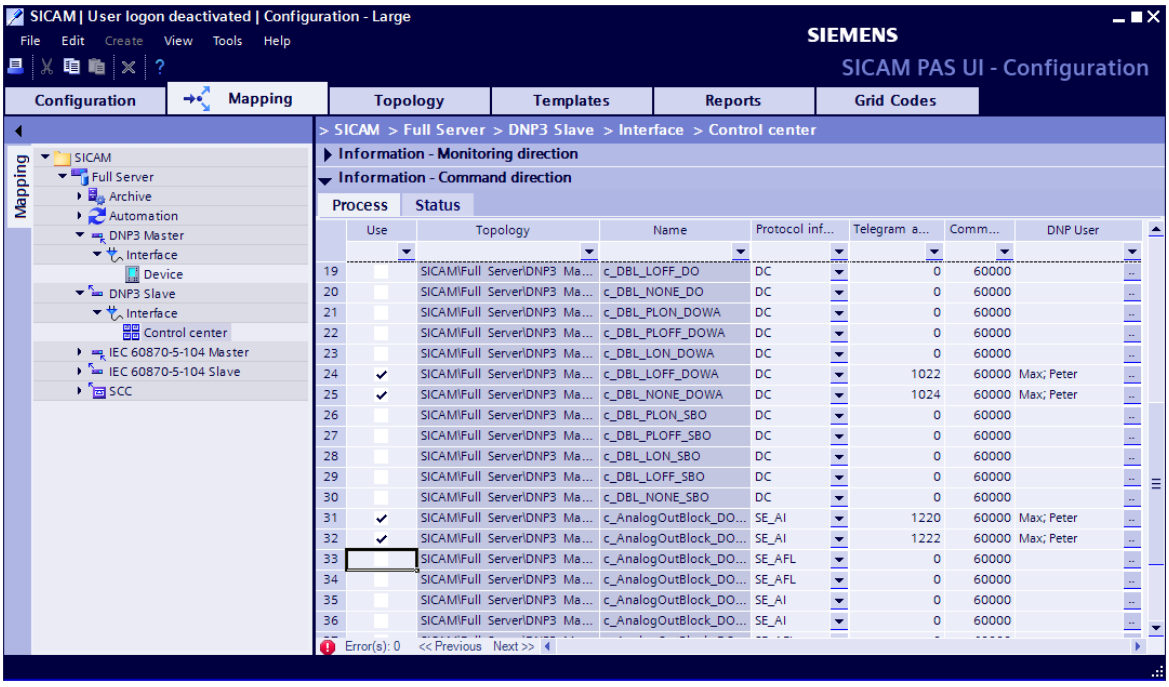
The authentication function is only effective if it has been activated during the parameterization of the **DNP3i Slave** in SICAM PAS/PQS UI – Configuration. To do this, open the **Configuration** view, **Security - Authentication** input area. In this area, you also assign the default user.

This ensures that all users with a **DNP3 user ID** have the switching authority for all commands.

To restrict the switching authorization of a user to individual commands, you can assign these commands in the **Mapping** view.

Proceed as follows:

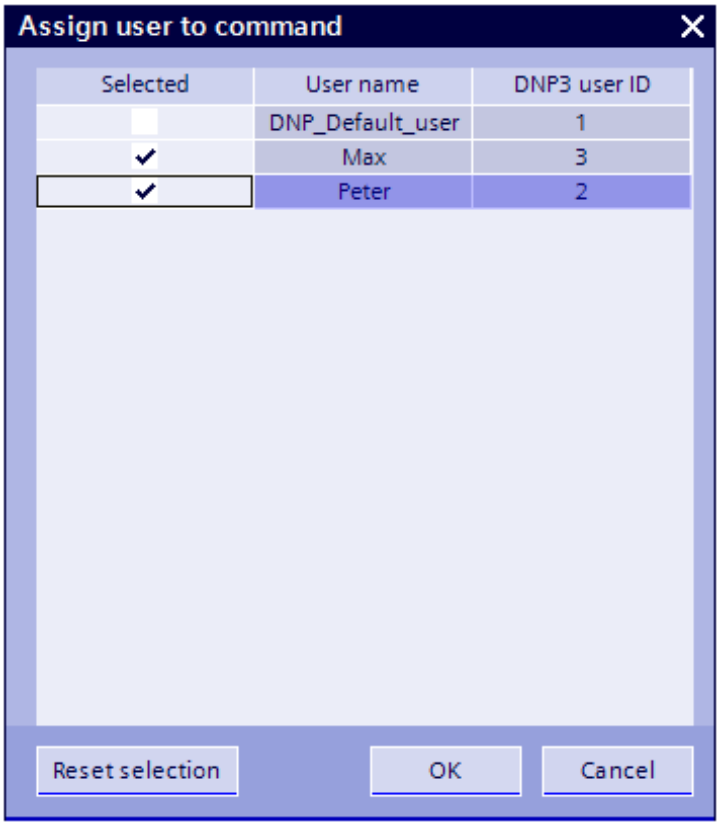
✧ Select the DNP3i control center from the configuration tree in the **Mapping** view.



[sc_DNP_Assigning_Users, 2, en_US]

Figure 6-5 DNP3i Slave Protocol – Assigning Users

✧ Select an item of information in the **DNP user** column. In the dialog which opens next, select one or several users, which are authenticated for this command.



[sc_DNP_Selecting_Users, 2, en_US]

Figure 6-6 DNP3i Slave Protocol – Selecting Users

For more information on authentication and secure data transmission, refer to */8/ SICAM PAS/PQS, Security*.

Activating the DNP Authentication Subsequently

Proceed as follows if you are logged on as a **Windows user** and want to subsequently activate your **DNP authentication**:

- ✧ Switch the User Administration to **Internal SICAM PAS/PQS** users.
- ✧ Close the User Administration.
- ✧ Log on as an internal SICAM PAS/PQS administrator.
- ✧ Switch the User Administration to **Windows** users.
- ✧ Change the Windows user.

For more information on authentication and secure communication, refer to */8/ SICAM PAS/PQS, Security*.

Changing the Type of User Administration

To change the type of User Administration:

- ✧ In the menu bar, select **Tools > Type of User Administration > Use Windows users** in order to use the Windows access rights for User Administration.

  - or -

- ✧ In the menu bar, select **Tools > Type of User Administration > Use internal SICAM PAS/PQS users** in order to use individual SICAM PAS/PQS access rights for User Administration.

Any users of the other type of User Administration will be invalid if there is a change.

To ensure that existing users become valid again:

- ✧ Select the invalid user and select **Edit user** from the context menu.
- ✧ In the dialog which opens, enter the new access rights.

If there is a change of the type of User Administration, the parameters defined for authentication will be maintained and applied to the changed user account.

Editing a User

Use one of the following options in order to assign a user to another user group or to change the password of a user.

To edit a user:

- ✧ Click **Edit** in the corresponding row.

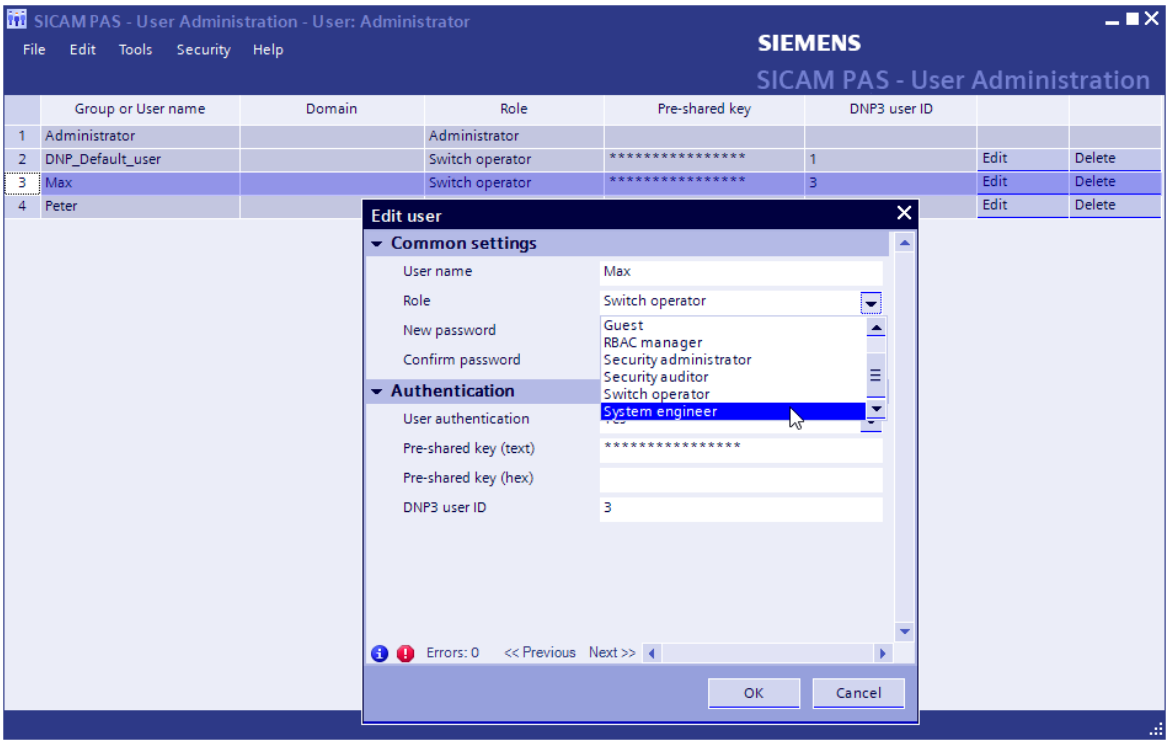
  - or -

- ✧ Right-click the row of the user and select **Edit user** from the context menu.

  - or -

- ✧ Select the row of the user and select **Edit > Edit user** from the User Administration menu bar.

The **Edit user** dialog opens.



[sc_Editing_user_account, 1, en_US]

Figure 6-7 Editing a User

The parameters displayed depend on the selected type of User Administration and are entered analog to the procedure for creating a user.

✧ Edit the parameters.

Deleting a User

All users, apart from an administrator, can be deleted.

To delete a user:

✧ Click **Delete** in the corresponding row.

- or -

✧ Right-click the row of the user and select **Delete user** from the context menu.

- or -

✧ Select the row of the user and select **Edit > Delete user** from the User Administration menu bar.

The user is removed from the list.

6.4 Logging on/off a User

First, the individual SICAM PAS/PQS system components are started without the User Administration. The header of the system components shows that the User Administration has been deactivated.

When opening the User Administration for the first time, the existing administrator is shown as the user by default.

The User Administration is effective for the following system components:

- SICAM PAS/PQS UI – Configuration
- SICAM PAS/PQS UI – Operation

- SICAM PAS/PQS UI – Operation Client
- Feature Enabler
- Value Viewer

The User Administration itself can only be opened by users with administrator rights.

Activating the User Administration

Proceed as follows to activate the User Administration:

✧ Select **Tools > Activate user login** from the User Administration menu bar.

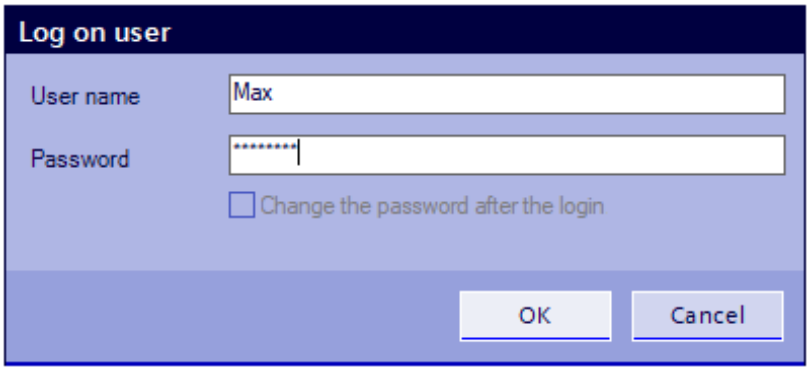
The checkmark on this menu item indicates the selection.

Logging on a User

The login of a user depends on the selected type of User Administration.

- If **Windows** access rights are used, your user name and the user role assigned are automatically used for accessing the applications.
- If **internal SICAM PAS/PQS** access rights are used, the **Log on user** dialog opens as soon as the first system component is started.

✧ Enter the **User name** and the **Password**.



[sc_Log_on_user, 1, en_US]

Figure 6-8 Logging on a User to a SICAM PAS/PQS System Component

The system component opens and your user name is displayed in the header of the system component. As long as this system component is open, you are automatically logged on for the other system components.

Logging off a User

If you close all system components, you automatically log off as a user.

To leave one or several system components open, you can log off by using a menu command.

To log off as a user:

✧ In the menu bar of a system component for which you are logged on, click **File > Log off user**.

The **Log on user** dialog opens. The header of all open system components indicates that no user is logged on. The applications are blocked until a new user has logged on. This ensures that one user is always logged on while the User Administration is active.

6.5 Modifying the Basic Settings of the User Administration

Selecting a Language

To change the user interface language of the User Administration:

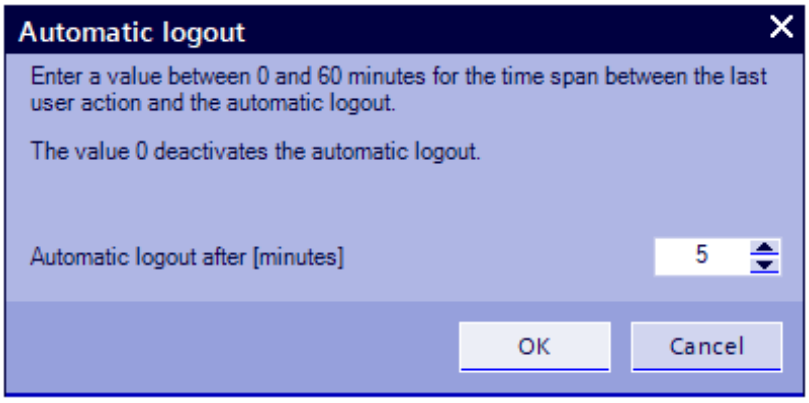
✧ Select **Tools > Language selection** and select the desired language in the dialog which opens.

The new language setting is activated upon a restart of the User Administration.

Setting a Timer

To set the time for the automatic logout from the User Administration:

✧ Select **Tools > Set timer** and set a time between 0 and 60 minutes in the dialog which opens. The 0 minutes setting deactivates the automatic logout.



[sc_Logoff_Time_User_Administ, 2, en_US]

Figure 6-9 Setting the Logout Time for the User Administration

6.6 Showing the History of the User Administration

Showing the Security Log File

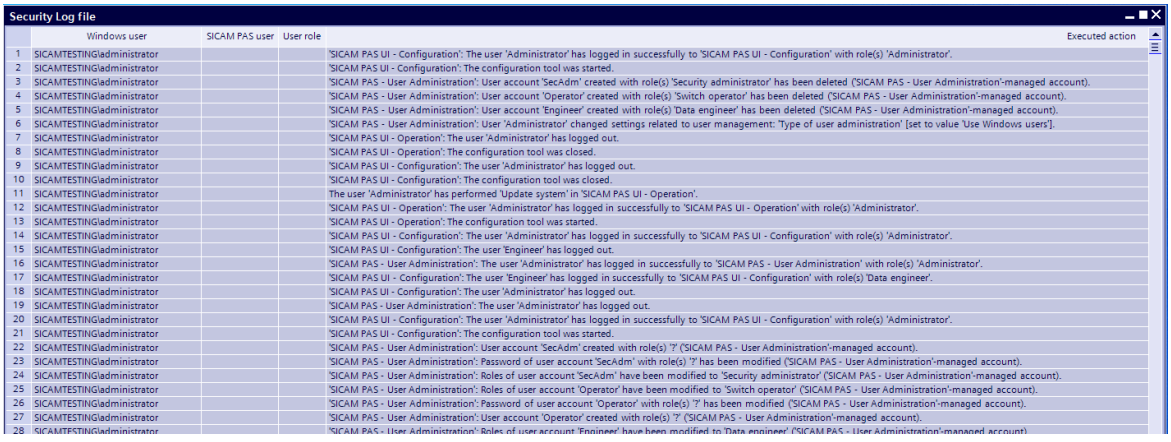
All activities of the User Administration are logged in chronological order in a log file.

NOTE

The security log file can only be displayed if the logged on Windows user belongs to the administrator group.

To show the progress of User Administration activities:

✧ Select **File > Show security log file...**.



[sc_User_Administ_Log_File, 2, en_US]

Figure 6-10 User Administration Log File

6.7 Configuring syslog

NOTE

The **Security** menu is available only for the **Administrator** and **Security administrator**.

Security related logs, for example, user login/logout, start/stop of system components, modifications in the archive (import records, import PQDIF, delete records, delete reports, add or edit traffic lights), are displayed in the Windows Event Viewer in the **PASSecurity** and **PQ Analyzer Security** folders. Use **syslog** to collect these security-related logs of the applications within a system on a dedicated syslog server.

To configure the syslog server:

✧ Select **Configure syslog...** from the **Security** menu.

The **Configure syslog** dialog which opens provides the parameters:

- **Activate syslog**
  By default, this parameter is set to **No**. Select **Yes** to activate syslog.
- **Server IP address**
  By default, the IP address of the network card of your computer is used. Enter the syslog server IP address.
- **UDP port**
  This parameter is used to establish the connection to the syslog server. By default, 514 is used as UDP port number.

✧ Click **OK** to configure syslog or click **Cancel** to discard the changes.

NOTE

After syslog has been configured, update the system in **SICAM PAS/PQS UI – Operation**.

6.8 Enabling Asset Monitoring (SNMP Agent)

NOTE

The **Security** menu is available only for the **Administrator** and **Security administrator**.

SICAM PAS/PQS provides an SNMP Agent which makes available asset information, for example, product name, installed software and database versions, date of last configuration changes, and enabled features, to an SNMP Manager.

SNMP Agent also stores security related logs, for example, user login/logout, start/stop of system components, modifications in the archive (import records, import PQDIF, delete records, delete reports, add or edit traffic lights), available as information for the SNMP Manager.

To enable/disable asset monitoring:

✧ Select **Enabling Asset Monitoring (SNMP Agent)** from the **Security** menu.

The checkmark on this menu item indicates the selection.

NOTE

In order to be able to communicate information about the SICAM PAS/PQS station between with the SNMP Agent and the SNMP manager, the following credentials are required:

- **SNMP User Name**: Admin
- **SNMP V3 Authentication Protocol**: SHA512
- **SNMP V3 Authentication Password**: 12345678
- **SNMP V3 Privacy Protocol**: AES128
- **SNMP V3 Privacy Password**: 12345678

For safety reasons, Siemens recommends you remove this initial standard user, create your own user, and assign a new password. The corresponding SNMP tree structures and tables for user management are readable and writable (USMMIB).For more information refer to RFC documentation: USM-MIB (RFC 3414, 2574) and VACM-MIB (RFC 3415, 2575).

User credentials for SNMP Agent can be:

- Adapted to established connection of SNMP Manager

  – or –

- Configured in advance using MIB browser

  For example, *https://www.ireasoning.com/downloadmibbrowserpro.shtml*, go to Tools > Manage SNMPv3 USM Users.

NOTE

When SICAM PAS/PQS is configured with SNMP client, the port number 161 is used. In such a case, the SNMP Agent and the SNMP client both tend to use the same port number 161, causing one of them to fail. To solve this, you can assign the SNMP Agent to another port by adding an environment variable, **RC_SSA_SNMP_PORT** with the value of the port number as a decimal number.

NOTE

For the display of MIB information (MIB – Management Information Base), a MIB browser and the description files are required.

You can find the MIB file in the **DeviceDescriptions/MIB** folder on the **SICAM PAS/PQS** DVD.

6.9 Enabling Security Notifications (SNMP Agent)

NOTE

The **Security** menu is available only for the **Administrator** and **Security administrator**.

Security related logs, for example, user login/logout, start/stop of system components, modifications in the archive (import records, import PQDIF, delete records, delete reports, add or edit traffic lights), are displayed in the **Windows Event Viewer** in the **PASSecurity** and **PQ Analyzer Security** folders. Use **Enabling security notifications (SNMP Agent)**, to publish the security-related logs of the applications within a system as traps to SNMP Manager.

To enable/disable the security events as traps:

✧ Select **Enable security notifications (SNMP Agent)** from the **Security** menu

The checkmark on this menu item indicates the selection.

NOTE

The parameters used by the SNMP Agent for the generation of notifications or messages can be remotely configured. The corresponding SNMP tree structures and tables for Security Notification are readable and writable. For more information refer to RFC documentation: SNMP-NOTIFICATION-MIB (RFC 3413) and SNMP-TARGET-MIB (RFC 3413).

NOTE

When SICAM PAS/PQS is configured with SNMP client, the port number 162 is used. In such a case, the secure SNMP Agent and the SNMP client both tend to use the same port number 162, causing one of them to fail. To solve this, you can assign the secure SNMP Agent to another port by adding an environment variable, **RC_SSA_SNMP_PORT** with the value of the port number as a decimal number.

7 Human-Machine Interface (HMI)

Use SICAM SCC to monitor and control your system.

SICAM SCC provides access to the SICAM PAS/PQS station with a local network, by using the Intranet or by using the Internet.

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7.1 Overview

The SICAM SCC Human-Machine Interface (HMI) serves for system monitoring and control.

Functional and spatial interactions of your station components are represented in the SICAM SCC overview and station diagrams.

State changes of process information and control actions are logged chronologically in message lists such as alarm and event lists.

You can intervene in the process and control it from the station diagrams.

Messages and measured values can be logged and saved in the archive.

The assignment of specific user authorizations and the consideration of the switching authority on different levels protect your system against unauthorized access.

Various switching modes, update functions, and options for the setting of bay and telecontrol blocks complement the power-management functions of SICAM SCC.

The communication with the SICAM PAS is performed by using Ethernet (TCP/IP).

To connect SICAM SCC to SICAM PAS:

- Using SICAM PAS UI – Configuration, add the **SCC** application, the corresponding **interface**, and a **control center** object to your project and configure them accordingly.
- Export the project data for SICAM SCC using SICAM PAS/PQS UI – Configuration.
- Map the information to SICAM SCC.
- Export the project data for SICAM SCC using SICAM PAS/PQS UI – Configuration.
- Import the project data into SICAM SCC.

7.2 Setting up a Connection

Inserting an Application

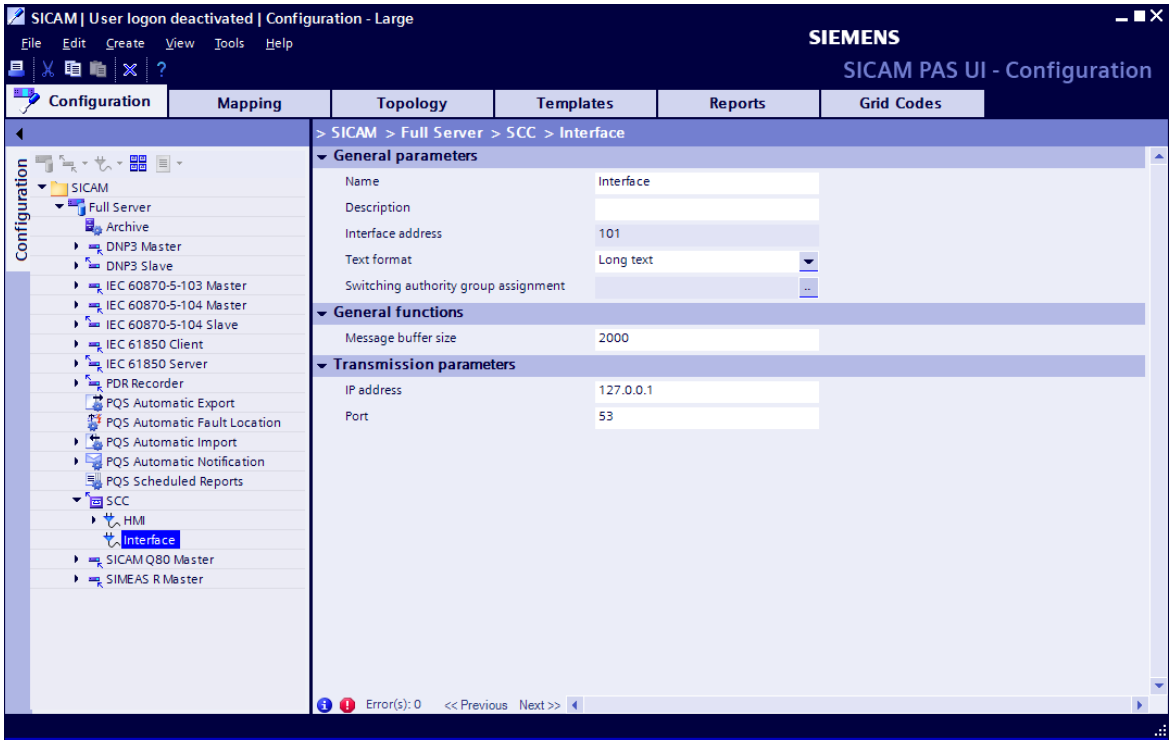
To insert an **application** for SICAM SCC in **SICAM PAS/PQS UI – Configuration**:

✧ Right-click **Full Server** in the configuration tree and select **Application > SCC** from the context menu.

Inserting an Interface

✧ Insert an **interface** for the SCC application.

✧ Select the interface of the **SCC** application and under **General parameters**, enter the name of the interface.



[sc_Insert_App, 3, en_US]

Figure 7-1 Inserting an Application

✧ Select the **Text format** used for the mapping of information for SICAM SCC:

- **Long text**, 255 characters for message group and message text, can be exported as a TEA-X file only
- **Short text**, can be exported as a TEA-X file or as a SCC file in PXD format

NOTE

If Unicode characters (except Central European character sets) are used, they are replaced with # in the exported PXD file.

✧ Define the **Switching authority group assignment**, for example, Local 1.

For more information on the switching authority, refer to *A.14 Information – Switching Authority*.

Inserting a Control Center

✧ Insert a **control center** for the SCC application. Enter a name, for example, **Control_center_local**.

7.3 Mapping Information

Monitoring Direction

✧ Select the **Mapping** view.

✧ Select the **control_center_local**. In the **monitoring direction**, select the information which you want to display on your operator terminal.

Select how you want to use each individual item of information in SICAM SCC:

✧ Select the **Alarm logging** column to enter the information into an alarm list.

✧ Select the **Tag logging** column to show the information in a diagram.

- ✧ Select the **Archive system** column to archive a message or a measured value. This selection automatically initiates the selection in the **Tag logging** column.

NOTE

The following **Message list**, **Message type**, and **Value text group** columns are enabled only if the **Alarm logging** is enabled.

- ✧ In the **Message list** column, select the message list in which the information is displayed. Indications can be assigned to **Event and alarm list**, **Event and protection message list**, **Event list**, and **SCC default**.
- ✧ In the **Message type** column, define the message type for each indication. For example, the color in which the message is displayed in the message list.

  Indications can be classified as **Alarm** type, **Error** type, **SCC default** type, and **Warning** type.
- ✧ In the **Value text group** column, select the value text group in which the information is displayed. Indications can be assigned to different type of value text groups: **0...16**, **SCC default**, **Show process value**.

Command Direction

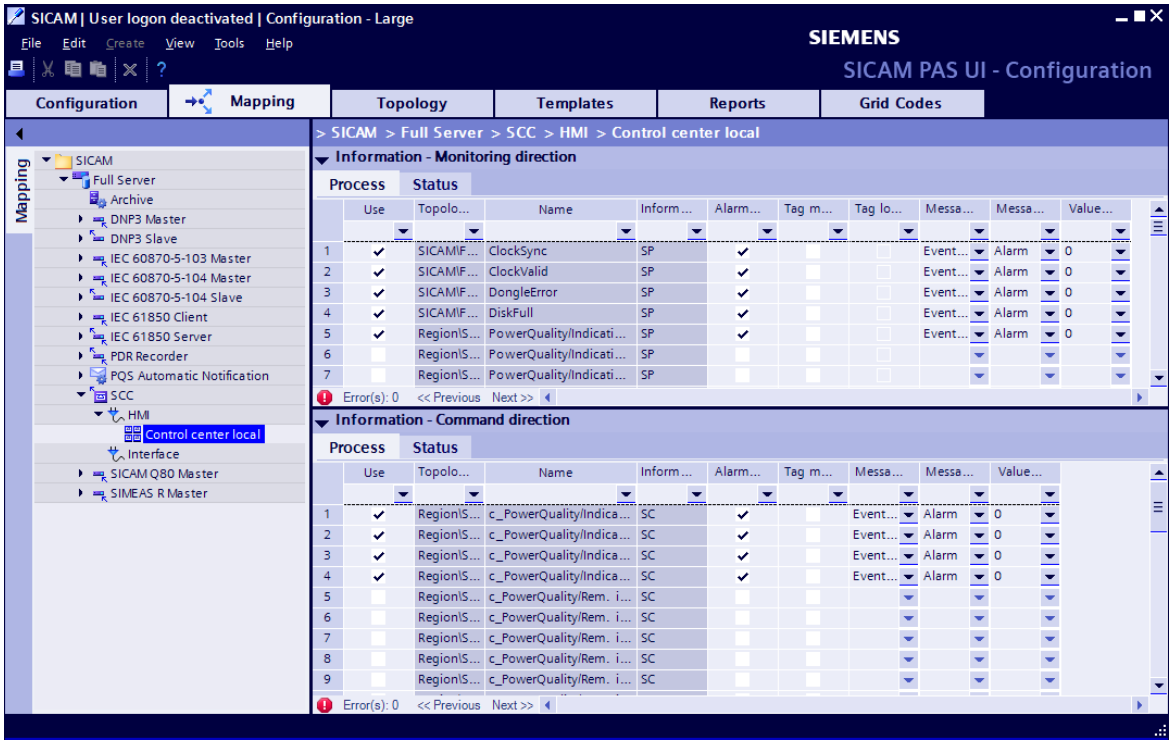
- ✧ Switch to the **command direction** and select the information which can be controlled by using your operator terminal.
- ✧ Select the **Alarm logging** column to enter the information into the event list.
- ✧ Select the **Tag management** column to show the information in a diagram.

NOTE

The following **Message list**, **Message type**, and **Value text group** columns are enabled only if the **Alarm logging** is enabled.

- ✧ In the **Message list** column, select the message list in which the information is displayed. Indications can be assigned to Event and alarm list, Event and protection message list, Event list, and SCC default.
- ✧ In the **Message type** column, define the message type for each indication. For example, the color in which the message is displayed in the message list.

  Indications can be classified as Alarm type, Error type, SCC default type, and Warning type.
- ✧ In the **Value text group** column, select the value text group in which the information is displayed. Indications can be assigned to different type of value text groups: 0...16, SCC default, Show process value.



[sc_Mapping_Info, 3, en_US]

Figure 7-2 Mapping Information

This selection creates the SCC tags, which you require for the configuration and parameterization of your HMI. Define the topological structure of your station before mapping the tags to SICAM SCC.

If you have modified the topology after the export, you can have the tag names updated.

For more information, refer to *2.9 Mapping the Topological Structures*.

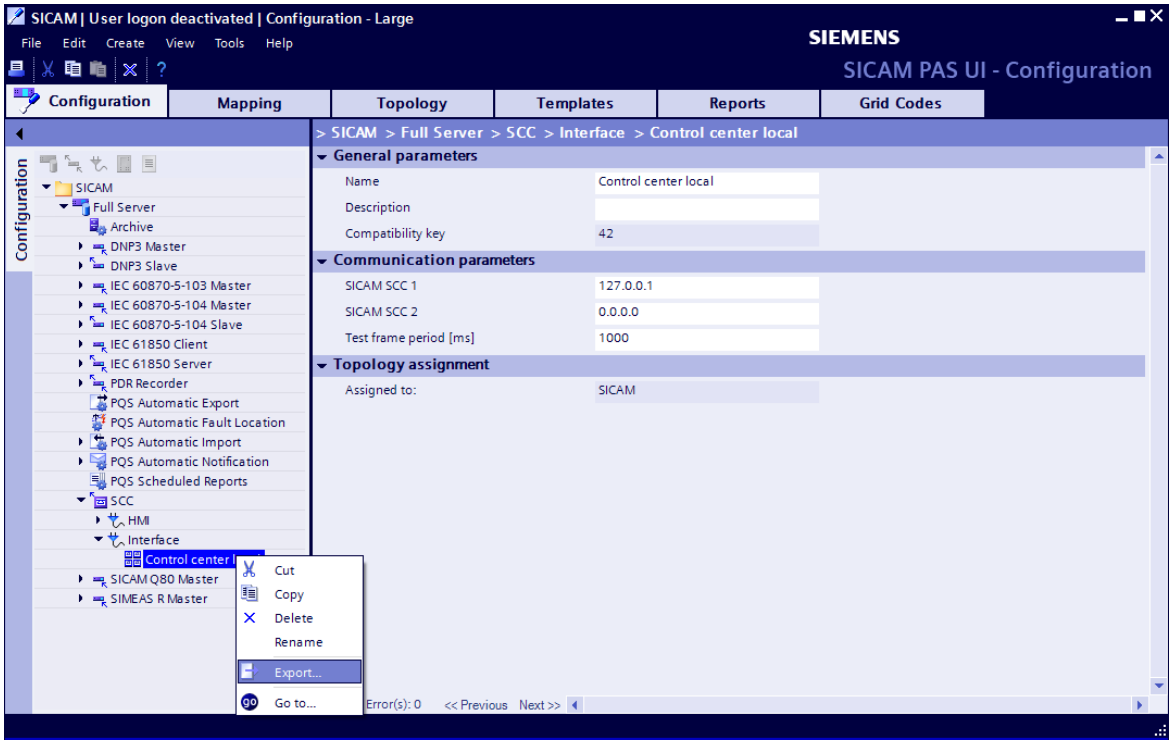
7.4 Exporting Configuration Data

Exporting Data

In order to be able to use the configured and parameterized information in SICAM SCC, you must export it from SICAM PAS/PQS UI – Configuration.

✧ Select the **Configuration** view.

✧ Select the control center of the SCC application and select **Export...** from the context menu.



[sc_Exporting_Config_Data, 3, en_US]

Figure 7-3 Exporting Configuration Data

The export function creates a TEA-X file or a PXD file in the selected directory. The PXD file export for SICAM SCC is only possible, if the **short text** text format is selected in the SCC interface. Afterwards, you import the file in SICAM SCC using the SICAM PAS Wizard. When using TEA-X, only 1 PAS station can be imported in SICAM SCC.

The tag names are created from the topological designations of the information. If you have modified the topology after mapping the information for SCC, you can decide whether you want to perform the export with modified SCC tag names or with those which were valid upon the mapping of the data.

Updating SCC Tag Names

To update the tag names:

✧ Open the **Mapping** view. Select the control center and select **Replace SCC tag names** from the context menu.

For more information, refer to */5/ SICAM SCC, Human Machine Interface SICAM SCC*.

8 SINAUT LSA Converter

Use the SINAUT LSA Converter in order to convert the project data of a SINAUT LSA system for use in SICAM PAS/PQS.

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8.1 Converting SINAUT LSA Project Files

General Information

Use the SINAUT LSA Converter in order to convert the project data of a SINAUT LSA system for its use in SICAM PAS/PQS.

After the conversion, one **XML file** and one or several **TXT files** are available. The TXT files hold the description files of the devices configured in the SINAUT LSA system.

Import the XML file into your SICAM PAS/PQS project. After the import, all devices of the SINAUT LSA system are included the SICAM PAS/PQS project.

For large systems, the project data is stored in 2 files, Modul1.lsa and Modul2.lsa.

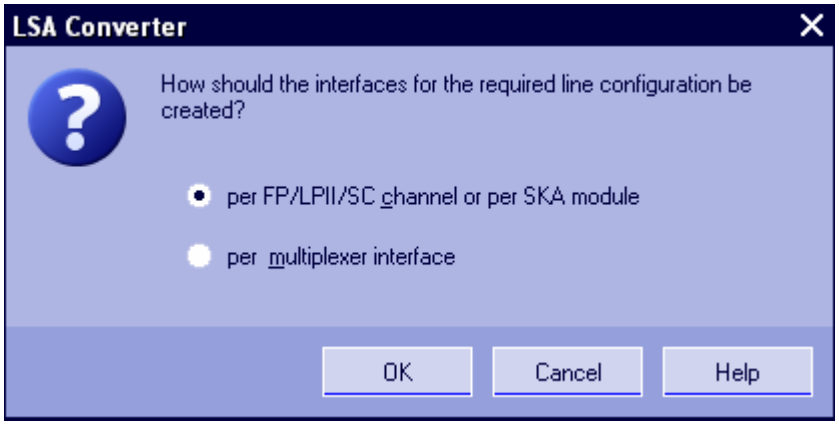
During the conversion, you must specify only one of the two files. The other file is converted automatically. The SINAUT LSA Converter creates a **Modul.lsa** file which holds all project data.

The indexes required for the definition of the configuration commands and all related parameters are written into a **SYAP_xxx.txt** file. **xxx** is the name of the download file, for example, SYAP_Modul.txt.

Converting SINAUT LSA Project Data

Start the LSA Converter from the Windows Start menu.

- ✧ Click **Start** and scroll through the app list.
- ✧ Select **LSA Converter** from the **SICAM PAS/PQS** folder.
- ✧ In the **Open an LSA Configuration** dialog which opens next, specify the LSA file which you want to convert.
- ✧ Click **Open** to open the **LSA Converter** dialog.



[sc_Interface_Creation, 1, en_US]

Figure 8-1 Selecting the Interface Creation

- ✧ Activate **per FP/LPII/SC Channel or per SKA module** in order to assign the desired interface to all the devices of an SKA module.
- ✧ Activate **per multiplexer interface** in order to assign the desired interface to all devices of an MUX multiplexer and then click **OK** to confirm.

The abbreviation SKA stands for the serial interfacing module for request control.

If required, the dialog for the selection of the version of the SKA firmware opens.

- ✧ Select the version of the SKA firmware (see online help) and click **OK** to confirm.

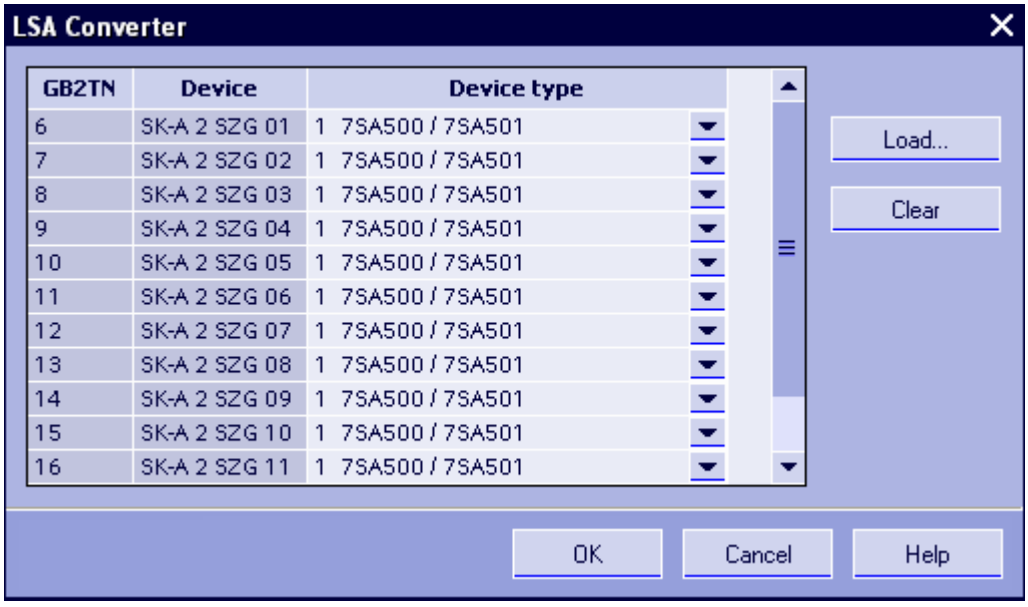
The dialog for saving the protection device templates opens.

- ✧ Select **in a separate device description file**.
  The templates of the protection devices are saved in separate files.

NOTE

The **in the device description file of the bay controller** option is supported in monitoring direction. Protection devices can be connected via the IEC 60870-5-103 protocol. However, commands, measured values, or fault records are not supported. If commands, measured values, or fault records are required, the protection devices must be connected directly to SICAM PAS/PQS via the IEC 60870-5-103 Master application.

For project data of SINAUT LSA systems of Version 6 or older, the dialog for the specification of the device type opens.



[sc_Defining_Dev_Type, 1, en_US]

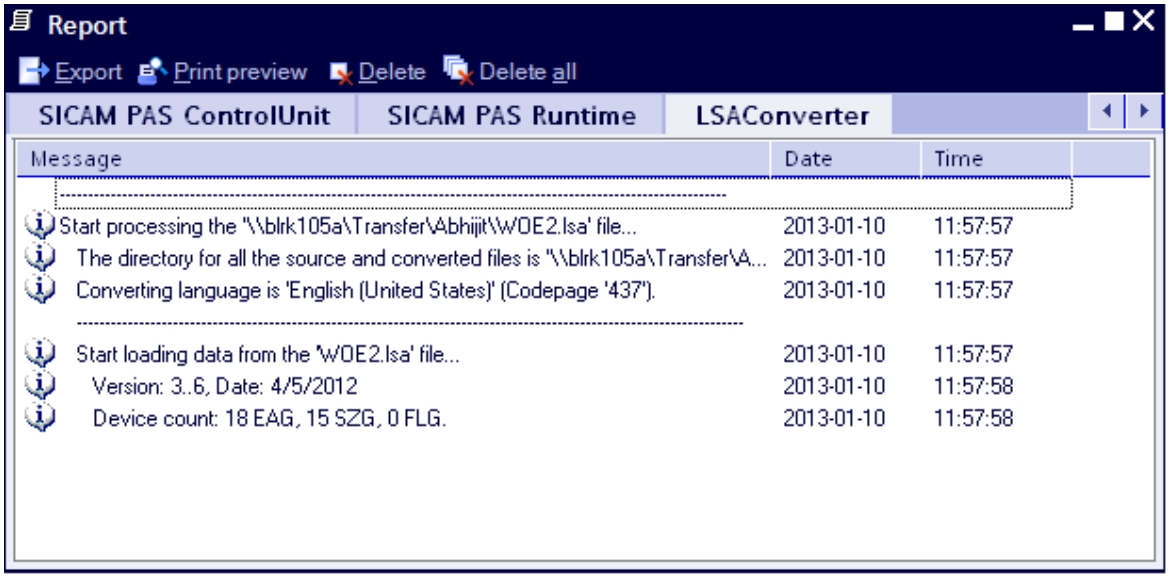
Figure 8-2 Defining the Device Type

The device number is indicated in the **GB2TN** column.

The device name is indicated in the **Device** column.

✧ Under **Device type**, select the type of each individual device and then click **OK** to confirm. All device types of a system are now available for selection from the drop-down list box.
Specify a type for each device.

The conversion is executed. The progress of the conversion is documented in the **Report**.



[sc_Report_Dialog, 2, en_US]

Figure 8-3 Report Dialog

The created files are saved in the directory of the LSA file.

8.2 Importing/Updating Project Data

The following description is identical for the **SINAUT LSA ILSA Master** and **IEC 60870-5-103 Master** applications. The individual steps are explained using the example of **SINAUT LSA ILSA Master**. If devices are connected to the SINAUT LSA system via the IEC 60870-5-103 protocol, perform the same steps for the **IEC 60870-5-103 Master** application.

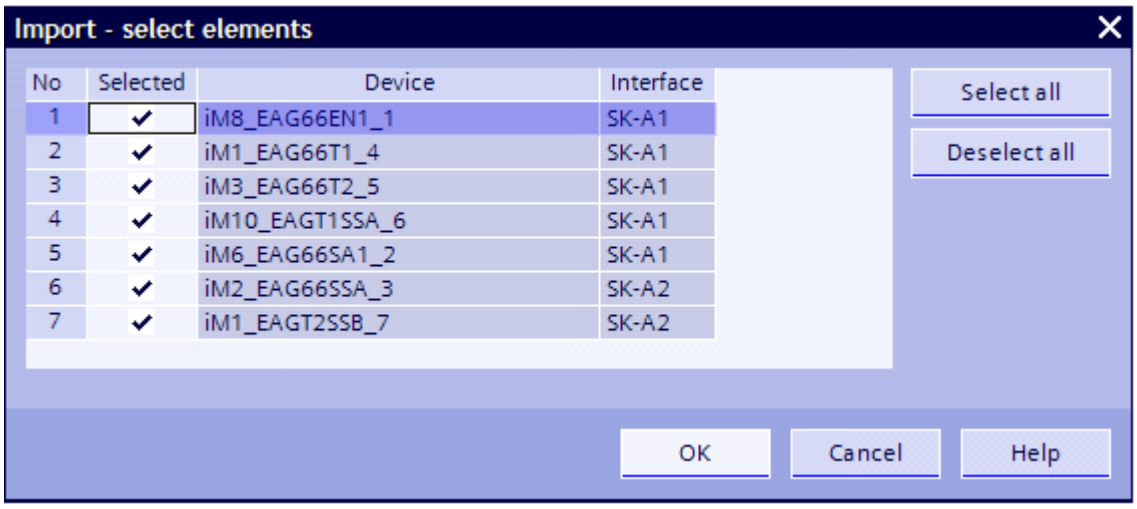
8.2.1 Importing Project Data into SICAM PAS/PQS

To import the converted data of the SINAUT LSA system into SICAM PAS/PQS:

- ✧ Start **SICAM PAS/PQS UI – Configuration**.
- ✧ Insert the **SINAUT LSA ILSA Master** application into the project.
- ✧ Select the inserted application and select **Import...** from the context menu.
- ✧ In the dialog which opens, select the XML file created by the SINAUT LSA Converter.

This starts the import process. The progress (successful execution / errors occurred) is documented in the **Report**.

The **Import – select elements** dialog shows the devices the data of which can be inserted into the configuration tree.



[sc_Selecting_Element, 1, en_US]

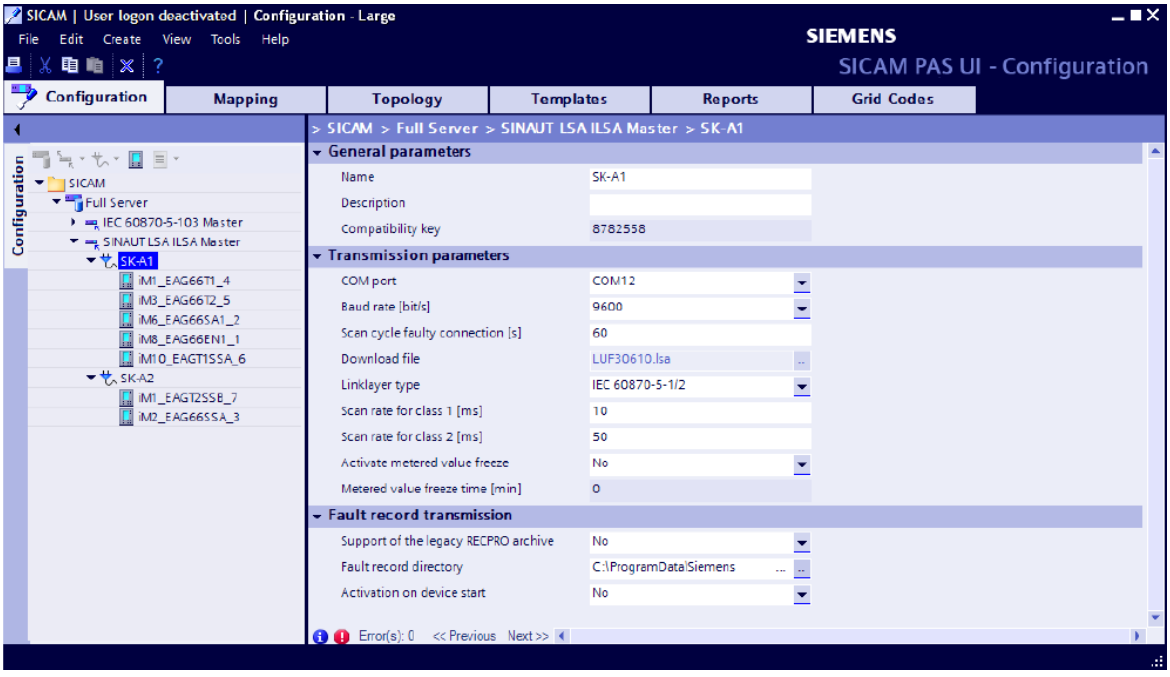
Figure 8-4 Importing/Updating - Selecting an Element

NOTE

Do not deselect individual devices of an interface for Importing/Updating. Otherwise, the interface data for devices which have not been selected becomes inconsistent.

✧ Click **OK** to confirm.

After the import, you can view the devices of the SINAUT LSA system in the configuration tree.



[sc_Imported_Dev_Config, 3, en_US]

Figure 8-5 Imported Devices in SICAM PAS/PQS UI – Configuration

8.2.2 Updating the Project Data

The following applies when updating a SINAUT LSA system in SICAM PAS/PQS with changed project data:

- Only the system components of an existing LSA configuration are updated.
- New system components must be imported, refer to *8.2.1 Importing Project Data into SICAM PAS/PQS*.
- Any component which has been removed from a SINAUT LSA system must be manually deleted in SICAM PAS/PQS UI – Configuration.
- The interfaces, devices and information/commands to be updated are identified by their name and not by their address. If these identifiers are changed, information/commands with a different name are deleted and created once again with their original name.

To update the converted data of a changed SINAUT LSA system in SICAM PAS/PQS:

✧ Start **SICAM PAS/PQS UI – Configuration**.

✧ Select the **SINAUT LSA ILSA Master** application and then select **Update...** from the context menu.

✧ Continue as described in *8.2.1 Importing Project Data into SICAM PAS/PQS*.

NOTE

Proceed in the following order when updating an LSA system: Updating existing system components, Importing new system components, Deleting removed system components.

9 Diagnostic Tools

The **Version Scan** system component provides information on the version and storage location of installed products and their lower-level system components.

SICAM CHaSI (Collect Hardware and Software Information) is a diagnostic tool used to collect information on the hardware and software components of the SICAM systems.

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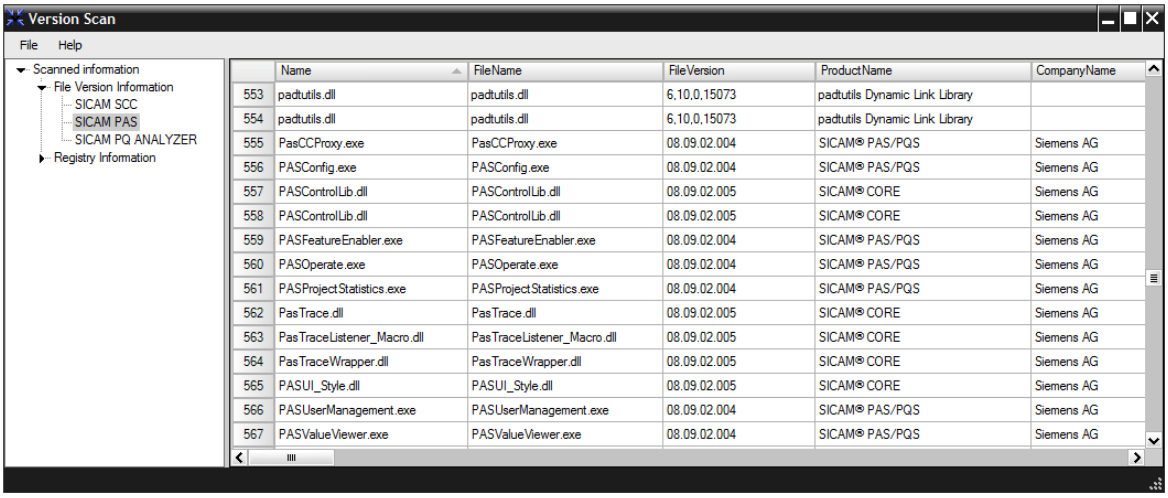
9.1 Version Scan

The **Version Scan** system component determines the version and the storage location of the products installed and their lower-level system components. Error sources through inconsistent versions of the individual components can thus be determined quickly and efficiently.

For the Customer Support Center, the Version Scan provides valuable information, which serves as a basis for evaluating the system behavior or for determining the causes of problems.

The following products are evaluated:

- SICAM PAS
- SICAM SCC
- SICAM PQ Analyzer
- DIGSI



	Name	FileName	FileVersion	ProductName	CompanyName
553	padtutils.dll	padtutils.dll	6,10,0,15073	padtutils Dynamic Link Library	
554	padtutils.dll	padtutils.dll	6,10,0,15073	padtutils Dynamic Link Library	
555	PasCCProxy.exe	PasCCProxy.exe	08.09.02.004	SICAM® PAS/PQS	Siemens AG
556	PASConfig.exe	PASConfig.exe	08.09.02.004	SICAM® PAS/PQS	Siemens AG
557	PASControlLib.dll	PASControlLib.dll	08.09.02.005	SICAM® CORE	Siemens AG
558	PASControlLib.dll	PASControlLib.dll	08.09.02.005	SICAM® CORE	Siemens AG
559	PASFeatureEnabler.exe	PASFeatureEnabler.exe	08.09.02.004	SICAM® PAS/PQS	Siemens AG
560	PASOperate.exe	PASOperate.exe	08.09.02.004	SICAM® PAS/PQS	Siemens AG
561	PASProjectStatistics.exe	PASProjectStatistics.exe	08.09.02.004	SICAM® PAS/PQS	Siemens AG
562	PasTrace.dll	PasTrace.dll	08.09.02.005	SICAM® CORE	Siemens AG
563	PasTraceListener_Macro.dll	PasTraceListener_Macro.dll	08.09.02.005	SICAM® CORE	Siemens AG
564	PasTraceWrapper.dll	PasTraceWrapper.dll	08.09.02.005	SICAM® CORE	Siemens AG
565	PASUI_Style.dll	PASUI_Style.dll	08.09.02.005	SICAM® CORE	Siemens AG
566	PASUserManagement.exe	PASUserManagement.exe	08.09.02.004	SICAM® PAS/PQS	Siemens AG
567	PASValueViewer.exe	PASValueViewer.exe	08.09.02.004	SICAM® PAS/PQS	Siemens AG

[sc_VersionScan, 3, en_US]

Figure 9-1 Version Scan

The information provided by Version Scan is structured according to:

- Scanned information
  Name and version of the products installed.
- File version information
  All exe and dll files of the system component selected in the structure tree
  The information is displayed with the name, file name, file version, installation path.
- Registry information
  All registry entries of the system component selected in the structure tree
- Optional packages information
  Name and installation path of the optional system component selected in the structure tree

Starting the Version Scan

Start the Version Scan system component from the Windows Start menu.

✧ Click **Start** and scroll through the app list.

✧ Select **Version Scan** from the **SICAM PAS/PQS** folder.

The Version Scan opens and the installed products are displayed.

Exporting Version Information

You can export the version information, for example, for supporting our hotline.

✧ Select **File > Generate Report** and click **Create Report** in the dialog which opens.

✧ In the following dialog, click **Save As...** to save the report.

The report is compressed as a VSCAN file and saved in the destination directory under **VersionScanReport.zip**.

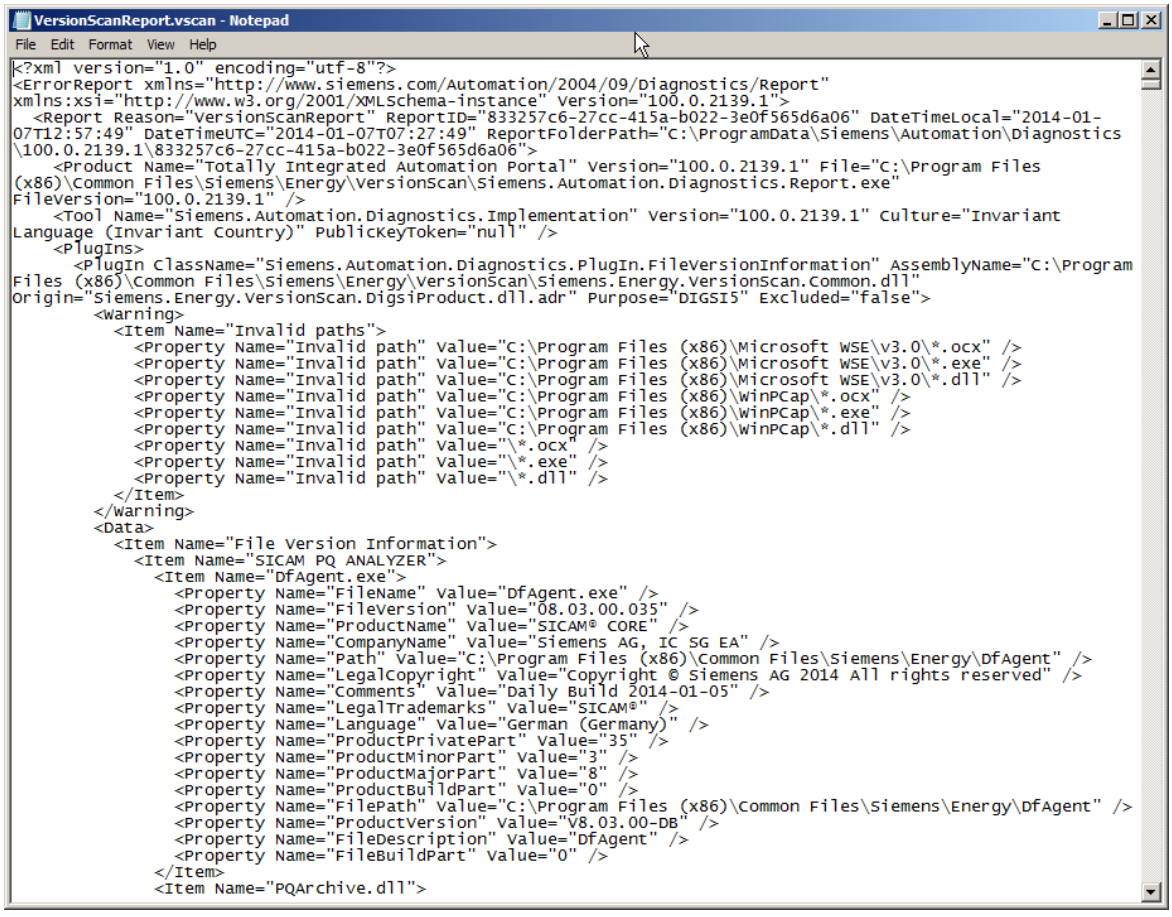


Figure 9-2 Version Scan Report, Example

Importing Version Information

You can load the created Report.VSCAN (Version Scan file) in the Version Scan.

Using the version scan file, you can make available customer information for analysis by the hotline.

✧ Click **File > Load Report**.

In the dialog which opens, select the directory in which the exported Version Scan report is stored.

The version information of the individual system components can be selected again by using the Version Scan structure tree.

9.2 SICAM CHaSI System

SICAM CHaSI (Collect Hardware and Software Information) is a diagnostic tool used to collect information on the hardware and software components of the SICAM systems.

You can forward this information to the Customer Support Center for further analysis, which includes the following data:

- Hardware and software inventory data including data concerning the BIOS, the processor, and the software installed
- Information on the file system, the network, important entries from the registration database, and system settings (including the hosts file and the ntp file)
- Information on the version of the SICAM products and files installed for:
  - SICAM PAS/PQS
  - SICAM PQ Analyzer
  - SICAM SCC
  - SIMATIC WinCC
- Error log files with information on any program crashes (dump files)
- Windows Event Log
- Windows Error Reporting files (only Appcrash and Apphang files)
- Report logs

SICAM CHaSI provides 2 functions for the collection of diagnostic data:

- *9.2.1 SICAM CHaSI System Overview*
  Displays a selection of the most important system information in the Web browser. This procedure takes less than 1 minute.
- *9.2.2 SICAM CHaSI System Details*
  Displays a collection of detailed diagnostic data. This procedure takes 5 to 15 minutes, depending on the scope and performance of the system.

You can view all the operations. You can view the collected information in plain text.

NOTE

User related data, for example passwords, are not collected.

You can compress the collected data and provide it to the Customer Support Center for further evaluation. This is done for:

- **System Overview** data (e-mail)
- **System Details** data (Secure File Exchange[1])

However, in certain support cases, further diagnosis is necessary for which the data required cannot be collected using the SICAM CHaSI scripts. For example, protocol logs during the runtime of the programs.

9.2.1 SICAM CHaSI System Overview

For System Overview, only the most relevant values are determined and displayed. You can forward the generated file to the Customer Support Center. You can use the generated values for analysis or setting up an inventory of the system.

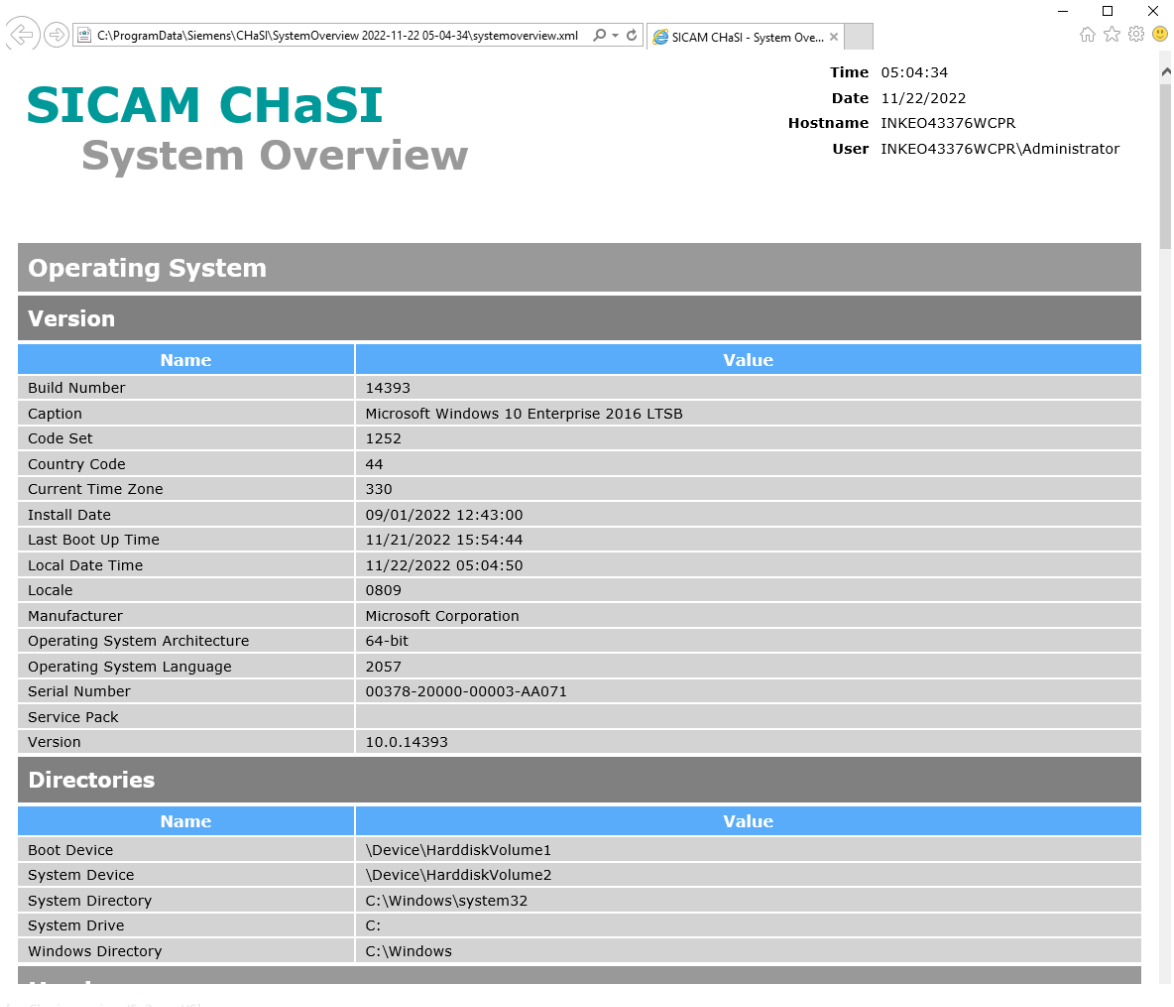
Starting SICAM CHaSI System Overview

To start the determination of the System Overview data:

✧ Double-click the **SystemOverview.bat** file in the **%PAS_BIN%\CHaSI** directory.

The command-line tool displays the processed information, as well as the progress of processing. Afterwards, the information is arranged in tables and displayed via the Internet Explorer.

1 SIEMENS Secure File Exchange, service for secure data exchange, see *https://secufex.erlm.siemens.de*



[sc_Chasi_overview_IE, 2, en_US]

Figure 9-3 Displaying the System Overview Data in Internet Explorer

NOTE

If **Internet Explorer** is not installed, the **systemoverview.xml** file is not displayed. In this case, open the file manually using any other Web browser.

Due to the security settings of **Google Chrome**, the **systemoverview.xml** file **cannot** be displayed in this browser.

Forwarding the Collected Data to the Customer Support Center

In the **%ProgramData%\Siemens\CHaSI\SystemOverview [Date Time]** directory, the information is saved in **systemoverview.xml**, for example: C:\ProgramData\Siemens\CHaSI\SystemOverview 2014- 07-04 10-58-26\systemoverview.xml.

In addition, the **SystemOverview.xlst**, **\css\screen.css**, and **\css\print.css** files are copied into the specified directory. These files are required for representation.

✧ Save the **SystemOverview [Date Time]** directory as a ZIP file and send it to the Customer Support Center.

9.2.2 SICAM CHaSI System Details

The values required for initial analysis of System Details are determined and collected automatically. The information is collected independently of the operating system used and the product installed.

Starting SICAM CHaSI System Details

NOTE

Administrator rights are required to access the **SICAM CHaSI System Details** tool. If administrators rights are not available, the tool tries to obtain them using the user account control function. If a user's rights are not sufficient in order to execute the tool with administrator rights, the tool is aborted.

To start the determination of the System Details data:

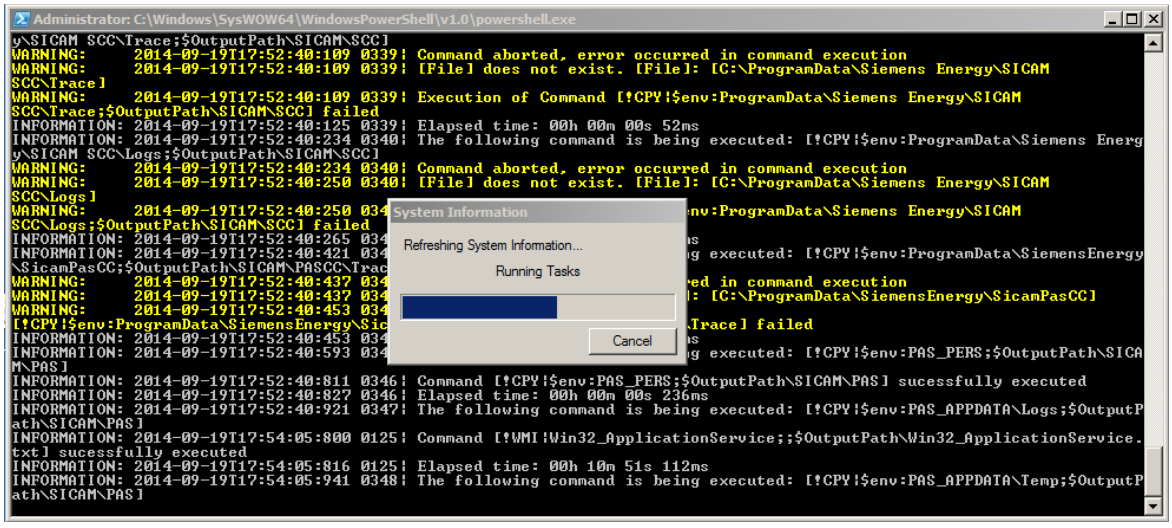
✧ Double-click the **SystemDetails.bat** file in the **%PAS_BIN%\CHaSI** directory.

However, it can also become necessary to stop the SICAM runtime services and close the SICAM PAS/PQS components, for example, for copying the SICAM PAS/PQS database.

✧ If you agree that the SICAM runtime services are stopped, enter **Yes**.

The services are automatically restarted afterwards. The SICAM PAS/PQS components, for example, SICAM PAS/PQS UI – Configuration, must be restarted manually.

If you enter **No**, exclusively tasks that are admissible during runtime or with components started are executed.



[sc_Chasi_details, 1, en_US]

Figure 9-4 Command Line Tool with System Details Data

Errors are highlighted in red and warnings are highlighted in yellow. If you ignore these errors and warnings, the corresponding information is not included in the evaluation.

Forwarding the Collected Data to the Customer Support Center

The information collected is saved in a new directory each time you generate the system details:

%ProgramData%\Siemens\CHaSI\SystemDetails[Date Time]

(for example: C:\ProgramData\Siemens\CHaSI\SystemDetails 2014-06-30 17-44-10)

✧ Save the **SystemDetails[Date Time]** directory as a ZIP file and send it to the Customer Support Center for further analysis.

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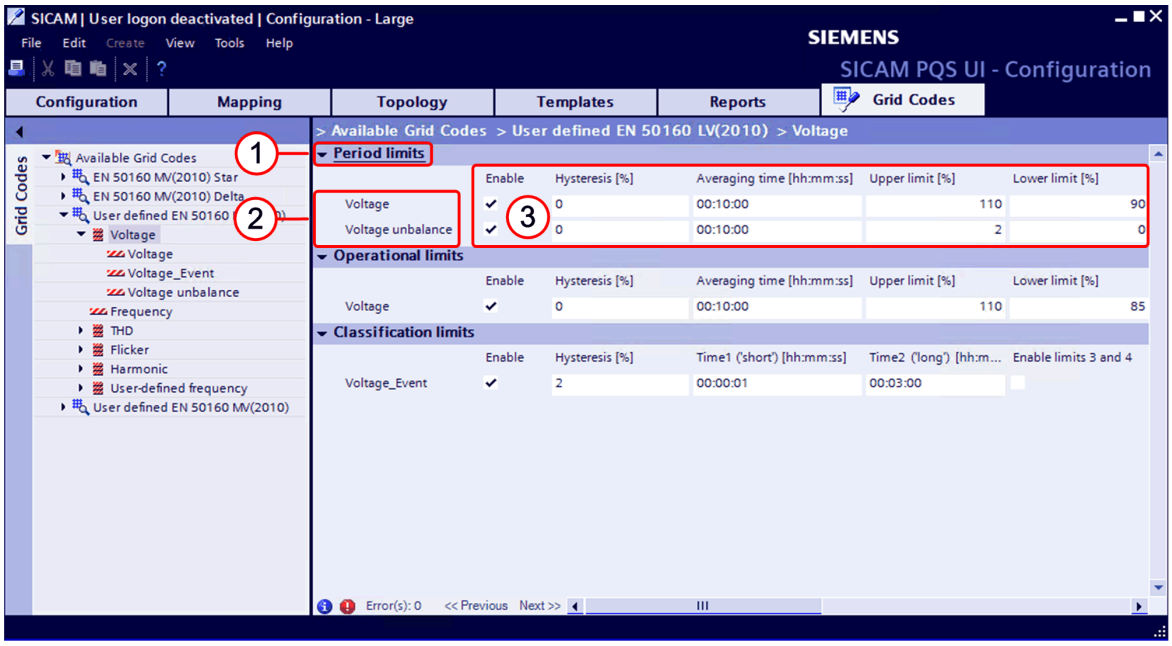
A.1 Structure of Grid Codes

A Grid Code is composed of a multitude of characteristics for which different rules may apply. The rules of a characteristic are used for identifying power quality violations.

If a rule is deactivated, all rule parameters are deactivated as well. The deactivated rules are saved, but not applied.



[le_pqa_GridCodeLimit, 5, en_US]

Figure A-1 Grid Code Limits

(1) Limits that can be defined for each of the selected characteristic group

(2) List of characteristics for the selected characteristic group

(3) Enabled rules with their limit

The following limits can be defined:

- **Period limits**
  Period limits specify the maximum permissible occurrence of limit violations. They are suited for the evaluation of measured characteristics required for the generation of scheduled reports.
- **Operational limits**
  Operational limits define absolute limits, which may never be exceeded or undershot.
- **Classification limits**
  Classification limits are used in the evaluation of measured voltages to classify voltage events.

Parameters of Period Limits

- **Hysteresis**
  Percent value in terms of the measuring variable for the stabilization of the data to be evaluated. Minor value changes are not considered.
- **Averaging time**
  Averaging time in the following format: **Hours:Minutes:Seconds**
- **Upper limit**
  Absolute value for flicker
  The upper limit must be greater than or equal to the lower limit.

- **Lower limit**
  Absolute value for flicker
  The lower limit must be less than or equal to the upper limit.
- **Value of the interval**
  Value of the time range observed, in terms of the unit of the interval, for example,1 (hour)
- **Unit of the interval**, for example, Minute, Hour, Day, Week, Month, and Year
- **Max. violation rate**
  Permissible violation time, in percent, in terms of the time interval defined.
  Example: For an interval of 1 week, the setting 95 % corresponds to a maximum permissible total violation time of 159.6 hours.

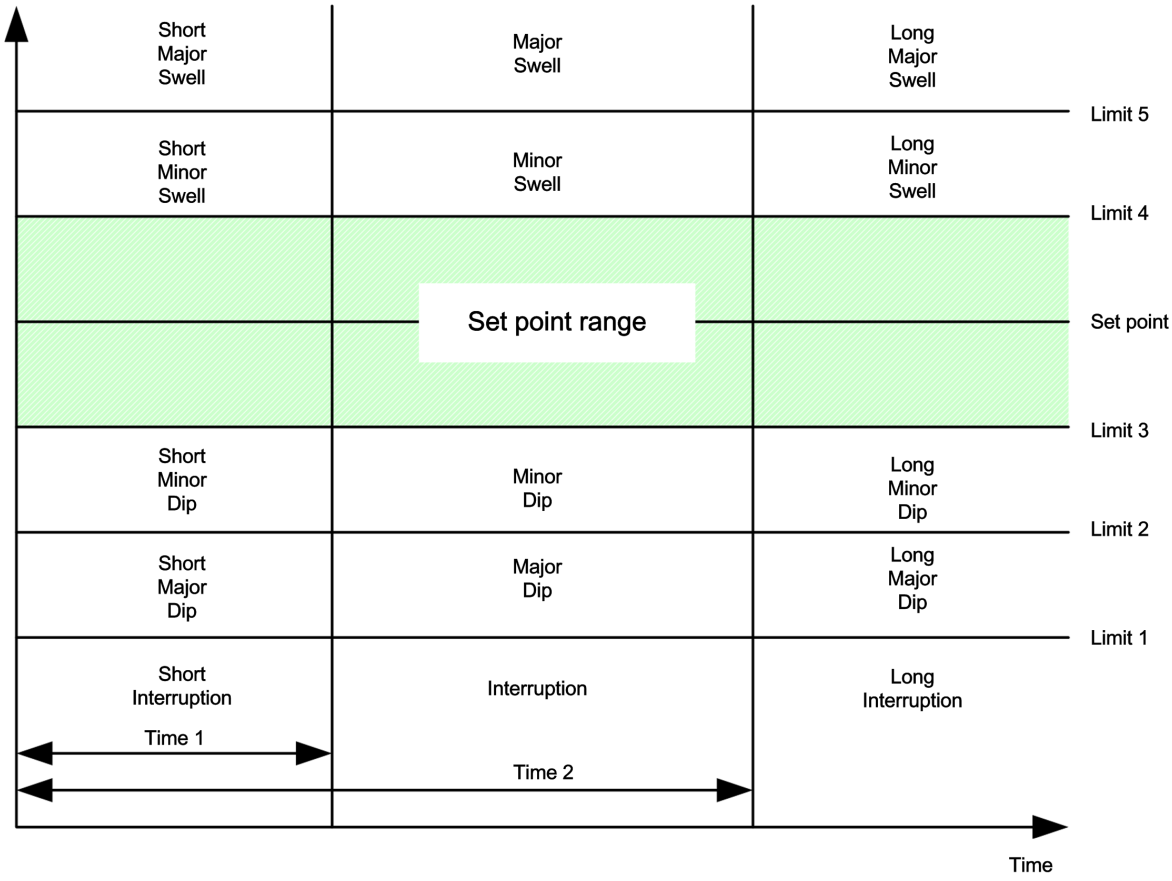
Parameters of Operational Limits

- **Hysteresis**
  Percent value in terms of the measuring variable for the stabilization of the data to be evaluated. Minor value changes are not considered.
- **Averaging time**
  Averaging time in the following format:
  Hours:Minutes:Seconds
- **Upper limit**
  Absolute value for flicker
  The upper limit must be greater than or equal to the lower limit.
- **Lower limit**
  Absolute value for flicker
  The lower limit must be less than or equal to the upper limit.

Parameters of Classification Limits

- **Hysteresis**
  Percent value in terms of the measuring variable for the stabilization of the data to be evaluated. Minor value changes are not considered.
- **Time 1 ('short')**
  Maximum duration of 'short' events
- **Time 2 ('long')**
  Minimum duration of 'long' events
- **Enable limits 3 and 4**
  If this option is disabled, the limits for Minor Dip and Minor Swell are saved but not applied.
- **Limit 1**
  Limit value to differentiate between Interruption and Major Dip
- **Limit 2**
  Limit value to differentiate between Major Dip and Minor Dip
- **Limit 3**
  Limit value to differentiate between Minor Dip and normal operation area
- **Limit 4**
  Limit value to differentiate between Minor Swell and normal operation area
- **Limit 5**
  Limit value to differentiate between Minor Swell and Major Swell

Events are classified as shown in the following matrix:



[sc_pqa_ClassifcationMatrix, 2, en_US]

Figure A-2 Classification Matrix

A.2 Updating a User-Defined Mapping File

The PQ data in PQDIF format is exported based on the default mapping file, **PQDIF_Archive_Mapping.csv** to a user-defined location. You can selectively export the PQ data in PQDIF format by customizing the PQDIF tags in the default mapping file as per your requirements.

To update a user-defined mapping file, proceed with the following steps:

✧ Copy **PQDIF_Archive_Mapping.csv** from **%pas_bin%** to **%publicdocuments%Siemens\SICAM PAS PQS\PQDIFExport**.

✧ Edit the contents of this file using a spreadsheet application to modify the PQDIF tags as per your requirements.

You can also delete the rows to filter the data that is not required to be exported.

NOTE

The mapping file is always saved in the .csv format. Other file formats like .xls or .xlsx are not accepted.

The mapping file must contain at least one valid entry.

✧ To reflect the changes made in the user-defined mapping file in the **PQS Automatic Export** application, update the runtime system using SICAM PAS/PQS UI – Operation or SICAM PAS/PQS UI – Operation Client.

NOTE

The mapping file is validated during the export. Any validation errors in the mapping are shown as warnings in the **Report**. The measurement channels that have warnings during the validation of the mapping file are not exported.

The default mapping file contains the following columns:

Table A-1 Columns of the Default Mapping File

Name of the column	Description
CharacteristicType	Defines which measurement data is to be transmitted via an individual channel, for example, Voltage, and Current
MeasurementValueType	Defines what is represented by the actual quantitative measurement data, for example, Mean, Max, and Min values
tagQuantityMeasuredID	Identifies the physical quantity under measurement that is, voltage, current, power, etc In general, there is a one-to-one correspondence between these and the units of the series.
tagQuantityCharacteristicID	Specifies additional detail about the meaning of the series data
tagValueTypeID	Specifies the meaning of the series data
Frequency/Base	Specifies nominal frequency
tagQuantityUnitsID	Specifies the units of the data in this series
tagQuantityTypeID	Defines the high-level description of the type of quantity that is being captured by this channel

NOTE

The list of valid PQDIF tags are defined in the IEEE 1159.3 PQDIF Standard.

The list of valid **CharacteristicType** and **MeasurementValueType** are defined in the Archive configuration file at **%pas_bin%/en/Siemens.Energy.Archives.ini**.

A.3 Updating a User-Defined Channel List File

The PQ data in CSV format is exported based on the default channel list file, **PQDataCSVExport_ChannelList.csv** to a user-defined location. You can selectively export the PQ data in CSV format by customizing the channel list file as per your requirements.

To update a user-defined channel list file, proceed with the following steps:

✧ Copy **PQDataCSVExport_ChannelList.csv** from **%pas_bin%** to **%publicdocuments%Siemens\SICAM PAS PQS\CSVExport**.

✧ Edit the contents of this channel list file using a spreadsheet application as per your requirements.
You can also delete the rows to filter the data that is not required to be exported.

NOTE

The channel list file is always saved in the .csv format. Other file formats like .xls or .xlsx are not accepted.

The channel list file must contain at least one valid entry.

✧ To reflect the changes made in the user-defined channel list file in the **PQS Automatic Export** application, update the runtime system using SICAM PAS/PQS UI – Operation or SICAM PAS/PQS UI – Operation Client.

NOTE

The channel list file is validated during the export. Any validation errors in the channel list file are shown as warnings in the **Report**. The measurement channels that have warnings during the validation of the channel list file are not exported.

The default channel list file contains the following columns:

Table A-2 Columns of the Default Channel List File

Name of the column	Description
CharacteristicType	Defines which measurement data is to be transmitted via an individual channel, for example, voltage and current
MeasurementValueType	Defines what is represented by the actual quantitative measurement data, for example, Mean, Max, Min, and ExtremeEvent.

NOTE

The list of valid **CharacteristicType** and **MeasurementValueType** are defined in the Archive configuration file at **%pas_bin%/en/Siemens.Energy.Archives.ini**.

A.4 Report Templates

Company Logo in Reports

Your company logo can be inserted in the report header for the following reports:

- Scheduled report
- PQ violation report
- Fault location report

Save the logo in PNG format in the **%PUBLICDOCUMENTS%Siemens\SICAM PAS PQS** named as **Logo_customer.png**.

If the graphics file for the logo is higher than 150 pixel or wider than 100 pixel, it is automatically scaled to 150 x 100 pixel. This may lead to visible artifacts and a blurred display.

If this folder or the logo is missing, the default image present in the installed location of SICAM PAS/PQS is used.

Report Template File

Report template files for scheduled reports are created as ASCII formatted TXT files which can be edited using a text editor.

NOTE

When you edit a report template file, keep a copy of the updated file in a location different from the folders created by the setup - otherwise a database or a software update overwrite your changes.

NOTE

To enable the usage of Unicode characters, store the report template text files using UTF-8 encoding with BOM (Byte Order Marker).

You find report template files for scheduled reports in the directory **%PUBLICDOCUMENTS%Siemens\SICAM PAS PQS\ReportTemplatesScheduled**.

A report template file consists of the following elements:

- **Title** (once)
  The title includes the name of the report.
- **Version** (once) (optionally)
  The version is used to determine if a newer report template is available with the product.
- **Chapter** (optionally)
  Chapters are used to structure a report. You can assign a chapter heading and change the page layout.
- **Diagram**
  A diagram is defined by the diagram name, type, characteristic, and phase. You can also specify, whether measured or evaluated characteristics are displayed.

The following table shows the elements with their possible values.
For more information on the element syntax, refer to *A.5 Examples of Report Template Files*.

Element		Description/Value
Title		Defines the title of the report The title may appear only once in the report template.
	Version[2]	Defines the version of the report template The version must appear only once in the report template. The value must be in the format: **<Major version>.<Minor version>** , for example 1.0, 1.1, or 2.0
	Generation[2]	Interval for report generation. Possible values are: • **None**: The report is never generated. • **Every day**: The report is generated every day. • **Every week**: The report is generated every week. • **Every month**: The report is generated every month. • **Every year**: The report is generated every year.
Chapter[2]		Divides the report into different chapters
	NewPage	Page format of the chapter Possible values are: • **Default**: Uses the page format of the standard printer • **Current**: Copies the setting of the previous chapter
Diagram		Diagram name, creates a diagram
	Type	Diagram type to be used, see *Values for Type, Page 286*
	Characteristic	Characteristic to be displayed, see *Values for Characteristic, Page 287*
	Phase	Phase for which the report is created, see *Values for Phase, Page 290*
	DisplayMeasuredData	• **Yes**: Measured values are displayed in the diagram • **No**: Evaluated values are displayed in the diagram

NOTE

The scheduled report is generated when all the PQ characteristics along with evaluated data of the measurement points assigned are available in the archive for the requested reports.

2 Optional

Values for Type

The diagram types available represent different types of data. The table below shows the diagram types for report templates and the data types they represent.

Diagram Type	Measured Characteristics	Evaluated Characteristics
Time line Mean Values	X	
Time line Max Values	X	
Time line Min Values	X	
Table Mean Values	X	
Table Max Values	X	
Table Min Values	X	
Graphic Finger-Print Mean	X	
Table Finger-Print Mean	X	
Harmonics spectrum	X	X
Heatmap Mean Values	X	
Heatmap Max Values	X	
Heatmap PQ Index		X
Bar view P95-Min-Mean-Max	X	
Time line Event Values	X	X
Binary track	X	
Time line PQ Index		X
Time line Power Quality		X
Time line Measuring Gap		X
Bar view PQ-Statistics		X
ESKOM		X
ITI		X
SEMI F47		X
Graphic Finger-Print PQ Index		X
Graphic Finger-Print Event Values		X
Table Finger-Print PQ Index		X
Table Finger-Print Event Values		X
List Voltage-Event		X
List Sequence of Events	X	
Time line Rapid Voltage Changes	X	
List Rapid Voltage Changes	X	

Values for Characteristic

Characteristic Group	Types of Characteristics
Voltage	Voltage Voltage balance, Voltage unbalance, Positive-sequence voltage, Negative-sequence voltage, Zero-sequence voltage, Voltage unbalance u0
Current	Current Current balance, Current unbalance, Positive-sequence current, Negative-sequence current, Zero-sequence current, Sensitive current, Current unbalance i0
Frequency	Frequency
THD	THD voltage, THD current, PWHD current, PWHD voltage, TDD current
Power	Active power, Reactive power, Reactive power (Fundamental), Apparent power, Power factor, Cos Phi, Voltage current angle
Flicker	Flicker Pst, Flicker Plt, Flicker Ast, Flicker Alt
Energy	Active energy, Active-energy input, Active-energy output, Reactive energy, Capacitive reactive energy, Inductive reactive energy, Apparent energy

Characteristic Group	Types of Characteristics
Phasor	Negative-sequence system, Positive-sequence system, Voltage magnitude, Current magnitude, Voltage angle, Current angle, Voltage-difference angle, Current-difference angle, Pos.-seq. voltage magnitude, Pos.-seq. voltage angle, Pos.-seq. voltage Delta Phi, Pos.-seq. current magnitude, Pos.-seq. current angle, Pos.-seq. current Delta Phi, Neg.-seq. voltage magnitude, Neg.-seq. voltage angle, Neg.-seq. voltage Delta Phi, Neg.-seq. current magnitude, Neg.-seq. current angle, Neg.-seq. current Delta Phi, Zero-seq. voltage magnitude, Zero-seq. voltage angle, Zero-seq. voltage Delta Phi, Zero-seq. current magnitude, Zero-seq. current angle, Zero-seq. current Delta Phi, Frequency phasor, Active power magnitude, Reactive power magnitude

Characteristic Group	Types of Characteristics
Harmonic	2nd Harmonic voltage, 3rd Harmonic voltage, 4th Harmonic voltage, ... , 100th Harmonic voltage 2nd Harmonic current, 3rd Harmonic current, 4th Harmonic current, ... , 100th Harmonic current 0th Interharmonic voltage, 1st Interharmonic voltage, 2nd Interharmonic voltage, 3rd Interharmonic voltage, 4th Interharmonic voltage, ... , 100th Interharmonic voltage 0th Interharmonic current, 1st Interharmonic current, 2nd Interharmonic current, 3rd Interharmonic current, 4th Interharmonic current, ... , 100th Interharmonic current
Emissions	Emissions 2 kHz to 9 kHz Emissions 2.1 kHz Emissions 2.3 kHz, ... , Emissions 8.9 kHz Emissions 9 kHz to 150 kHz Emissions 9 kHz Emissions 11 kHz, ... , Emissions 149 kHz

Characteristic Group	Types of Characteristics
User-defined frequency	User-def. voltage frequency A, ... , User-def. voltage frequency P User-def. current frequency A, ... , User-def. current frequency P User-defined mains signalling voltage frequency A, B
Process channels	1st Process channel, 2nd Process channel, 3rd Process channel, 4th Process channel, ... , 128th Process channel

NOTE

The **Reactive power (fundamental)** characteristic is supported only by the user-defined Grid Codes and the AllCharacteristics_57-62.TXT report template.

The **Emissions** characteristic is supported by the IEC61000-2-2-Star-LV.EAGridCode, IEC61000-2-2-Delta-LV.EAGridCode, and UserDefined_IEC61000-2-2-LV.EAGridCode Grid Codes.

For 50 Hz system frequency, the emissions characteristic ranges from 2 kHz - 9 kHz and 9 kHz - 150 kHz.

For 60 Hz system frequency, the emissions characteristic ranges from 2.5 kHz - 9 kHz and 9 kHz - 150 kHz.

Values for Phase

N	N-E	L-N	E	L
A	A-B	A-N	A-E	L-E
B	B-C	B-N	B-E	Sum
C	C-A	C-N	C-E	Undefined

A.5 Examples of Report Template Files

In the **%PUBLICDOCUMENTS%Siemens\SICAM PAS PQS\ReportTemplatesScheduled** directory you find the following report templates:

- **AllDiagrams-Star.txt**
  Templates for all possible diagram types for the **Star** network type
- **AllCharacteristics_1-27-Star.txt, AllCharacteristics_28-56-Star.txt, AllCharacteristics_57-62-Star.txt**
  Templates for all supported characteristics for the **Star** network type
- **AllDiagrams-Delta.txt**
  Templates for all possible diagram types for the **Delta** network type
- **AllCharacteristics_1-27-Delta.txt, AllCharacteristics_28-56-Delta.txt, AllCharacteristics_57-62-Delta.txt**
  Templates for all supported characteristics for the **Delta** network type
- **EN50160-Star.txt**
  Report template for Grid Code according to the EN 50160 standard for the **Star** network type

- **EN50160.Delta.txt**
  Report template for Grid Code according to the EN 50160 standard for the **Delta** network type
- **IEC61000-Star.txt**
  Report template for Grid Code according to the IEC 61000 standard for the **Star** network type
- **IEC61000.Delta.txt**
  Report template for Grid Code according to the IEC 61000 standard for the **Delta** network type
- **IEC61000-2-2-Star.txt**
  Report template for Grid Code according to the IEC 61000-2-2 standard for the **Star** network type
- **IEC61000-2-2-Delta.txt**
  Report template for Grid Code according to the IEC 61000-2-2 standard for the **Delta** network type

The following pages show some examples of report template files:

- *A.6 Average Voltage over the Day with PQ Index Curve*
- *A.7 Evaluation of the Power Quality for One Month*
- *A.8 PQ Statistics for the Whole Year*

A.6 Average Voltage over the Day with PQ Index Curve

These daily reports show the voltage curve and the PQ Index for the voltage in a system with 2 PQ devices.

Settings in the Grid Code

- **Period limits**
  - Disabled
- **Operational limits**
  - Hysteresis: 0%
  - Averaging time: 00:10:00 (10 minutes)
  - Upper limit: 120%
  - Lower limit: 80%
- **Classification limits**
  - Disabled

Report Template File

The report template could look like this:

```
Title              "Voltage curve (day)"
                   Generation="Every day"
Chapter            "Voltage PQ device 1"
                   NewPage="Default"
Diagram            "Voltage curve"
                   Type="Time line mean"
                   Characteristic="Voltage"
                   Phase="Sum"
                   DisplayMeasuredData="Yes"
```

```
Diagram             "PQ Index curve"
                    Type="Time line PQ Index""
                    Characteristic="Voltage"
                    Phase="Sum"
                    DisplayMeasuredData="No"
Chapter             "Voltage PQ device 2"
                    NewPage="Default"
Diagram             "Voltage curve"
                    Type="Time line mean"
                    Characteristic="Voltage"
                    Phase="Sum"
                    DisplayMeasuredData="Yes"
Diagram             "PQ Index curve"
                    Type="Time line PQ Index""
                    Characteristic="Voltage"
                    Phase="Sum"
                    DisplayMeasuredData="No"
```

A.7 Evaluation of the Power Quality for One Month

These monthly generated reports show the general PQ Index and the PQ Index for the voltage and current level.

Settings in the Grid Code

- **Period limits:**
  - Hysteresis: 0%
  - Averaging time: 00:10:00 (10 minutes)
  - Upper limit: 120%
  - Lower limit: 80%
  - Interval value: 1
  - Interval unit: Month
  - Max. violation rate: 1%
- **Operational limits:**
  - Disabled
- **Classification limits:**
  - Disabled

Report Template File

The report template could look like this:

```
Title               "Monthly PQ report"
                    Generation="Every month"
Chapter             "Overview of Power Quality"
                    NewPage="Default"
```

```
Diagram          "PQ Index (overall device)"
                 Type="Time line PQ Index"
                 Characteristic="Undefined"
                 Phase="Sum"
                 DisplayMeasuredData="No"
Chapter          "PQ Index (voltage)"
                 NewPage="Default"
Diagram          "PQ Index (voltage)"
                 Type="Time line PQ Index""
                 Characteristic="Voltage"
                 Phase="Sum"
                 DisplayMeasuredData="No"
Chapter          "PQ Index (current level)"
                 NewPage="Default"
Diagram          "PQ Index (current level)"
                 Type="Time line PQ Index"
                 Characteristic="Current"
                 Phase="Sum"
                 DisplayMeasuredData="No"
```

A.8 PQ Statistics for the Whole Year

These yearly generated reports show the PQ statistics for the voltage in a system with 3 PQ devices.

Settings in the Grid Code

- **Period limits:**
  - Hysteresis: 0%
  - Averaging time: 00:10:00 (10 minutes)
  - Upper limit: 120%
  - Lower limit: 80%
  - Interval values: 1
  - Interval units: Year
  - Max. violation rate: 1%
- **Operational limits:**
  - Disabled
- **Classification limits:**
  - Disabled

Report Template File

```
Title            "PQ Statistics (year)"
                 Generation="Every year"
Chapter          "PQ Statistics"
                 NewPage="Default"
```

```
Diagram             "PQ statistics PQ device 1"
                    Type="Bar view PQ-Statistics"
                    Characteristic="Voltage"
                    Phase="Sum"
                    DisplayMeasuredData="No"
Diagram             "PQ statistics PQ device 2"
                    Type="Bar view PQ-Statistics"
                    Characteristic="Voltage"
                    Phase="Sum"
                    DisplayMeasuredData="No"
Diagram             "PQ statistics PQ device 3"
                    Type="Bar view PQ-Statistics"
                    Characteristic="Voltage"
                    Phase="Sum"
                    DisplayMeasuredData="No"
```

A.9 Status Indications and Status Commands

Overview

SICAM PAS/PQS provides status information and status commands concerning systems, applications, interfaces and device connections. This information can be visualized for example, in SICAM SCC.

Status information is used in the monitoring direction. Status commands are used in the command direction.

The following 5 types of information are distinguished for the Data Management of SICAM PAS/PQS:

- Status commands of a system, an application, an interface, or a device
- Status indications of a system, an application, an interface, or a device
- Status commands of a telecontrol/bay block of an interface or a device
- Status indications of a telecontrol/bay block of an interface or a device

  Status indications and status commands are evaluated and set by using SICAM PAS/PQS UI – Operation.

A.10 Information - System/Application/Interface/Device

Status Commands

Status commands available in the system have the name **_Adm**. These commands are available for each level (systems, applications, interfaces and devices). They are used to specify the target states of the corresponding level. The values can be predefined as follows:

0	STOPPED target state
1	RUNNING target state

These status commands are of the **ADMINC** type. They can be mapped as information in the command direction, for example, to SICAM SCC or a control center.

NOTE

If the **_Adm** status commands of the application level, interface level or device level are not up to date, the system driver, a SICAM PAS/PQS service, does not run. In SICAM PAS/PQS UI – Operation, this is indicated by a black exclamation mark on a yellow background. The communication drive does not start up.

A.11 Status Indications

The status indications available in the system have the name **_Opr**. They are available for each level (systems, applications, interfaces and devices) and represent the statuses at the time of viewing. The values have the following meaning:

0	STOPPED
1	RUNNING

These status indications are of the **OPER** type. They can be mapped as information in the monitoring direction, for example, to SICAM SCC or a control center.

To view various statuses, the **_Adm** and **_Opr** information is combined in SICAM PAS/PQS UI – Operation:

Table A-3 Display in SICAM PAS/PQS UI – Operation

_Adm	_Opr	Icon	Meaning/Display
0 (STOPPED)	0		Stopped
1 (RUNNING)	0		Starting
1 (RUNNING)	1		Running
0 (STOPPED)	1		Stopping

A.12 Information - Telecontrol/Bay Blocking

Device-Specific Status Commands and Status Indications

Status commands

Status commands available in the system for the telecontrol/bay block have the name **_BlkAdm**. They are available for master applications on the interface and device level. Only the status indications of a Master connection are used. They specify the target states of the telecontrol/bay block of the devices. The values are bit patterns and have the following meaning:

10000_{hex}	Target state no blocking
20000_{hex}	Target state bay blocking
30000_{hex}	Target state telecontrol blocking
40000_{hex}	Target state telecontrol and bay blocking

These status commands are of the **ADMINC** info type.

Status indications

Status indications available in the system have the name **_Blkopr**. They are available for Master applications on the interface and device level. They are used to show the target states of the telecontrol/bay block of the devices. The values are bit patterns and have the following meaning:

10000_{hex}	No blocking
20000_{hex}	Bay blocking set
30000_{hex}	Telecontrol blocking set
40000_{hex}	Telecontrol and bay blocking set

These status indications are of the **OPER** info type.

NOTE

The initiator category in the **Properties** section of the Value Viewer must be set before sending any command to the device.

When telecontrol blocking is enabled, set the **InitiatorCategory** field to **LocalControl**, before the command is sent to the device from the bay level.

A.13 Channel-Specific Status Commands and Status Indications

The telecontrol block sets the **BlockState** structure value to **remote blocked**. The control center connection evaluates the structure value.

To bypass the telecontrol block for a specific channel, the value $\mathbf{50000}_{hex}$ (Ignore telecontrol block) is entered in the **_BlkAdm** status command.

In this case, the information is transmitted despite the telecontrol block.

You can modify the structure value in the ValueViewer, by using the automation function, SICAM SCC, or from the control center.

A.14 Information – Switching Authority

In SICAM PAS/PQS UI – Configuration, each topological level (region, station, voltage level and bay) can be assigned a switching authority.

For each parameterized switching authority, a specific switching authority tag (**AuthorityValue xx**) is created. The names of these tags can be freely changed.

The effectiveness of the switching authority tags is deactivated after parameterization (Value 0). During the system runtime, it is activated by using a control center connection, SICAM SCC or the Value Viewer (value unequal 0).

Before executing a command, the system checks whether the switching authority tag allows the command execution at the current time.

The switching authority tags are checked from the lowest to the next higher topology level. As soon as a defined switching authority tag (value unequal 0) has been found, this value is used for checking the command output conditions.

If switching authority tags have been parameterized on the Station, Voltage and Bay levels and all switching authority tags are set to Unequal 0, only the switching authority on the bay level is effective for the command output.

Examples

If you have set the switching authority tag for the bay for example, to **Remote 1** and the switching authority tag for the station to **Local 1**, the command output for the bay can still be performed remotely although Local control has been defined for the station concerned.

Table A-4 Defining the switching authority, example

Application Interface	Local			Remote				
	1	2	3	1	2	3	4	5
SICAM PAS/PQS UI	X	X						
SICAM SCC 1	X			X				
SICAM SCC 2	X		X	X				
IEC 60870-5-101 – LS1	X				X			
DNP3 – LS	X					X		

Application Interface	Local			Remote				
	1	2	3	1	2	3	4	5
IEC 60870-5-104 – LS1	X						X	
IEC 60870-5-104 – LS2	X							X

Example - SICAM SCC1:

SICAM SCC1 has the switching authority if **Local 1** or **Remote 1** has been set in the **AuthorityValue xx**. This also applies to all other rows.

NOTE

If the switching authority **Local x** is configured for an interface, you can assign any switching permission for **Local x** and **Remote x** from the application of this interface during operation.

If the switching authority **Remote x** is configured for an interface, you can assign the switching permission **Local x** from the application of this interface during operation only while **Remote x** has the switching permission.

A.15 Control Commands for the SIMEAS R Device

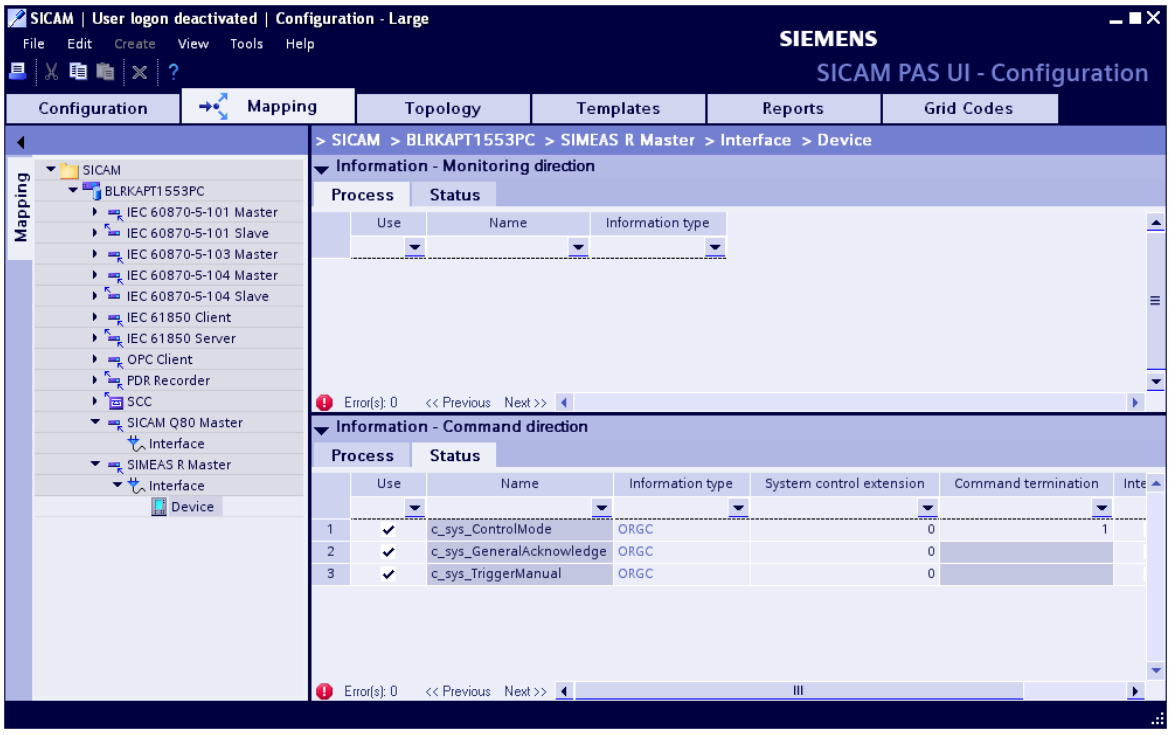
By using the **Value Viewer** you can transmit the following commands to the SIMEAS R device:

- *Setting the Control Mode, Page 299*
- *Acknowledging a Group Alarm, Page 299*
- *Triggering of a Fault Record, Page 299*

To enable control commands for SIMEAS R, open the **Mapping** view in **SICAM PAS/PQS UI – Configuration**. Under **Information – Command direction**, register **Status**, activate in the **Use** column:

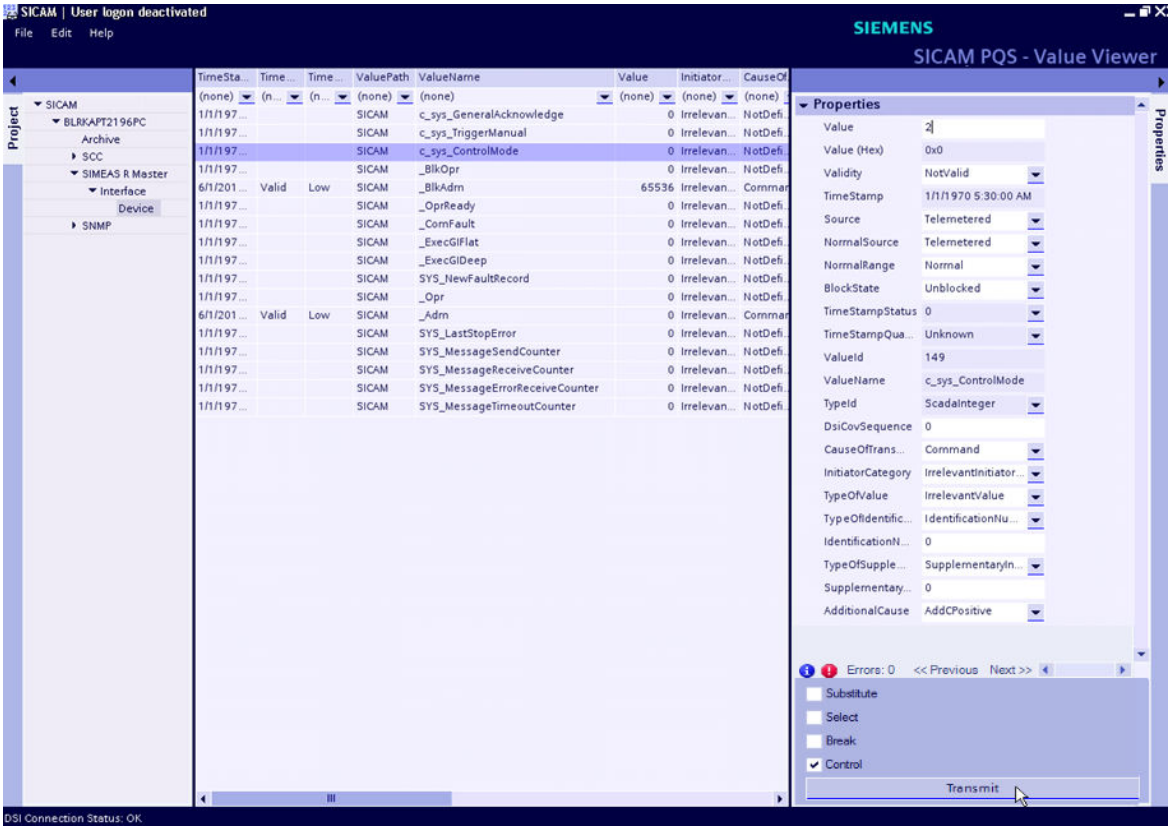
- **c_sys_ControlMode** for setting the control mode
- **c_sys_GeneralAcknowledge** for acknowledging group alarm
- **c_sys_TriggerManual** for manual triggering of fault records

Control commands for the SIMEAS R are triggered by means of the Value Viewer. The following screenshot shows an example of the control mode settings for the **Test** mode of a SIMEAS R device.



[sc_SIMEAS_R_enable_control_mode, 2, en_US]

Figure A-3 SIMEAS R Enabling Control Commands



[sc_switching_control_modes, 1, en_US]

Figure A-4 SIMEAS R Triggering Control Commands

Setting the Control Mode

To setup the control mode for a device:

- ✧ Open the **Value Viewer**.
- ✧ Select the value **c_sys_ControlMode** in the **ValueName** column.
- ✧ Under **Properties**, select the value **Command** from the **CauseOfTransmission** list box.
- ✧ Enter a value in the **Value** field:
  1 for **Normal**
  2 for **Test**
  3 for **Lock**
- ✧ Select the **Control** check box.
- ✧ To define the operation mode for the device, click **Transmit**.

Acknowledging a Group Alarm

To acknowledge a group alarm:

- ✧ Open the **Value Viewer**.
- ✧ Select the value **c_sys_GeneralAcknowledge** in the **ValueName** column.
- ✧ Under **Properties**, select the value **Command** from the **CauseOfTransmission** list box.
- ✧ Enter the value **1** in the **Value** field.
- ✧ Select the **Control** check box.
- ✧ To acknowledge the group alarm, click **Transmit**.
  The LED on the device goes off.

Triggering of a Fault Record

To manually trigger fault records:

- ✧ Open the **Value Viewer**.
- ✧ Select the value **c_sys_TriggerManual** in the **ValueName** column.
- ✧ Under **Properties**, select the value **Command** from the **CauseOfTransmission** list box.
- ✧ Enter the value **1** in the **Value** field.
- ✧ Select the **Control** check box.
- ✧ To execute the command click **Transmit**.
  A fault record will be triggered on the device and transmitted to SICAM PAS/PQS.

A.16 Security-Related Messages

Messages Referring to SICAM PAS/PQS

Event	Source – Referred System Component							
	UI – Configuration	UI – Operation	UI – Operation Client	Value Viewer	User Administration	Feature Enabler	Easy Configuration	Runtime
Tool started/closed	x	x		x	x	x	x	
User added/modified/deleted					x			
User role and rights changed					x			
Password changed					x			
Security-relevant software configuration changed (syslog parameters, for example, IP address and port, enabling/disabling User login etc.)					x			
Login failed	x	x		x	x	x	x	
Login succeeded	x	x		x	x	x	x	
Manual logout (user-initiated logout)	x	x		x	x		x	
Timed logout (automatic logout after a period of inactivity)	x	x		x	x		x	
Value substituted				x				
Wrong password entered (when substituting values)				x				
Configuration changed (Update system, Activate changes, user initiated redundancy switchover)		x	x				x	
Alarm incident: Unsuccessful login attempt	x	x		x	x	x	x	
Password changed for: • SNMP V3 • FTP • IEC 60870-5-101 dial up	x							
Secure authentication for the archive enabled/disabled	x							
Security parameters enabled/disabled for: • DNP3 • IEC 60870-5-104 • IEC 61850	x							
All connection requests logged from any IP address for: • DNP3 Slave • IEC 60870-5-104 Slave • IEC 61850 Server								x
All authentication results for DNP3 Slave								x
All secure communication results for: • DNP3 Master/Slave • IEC 60870-5-104 Master/Slave • IEC 61850 Client/Server								x

Event	Source – Referred System Component							
	UI – Configuration	UI – Operation	UI – Operation Client	Value Viewer	User Administration	Feature Enabler	Easy Configuration	Runtime
Enabling asset monitoring (SNMP Agent)					x			
Attempted use of unauthorized configuration software When EnableFeature.dll is not signed or version mismatch								x

Messages Referring to SICAM PQ Analyzer

Event	Remark
Login succeeded	Successful login of client (SICAM PQ Analyzer, SICAM PQ Collector) to SARA server
Login failed	License missing, unauthorized user
Manual logout (user-initiated logout)	Client (SICAM PQ Analyzer, SICAM PQ Collector) disconnects from SARA server
Alarm incident: Reboot	Startup of SARA server
Alarm incident: Reboot	Shutdown of SARA server
Fault records imported	Manual import of fault records from SICAM PQ Analyzer
PQ data imported	Manual import of PQ data from SICAM PQ Analyzer
Incident deleted	Deletion of an incident from SICAM PQ Analyzer
Incident acknowledged	Acknowledgement of an incident from SICAM PQ Analyzer
Incident comment added/edited/deleted	Add/Edit/Delete incident comment from SICAM PQ Analyzer
Traffic light added/edited/deleted	Add/Edit/Delete traffic light from SICAM PQ Analyzer
Client list cleared	Clear client management list
Manual retrieval of fault records	Manual retrieval of SIMEAS R fault record from SICAM PQ Analyzer
Manual fault location report generation	Manual fault location report generation from SICAM PQ Analyzer
Operation failed	Any unsuccessful operation while modifying the archive content

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