



Process Expert

Installation and Configuration Guide

EIO0000001255.18
10/2023

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Safety Information

Important Information

Read these instructions carefully, and look at the equipment to become familiar with the device before trying to install, operate, service, or maintain it. The following special messages may appear throughout this documentation or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.



The addition of this symbol to a “Danger” or “Warning” safety label indicates that an electrical hazard exists which will result in personal injury if the instructions are not followed.



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

DANGER

DANGER indicates a hazardous situation which, if not avoided, **will result in** death or serious injury.

WARNING

WARNING indicates a hazardous situation which, if not avoided, **could result in** death or serious injury.

CAUTION

CAUTION indicates a hazardous situation which, if not avoided, **could result in** minor or moderate injury.

NOTICE

NOTICE is used to address practices not related to physical injury.

Please Note

Electrical equipment should be installed, operated, serviced, and maintained only by qualified personnel. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material.

A qualified person is one who has skills and knowledge related to the construction and operation of electrical equipment and its installation, and has received safety training to recognize and avoid the hazards involved.

About the Book

Document Scope

This document explains how to install EcoStruxure Process Expert.

It also describes how to:

- Generate digital certificates and use role-based access control.
- Configure software settings.
- Start the system server and engineering clients.
- Migrate databases and systems of earlier supported versions to continue using them.
- Repair, modify, and remove the software.

It is written for users who have a working knowledge in the design of Control systems, including supervision functions.

NOTE: Read and understand this manual and the *EcoStruxure™ Process Expert, Licensing Guide* before installing and using this software.

The *Licensing Guide* is in the *ReleaseNotesAndUGs* folder of the software installation package.

Validity Note

This document has been updated for the release of EcoStruxure Process Expert 2023.

The characteristics that are described in the present document, as well as those described in the documents included in the Related Documents section below, can be found online. To access the information online, go to the Schneider Electric home page www.se.com/ww/en/download/.

The characteristics that are described in the present document should be the same as those characteristics that appear online. In line with our policy of constant improvement, we may revise content over time to improve clarity and accuracy. If you see a difference between the document and online information, use the online information as your reference.

Related Documents

Title of documentation	Reference number
EcoStruxure™ Process Expert, Security Deployment Guide	EIO0000004234 (ENG)
EcoStruxure™ Process Expert, Licensing Guide	EIO0000001261 (ENG)
EcoStruxure™ Process Expert, User Guide	EIO0000001114 (ENG)
Schneider Electric Floating License Manager, User Manual	EIO0000001078 (ENG) EIO0000001082 (SPA) EIO0000001081 (ITA) EIO0000001079 (FRE) EIO0000001080 (GER) EIO0000001083 (CHS)
EcoStruxure™ Process Expert, Runtime Navigation Services, User Guide	EIO0000001574 (ENG)
EcoStruxure™ Process Expert, Infrastructure Virtualization, Application Note	EIO0000003796 (ENG)
EcoStruxure™ Process Expert, Implementing System Server Redundancy, Application Note	EIO0000004854 (ENG)

Title of documentation	Reference number
EcoStruxure™ Control Expert, Operating Modes	33003101 (ENG) 33003102 (FRE) 33003103 (GER) 33003104 (SPA) 33003696 (ITA) 33003697 (CHS)
EcoStruxure™ Control Expert, Security Editor, Operation Guide	EIO0000004105 (ENG) EIO0000004106 (FRE) EIO0000004107 (GER) EIO0000004108 (ITA) EIO0000004109 (SPA) EIO0000004110 (CHS)

mySchneider Support Portal

Visit <https://www.se.com/myschneider> for support, software updates, and latest information on EcoStruxure Process Expert.

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Product Related Information

⚠ WARNING
<p>LOSS OF CONTROL</p> <ul style="list-style-type: none"> • Perform a Failure Mode and Effects Analysis (FMEA), or equivalent risk analysis, of your application, and apply preventive and detective controls before implementation. • Provide a fallback state for undesired control events or sequences. • Provide separate or redundant control paths wherever required. • Supply appropriate parameters, particularly for limits. • Review the implications of transmission delays and take actions to mitigate them. • Review the implications of communication link interruptions and take actions to mitigate them. • Provide independent paths for control functions (for example, emergency stop, over-limit conditions, and error conditions) according to your risk assessment, and applicable codes and regulations. • Apply local accident prevention and safety regulations and guidelines.¹ • Test each implementation of a system for proper operation before placing it into service. <p>Failure to follow these instructions can result in death, serious injury, or equipment damage.</p>

¹ For additional information, refer to NEMA ICS 1.1 (latest edition), *Safety Guidelines for the Application, Installation, and Maintenance of Solid State Control* and to NEMA ICS 7.1 (latest edition), *Safety Standards for Construction and Guide for Selection, Installation and Operation of Adjustable-Speed Drive Systems* or their equivalent governing your particular location.

⚠ WARNING**UNINTENDED EQUIPMENT OPERATION**

- Only use software approved by Schneider Electric for use with this equipment.
- Update your application program every time you change the physical hardware configuration.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

The examples in this manual are given for information only.

⚠ WARNING**UNINTENDED EQUIPMENT OPERATION**

Adapt examples that are given in this manual to the specific functions and requirements of your industrial application before you implement them.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Terminology Derived from Standards

The technical terms, terminology, symbols and the corresponding descriptions in this manual, or that appear in or on the products themselves, are generally derived from the terms or definitions of international standards.

In the area of functional safety systems, drives and general automation, this may include, but is not limited to, terms such as *safety*, *safety function*, *safe state*, *fault*, *fault reset*, *malfunction*, *failure*, *error*, *error message*, *dangerous*, etc.

Among others, these standards include:

Standard	Description
IEC 61131-2:2007	Programmable controllers, part 2: Equipment requirements and tests.
ISO 13849-1:2015	Safety of machinery: Safety related parts of control systems. General principles for design.
EN 61496-1:2013	Safety of machinery: Electro-sensitive protective equipment. Part 1: General requirements and tests.
ISO 12100:2010	Safety of machinery - General principles for design - Risk assessment and risk reduction
EN 60204-1:2006	Safety of machinery - Electrical equipment of machines - Part 1: General requirements
ISO 14119:2013	Safety of machinery - Interlocking devices associated with guards - Principles for design and selection
ISO 13850:2015	Safety of machinery - Emergency stop - Principles for design
IEC 62061:2015	Safety of machinery - Functional safety of safety-related electrical, electronic, and electronic programmable control systems
IEC 61508-1:2010	Functional safety of electrical/electronic/programmable electronic safety-related systems: General requirements.
IEC 61508-2:2010	Functional safety of electrical/electronic/programmable electronic safety-related systems: Requirements for electrical/electronic/programmable electronic safety-related systems.
IEC 61508-3:2010	Functional safety of electrical/electronic/programmable electronic safety-related systems: Software requirements.
IEC 61784-3:2016	Industrial communication networks - Profiles - Part 3: Functional safety fieldbuses - General rules and profile definitions.
2006/42/EC	Machinery Directive
2014/30/EU	Electromagnetic Compatibility Directive
2014/35/EU	Low Voltage Directive

In addition, terms used in the present document may tangentially be used as they are derived from other standards such as:

Standard	Description
IEC 60034 series	Rotating electrical machines
IEC 61800 series	Adjustable speed electrical power drive systems
IEC 61158 series	Digital data communications for measurement and control – Fieldbus for use in industrial control systems

Finally, the term zone of operation may be used in conjunction with the description of specific hazards, and is defined as it is for a hazard zone or danger zone in the Machinery Directive (2006/42/EC) and ISO 12100:2010.

NOTE: The aforementioned standards may or may not apply to the specific products cited in the present documentation. For more information concerning the individual standards applicable to the products described herein, see the characteristics tables for those product references.

First Steps

Overview

This chapter contains a procedure describing the steps to install EcoStruxure Process Expert (herein, the software).

Upgrading from earlier EcoStruxure Process Expert versions is not supported. These versions must be manually uninstalled first.

To reuse databases or systems of an earlier supported version, you must perform certain steps before uninstalling the earlier software version.

NOTE: Before installing the software on Windows Server 2019 for use with Remote Desktop Services (RDS), refer to the topic describing [additional installation requirements](#), page 50.

Installation of EcoStruxure Process Expert

Overview

This topic describes the steps to get started with the installation of EcoStruxure Process Expert.

This guide includes a [troubleshooting section, page 149](#) to help answer questions about the installation. If you need additional assistance, contact your local Schneider Electric service representative.

Prerequisites to Migrating a Database or System

To reuse databases or systems of an earlier supported software version, do the following before uninstalling the earlier version:

- Databases of Process Expert 4.3 and later must be prepared for migration, [page 61](#).
- Systems of version 2020 R2 or 2021 must be backed up from the engineering client with the [forward compatibility option enabled, page 71](#).

You may need to install a premigration patch. The installation of a [premigration patch, page 74](#) is required for versions 2020 R2 and 2021.

If you are installing the software in a language other than English, refer to the topic describing the [language of installation, page 23](#) for applicable restrictions.

NOTE: For information on actions that may be required after a migration to take advantage of new features, refer to the topic describing the [availability of new features in migrated databases and systems, page 75](#).

NOTE: Installing the software without migrating a database creates a new blank one, [page 34](#).

Removing the Earlier Software Version

You cannot install the software if an earlier version is installed.

To remove the earlier version, refer to the topic describing how to [remove the software, page 146](#) and use *setup.exe* in the installation package or the **Change > Remove** command for **EcoStruxure Process Expert** in the Microsoft Windows **Control Panel**.

If a version of AVEVA Plant SCADA other than 2023 (Update 01 to Update 03) is installed on the computer, [page 31](#), remove the following components manually:

- AVEVA Plant SCADA Deployment
- AVEVA Plant SCADA Connectivity Server
- AVEVA Industrial Graphics Server
- AVEVA Plant SCADA Security Configuration
- AVEVA Plant SCADA Project DBF AddIn

NOTE: If you want to retain the HTML help of templates that you have used with an earlier version, copy the corresponding help files before removing the software. For details, refer to *Using Help for Different Versions of Schneider Electric Templates in EcoStruxure™ Process Expert, User Guide* of the earlier version.

Getting Started – System Server Installation

The following tables present the steps to install the software. Each step contains a reference to a topic providing more details.

Step	Action
1	Ensure that the computer on which you install the system server fulfills the system requirements, page 21.
2	If Citect/Plant SCADA, Control Expert, and/or Advantys Configuration Software are already installed, review their installation requirements, page 31 first.
3	Extract the files of the installation package, page 30 to disk or mount the image (.iso).
4	<p>Launch the installer, page 42, select the language of installation, page 23, and install, at least, the system server.</p> <p>Restart the computer to complete the installation.</p> <p>NOTE: The steps to follow to install clients are described in a separate table at the end of this topic.</p>

Getting Started – Software Preparation and Configuration

Step	Action
1	<p>Purchase or update licenses and activate them by using the Floating License Manager (FLM) (see <i>EcoStruxure™ Process Expert, Licensing Guide</i>) before the 30-day trial period expires.</p> <p>NOTE: If the FLM is installed on a remote computer, enter its IP address in the License Manager.</p>
2	<p>The system administrator must configure local or centralized Role-Based Access Control (RBAC), page 81 by using Security Editor on the system server computer.</p> <p>At least one user must be created and associated to the <i>ESX PE Server Admin</i> profile to log into the system server and generate certificates.</p> <p>NOTE: If you used an earlier version of the software, <i>ESX HDCS</i> groups may exist on the system server computer and contain users. In this case, these users are created in Security Editor.</p>
3	<p>From the Windows Start menu, click EcoStruxure Process Expert > System Server and log in (see <i>EcoStruxure™ Process Expert, User Guide</i>) by entering the name and password of a user associated to the appropriate profile, page 84 in the log-in window.</p>
4	<p>Create and/or install certificates, page 94 by using the Security section of the System Server Configuration Wizard (Basic Settings) menu of the system server console or tray icon context menu).</p> <p>You can let the software create a root CA certificate or use your own.</p> <p>NOTE: If you have installed a client on the system server computer, the certificate is valid for both server and client.</p>
5	<p>If you are not migrating a database, you can change the template library, page 124 that is installed in the database, page 16.</p>
6	<p>If remote clients need to connect to the system server, configure Listening IP address by using the Server Configuration tool, page 114.</p>
7	<p>To migrate, page 61 a database of Process Expert 4.3/SP1 or a subsequent supporting version:</p> <ol style="list-style-type: none"> 1. Install in Control Expert the extensions, page 123 that you were using with the earlier version. 2. Restore the database backup file (.mdbk), page 66.
8	<p>Start the system server, page 126 by using the Start command in the menu bar of the server console or the tray icon context menu.</p> <p>If you are migrating a database, the EcoStruxure Process Expert 2023 Migration window opens and may require user interaction, page 66 to complete the migration of Supervision data.</p> <p>Wait until the system server tray icon turns green or Server is ready appears in the console. This may take a moment the first time.</p> <p>NOTE: If you are not migrating a database, a blank version 2023 database is created, page 136.</p>

Getting Started – Client Installation

Step	Action
1	Ensure that the computer on which you install a client fulfils the system requirements, page 21.
2	If Citect/Plant SCADA, Control Expert, and/or Advantys Configuration Software are already installed, review their installation requirements, page 31.
3	Extract the files of the installation package, page 30 to disk or mount the image (.iso).
4	<p>Install the software, page 42 by launching the installer and select the same language of installation, page 23 as for the system server.</p> <p>In the Station Role window, select the type of client that you want to install.</p> <p>Restart the computer to complete the installation.</p>
5	For Role-Based Access Control (RBAC), page 81, on a remote client, the system administrator must trust the server authority certificate by entering the address of the system server computer in Security Editor (Certificate whitelist tab).
6	<p>In the License Manager (LM), enter the IP address of the computer on which the FLM is installed and where the EcoStruxure Process Expert licenses are activated (if it is a remote computer).</p> <p>This is required for Control Expert to acquire its license rights (see <i>EcoStruxure™ Process Expert, Licensing Guide</i>) even if you are using the trial period and no license is activated yet.</p>
7	<p>For a remote client, in the System Server section of the Configuration Wizard of the client, enter the listening IP address, page 113 of the system server computer.</p> <p>Open the configuration wizard from the EcoStruxure Process Expert folder of the Windows Start menu.</p>
8	<p>Install certificates, page 94 by using the Security section of the Engineering Client Configuration Wizard and Operation Client Configuration Wizard.</p> <p>NOTE: Install a certificate only once per computer even if you are installing both types of clients.</p>
9	If you migrated a database, install in Control Expert the extensions, page 123 that you were using with the earlier version.
10	If you migrated a database and want to modify existing systems or create new ones to take advantage of the functionality of the software, import the templates that are supplied with the software, page 57 by using the engineering client.

EcoStruxure Process Expert Infrastructure

Overview

This chapter gives you a high-level understanding of the main software components that form the EcoStruxure Process Expert infrastructure. It also outlines how these components can be installed on various computers depending on the tasks you want to accomplish. For example, engineering only or runtime-related tasks.

Software Architecture

Overview

The EcoStruxure Process Expert infrastructure is based on a client/server architecture with integrated as well as third-party software components. It allows you to run multiple clients connecting to one server to access the tools that are required in engineering time and during operation.

By using multiple clients, several users can work simultaneously on the same system or several systems.

To use the various software components described in this topic, you need to:

- Purchase and activate the necessary licenses (see *EcoStruxure™ Process Expert, Licensing Guide*) before the 30-day trial period expires.
- Generate and install digital certificates, page 94.
- Configure role-based access control, page 81.

NOTE: As of version 2021, Participants are not installed in a virtual machine anymore but on the operating system of the computer.

EcoStruxure Process Expert Components

The EcoStruxure Process Expert installation package contains the following software components, which form the infrastructure:

- A **system server**: Manages system data, software Participant activity, and requests from clients. The user interface consists of a console that allows you to monitor server activity.

You can use redundant system servers with the help of third-party solutions as of version 2021. For details, refer to *EcoStruxure™ Process Expert, Implementing System Server Redundancy, Application Note*.

- **Engineering clients**: Provide a user interface that gives access to platform resources, such as explorers and editors. In addition, engineering clients use Control and Supervision software Participants with which you can perform in-depth configurations. Together, these resources and tools allow you to design and maintain systems. You can use several clients at the same time on capable hardware.
- **Operation clients**: Provide a user interface that allows you to view system components during runtime (for example, controllers, process objects, process data, and so on) for monitoring and troubleshooting purposes. These clients can use the Control Participant too. They require a Supervision client to run on the same computer, which is the entry point to runtime navigation services (RTNS) (see *EcoStruxure™ Process Expert, Runtime Navigation Services, User Guide*). You can use several clients at the same time on capable hardware.
- A **database**: Consists of several physical databases, which contain template libraries and user data related to the systems that you create by using the software. Each system has its own database. The database resides on the computer running the system server and is created during the first system server start. It is managed by third-party software, which is included.

For details on other software that is included in the installation package, refer to the topic describing installed software components, page 34.

Supervision Software Components

EcoStruxure Process Expert also uses the following software components during runtime:

- **Operation server:** I/O, alarm, trend, and report servers can be installed on one or distributed over several computers. One computer requires the configuration tools to be installed. These consist of various editors, which allow you to complete the deployment of Supervision projects on the network.
- Supervision **clients:** Provide a user interface that allows you to monitor and/or control the process during operation. A Supervision system can consist of several clients, which can be used simultaneously.

Supervision clients can be either:

- Control clients, which allow you to control the process during operation.
- View-only clients, which allow you to monitor the process. They cannot interact with the process during operation.

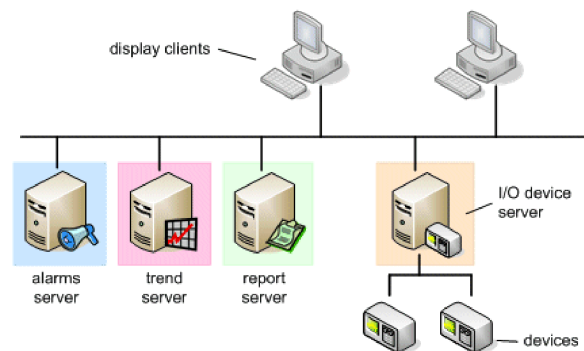
Each operation server also acts as a control client across the Supervision system architecture.

- **OPC Factory Server or OPC UA Server Expert:** Acts as an interface between the program and the I/O server and manages OPC items. While *OFSOPC* is the default communication protocol of systems that you create by using the software, *OPCUA* can be selected.

Other protocols are also supported but require some manual configuration.

NOTE: EcoStruxure Process Expert and Supervision software components are available in separate installation packages, [page 31](#).

The following figure shows the Supervision client/server part of an EcoStruxure Process Expert architecture.



Background Processes

The table describes the background processes and services associated to EcoStruxure Process Expert that are started when you start a given software component.

Software component	Background process or service
System server	GuestAgent
	Runtime Access Tool Server (RAT)
	Control Expert ⁽¹⁾ There are as many processes as the maximum number of instances, page 112 that are configured in the System Server Configuration Wizard . If the system server was started automatically, page 131, only one Control Expert service is started by the server, the others are started by the local client.
	Ctdraw32 and Citectide
Client (Remote client in a distributed architecture only)	GuestAgent
	HostAgent
	Runtime Access Tool Server (RAT)
	Control Expert ⁽¹⁾ There are as many processes as the maximum number of instances, page 112 that are configured in the System Server Configuration Wizard .
	Ctdraw32 and Citectide
(1) In addition, the <i>SE System Manager ControlExpert.Topology 15.3</i> service that is required for the Topology Explorer is automatically started with the computer.	

Physical Architecture

Overview

The software provides the flexibility to install software components on various physical architectures depending on the performance of the computers, the number of concurrent users, and your work method. Client stations and servers need to be connected to each other on an Ethernet network by a cable connection. A cable connection to the control network is also required.

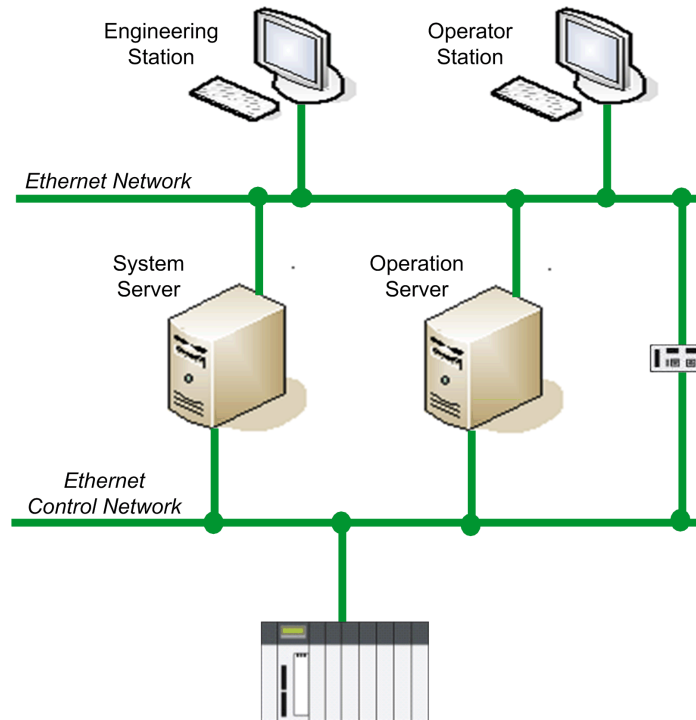
Physical Architecture Description

Typically, the physical architecture on which an EcoStruxure Process Expert infrastructure is running consists of computers that have the following roles and connections.

Role of the computer	Number of computers	Description	Computer connected to
Servers			
System server	1 ⁽¹⁾	Runs the System Server .	Ethernet network. Ethernet control network
Operation server	1 or more	Runs Supervision server software to collect real-time data from devices and treat it according to its nature (for example, alarms or trends). Each operation server also acts as a control client.	Ethernet network. Ethernet control network.
Clients			
Engineering station	1 to n	Runs an Engineering Client to engineer and maintain systems.	Ethernet network. Ethernet control network
Operator station	1 to n	Runs Supervision control or view-only client software to monitor and control the automation system. Requires an Operation Client to do online diagnosis by using runtime navigation services (RTNS) (see <i>EcoStruxure™ Process Expert, Runtime Navigation Services, User Guide</i>).	Ethernet network. Ethernet control network (required to use the Operation Client).
(1) You can use redundant system servers with the help of third-party solutions as of version 2021. For details, refer to <i>EcoStruxure™ Process Expert Implementing System Server Redundancy, Application Note</i> .			

NOTE: Computers can cumulate several roles in which case you need to install the software that is required for each role. Ensure that each computer meets the requirements, page 30 of each role. Certain conditions apply, page 48 to use the installed Supervision Participant software for engineering.

The following figure shows an example of a physical architecture running EcoStruxure Process Expert.



NOTE: The following can exist but are not represented:

- Redundant system server.
- Multiple engineering and operator stations.
- Redundant and/or multiple operation servers.
- Multiple controllers.

Performance Considerations

If you are using a client that is installed on the system server computer and perform CPU-intensive operations (for example, importing many instances), actions that you execute immediately after may trigger notifications about client/server communication interruptions.

For more information, refer to the troubleshooting topic, page 153.

Network Connections

If you have questions about client/server communication, refer to the troubleshooting topic, page 153.

System and Installation Requirements

Overview

This chapter contains general information and describes the requirements to install and run the software on your computers.

Language of Installation

Available Installation Languages

As of version 2023, you can install EcoStruxure Process Expert in one of the following languages:

- English (United States)
- Chinese (simplified, China)
- French (France)
- Spanish (traditional sort, Spain)

The available installation languages depend on the language of the operating system (OS) of the computer, not the display language that is configured.

OS language	LCID	Hexa-decimal ⁽¹⁾	Available installation language ⁽²⁾
English	1033	0409	English
Chinese	2052	0804	Chinese, English
French ⁽³⁾	1036	040C	French, English
Spanish	3082	0C0A	Spanish, English
	1034	040A	
Other ⁽⁴⁾	—	—	English

(1) Value data of the **Default** value of the *Computer\HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\Nls\Language* registry key.

(2) An engineering or operation client can only connect to a system server that uses the same language.

(3) The software was tested in French on Windows 10 only.

(4) The software was tested with operating systems in the following languages: English (United States), Chinese (simplified, China), German (Germany), and Spanish (international, Spain).

Participants and other software components are automatically installed in the language that you select for EcoStruxure Process Expert except for the following:

- Advantys Configuration Software is not available in Chinese.
- InterSystems Caché and Modicon IEC 61850 Configuration Tool are not available in Chinese, French, and Spanish.

These components are installed in English instead.

NOTE: OPC Factory Server is not available in Chinese and Spanish.

NOTE: In a French installation, you must manually change the language of the License Manager and Floating License Manager by selecting **Settings...** in their **Options** menu.

Changing the Language of the EcoStruxure Process Expert Installation

To change the language of the EcoStruxure Process Expert installation, remove the software and reinstall the same version in an available language. This operation does not remove the database.

To help avoid language-related issues with data managed by Participants, follow best practices, page 23.

Changing the Operating System Display Language After Installation

If you change the display language of the OS after installing EcoStruxure Process Expert, the language that is used by the software does not change.

Language of Export Files in CSV and XML Format

Independently of the language that EcoStruxure Process Expert is using, headers and tags for export data appear in English in files exported to CSV (comma-separated value) and XML format (for example, application export files).

Data entered by users and that is contained in these export files remains in the language it was entered.

To help avoid language-related issues when you import these files to an infrastructure in another language, follow [best practices](#), page 23.

Language of Log Files

Independently of the language that EcoStruxure Process Expert is using, the content of log files appears in English.

Migrating Databases to the Current Version Installed in Another Language

A database migration backup file (.mdbk) that was created by using version 2021 or an earlier supported version can only be migrated to (restored on) a system server installed in English.

However, after migration is completed, you can use this database with an infrastructure in a non-English language.

For details, refer to the topic describing the [migration of databases to the current version](#), page 68.

Best Practices

Participants may detect errors if they process data that is entered in a language that is different from the Participant installation language. Such data entered by users, for example, identifiers of systems, instances, and Control and Supervision projects, or instance configuration data can be contained in export files, system backup files, databases and their backup files.

To help avoid language-related issues, transfer and reuse data only between infrastructures of a same language.

If this is not possible, follow these best practices during the system engineering life cycle:

- Enter data in English or by using the invariant culture (for example, system, project, and instance identifiers).
- Import only export files and restore only systems and databases that contain user data entered in English or by using the invariant culture.

For example, if the identifier of a Supervision project was entered in Spanish because the project was created with EcoStruxure Process Expert installed in Spanish, avoid restoring the system or importing this Supervision project to an infrastructure installed in English.

NOTE: Independently of the language of installation, the Supervision Participant only supports characters of the ASCII table in project, page, and tag identifiers. For example, even if the language of installation is Chinese, do not use project, page, and tag identifiers that contain Chinese characters.

System Requirements

Overview

This topic describes the hardware and operating system requirements.

The hardware requirements depend on the [role of the computer](#), [page 19](#) in the EcoStruxure Process Expert infrastructure, the size of the application, and the operating system.

You can adjust the [number of Control Participant instances](#), [page 112](#) to help improve performance.

CPU Performance

To help you select a suitable CPU, the processor performance level is defined by using the PassMark CPU mark. You can look up the CPU benchmarks by visiting passmark.com.

Ensure that the CPU also meets the other performance criteria that are described in this topic.

Requirements for Windows Server 2019 Remote Desktop Services

For details on the specific system requirements to use EcoStruxure Process Expert with Windows Server 2019 Remote Desktop Services (RDS), refer to the topic describing the [use of RDS](#), [page 50](#).

Operating System Requirements

EcoStruxure Process Expert has been tested with the following operating system versions. For a complete compatibility matrix, visit the [mySchneider support portal](#).

It is good practice to keep your operating system up to date with the latest Microsoft updates and test the compatibility of these updates in a test environment before installing them in a production environment.

Supported operating systems	Station role
Microsoft Windows Server 2019 Standard	<ul style="list-style-type: none">System serverAll-in-one architectures with medium and large applications <p>NOTE: Using Windows Server 2019 Remote Desktop Services (RDS), page 50 is supported as of EcoStruxure Process Expert 2021.</p>
Microsoft Windows 10 Professional 64-bit	<ul style="list-style-type: none">ClientsAll-in-one architectures with small applications

NOTE: The software has been tested with operating systems in the following [languages](#), [page 34](#): English (United States), French (France), Chinese (simplified, China), German (Germany), and Spanish (international, Spain).

Application Size

For simplification, applications are sized based on the number of instances. It is assumed that a Control project contains 400 sections and the facets of 5 instances are assigned to each section.

Application size	Number of instances	Number of Supervision pages
Small	Up to 1,000	Up to 20
Medium	Less than 3,000	Less than 60
Large	More than 3,000	More than 60

Hardware Requirements - Small Applications

All-in-one architecture

The hardware requirements are valid for a maximum of 4 instances, page 112 of the Control Participant running simultaneously on the computer.

Every 2 additional instances of the Control Participant require 2 logical processors and 4 GB of RAM extra.

Component	Requirements
CPU	Workstation CPU that meets the following specifications: <ul style="list-style-type: none"> • Min. CPU mark: 10,000 • Min. base frequency: 2.6 GHz • Min. turbo frequency: 3.5 GHz • Cores: 4 / logical processors (threads): 8 • Min. cache size: 8 MB • Min. bus speed: 8 GT/s
RAM	16 GB
Hard drive	SSD 256 GB capacity. NTFS file system. Higher transfer speeds improve overall performance. 50 GB of free space to install and run the software.
Display	1920 x 1080 or higher
Ports	Ethernet port
Input devices	Mouse or compatible device Keyboard

Hardware Requirements - Medium and Large Applications

• All-in-one architecture

The hardware requirements are valid for a maximum of 4 instances, page 112 of the Control Participant running simultaneously.

Every 2 additional instances of the Control Participant require 2 logical processors and 4 GB of RAM extra.

Component	Requirements
CPU	Server CPU that meets the following specifications: <ul style="list-style-type: none"> • Min. CPU mark: 10,000 • Min. base frequency: 2.6 GHz • Min. turbo frequency: 3.5 GHz • Cores: <ul style="list-style-type: none"> ◦ Minimum: 6 cores / 12 logical processors (threads) ◦ Recommended: 8 cores / 16 logical processors (threads) • Min. cache size: 8 MB • Min. bus speed: 8 GT/s
RAM	<ul style="list-style-type: none"> • Minimum: 24 GB • Recommended: 32 GB
Hard drive	SSD 512 GB capacity. NTFS file system. Higher transfer speeds improve overall performance. 50 GB of free space to install and run the software.
Display	1920 x 1080 or higher
Ports	Ethernet port
Input devices	Mouse or compatible device Keyboard

• Distributed architecture: System server computer

The hardware requirements are valid for a maximum of 4 instances, page 112 of the Control Participant running simultaneously.

Every 2 additional instances of the Control Participant require 2 logical processors and 4 GB of RAM extra.

Component	Requirements
CPU	Server CPU that meets the following specifications: <ul style="list-style-type: none"> • Min. CPU mark: 10,000 • Min. base frequency: 2.6 GHz • Min. turbo frequency: 3.5 GHz • Cores: <ul style="list-style-type: none"> ◦ Minimum: 5 cores / 10 processors (threads) ◦ Recommended: 6 cores / 12 logical processors (threads) • Min. cache size: 8 MB • Min. bus speed: 8 GT/s
RAM	<ul style="list-style-type: none"> • Minimum: 16 GB • Recommended: 24 GB
Hard drive	SSD 512 GB capacity. NTFS file system. Higher transfer speeds improve overall performance. 50 GB of free space to install and run the software.
Display	1920 x 1080 or higher
Ports	Ethernet port
Input devices	Mouse or compatible device Keyboard

- **Distributed architecture: Engineering client computer**

The hardware requirements are valid for a maximum of 4 instances, page 112 of the Control Participant running simultaneously.

Every 2 additional instances of the Control Participant require 2 logical processors and 4 GB of RAM extra.

Component	Requirements
CPU	Workstation CPU that meets the following specifications: <ul style="list-style-type: none"> • Min. CPU mark: 10,000 • Min. base frequency: 2.6 GHz • Min. turbo frequency: 3.5 GHz • Cores: <ul style="list-style-type: none"> ◦ Minimum: 4 cores / 8 logical processors (threads) ◦ Recommended: 6 cores / 12 logical processors (threads) • Min. cache size: 8 MB • Min. bus speed: 8 GT/s
RAM	16 GB
Hard drive	SSD 256 GB capacity. NTFS file system. Higher transfer speeds improve overall performance. 45 GB of free space to install and run the software.
Display	1920 x 1080 or higher
Ports	Ethernet port
Input devices	Mouse or compatible device Keyboard

NOTE: The same requirements are valid if, in addition, you install an operation client on the computer.

Operation Server Hardware Requirements

The following table describes the hardware requirements for the *AVEVA Plant SCADA Runtime Server* for a large system. For detailed information and requirements for other system sizes, refer to *AVEVA Plant SCADA* help (**About Plant SCADA > Install Plant SCADA > Install a Runtime Server**).

Component	Requirements
CPU	CPU mark: 8,000
RAM	Recommended: 16 GB
Hard drive	100 GB, 7,200 RPM minimum. SSD recommended. NTFS file system.
Graphics	DirectX 11 or later with WDDM 1.0 driver. 128 MB of dedicated VRAM.
Display	1920 x 1080
Ports	Ethernet port
Input devices	Mouse or compatible device Keyboard

Operation Client Hardware Requirements

Component	Requirements
CPU	Min. CPU mark: 2,000
RAM	Minimum: 4 GB
Hard drive	SSD 256 GB capacity. NTFS file system. Higher transfer speeds improve overall performance.
Display	1920 x 1080 or higher
Ports	Ethernet port
Input devices	Mouse or compatible device Keyboard

Software Requirements

Overview

The upgrade from earlier versions of EcoStruxure Process Expert is not supported. These versions must be manually uninstalled first.

You cannot install EcoStruxure Process Expert 2023 on a computer where EcoStruxure Process Expert for AVEVA System Platform is installed.

You must have administrator rights to install the software.

Only a 64-bit installation package is provided.

NOTE: You can migrate your systems, page 71 and/or your database, page 34 from earlier supported versions to version 2023. In this case, you must perform certain steps before installing the software or uninstalling the earlier version. Restrictions related to the installation language, page 71 may apply.

Installing the software without migrating a database creates a new blank one, page 136.

Digital Certificates

The software implements a public key infrastructure (PKI) based on the X.509 standard. It allows using a self-signed root certification authority (CA) and entity certificates to help secure client/server communication in the EcoStruxure Process Expert infrastructure.

You must generate and install certificates, page 94 before you can use the system server and clients.

Role-Based Access Control

The software uses Security Editor to implement Role-Based Access Control, page 81 (RBAC) and administer the tasks that authorized users can perform.

A user with administrator rights for Security Editor needs to create users, assign them predefined profiles, and configure the login policy to be used (local or centralized) so that these users can log into software components.

Opening the Installation Package

The installation package is supplied in the form of an ISO file. Use either method to open it:

- An ISO file management tool.

With Windows 10 and 11, you can use the Windows Explorer. Right-click the file and select **Open with**.

- An archive management tool. For example, 7-Zip. You can download it at www.7-zip.com.

Supervision Software Requirements

To complete the deployment of Supervision projects and use Supervision runtime, install the following software that is available in the ESx_System_2023 folder of the installation package:

- AVEVA Plant SCADA 2023 Update 03 (on computers on which no EcoStruxure Process Expert component is installed)
- Depending on the protocol used for communication between controllers and the I/O server:
 - OPC UA Server Expert 2.01 SP1
 - OPC Factory Server 3.63 (LARGE (L) configuration)

The table describes the impact if Citect/AVEVA Plant SCADA and/or its components are already installed on the computer on which you are installing the software.

Version installed on the computer	Impact
Same version as the one installed by the software.	<p>The installation of Plant SCADA is skipped and the version that is installed on the computer is retained.</p> <p>NOTE: Ensure that the language of installation of Plant SCADA is the same as that of EcoStruxure Process Expert; otherwise, uninstall Plant SCADA from the computer. It will be re-installed by EcoStruxure Process Expert in the correct language.</p>
Earlier version	The installation is canceled and you must manually remove Citect/Plant SCADA and its components, page 147 before restarting the installation of EcoStruxure Process Expert.
Later version	

For more information on the installation of Plant SCADA, OPC Factory Server, and OPC UA Server Expert, refer to [Installing Supervision Software](#), page 48.

NOTE: You can download the software from the [mySchneider](#) support portal.

Control Expert Installation Requirements

The software requires a specific version, page 35 of Control Expert, which it installs on the computer.

The table describes the impact on Control Expert if it is already installed on the computer on which you are installing the software.

Version of Control Expert installed on the computer	Impact on Control Expert after installation of the software
Same version as the one installed by the software.	<p>The following functionality is modified when you open Control Expert in standalone mode:</p> <ul style="list-style-type: none"> The PLC menu is renamed Controller. Project backup files (.bak) and context restoration files (.ztx) are not created anymore. <p>In addition, settings of the Security Editor are modified (see <i>EcoStruxure™ Process Expert, Control Participant Services, User Guide</i>) once you start the system server or a client.</p> <p>NOTE: Ensure that the display language of Control Expert is the same as that used by EcoStruxure Process Expert; otherwise, uninstall Control Expert from the computer. It will be re-installed by EcoStruxure Process Expert in the same language.</p>
Earlier version	<p>The installed version is upgraded to the one used by the software.</p> <p>The following functionality is modified when you open Control Expert in standalone mode:</p> <ul style="list-style-type: none"> The PLC menu is renamed Controller. Project backup files (.bak) and context restoration files (.ztx) are not created anymore. <p>In addition, settings of the Security Editor are modified (see <i>EcoStruxure™ Process Expert, Control Participant Services, User Guide</i>) once you start the system server or a client.</p> <p>NOTE: Refer to the Control Expert help for information on project file compatibility.</p> <p>NOTE: Ensure that the display language of Control Expert is the same as that used by EcoStruxure Process Expert; otherwise, uninstall Control Expert from the computer. It will be re-installed by EcoStruxure Process Expert in the same language.</p>
Later version	You cannot install the software.

If you want to create Control Expert projects and import them into the software or open Control project files coming from EcoStruxure Process Expert with Control Expert, you need to use the same version of Control Expert as used by the software and the appropriate Control Expert DTM library version. Refer to the platform *Release Notes* for version details.

If you have questions about the exchange of Control project files between the software and Control Expert, contact your local Schneider Electric service representative.

NOTE: If you upgrade the version of Control Expert that is installed by EcoStruxure Process Expert, you cannot open it from the software nor use Participant services anymore (for example, to generate or build a Control project).

Advantys Configuration Software Installation Requirements

The software requires a specific version, page 35 of Advantys Configuration Software, which it installs on the computer on which the engineering client is installed.

If the required version is already installed on the computer, ensure that the display language of Advantys Configuration Software is the same as that used by EcoStruxure Process Expert; otherwise, change it to English.

If you upgrade the version of Advantys Configuration Software that is installed by EcoStruxure Process Expert, you cannot open it from the software nor use Participant services anymore (for example, to configure an STB island).

NOTE: When you start the system server, a notification may appear in the console about Advantys Configuration Software not being found. If no engineering client is installed on the computer, you can disregard the message; otherwise, install the required version.

Third-Party Components Installed by the Software

The software installs third-party components that it requires to function properly, such as InterSystems Caché software, which manages the database.

Only the version that is provided in the installation package is tested and validated. Updating these third-party components independently of the EcoStruxure Process Expert installation leads to incompatibilities.

NOTICE

UNINTENDED SOFTWARE OPERATION

Use only the version of third-party software that is installed by the EcoStruxure Process Expert installer.

Failure to follow these instructions can result in equipment damage.

NOTE: Refer to the topic providing general installation information for details about the version of third-party software that is installed, page 35.

License Requirements

To use the software after the 30-day trial period is expired, you must purchase EcoStruxure Process Expert licenses (see *EcoStruxure™ Process Expert, Licensing Guide*) and activate them by using the Schneider Electric Floating License Manager.

If you already activated an EcoStruxure Process Expert license, you may be able to update it.

NOTE: Generally, licenses that you have activated for a major version (for example, EcoStruxure Process Expert 2021) are valid also for subsequent releases within the same year (versions with R• suffix, for example EcoStruxure Process Expert 2021 R2). Refer to the platform *Release Notes* for details.

General Installation Information

Overview of Installation Scenarios

The table presents various database migration scenarios when version 2023 is installed and describes the result in terms of available systems and templates. Restrictions related to the installation language, page 22 may apply.

Database migration	Result
None	Creates a database containing templates, page 57 delivered with version 2023 ⁽²⁾ .
The user restores a database backup of an earlier version, which is migrated during the first start of the version 2023 system server.	A version 2023 database is not created. Only systems and templates contained in the migrated database are available. templates, page 57 delivered with version 2023 are not available. However, you can import them.
The version 2023 system server is started without database migration. Later only, the user restores and migrates a database backup of an earlier version (it can come, for example, from another system infrastructure).	The migrated database replaces ⁽¹⁾ the version 2023 database, which was created during the first server start. Only systems and templates contained in the migrated database are available. Systems created and templates delivered with version 2023 are not available anymore. However, you can import templates, page 57 delivered with version 2023.
<p>(1) When you restore a database, it replaces the mounted database, which remains on the computer, page 135.</p> <p>(2) By default, the database may not contain all the templates that are available. You can change the setting, page 124.</p>	

NOTE: Typically, a software version includes one or more libraries, which contain only the latest version of each template available at the time of release. Without this template version, new functionality is not available (for example, support of new controller platforms or new communication modules). For more information on the version of templates, refer to the Library *Release Notes*.

If you want to migrate the database of an earlier supported version, refer to the topic describing how to use templates supplied with the software, page 57.

User Interface Language

The user interface of EcoStruxure Process Expert is available in several languages, page 22.

User Rights

EcoStruxure Process Expert and Schneider Electric licensing software, page 35 are installed so that they are available to all the users of the computer.

However, only authorized users can log in, page 81 and use the system server and/or clients.

Installed Software Components

During installation of the software, you can install a combination of the following EcoStruxure Process Expert components on the computer.

The following tables indicate which additional software is installed when you install a given component. They also indicate the installed version.

EcoStruxure Process Expert component	Control Expert 15.3	Advantys Configuration Software 12.3	ProSoft Configurator for Modicon 1.005	Modicon IEC 61850 Configuration Tool 3.3
System server	Yes, page 32	Yes	No	No
Engineering client	You need to install some DTMs and Types libraries manually after the software installation, page 42 is complete. Also installs Security Editor.	Yes, page 33	Optional ⁽¹⁾ This application is required to configure PMPXM0100 modules (see <i>EcoStruxure™ Process Expert, Control Participant Services, User Guide</i>).	Optional ⁽¹⁾ This application is required to configure IEC 61850 communication modules (see <i>EcoStruxure™ Process Expert, Control Participant Services, User Guide</i>).
Operation client	Yes, page 32 You need to install some DTMs and Types libraries manually after the software installation, page 42 is complete. Also installs Security Editor.	No	No	No
(1) If an earlier version is installed on the computer, the installer upgrades it. In case of an optional component, only if you install it.				

EcoStruxure Process Expert component	AVEVA Plant SCADA 2023 Update 03	AVEVA Batch Management 2020 version 12.5.0.0
System server	Yes	Yes
Engineering client	Yes	Optional (installed by default) The installation is required for the InBatch ActiveX controls (see <i>EcoStruxure™ Process Expert, Supervision Participant Services, User Guide</i>) to be available when you edit a Supervision page.
Operation client	Yes, page 48	Yes

Component	Database (Caché 2018.1.4.505.-1)	Schneider Electric License Manager (LM) 2.9.0	Schneider Electric Floating License Manager (FLM) 2.9.0	Schneider Electric Software Update (SESU) 2.6.5
EcoStruxure Process Expert system server	Yes	Yes ⁽²⁾	Optional ⁽²⁾ An EcoStruxure Process Expert infrastructure requires at least one Floating License Manager.	Optional. This application informs you of available updates for installed Schneider Electric software and lets you install them.
EcoStruxure Process Expert engineering client	No	No	It corresponds to the License Server check box during installation.	An Internet connection is required to use it.
EcoStruxure Process Expert operation client	No	No	To use the Floating License Manager on another computer on which no component is installed, ensure that it is of the same version as that installed by the software. For more information, refer to the topic describing licensing mechanisms (see <i>EcoStruxure™ Process Expert, Licensing Guide</i>).	If an earlier version is installed on the computer, the installer upgrades it automatically. NOTE: If you select not to install Software Update, you cannot install it later without changing the role of the computer. To install it separately, use the Software Update installer located in the <i>SESU</i> folder of the installation package.
Control Expert	n/a	Yes If the version that is installed by Control Expert is earlier, it is updated.	No	Optional (<i>Custom</i> installation type)
AVEVA Plant SCADA	n/a	No	No	Optional
(2) Upgrading the License Manager or Floating License Manager may change the license server port value, page 37.				

License Server Port Settings

The installation of EcoStruxure Process Expert 2023 may modify the default settings of Schneider Electric licensing software, page 35 that is installed on the computer.

The table indicates which parameters are modified and the new value after the installation. The modification is performed only if the installer updates version 2.2.0.0 or a subsequent supporting version of the FLM/LM.

Software component	Parameter	Parameter value after installing Process Expert	Comment
Floating License Manager (FLM)	License Server Port	27011	If you have modified the default license server port value (27010), no change is made.
License Manager (LM)	Vendor Daemon / Server Port⁽¹⁾	27011	The server port value is changed only for Host Name / IP Address equal to 127.0.0.1 (default value).
(1) This parameter can designate either the vendor daemon port or the license server port of the Floating License Manager.			

After installation, ensure that the server port setting is the same in the Floating License Manager and License Manager of the EcoStruxure Process Expert 2023 infrastructure.

For information on how to verify and/or modify the server port setting, refer to the topic describing how to configure an Enterprise License Server (see *EcoStruxure™ Process Expert, Licensing Guide*).

NOTE: If other software acquires license rights from a Floating License Manager whose license server port was changed, ensure that these license rights remain available to the software.

Installation Log Files

The installer logs the activities performed during software installation in two log files.

File name	Path	Content
<i>EcoStruxure Process Expert Installation.log</i>	<i>C:\ProgramData\Schneider Electric\Process Expert x⁽¹⁾</i>	<ul style="list-style-type: none"> Installed, modified, repaired, and uninstalled software components. Component version. Applied hotfixes. Status of the action.
<i>EcoStruxure Process Expert x.log⁽¹⁾</i>	Folder designated by the Microsoft Windows %TEMP% environment variable.	Microsoft installer (MSI) verbose logging information.
(1) Where x corresponds to the version of the software that you have installed.		

Databases and Systems

When you install the software and start the system server, a new database is created.

If you used an earlier supported version and have created a backup for migration of the database and/or systems, you can reuse them after completing the database migration, page 61 or system migration, page 71.

NOTE: Restrictions related to the installation language, page 22 may apply.

Default Destination Folders

The default installation paths are:

- For EcoStruxure Process Expert: *C:\Program Files\Schneider Electric\EcoStruxure\Process Expert*
- For the *Db* folder (database, for system server only): *C:\ProgramData\Schneider Electric\Process Expert x* (where *x* corresponds to the version of the software that you are installing, for example, 2023).

Installation Requirements

Firewall Exceptions

The installation process modifies the Windows firewall settings of the computer to allow communication with applications that it installs.

If you are using a firewall other than the Windows one, modify the settings of the firewall to allow incoming connections with these applications.

The following paths correspond to a default installation of the system server:

- HostAgent: *C:\Program Files\Schneider Electric\EcoStruxure\Process Expert\System Server\HostAgent.exe*
- SystemServer: *C:\Program Files\Schneider Electric\EcoStruxure\Process Expert\System Server\SystemServer.exe*

NOTE: The entries created by the installer of an earlier version of the software may remain when the program is removed.

NOTE: AVEVA Plant SCADA may make additional changes to Windows firewall settings depending on your selection during installation.

Enabling .NET Framework 3.5 SP1 for Control Expert

Before installing the system server, an engineering client, or an operation client, ensure that .NET Framework 3.5 SP1 is enabled by opening the Windows Control Panel and clicking **Uninstall a program > Turn Windows features on or off**.

The EcoStruxure Process Expert installer informs you if this component is missing.

NOTE: .NET Framework 3.5 SP1 corresponds to version 3.5.30729.1 and higher in the registry but may appear as .NET Framework 3.5 in the **Turn Windows features on or off** window.

Installing .NET Framework 4.6.1 for Windows 10

Before you can install the software on a computer, .NET Framework 4.6.1 needs to be installed.

For Windows 10 (version earlier than 1511), the installer installs it automatically after you confirm the operation.

NOTE: .NET Framework 4.6.1 is already installed on Windows 10 versions later than 1511.

Installing .NET Framework 4.8 for Control Expert

Before you can install the system server, an engineering client, or an operation client on the computer, .NET Framework 4.8 needs to be installed.

The EcoStruxure Process Expert installer informs you if this component is missing.

Installing the Controller Simulator

Overview

You can use the Controller Simulator to perform deployment and execution tasks for Control Participant projects.

When you install the system server or a client, the Controller Simulator application is installed on the computer.

By default, the simulator is installed with a setting that helps secure the Ethernet ports of the computer that are used by each simulator instance. This setting applies only to the Windows session of the user who is logged on during installation.

Modifying this setting during the installation or installing the simulator on another computer makes the computer vulnerable to cyberattack.

Securing the Ethernet Ports Used by the Controller Simulator

During installation, in the **Controller Simulator Ethernet Port Setting** dialog box a check box is shown, which impacts the way the simulator is started.

Check box	Result
Selected (default)	Each instance of the simulator is started with a password-protected Control project that is loaded by default. This helps secure the Ethernet port of the computer (port 502 by default) that is used by the simulator instance and helps reduce vulnerability to cyberattack.
Cleared	Simulator instances are started without a Control project being loaded. This leaves the Ethernet ports of the computer that are used by the simulator instances (port 502 by default) unsecured and may allow a cyberattacker to gain access to the computer to execute, for example, malicious code.

Default Control Project Provided

When you install the software, a password-protected Control project file is copied to the computer:

- Full path: `%localappdata%\Schneider Electric\Process Expert\simulatorprofile.sta` (by default, the value of the `%localappdata%` environment variable is `C:\Users\ <username>\AppData\Local`)
- Password: **31081986@v!sH**

This is the file that is loaded into each simulator instance that you start if you select the check box in the **Controller Simulator Ethernet Port Setting** dialog box during installation.

NOTE: For information on how to change the password, refer to the topic describing password management (see *EcoStruxure™ Process Expert, User Guide*).

Default Simulator Installation Path

The *SimulatorStarter* folder is copied to the computer at the path `C:\Program Files\Schneider Electric\EcoStruxure\Process Expert\Utilities` and a *ProcessExpertControllerSimulator* shortcut is created on the desktop. It points to the *PLCSimulatorStarter.exe* file, which lets you start multiple instances of the simulator.

The *PLC_Simulator* folder is copied to the computer at the path `C:\Program Files (x86)\Schneider Electric`.

Installing the Simulator on a Computer without Installing the Software

Install and use the simulator on a computer on which EcoStruxure Process Expert is installed. This helps secure the Ethernet port that is used by the simulator on the computer by having the setting selected by default.

To install the simulator separately on a computer on which the software is not installed, proceed as follows.

Step	Action
1	Copy the <i>PLC_Simulator</i> folder to the computer. The folder is located in the installation package at the path <i>Program Files\Schneider Electric</i> .
2	Copy the <i>SimulatorStarter</i> folder inside the <i>PLC_Simulator</i> folder. The folder is located in the installation package at the path <i>ProgramFiles64Folder\Utilities</i> .
3	Create a shortcut to the <i>PLCSimulatorStarter.exe</i> file on the desktop. The file is located in the <i>SimulatorStarter</i> folder.
4	Copy the <i>simulatorprofile.sta</i> file to the computer. The file is located in the <i>AFS</i> folder in the root of the installation package.

NOTE: If you installed the simulator that was provided with an earlier version of the software on another computer, you must replace it with the simulator provided with this version of EcoStruxure Process Expert.

Securing the Ethernet Ports for Other Windows Sessions

The setting that helps secure the Ethernet ports of the computer applies only to the Windows session of the user who is logged on during installation.

When another user logs on to the computer and starts a simulator instance, no password-protected Control project is loaded. The simulator needs to be configured manually (see *EcoStruxure™ Process Expert, User Guide*) to load the default Control project provided with EcoStruxure Process Expert or another one.

Using the Simulator

For information on how to use the simulator, load another password-protected Control project, refer to the topic describing the deployment to the controller simulator (see *EcoStruxure™ Process Expert, User Guide*).

Installing the Software

Installing the Software

Overview

The installer installs necessary software depending on the components that you select during installation.

The computer may restart automatically during the installation process and needs to be restarted after installation completes.

Ensure that you install the components of a same infrastructure in the same language, page 22.

Installing the Software

The following tables describe the steps to install EcoStruxure Process Expert and its software Participants.

Steps to start the EcoStruxure Process Expert installation:

Step	Action
1	Ensure that the hardware and software requirements, page 30 are fulfilled.
2	Quit Schneider Electric applications that are running.
3	Ensure that the required .NET Framework components are enabled, page 39.
4	Temporarily disable antivirus services (such as real time, scripting) running on the computer.
5	Double-click the <i>setup.exe</i> file located in the root of the installation package. Result: The installation procedure starts.
6	Select the installation language, page 22 and follow the instructions on screen.
7	Accept the End User License Agreement (EULA).
8	In the Station Role dialog box, select the components, page 34 that you want to install on the computer depending on the machine role, page 19. NOTE: If an earlier version of the Floating License Manager is installed on the computer, select its check box to upgrade it.
9	The installation of EcoStruxure Process Expert continues.

Steps to install Control Expert:

NOTE: To cancel the installation of the software while the installation of Control Expert is in progress, first cancel the installation of Control Expert.

Step	Action
1	The Control Expert <i>Release Notes</i> do not open from the installer. Open the Control Expert Readme and Release Notes from the <i>ReleaseNotesAndUGs</i> folder of the software installation package.
2	Accept the End User License Agreement (EULA).
3	You can select the Control Expert installation path, the setup type, and optional components. You can make changes after installation completes by restarting the installation of Control Expert by using its installer, which is located in the <i>ESx_System_2023</i> folder of the installation package.
4	If you do not want to install SESU, page 34, choose the Custom Control Expert installation mode and select not to install it.
5	Click Install to start the installation. NOTE: Do not click Yes to restart the computer at the end of the Control Expert installation. Otherwise, the installation of EcoStruxure Process Expert is interrupted and must be restarted.
6	After Control Expert is installed or if the appropriate version, page 34 is already present on the computer, a Control Expert hotfix is installed. Click OK in the Hotfix Installation Result dialog box to resume the installation.
7	The installation of EcoStruxure Process Expert continues.

Steps to install AVEVA Plant SCADA Update 03:

Step	Action
1	Accept the End User License Agreement (EULA).
2	In the computer role window, select Development Workstation ; otherwise, Supervision Participant services will not be available.
3	In the component selection window, keep the default selection. NOTE: <ul style="list-style-type: none"> If you do not want to install SESU, page 34, clear its check box. The AVEVA Enterprise License Manager and/or License Server are required.
4	In the Access Restriction window, add the current Windows user, if required. NOTE: The access control for AVEVA Plant SCADA is different from the role-based access control, page 81 of EcoStruxure Process Expert.
5	You can change the default installation path.
6	Click Install to start the installation.
7	In the Select Drivers window, select the required drivers, page 49.
8	Do not select the following check boxes in the AVEVA Plant SCADA Setup Summary window: <ul style="list-style-type: none"> Launch the AVEVA Configurator Restart the machine for the changes to take effect Otherwise, incorrect settings may be applied and the EcoStruxure Process Expert installation is interrupted and must be restarted.
9	Click Finish to exit the AVEVA Plant SCADA installer.
10	Click Update to install AVEVA Plant SCADA Update 03 when prompted and Close to exit the installer of the update. Result: the installation of EcoStruxure Process Expert continues.

Steps to install Advantys configuration software, Schneider Electric licensing software, ProSoft Configurator for Modicon, IEC 61850 Configuration Tool, and complete the installation of EcoStruxure Process Expert:

Step	Action
1	The installer installs Advantys configuration software.
2	The installer installs Schneider Electric licensing software. NOTE: If an earlier version of the License Manager and/or Floating License Manager is installed on the computer, accept to upgrade it for the installation process to continue.
3	The installer installs ProSoft Configurator for Modicon.
4	If you are installing IEC 61850 Configuration Tool, import the certificate, page 45 that is required by the tool, if prompted.
5	If Control Expert is installed on the computer on which you are installing the system server, a dialog box may open prompting you to enter the password, page 85 for the <i>SecurityAdmin</i> user of Security Editor.
6	Click Finish to exit the EcoStruxure Process Expert installer.
7	Restart the computer when prompted to complete the installation of EcoStruxure Process Expert.
8	Install, page 46 the following on each computer on which Control Expert is installed: <ul style="list-style-type: none"> DTMs for specific devices and modules Types libraries for the GPL and specific modules Use the installation files located in the <i>ESx_System_2023\PXM_PRM_GSD_PsxGPL for Control Expert</i> folder of the installation package.

Importing the Certificate for IEC 61850 Configuration Tool

To import the certificate that is required by the IEC 61850 Configuration Tool, proceed as follows if you are prompted during installation.

Step	Action
1	In the Certificates dialog box, click Import... Result: The Certificate Import Wizard dialog box opens.
2	In the Certificate Import Wizard , click Browse... Result: The Open dialog box opens and automatically displays the certificate that you need to import.
3	Select the file and click Open .
4	In the File to Import screen, click Next .
5	In the Certificate Store screen, select Automatically select the certificate store based on the type of certificate , and click Next .
6	Click Finish . Result: A message is shown to confirm the successful import of the certificate.
7	Close the Certificates dialog box.

Installing DTMs and Types Libraries

Overview

When a Device Type Manager (DTM) that you require to complete the configuration and refinement stages is not available in the **Hardware Catalog**, you need to install it manually in Control Expert Classic.

You can also manually install the Types libraries (Libset) that you require in Control Expert Classic.

Perform the installation of the DTMs and Types Libraries on each computer of the EcoStruxure Process Expert infrastructure.

For more information on the installation and configuration of DTMs and Types libraries, refer to the Control Expert help.

Installing DTMs by Using a Setup

The following table outlines the steps to install DTMs on a computer by using their setup.

Step	Action
1	Ensure that engineering and operation clients are closed, the system server is stopped, and that the server console is closed. NOTE: The server console may be minimized to a tray icon. In such a case, click Exit in the context menu of the tray icon.
2	Ensure that the standalone Control Expert (or Control Expert Classic) is closed.
3	Extract the installation files to disk.
4	Double-click the setup of the DTM and follow the instructions on the screen.
5	Open the standalone Control Expert (or Control Expert Classic) and update the DTM Hardware Catalog .
6	Close Control Expert (or Control Expert Classic).

Installing DTMs by Using EDS Files

To install a DTM for an EtherNet/IP device by using Electronic Data Sheet (EDS) files, open the EtherNet/IP addition wizard of Control Expert Classic (standalone application).

Before using the wizard, ensure that engineering and operation clients are closed, the system server is stopped, and that the server console is closed.

After the installation is completed, update the DTM **Hardware Catalog** of the standalone Control Expert (or Control Expert Classic).

For details, refer to the topic that describes *adding an EDS file to the hardware catalog* in *EcoStruxure™ EcoStruxure Control Expert, Operating Modes*.

Installing PROFIBUS DTMs by Using GSD Files

To install a DTM for a PROFIBUS device by using General Station Description (GSD) files, open the PROFIBUS **GSD Addition** wizard of Control Expert Classic (standalone application).

The following table describes the steps to install the DTMs on a computer by using GSD files.

Step	Action
1	Ensure that engineering and operation clients are closed, the system server is stopped, and that the server console is closed. NOTE: The server console may be minimized to a tray icon. In such a case, click Exit in the context menu of the tray icon.
2	Extract the GSD files to disk if needed.
3	Open the standalone Control Expert Classic.
4	Open the DTM Browser and ensure that the PRM Master and communication DTMs are installed.
5	In the DTM Browser , right-click Host PC and click Add .
6	In the Add window, select PRM Master and click Add DTM .
7	In the DTM Browser , right-click the PRM Master and click Device menu > Additional Functions > Add GSD In Library . Result: The GSD Addition wizard opens.
8	Follow the instructions on the screen.
9	Once installation is completed, update the DTM Hardware Catalog .
10	Close Control Expert Classic.

Installing Types Libraries

To install a different version of the Libset, use the **Libset Installer** of the standalone Control Expert Classic.

Before using the installer, ensure that engineering and operation clients are closed, the system server is stopped, and that the server console is closed.

For details, refer to the topic describing the *Libset* in *EcoStruxure™ EcoStruxure Control Expert, Operating Modes*.

Installing Supervision Software

Using the Supervision Software for Engineering

You can use the Supervision Participant software that is installed by EcoStruxure Process Expert as standalone software for engineering but certain conditions apply as described in the following table.

Computer role	Conditions ⁽¹⁾
System server (without engineering client)	The system server is stopped. (The system server does not allow releasing the Supervision Participant.)
System server (with engineering client)	Either of: <ul style="list-style-type: none"> The Supervision Participant was released by using the Release Supervision Participant button in the toolbar of the engineering client. The engineering client is closed and the system server is stopped.
Engineering station	Either of: <ul style="list-style-type: none"> The Supervision Participant was released by using the Release Supervision Participant button in the toolbar of the engineering client. The engineering client is closed.
(1) Does not apply to use runtime Supervision components.	

Supervision Software Installation Requirements

To complete the system engineering life cycle and use Supervision services during runtime, you must install [Supervision software](#), page 31 on machines that have the following roles:

- Operation server: Install operation server software (configuration tools are required on at least one operation server).

Also install OPC Factory Server and/or OPC UA Server Expert.

- Operator station: Install a Supervision control and/or view only client.

For more information, refer to the *AVEVA Plant SCADA Installation and Configuration Guide*.

NOTE: On computers that have the role, page 19 of system server or engineering station, selecting the Supervision role of **Development Workstation** is required.

Using Runtime Navigation Services

To use runtime navigation services (RTNS), install on the computer acting as operator station and/or operation server, an EcoStruxure Process Expert operation client, page 19.

NOTE: Installing the operation client automatically installs AVEVA Plant SCADA, which you can use and configure for runtime as needed.

Installing Patches for AVEVA Plant SCADA

When you manually install or remove patches or hotfixes for Plant SCADA after it has been installed by EcoStruxure Process Expert, ensure that you perform the same installation or removal on the computers on which it has been installed. Otherwise, the functionality of the Supervision Participant may be impacted.

Installing Drivers

When you install the operation server, in the **Select Drivers** screen, select the driver that corresponds to the value of **Protocol** that is configured for tag containers (see *EcoStruxure™ Process Expert, User Guide*) to allow communication between controllers and the I/O server.

For details on the driver configuration, refer to the driver-specific help in the *Plant SCADA Driver Reference Help*.

Installing OPC Factory Server

If OPC Factory Server (OFS) is needed, install Plant SCADA before installing OFS, which is included in the Plant SCADA installation package. If OFS is already installed, uninstall it before installing Plant SCADA. This way, the necessary part number and serial number are entered automatically during the installation of OFS.

To install OFS, double-click *Launch.exe* in the Plant SCADA installation package and then select **Schneider Electric OPC Factory Server vX.Y** (where X.Y corresponds to the OFS version) in the **AVEVA Plant SCADA Setup** dialog box.

Then, if a later version of OFS is required, page 31, use a separate OFS installation package to upgrade it.

For more information on how to install and configure OPC Factory Server, refer to the *OPC Factory Server Help*, which is located in the *Help* folder inside the OFS installation package.

Installing OPC UA Server Expert

If needed, install the required version, page 31 of OPC UA Server Expert on the operation server computer, that is to say, the computer on which the I/O server is installed. The order of installation does not matter.

Certain EcoStruxure Process Expert licenses (see *EcoStruxure™ Process Expert, Licensing Guide*) include a license for this version.

For more information on how to install and configure OPC UA Server Expert, refer to *EcoStruxure™ OPC UA Server Expert*, which you can open from the **Help EcoStruxure Process Expert** window of the engineering client.

Using Remote Desktop Services with Windows Server 2019

Overview

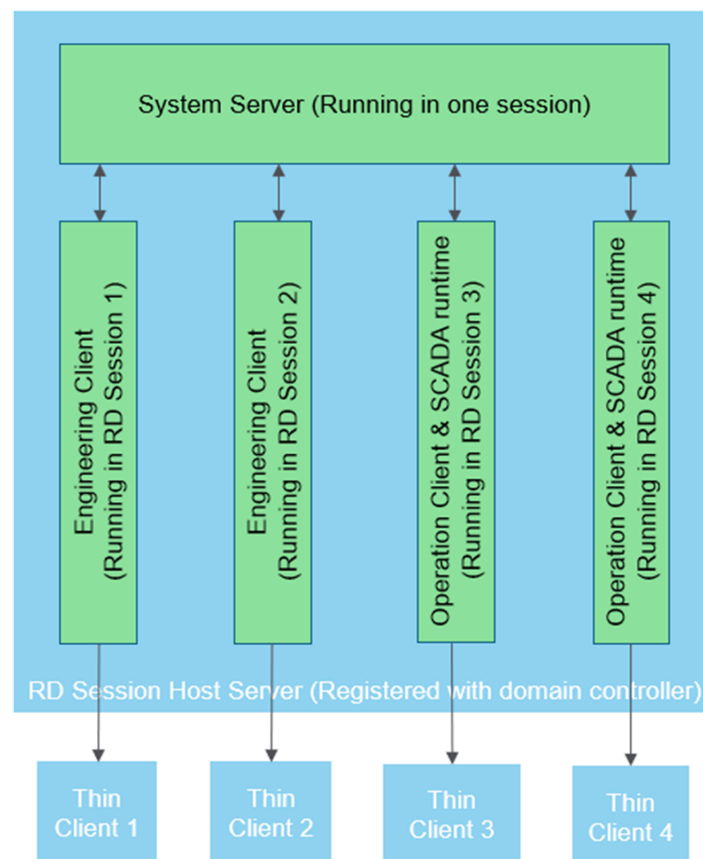
This topic describes the specific requirements and limitations related to using EcoStruxure Process Expert with Remote Desktop Services (RDS) on Windows Server 2019.

It allows thin clients to connect to the Remote Desktop (RD) Session Host server and use the software by using Remote Desktop Protocol (RDP).

For information on the general software installation and configuration aspects, refer to the corresponding chapters of this manual.

RDS Deployments

The following figure shows an RDS deployment where both the engineering and operation clients can be used from thin clients. Several instances of the operation client can be used on one RD Session Host server. However, only one operation client can be used per RD session.



NOTE: For each deployment scenario, some limitations apply to the **Topology Explorer** and Supervision Participant instances that can be used concurrently among the open engineering client RD sessions. For details, refer to Limitations, page 53.

Server Computer System Requirements

The following hardware requirements are valid for the computer running Windows Server 2019 and the following configuration:

- 5 thin clients connecting simultaneously.
- A maximum of 4 instances, page 112 of the Control Participant running simultaneously per thin client.

Every 2 additional instances of the Control Participant require 2 logical processors and 4 GB of RAM extra.

Component	Minimum requirements
CPU	Server CPU that meets the following specifications: <ul style="list-style-type: none"> • CPU mark: 10,000 • Base frequency: 2.6 GHz • Turbo frequency: 3.5 GHz • Cores: 24 cores / 48 logical processors (threads) • Cache size: 8 MB • Bus speed: 8 GT/s
RAM	128 GB
Hard drive	SSD 512 GB capacity. NTFS file system. Higher transfer speeds improve overall performance. 50 GB of free space to install and run the software.
Display	1920 x 1080 or higher
Ports	Ethernet port A bandwidth of 2 to 3 Mbps is needed with each thin client. Otherwise, screen refresh issues may occur. For details on bandwidth requirements when using RDP, refer to the Microsoft documentation .
Input devices	Mouse or compatible device Keyboard

NOTE: To connect more than 5 thin clients, either increase the server computer processing power or set up an additional RD Session Host server computer on which an EcoStruxure Process Expert system server and clients are installed.

Specific Configurations

- Ensure that the RD Session Host server computer is registered with a domain controller.
- The following table describes the configuration to select in the Windows Server Manager.

Windows Server Manager	Selection
Installation Type	Role-based or feature-based installation
Server Roles	Remote Desktop Services
RDS Role Services	Remote Desktop Connection Broker Remote Desktop Gateway Remote Desktop Licensing Remote Desktop Session Host Remote Desktop Web Access

- In the **Session** settings of the RD Session Host server, set **End a disconnected session** to *Never*.

- To use the Controller simulator from a thin client, first open the *AppData* folder of the *Administrator* user of the thin client once (*AppData* is a hidden folder). When the dialog box opens saying that you do not have permission to access this folder, click **Continue**.
- Close Participant refinement windows and client windows before signing out from your RDP session to free up resources for other sessions.

Enabling Windows Installer RDS Compatibility

To install the software on Windows Server 2019, the following setting must be enabled: **Computer Configuration > Administrative Templates > Windows Components > Remote Desktop Services > Remote Desktop Session Host > Application Compatibility > Turn off Windows Installer RDS Compatibility**.

To access the setting, enter *gpedit.msc* in the Windows search bar.

Installing the Software

- Select all the station roles when installing EcoStruxure Process Expert on the RD Session Host server computer.
NOTE: If you install the operation client on one or more operator stations, page 19, it is not required to install it on the RD Session Host server computer.
- Configure the EcoStruxure Process Expert system server listening IP address, page 115 to accept connections from remote clients and configure engineering and operation clients with the IP address of the system server, page 113.
- If you select the **Add the current Windows user to these groups** check box in the **Access Restriction** window of the AVEVA Plant SCADA installer, a dialog box may open indicating that the operation could not be completed. In this event, after the installation of EcoStruxure Process Expert completes, add the users of thin clients manually to the appropriate security roles by using the AVEVA Plant SCADA **Configurator**.
- The installation of EcoStruxure Process Expert components on thin clients is not required.

Licensing Considerations

- You need as many engineering client licenses as there are users logged into an engineering client in concurrent RD sessions.
- Licenses must be activated by using the Floating License Manager (FLM), which can be installed on the RD Session Host server computer or a remote enterprise license server.
- The RD Session Host server computer requires an internet connection so that license rights can be validated with the Schneider Electric license server.

NOTE: Ensure that the appropriate internet connection settings are configured in all RD sessions. Otherwise, opening the FLM and the License Manager (LM) on the RD Session Host server computer may take time.

- For the first 120 days, no RDS Client Access License (CAL) is required.

The following table shows the types of RDS CALs that are available. Use the appropriate license type for each connecting user. For more information, refer to the Microsoft online documentation on [remote desktop deployment licensing](#).

Usage scenario	Client Access License
One user connects to an RD session from several thin clients.	Per user CAL
Several users connect to an RD session from the same thin client.	Per device CAL

Limitations

The following limitations apply to the RD Session Host server computer:

- A maximum of four **Topology Explorer** instances can be used. Each engineering client RD session automatically uses one **Topology Explorer** instance even if the **Topology Explorer** is not open. As a result, if you open more than four engineering client RD sessions, the **Topology Explorer** is not available in the engineering client of the additional sessions.
- Only one instance of AVEVA Plant SCADA server can run at a time. As a result, only one engineering client RD session can use the Supervision Participant at a time (for example, to edit a page or build a Supervision project). Using Plant SCADA standalone requires releasing the Supervision Participant (see *EcoStruxure™ Process Expert, Supervision Participant Services, User Guide*) first.

Migrating Databases and Systems

About Database and System Migration

Overview

Extensions Installed in Software Participants

If you want to reuse a database and made changes to the software Participants of your earlier version of the software by installing extensions or adding files manually to the *Extensions* folder, re-install them manually after installing the software.

These changes can be, for example, the installation of Device Type Managers (DTMs) or an upgrade of the set of libraries (Libset) of Control Expert.

New Name of the Control Participant

As of version 2019, the Control Participant was renamed *Control Expert* (formerly Unity Pro). Due to this name change, the installation path of the Participant is changed to *C:\Program Files (x86)\Schneider Electric\Control Expert X* (where X is the Participant version).

If you were using user-created patches with an earlier version of the software in which a file refers to the former Participant installation path (for example, if the *execute.bat* file contains the path *C:\Program Files (x86)\Schneider Electric\Unity Pro*), update them with the new path before reusing them.

Reusing Application Export Files

To reuse instances that you exported from Process Expert 4.0 and subsequent supporting versions, you can import the corresponding application export files (.xml) in the **Application Explorer** after installing the software. This requires that the templates that are used by these instances are available in the Global Templates library at the time of import (same template version).

For more information on the export and import of the application, refer to the topic describing how to manage application folders and instances in the *EcoStruxure™ Process Expert, User Guide*.

Reusing Templates of Earlier Versions

To reuse templates that you created in Process Expert 4.3/SP1 or version 2018 and subsequent supporting versions and that are not part of the Global Templates library anymore (because you have, for example, exported and then deleted them), Import (see *EcoStruxure™ Process Expert, User Guide*) the corresponding export files (.sbk) in the library of the respective version before creating the database migration backup file (.mdbk). During the migration of the database, the templates are made compatible with the later version.

NOTE: When you import templates that were exported from a different version of the software, they may not be usable in the entire system engineering life cycle.

Reusing Project and Topology Export Files of Earlier Versions

To reuse Control or Supervision Participant projects, or topological entities that you exported from Process Expert 4.3/SP1 or version 2018 and subsequent supporting versions, import the corresponding export files (.sbk) into a system of the respective version before creating the database migration backup file (.mdbk) or forward compatible system backup file.

This is needed because you cannot import project or topology export files into a version of the software that is different from the version they were created with. This restriction also applies to *R•* versions of a major release.

Managing Unused Databases of Earlier Software Versions

When you remove the software, databases are not removed. If you do not want to reuse databases of an earlier version (which includes systems, segment libraries, and templates you may have created), install the new software version and start the system server without restoring a database backup file. To save disk space, you can remove the *Db* database folder, page 38 of the earlier version.

Migrating M580 Controllers

M580 Controllers in the System Topology

If the topology of a system contains an M580 controller, make sure that the Control Participant project containing the controller configuration in the **Topology Explorer** can be built without detected errors before you create a forward-compatible system backup or use the **Migrate Database** command to create a database backup for migration. This is true regardless of whether the controller is mapped to the executable of a Control project or not. If this does not happen, you may still perform the system or database backup, but the migration of the system or database to version 2023 or later does not complete, and a notification is displayed in the system server console.

M580 Controllers With Firmware Version 2.60 and Earlier

If the topology of a system contains an M580 controller with firmware version 2.60 or earlier, the system or database cannot be migrated to version 2023 and later. In this case, a message is displayed in the system server console when you restore the system or start the server after restoring the database.

You must change the firmware version of the M580 controllers to 2.70 or later by using the **Configure** command before performing the premigration of the database or creating the forward-compatible system backup.

If your database is from EcoStruxure Hybrid DCS 2018 R2 or earlier, first migrate it to one of the following versions that supports firmware version 2.70 or later:

- EcoStruxure Process Expert 2019
- EcoStruxure Process Expert 2020, 2020 R2
- EcoStruxure Process Expert 2021

Then, change the M580 controller firmware version and premigrate the database.

NOTE: After changing the controller firmware version in EcoStruxure Process Expert, you must build the executable by using the **Build All** command and change the firmware version of the physical controller to deploy the executable. This requires stopping the controller.

Using Templates Supplied With the Software

Overview

Typically, a software version is supplied with one or more libraries, which contain new and/or updated templates.

To take advantage of new functionality provided by these templates, import (see *EcoStruxure™ Process Expert, User Guide*) them if you have migrated a database of an earlier version. This is needed because the templates that are supplied with the software do not appear in the Global Templates library, page 34 after a migration.

Then, to use the later version of templates, update the templates that are used by the instances of your systems.

Generally, update a template only if it is needed. That is to say, if the new version of the template provides a new functionality that you need or an improvement. This applies, in particular, to systems that are already deployed.

For more information on the templates that are provided, refer to the help of the Schneider Electric libraries.

For information on the severity of the impact when updating a template and on the compatibility of templates belonging to different libraries, refer to the library *Release Notes* in the *ReleaseNotesAndUGs* folder of the software installation package.

Templates Supplied With the Software

The new and/or updated Schneider Electric topological and application templates are provided in the form of export files (.sbk).

There is one export file per template category.

The table indicates which libraries are included with the software and the path of the folder on the computer on which the system server is installed (where x is the software version). For details on each library, refer to the corresponding *Release Notes*.

EcoStruxure Process Expert library	Folder containing SBK files	Description
General Purpose Library (GPL) 2023	C:\ProgramData \Schneider Electric \Process Expert x \Templates	GPL that supports the Situational Awareness (SA) functionality of the Supervision Participant. Template export file names have the SA suffix.
General Purpose Library (GPL) Classic 2023	C:\ProgramData \Schneider Electric \Process Expert x \Templates Classic	Standard GPL that was renamed General Purpose Library Classic.
Foundation Library (FL) 2023	The <i>Foundation.sbk</i> file is included in each folder containing SBK files of a GPL.	Contains elementary application templates that are referenced by templates of other libraries. It also contains topological templates that are required to take advantage of the following (if applicable): <ul style="list-style-type: none"> Newly supported hardware modules. New functionality of the new version of the Control Participant.

DTMs and Types Supplied With the Software

The EcoStruxure Process Expert General Purpose Library supplied with the software may contain templates that require new or new versions of DTMs and/or types.

The necessary installation files are in the *ESx_System_2023\PXM_PRM_GSD_PsxGPL for Control Expert* folder of the installation package.

When to Import and Update Templates

The table describes several common database migration scenarios and indicates in which case you need to use the templates that are provided with the software.

Scenario	Example	Actions after migrating the database
Systems of migrated databases are not modified or only by using templates and functionality of the earlier version of the software. Typically, the new software version is installed to benefit of performance improvements and/or new functionality not related to libraries.	User whose existing systems are deployed and functional. In the short term, no changes are planned in the application or topology, which would use new functionality (for example, adding newly supported hardware modules).	Importing templates supplied with the software is not required. NOTE: The templates of the earlier version of the software are available in the Global Templates library.
Systems of migrated databases are going to be updated to take advantage of the new features of a library of the new software version.	User who wants to:	
	Add to the topology a newly supported hardware module or use a new topological functionality provided by a library of the new software version.	Import templates of the Foundation library that is supplied with the software.
	Update the module of an existing controller to a new version.	Import templates of the Foundation library that is supplied with the software then, update the template that is used by the module. Thereafter, you can configure the controller in the Topology Explorer and change the version of the module.
	Use the new functionality provided by the new version of an application template of a GPL.	Import templates of a GPL that is supplied with the software to create new instances. Optionally, update templates of existing instances of the application. NOTE: You can use templates of different GPLs in the same system as long as their facets are not assigned to a same Participant project.
Application instances and topological entities of systems of migrated databases remain unchanged. However, new systems will be created, which contain application instances and topological entities that use new functionality of a library of the new software version. As a result, systems of both the earlier version and the new software version will co-exist.	System integrator who keeps supporting the installed base while creating new systems within the same database by using the new software version.	<ul style="list-style-type: none"> To create new topological entities: Import templates of the Foundation library that is supplied with the software. To create new application instances: Import templates of a GPL that is supplied with the software. Updating templates of existing instances of the application and entities of the topology is not required. NOTE: Because earlier and new versions of templates co-exist in the Global Templates library, ensure that you are using: <ul style="list-style-type: none"> The earlier version when modifying systems of migrated databases. The new version or templates of a different GPL when creating and modifying new systems. NOTE: You can use templates of different GPLs in the same system as long as their facets are not assigned to a same Participant project.

Updating Systems With the Templates Supplied With the Software

After you import new templates into the Global Templates library, you can update instances of systems with these new templates.

Migrated Control Participant projects may not function properly after a migration.

⚠ WARNING

UNINTENDED EQUIPMENT OPERATION

Ensure that any built Control Participant projects that are contained in a migrated database function properly before deploying them to controllers.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

The table describes the workflow to update templates that are used by application instances and topological entities in migrated databases with templates supplied with the software.

Step	Description
1	<p>Ensure that the application size license that is activated for the software is of the appropriate size.</p> <p>If the software displays a notification about the license size, refer to <i>Licensing Conflicts</i> in the <i>EcoStruxure™ Process Expert, Licensing Guide</i>.</p> <p>For information on the size of systems, refer to <i>Instance Count</i> in the <i>EcoStruxure™ Process Expert, User Guide</i>.</p>
2	<p>Ensure that you have imported Global Templates supplied with the software, page 57 and installed the necessary DTMs and/or Types libraries.</p>
3	<p>If you created your own templates, update these templates with an updated reference that may be available with the software.</p> <p>Refer to <i>Updating Global Templates</i> in the <i>EcoStruxure™ Process Expert, User Guide</i>.</p>
4	<p>Update the templates that are used by instances of the application.</p> <p>Refer to <i>Updating and Replacing Templates of Instances</i> in the <i>EcoStruxure™ Process Expert, User Guide</i>.</p> <p>NOTE: To retain existing links, update instances that are linked at once.</p>
5	<p>Generate the Control and Supervision projects.</p> <p>NOTE: If the software detects DFB version conflicts, it opens a dialog box, which allows you to select the version you want to use. Select the version encapsulated in the new version of the template. For details, refer to the topic describing the management of versions of types in Control facets during generation (see <i>EcoStruxure™ Process Expert, User Guide</i>).</p> <p>NOTE: If the generation process detects that the controller does not support a new functionality or data type, upgrade the firmware version of the controller module of the default configuration used by the Control Participant project.</p>
6	<p>Update the templates that are used by the topological entities of each system by using the Update Templates command.</p> <p>Refer to <i>Updating Templates of Topological Entities</i> (see <i>EcoStruxure™ Process Expert, User Guide</i>).</p> <p>NOTE: You may need to upgrade the firmware of topological entities to a version that supports new modules or data types.</p>
7	<p>Build the Participant projects and ensure that they function properly.</p>
8	<p>Deploy the built Participant projects to their respective engines.</p>

Stopping and Starting Caché

Stopping Caché

Before stopping Caché, stop the system server.

NOTICE

LOSS OF COMMUNICATION

Stop the system server only when no client is running.

Failure to follow these instructions can result in equipment damage.

To stop Caché, proceed as follows.

Step	Action
1	Quit clients that are connected to the system server (see <i>EcoStruxure™ Process Expert, User Guide</i>).
2	Stop the system server (see <i>EcoStruxure™ Process Expert, User Guide</i>).
3	Right-click the icon representing the Caché database in the system tray. Result: The Caché context menu opens.
4	Select Stop Caché . Result: Caché opens the Caché Shutdown dialog box.
5	Select Shut down and click OK . Result: The Caché splash screen is shown while the database shuts down.
6	Wait until the Caché database tray icon turns gray, indicating that the database is shut down.

NOTE: Do not start the system server when Caché is stopped because the database needs to be running for the system server to function properly.

Starting Caché

To start Caché, proceed as follows.

Step	Action
1	Right-click the icon representing the Caché database in the system tray. Result: The Caché context menu opens.
2	Select Start Caché . Result: The Caché splash screen is shown while the database starts.
3	Wait until the Caché database tray icon turns blue, indicating that the database is running.

NOTE: By default, Caché is configured to start when you start Microsoft Windows.

Migrating Databases

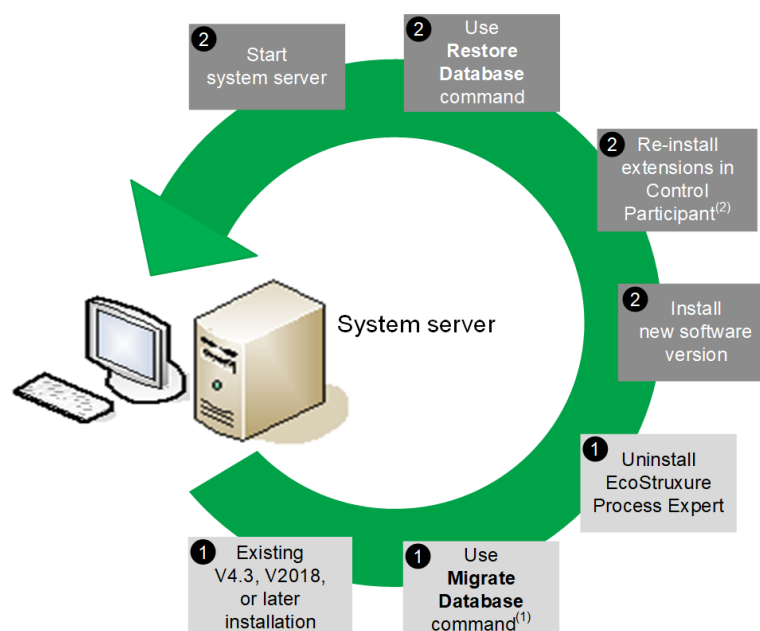
Overview

Only the migration of databases of the following versions is supported:

- Process Expert 4.3 and V4.3 SP1
- EcoStruxure Hybrid DCS 2018 to 2019.
- EcoStruxure Process Expert 2020 and any subsequent supporting version.

Typically, migrating a database is a two-step process, which can take up to several hours depending on the size of the database. This section describes the prerequisites and how to complete the process.

The following figure illustrates the typical workflow to migrate a database to version 2023.



(1) If the command, page 128 does not appear, install a premigration patch, page 62 first.

(2) Extensions are the necessary DTMs and the Types libraries for the GPL and specific devices/modules.

NOTE: It is possible to re-use the database of 32-bit Process Expert 4.1 or earlier, but you need to migrate it to V4.2 first, then to V4.3. Refer to *Upgrading the Software* in the *Installation Guide* of V4.2.

Preparing Databases for Migration

Overview

Migrating a database is a two-step process, page 61.

In the first step, prepare databases for migration before removing the installed version and installing the new version. This premigration is an automated process. The purpose is to create a backup file of each database that you want to reuse. These backup files can be migrated by using the new version to create a compatible database.

Premigration is performed by using the **Migrate Database** command, page 127 of the system server of the installed version.

- If the command does not appear, install the premigration patch first.
- For V4.3/V4.3 SP1 databases, the command is already present in the system server console. You need to install a premigration patch only in case of forgotten passwords, page 63.

You cannot use clients during this step.

NOTE: If you modify, add, or delete a system or make a change to the Global Templates library or content repository after you have created the database backup file, you must create a new one in order to migrate the changes.

Activity Logs

The software creates log entries when you premigrate a database.

The information is added to the system server log file (see *EcoStruxure™ Process Expert, User Guide*).

M580 Controller Firmware Version

To migrate a database, the firmware version of M580 controllers in the topology of systems must be 2.70 or later. Otherwise, follow the procedure *M580 Controllers With Firmware Version 2.60 and Earlier*, page 56.

Password Management

If the following passwords are set, one or more **Password Authentication** dialog boxes open while the backup file is created prompting you to enter the corresponding passwords:

- The system access password for each system.
- The control constituent password for Global Templates.
- The **Controller** or **Simulator** password (see *EcoStruxure™ Process Expert, User Guide*) for topological entities of each system.

You must provide the passwords to proceed with the premigration.

The dialog box for **Controller** and **Simulator** passwords provides an option to manage forgotten passwords:

- For controllers, it lets you obtain a temporary password that you can enter directly in the **Password Authentication** dialog box.
- For workstations, it lets you proceed with the premigration without providing the password.

NOTE: In Process Expert 4.3/SP1, the option is only available after you install the premigration patch.

Without installing the premigration patch, if you have forgotten the password for a controller or workstation, you can cancel the premigration process, open the **Topological Explorer**, reset the password (see *EcoStruxure™ Process Expert, User Guide*), and then start over.

The following figure shows an example of the **Password Authentication** dialog box, which prompts for the **Controller** and **Simulator** passwords of each system contained in a database that you are premigrating.

1 ☒ Show StationNode's Simulator

System Name	Engine Name	Engine Type	Password	Forgot Password?
IEC	WP_M580R_Client	Controller	<input type="password"/>	ForgotPassword
Basic_P2P	StationNode_1/UnityPro_1	Simulator	<input type="password"/>	

OK Cancel

Item	Description
1	<p>When selected, shows the workstations (station nodes) acting as controller simulator for which password protection is enabled and a password has been set. Otherwise, these workstations are not shown and you cannot enter their password.</p> <p>NOTE: Entering the password for workstations is optional. If you do not enter it, you can proceed with the premigration after you confirm the command. However, you need to deploy the built Control Participant project again to the workstation in the new version of the software.</p> <p>Click No in the confirmation dialog box to revert to the Password Authentication dialog box.</p>
2	Identifier of the system containing the topological entity.
3	<p>Identifier of the topological entity in the Topology Explorer.</p> <p>For workstations, also indicates the identifier of the Control Expert service.</p>
4	<p>The engine type can be either of the following:</p> <ul style="list-style-type: none"> Controller. Simulator: A workstation in which a Control Expert service has been created.
5	<p>Text box to enter the Controller or Simulator password.</p> <p>If you enter an incorrect password for an entity, a red icon is displayed in the corresponding row.</p>
6	<p>Click the link if you have forgotten the password for a controller. It provides a code that you must submit to Schneider Electric support to obtain a temporary password. You can enter this temporary password directly in the Password Authentication dialog box and proceed with the premigration.</p>

Installing the Premigration Patch

If necessary, install the patch on the computer on which the system server is installed before starting the premigration process.

Step	Action
1	Ensure that no client is open, the system server is stopped, and the server console is closed.
2	Copy the premigration patch installation file (.exe) that corresponds to your installed version to the computer. The files are located in the <i>MigrationPatches</i> folder, which is in the root of the software installation package.
3	Double-click the file. Result: The welcome screen opens. NOTE: Hotfix EPE2021_RTM_81344 must be applied before installing the <i>EPE2021_PreMigration.exe</i> premigration patch on version 2021.
4	Click Update and follow the instructions on screen.

Creating a Database Backup File for Migration

The premigration of a database may take up to several hours depending on the size of the database.

To create a backup file of the database that is mounted, proceed as follows.

Step	Action
1	Start the system server.
2	Ensure that no client is connected to the system server.
3	In the system server console menu bar or tray icon, page 127, click Database > Migrate Database . Result: A Save As dialog box opens. NOTE: The command may be impacted if the system server auto-start functionality is enabled, page 132.
4	Enter a name and location for the database backup file and click Save . Result: If the database contains a system with a topological entity for which password protection is enabled and a password has been set, the Password Authentication dialog box opens; proceed to step 6. Otherwise, the creation of the database backup file starts.
5	Wait until Done appears in the system server console after the server is stopped and database operations are completed. Result: The database backup file is created and premigration is complete. NOTE: When the creation of the database backup file starts, no activity may be shown in the system server console.
6	In the Password Authentication dialog box, enter the password for each topological entity or <i>manage forgotten passwords</i> , page 63 and click OK . Result: The creation of the database backup file starts (no activity may be shown in the system server console). NOTE: Click Cancel to close the dialog box without migrating a database.
7	Wait until Done appears in the system server console after the server is stopped and database operations are completed. Result: The database backup file is created and premigration is complete.
8	To create a backup file of another database, <i>restore it</i> , page 133 and repeat the procedure.

Migrating Databases

Overview

The second step of the migration process can be performed once you have installed the system server of the new software version.

By restoring a database backup file (.mdbk) created during the first step and starting the system server, the migration process is completed.

If password protection is enabled on the system server and/or on systems that you are migrating, you need to enter these passwords.

Database backup files created from an earlier supported version are language-dependent and can only be migrated to an infrastructure in the same language. After migration is completed, you can [restore it, page 68](#) on an infrastructure in another language.

Once you have migrated a database, you can perform the second step of the migration process for another database at any time.

NOTE: After installing EcoStruxure Process Expert, if you start the system server without restoring a database, a blank database is created, [page 34](#).

Prerequisites

The following are prerequisites for performing the migration process:

- You have an up-to-date backup file (.mdbk) of each database that you want to migrate, which was [created with the earlier software version, page 62](#).
- You have installed the version 2023 system server.
- You have [re-installed, page 46](#) in Control Expert the DTMs and Types libraries that are used in Control Participant projects of systems contained in the database that you want to migrate.
- The [firmware version of M580 controllers, page 56](#) in the topology of systems is 2.70 or later.

Password Management

If one or more the following passwords are set, a **Password Authentication** dialog box opens when you restore the database backup file prompting you to enter the corresponding passwords:

- The system access password for each system.
- The control constituent password for Global Templates that is set on the system server on which you are restoring the file.

You must provide the passwords to complete the migration of the database.

Migrating Supervision Data

For information on the steps required when you migrate a database that contains Supervision projects, refer to the topic describing the [migration of Supervision data, page 69](#).

Completing the Migration on a Different Computer

If you have installed the system server on another computer than the one on which you created the database backup file, ensure that the system server can access the file over the network or transfer it manually from the other computer.

NOTE: Verify that the **Read-only** attribute of the folder containing the database backup file is cleared by right-clicking the folder and selecting **Properties**.

Migrating the Database of the Earlier Supported Version

Step	Action
1	Back up the database that is mounted by using the Back Up Database command, page 128 in the system server console or tray icon. A database is mounted, page 34 if you have restored one and/or already started the version 2023 system server.
2	Mount the database that you want to migrate by clicking Database > Restore Database in the system server console or tray icon. In the Open dialog box, select .mdbk in the file type menu. NOTE: The command may be impacted if the system server auto-start functionality is enabled, page 132.
3	Start the system server, page 137. Result: The database is migrated. During this process, the EcoStruxure Process Expert 2023 Migration Supervision Participant window opens and may require user interaction, page 69 for migration to complete successfully.
4	Wait until the system server tray icon turns green or Server is ready appears in the server console. This may take some time depending on the size of the database. Result: The server is running and the database has been migrated to the current software version, which is indicated in brackets.

Migration Log Files

The software creates several log files when you migrate a database, which contain information about the migrated objects and detected errors.

The name of the log files is *migration_YYYY-MM-DD_HH-MM-SS.log* where *YYYY-MM-DD_HH-MM-SS* represents the date and time when the log file was created.

The software creates log files at the following locations:

- For the database that you have migrated, in the *GLOBAL* folder.
- For each system contained in the migrated database, in the *System_n*.

Both folders are located at the path *C:\ProgramData\Schneider Electric\Process Expert X\Db* where *X* corresponds to the version of the software that you are using.

NOTE: Systems that appear in the *Db* database folder keep their default name (*System_n*) even if you rename them in the **Systems Explorer**.

Managing Databases

Database backups that the software creates when you restore databases can use up a lot of disk space. Manage these folders regularly to recover disk space.

Using Migrated Databases With Infrastructures in Another Language

To use a database migration backup file (.mdbk) created on an English system server with an infrastructure installed in another language, proceed as follows.

Step	Action
1	Restore the migration backup file (.mdbk) on an English system server of the current version by using the Restore Database command, page 128 to complete the migration.
2	On this system server, create a backup file (.dbk) of this database by using the Back Up Database command.
3	Restore this database backup file on a system server in a language other than English by using the Restore Database command.

Migrating Supervision Data

Supervision Migration Window

If the software contains a new version of the Supervision Participant, a Supervision Participant migration window may open on top of the **Plant SCADA Studio** and **Graphics Builder** windows when Supervision data (for example, global **Included** projects or pages) is upgraded to the new version as part of a system or database migration.

External **Included** projects are not automatically upgraded. You must **upgrade** them manually, [page 70](#) and replace the earlier version stored at the system level in the content repository.

The migration window opens even if systems that you are migrating contain no Supervision project.

Avoid clicking **Cancel** in a dialog box related to **Included** projects of a Schneider Electric library; otherwise, you must upgrade these global **Included** projects to the new Supervision Participant version manually by retrieving them from the content repository (global constituents), upgrading them with **Plant SCADA Studio**, and adding them back to the content repository by editing a genie facet.

Upgrading Supervision data of databases of EcoStruxure Hybrid DCS 2018/R2 and earlier takes time.

NOTE: Dialog boxes may open in the background if the **Plant SCADA Studio** window has the focus. Bring the **Graphics Builder** window to the foreground to show open dialog boxes and interact with them.

NOTE: Upgrading Supervision data after the migration while refining the Supervision project or after deploying the project upgrades only the data of the Supervision project and does not update the **Included** projects stored in the content repository.

Depending on the Supervision data that is upgraded, you may be required to interact with one or more dialog boxes that open during the database or system migration. The following table presents some examples.

Scenario	User action
Missing link to graphical object. For example, a graphic or logo has been added to one or more Supervision pages.	You are prompted whether you want to keep the link. To keep it, select the location of the graphical object.
Connection to a driver that is not part of the Supervision Participant by default. For example, a segment library that uses the ODBC driver has been installed and instances thereof are used in the Supervision project.	An information dialog box opens that you must acknowledge.

Upgrading External Included Projects Manually

When you migrate a system or database, you must upgrade manually external **Included** projects that you added to a Supervision project by using the **Include Projects** command.

To upgrade an external **Included** project and replace the earlier version in the content repository, proceed as follows.

Step	Action
1	Open Plant SCADA Studio of AVEVA Plant SCADA Update 03 and restore the external Included project that you added to the Supervision project contained in the system or database that is migrated.
2	Back up the Included project.
3	After migration of the system or database is complete, open the Supervision project that contains the Included project in the Project Explorer and select Include Projects in the project context menu. Result: The Include Projects window opens.
4	Click Add .
5	Select the Included project that you backed up and click Open . Result: A dialog box opens prompting you to confirm the replacement of the Included project in the content repository.
6	Click Yes .
7	Generate the Supervision project to update graphical objects related to the Included project.

Creating Unique Identifiers

When you migrate systems or databases of version 2021 or earlier supported versions, the migration process does not create unique IDs for Supervision projects and variable tags. However, these unique IDs are expected by the Supervision Participant when you work with migrated Supervision projects.

To create unique IDs for existing Supervision projects and their variable tags after migrating a system or database, proceed as follows.

Step	Action
1	In the Project Explorer , refine the Supervision project.
2	In the Supervision Participant window, click Projects > Home > Migration Tool . Result: The Project Migration dialog box opens.
3	Select Create unique IDs for Variables .
4	Clear the following: <ul style="list-style-type: none"> • Create Computers from Network Addresses • Remove obsolete Memory and Alarm devices • Create Roles from User security information • Copy XP_Style menu into Tab_Style menu
5	Click Migrate . Result: Unique IDs are created for the project and its variable tags.
6	Repeat the procedure from step 3 by selecting another Supervision project that is created in the Project Explorer .

Migrating Systems

Backing Up Systems for Reuse with a Subsequent Supporting Version

Overview

The migration of systems allows you to reuse your systems after installing a new software version. Compared to a database migration, it lets you create a new database that contains the templates included with the new version of the software. Templates that are used by the systems that you restore are added to this database.

The functionality allows you to migrate systems created with versions 2020 R2 and 2021 to version 2023.

The migration is a two-step process:

- Create a forward compatible system backup by using the installed version.
- Restore the system after installing the new version.

Both steps are performed in the **Systems Explorer** of the engineering client.

Creating and restoring a forward compatible system backup takes longer than a version-dependent one because the data is migrated similarly to a database migration.

NOTE: System backups created by using the **System Backup Scheduler** are not forward compatible.

Version and Language Compatibility of System Backups

The following table describes on which version/language you can restore a system backup created with version 2020 R2 or 2021.

System backup is forward compatible	Restore on the same version	Restore on subsequent supporting versions	Restore on a different language
No	Yes	No. It can also be restored on subsequent releases of the same version (<i>R•</i> versions, for example, 2020 R2) and service packs of the same version only if the Participant versions are the same.	Yes
Yes	Yes	Yes. NOTE: Forward compatible system backups created with version 2020 R2 cannot be restored on version 2021.	No ⁽¹⁾
(1) To restore the system on a non-English infrastructure of a subsequent supporting version, restore it on an English infrastructure of a subsequent supporting version first, back up the system and then, restore it on a non-English infrastructure. For example, restore the version 2021 forward compatible system backup on version 2023 (English) and back it up. Then, you can restore it on a version 2023 Spanish, French, or Chinese infrastructure.			

When you back up a system, the version of the software is recorded and displayed when you restore the system.

M580 Controller Firmware Version

To restore a system on version 2023 or later, the firmware version of M580 controllers in the topology must be 2.70 or later. Otherwise, follow the procedure *Migrating M580 Controllers*, page 56.

Enabling the Functionality

Install a premigration patch, page 74 on version 2020 R2 or 2021 to enable the creation of forward compatible system backups.

The premigration patch adds the following check boxes to the system **Back Up** window of the engineering client.

Check box	Description
Back up templates used by the system	<p>When selected (true), a template export file (.sbk) is created at the same location and with the same name as the system backup file (.sbf). It contains the templates that are used by topological and application instances of the system. These templates are imported when you restore the system unless they are already present in the database.</p> <p>It also contains the Included projects that are used by the existing Supervision projects.</p> <p>If the Control constituent password, page 116 is set, selecting this option increases the time required to create and restore the backup file significantly.</p> <p>NOTE: If you do not back up the templates that are used by the system, you may not be able to restore it after installing the software and starting the system server if the database does not contain the required templates (for example, if starting the system server creates a new database).</p>
Make backup forward compatible	<p>When selected (true), the system backup file is forward compatible and the system can be restored on subsequent supporting versions of the software if the templates that are used by the system (same template identifier and version) are present in the database.</p> <p>NOTE: A forward compatible system can also be restored on the same version.</p>

Managing Passwords When Creating Forward Compatible System Backups

If you make the system backup forward compatible and either password is set, enter it when prompted to perform the backup:

- The system access password.
- The controller access password for topological entities of the system. For details on how to enter the password for controllers and workstations, refer to the description of the **Password Authentication** dialog box, page 63, which opens but without displaying the **System Name** column.

If you back up the templates and the Control constituent password is set, enter it when prompted to perform the backup.

NOTE: If the system access or Control constituent password was already entered once since the engineering client was started, you are not prompted for it.

Creating a Forward Compatible System Backup

To create a system backup that is forward compatible, proceed as follows.

Step	Action
1	Right-click the system in the Systems Explorer and select Back Up . Result: The Back up window opens.
2	To create the backup in a different location and/or with a different file name, click the browser button; otherwise, proceed to step 4. Result: A Save As dialog box opens.
3	Select a location where to create the backup file and edit the file name if needed.
4	Select the check boxes to make the system backup forward compatible and back up the templates.
5	Enter a description (optional).
6	Click Save . Result: The software migrates the system data, creates the template export file, and the system backup file. Information about the operation is displayed in the notification panel. If a password is set, page 72, you must enter it; otherwise, the backup is not created. NOTE: To cancel the backup task, click the abort icon in the notification panel. The icon is disabled while the system data is migrated.

NOTE: Avoid running several forward compatible system backups in parallel on one or more clients connected to the same system server; otherwise, system backups may not complete successfully.

Restoring a System on a Subsequent Supporting Version

You can restore forward compatible systems on a subsequent supporting version the same way you restore a version-dependent system by using the **Systems Explorer** of the engineering client.

For details, refer to the topic describing how to restore systems (see *EcoStruxure™ Process Expert, User Guide*).

Installing the System Premigration Patch

Overview

Creating forward compatible system backups by using the **Back Up** command of the engineering client is only possible after you install the premigration patch on version 2020 R2 or 2021, which enables the functionality.

NOTE: The installation of this premigration patch on the system server also enables the **Migrate Database** command, which is required to premigrate databases, page 62.

Prerequisites

Depending on the installed software version, the following hotfix must be applied before installing the premigration patch:

- Version 2020 R2: EPE2020R2_RTM_88833
- Version 2021: EPE2021_RTM_81344

In the **Hotfix Details** tab of the **About EcoStruxure Process Expert** dialog box, you can verify which hotfixes are installed.

To download hotfixes, visit the [mySchneider](#) support portal.

Installing the Premigration Patch

To install the premigration patch, proceed as follows.

Step	Action
1	Ensure that no client is open, the system server is stopped, and the server console is closed.
2	Copy the premigration patch installation file to the computer on which the system server is installed. Use the file that corresponds to the installed software version: <ul style="list-style-type: none"> • Version 2021: <i>EPE2021_PreMigration.exe</i> • Version 2020 R2: <i>EPE2020R2_PreMigration.exe</i> The files are located in the <i>MigrationPatches</i> folder, which is in the root of the software installation package.
3	Double-click the file. Result: The welcome screen opens.
4	Click Update and follow the instructions on screen.
5	Once the installation is complete, repeat the steps on the computers on which an engineering client is installed that you want to use to create forward compatible system backups.

Impact of Migration On System Data

Overview

This topic describes the impact that system and database migration has on system data.

It also describes the changes that result of new Participant features and their availability in a migrated database. These changes may require user intervention to be fully integrated in existing systems.

Impact of Migration on Projects

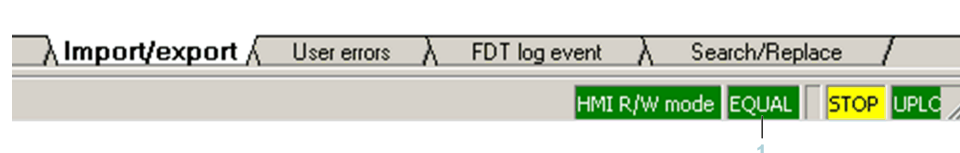
Executable Status After Migrating Databases

Migrated Control Participant projects may not function properly after a migration.

⚠ WARNING
UNINTENDED EQUIPMENT OPERATION
Ensure that any built Control Participant projects that are contained in a migrated database function properly before deploying them to controllers.
Failure to follow these instructions can result in death, serious injury, or equipment damage.

After migration of the database is completed, deploy the executable of a built Control Participant project to its respective engine again by using the **Deploy Built Project** command if the link status that is displayed in the status bar of the Control Participant indicates **DIFFERENT**. Deploying executables requires stopping the controller.

To view the link status, use the **Refine Online** command in the **Topology Explorer**, which opens the Control Participant window. The figure shows a partial view of the status bar.



1 Link status

The table describes the various states of Control project executables that can result of a migration and the actions to perform in each case.

Executable status before migration	Executable status after migration	Next actions
Built	Out Of Date	<p>If an M580 controller is mapped to the executable, use the Configure controller context menu command and save changes if prompted when closing the Control Participant window.</p> <p>Then, use the following command depending on the controller platform and/or the state of the built Control project before the migration:</p> <ul style="list-style-type: none"> M580 platform: Use the Build All command and deploy the project. Other platforms: <ul style="list-style-type: none"> The project was deployed: You can use the Build⁽¹⁾ or Build All command and deploy changes⁽²⁾ or deploy the project again depending on the change you made. The project was not deployed: You can use the Build or Build All command depending on the change you made and deploy the project.
Out Of Date		
Not Built	Not Built	<p>If an M580 controller is mapped to the executable, use the Configure controller context menu command and save changes if prompted when closing the Control Participant window.</p> <p>Then, use the Build All command and deploy the project.</p>
<p>(1) The Build command may be disabled when migrating to version 2023 or later if the migration created a change in the topology that requires using the Build All command.</p> <p>(2) Online refinement, deployment of changes, and redeploying the last project are not possible if the link status that is indicated in the status bar of the Control Participant is DIFFERENT.</p>		

The table describes the various states of Supervision project executables that can result of a migration and the actions to perform in each case.

Executable status before migration	Executable status after migration	Next actions
Built	Out Of Date	<p>If before migration, the built Supervision project was:</p> <ul style="list-style-type: none"> Deployed: Use the Build All command⁽²⁾. It is not necessary to deploy the project again to the same Supervision workstations⁽¹⁾. Not deployed: Use the Build All command⁽²⁾ and deploy it.
Out Of Date	Out Of Date	Independently if the built Supervision project was deployed or not, use the Build All command ⁽²⁾ and deploy it.
Not Built	Not Built	Use the Build or Build All command ⁽²⁾ and deploy it.
<p>(1) Supervision software installed on workstations needs to be upgraded to meet the software requirements. Deployed Supervision projects need to be compiled locally.</p> <p>(2) Building a Supervision project will not complete successfully if the identifier of a cluster exceeds 16 characters in length. If this is the case, rename such clusters and generate impacted Supervision projects before building them.</p>		

Locking Code of Control Projects After Migration

After you have migrated a Process Expert V4.3/SP1 database containing Control projects, perform a consistency check to enable the code locking feature.

This feature lets you distinguish code that is generated by the software from code that you have modified or added during refinement.

NOTE: Code may become locked without performing a consistency check depending on the status of Control facets or if you regenerate a Control project.

First Deployment or Execution Actions with a Migrated Database

The first time you use the **Deploy Changes / Undo Online Changes** or **Refine Online** command after migrating a Process Expert V4.3/SP1 database, the operation may take more time than usual because of file format conversions

taking place in the background. This is part of the migration process and is indicated in the notification panel.

Allow RPC Property of Supervision Servers

The migration of an EcoStruxure Process Expert 2021 system or database containing a Supervision project resets the **Allow RPC** property of Supervision servers to *False* if you had set it manually to *True* by refining the Supervision project.

NOTE: After the migration, you can change the value of the **Allow RPC** property from the Supervision project **Services** node in the **Project Explorer**.

Impact of Migration on the Topology

Updating STB Island Entities After Migration

If you migrated your database to an EcoStruxure Process Expert installation that uses an Advantys Control Participant version, [page 35](#) that is later than the version that was used to create STB islands, you need to update each STB island entity by using the **Configure** command in the **Topology Explorer**. Otherwise, some actions, such as, the creation of system documentation (reports) may not complete successfully.

Changes to Ethernet Network Connections

If you migrated a system or database of EcoStruxure Process Expert 2021 or earlier, IP addresses are unchanged. However, physical connections of topological entities to Ethernet networks may be changed according to the following rules:

- The network connection of the main interface (for example, *Main IP* for an M580 controller module) of the first entity to be migrated is retained.
- Each interface connected to the same network but having an IP address that belongs to a different IP address range⁽¹⁾ is connected to a new corresponding logical network.
- Interfaces connected to a different Ethernet network but having an IP address that belongs to an existing IP address range⁽¹⁾ remain connected this network.
- Interfaces of EIO adapter modules (xxxCRA•••••) having a network connection are connected to the same network as the controller (if applicable).
- Interfaces without network connection remain unconnected.

The rules apply to M580 controllers and devices that were connected to an Ethernet network by using the **Physical Connections** command.

Connecting an interface to a logical network or changing its logical network connection may change the IP address of the interface.

NOTE: Communication mappings of Control and Supervision executables are retained even if the topological entities are connected to different logical networks as a result of the migration. As of version 2023, the requirement for entities to be connected to the same logical (Ethernet) network to proceed with the Supervision communication mapping is removed.

NOTE: BMXNOR0200 modules do not require a connection to a logical network. They are available for Supervision communication mapping whether or not they were connected to a network before the migration.

NOTE: Network connections of interfaces with IP address 127.0.0.1 (for example, network interface cards of station nodes) are retained.

The following table illustrates the above rules by using the example of a system containing two controllers where Controller_1 is the first entity to be migrated by the software.

Topological entity with a module having an IP address assigned to an interface	Range ⁽¹⁾ the IP address belongs to	Original interface connection to network	Interface connection to network after migration
Controller_1 embedded communication ports	A	EthernetNetwork_1	EthernetNetwork_1
Communication module_1	B	EthernetNetwork_1	Logical Network_1
Communication module_2	C	EthernetNetwork_1	Logical Network_2
Communication module_3	D	Not connected	Not connected
Controller_2 embedded communication ports	A	EthernetNetwork_1	EthernetNetwork_1
Communication module_4	A	EthernetNetwork_2	EthernetNetwork_2
Communication module_5	A	EthernetNetwork_3	EthernetNetwork_3
EIO adapter module_1	A	EthernetNetwork_4	EthernetNetwork_1
(1) An IP address range is defined by the IP address and the subnet mask.			

Availability of New Functionality in Migrated Databases

The table describes the availability of new software functionality after you migrate a database.

Functionality	Availability in migrated database
Enhanced Topology Explorer functionality	The functionality is available.
Migrating systems, page 71 created with versions 2020 R2 and 2021 to version 2023	The functionality is available after you install a migration patch on the earlier version. You can restore migrated systems only on a system server installed in English.
Exporting templates when creating system backups	The functionality is available.
Localized User Interface	The functionality is available.
Using BMECRA31210.3.2 adapter modules	The modules can be added to M580 configurations after you import the <i>\$CRAEth</i> topological template, page 57 supplied with the software (Foundation library).
Using Ethernet modules with embedded OPC UA server BMENUA100.2	The modules can be added to M580 configurations after you perform the following operations: <ul style="list-style-type: none"> The controller module firmware version is upgraded to 4.00 or later⁽¹⁾. The <i>\$BMENUA</i> topological template (Foundation library) supplied with the software is imported.
Using BMXDDO3202 X80 discrete output modules	The modules can be added to M580 configurations after you import the <i>\$MPDOutput32</i> topological template, page 57 supplied with the software (Foundation library).
(1) This may require importing the appropriate topological M580 controller module template, page 57 supplied with the software (Foundation library) and updating the controller entity in the Topology Explorer with it.	

Role-Based Access Control

About Role-Based Access Control

Overview

The objective of Role-Based Access Control (RBAC) is to administer the tasks that authorized users can perform in EcoStruxure Process Expert by assigning them predefined profiles.

Security Editor installed on the system server computer of the EcoStruxure Process Expert infrastructure is the tool that is used to administer users, profiles, and login policies.

It stores access control configurations on a local security database.

By default, to log into EcoStruxure Process Expert, a user must exist or be created, be associated to the necessary profiles, page 84, and be enabled in Security Editor. Other login policies can be implemented.

You must have administrator rights on the computer to configure RBAC.

For more information on using Security Editor, see *EcoStruxure™ Control Expert, Security Editor, Operation Guide*.

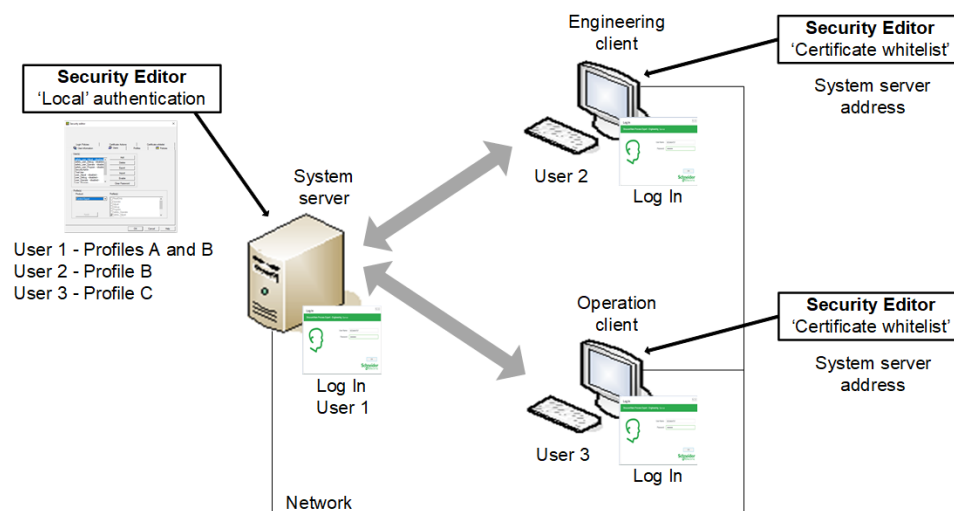
NOTE: If you configured RBAC by using Windows user accounts for an earlier supported version of the software, local users are migrated, page 84 to Security Editor when you install a later version of the software.

Default Login Policy Working Principle

Local authentication mode is the default login policy that is configured in Security Editor.

The following figure illustrates the default login policy. Users are created and assigned a profile by using Security Editor on the system server computer. Credentials are stored in the local security database, which is used to authenticate users.

For users to log in on remote clients, the server certificate authority must be trusted so that Security Editor can authenticate them.



NOTE: Independently of the **Login** security level that is selected in Security Editor (**Policies** tab), logging in to EcoStruxure Process Expert requires entering credentials.

Opening Security Editor

Security Editor is installed as part of the Control Participant of EcoStruxure Process Expert.

You can open Security Editor from the Windows Start menu, by clicking **EcoStruxure Control Expert > Security Editor**.

SecurityAdmin User

After installing EcoStruxure Process Expert, the *SecurityAdmin* user is the only one that can log into Security Editor and configure RBAC.

- User: *SecurityAdmin*
- Password: *Azertyuiop12!*

The first time you log in with these default credentials, change the password by using the **User information** tab.

⚠ WARNING

UNAUTHENTICATED ACCESS

Immediately define a secure password for the *SecurityAdmin* user.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Certificates

When you install EcoStruxure Process Expert, the **ControlExpert** and **SecurityService** (Security Editor) certificates that are required to use the software with an all-in-one architecture are installed automatically.

The certificates are added to the local Windows computer certificate store (certlm.msc) under *Personal\Certificates*.

To use remote clients that connect to the system server, you need to trust the server certificate authority, page 91.

NOTE: If you have questions about certificates, refer to the [troubleshooting, page 156](#) topic

Changing User Configuration

If the system administrator makes changes to a user, their associated profiles, or the login policy while the user is logged into EcoStruxure Process Expert, the changes are applied only after the user logs out and logs in again (if applicable).

NOTE: If the system administrator disables a user that is logged in, Control Participant services (for example, configuring a controller, refining or generating a Control project) are unavailable to this user as soon as the change is saved in Security Editor.

Logging In and Out and Locking the Software

The use of RBAC is mandatory and users are required to log into a component before they can use it.

The software implements the single login and logout mechanism when opening several components on the same computer.

A logged-in user can lock the components that are open on the computer and only the same user can unlock them.

For details, refer to the topic describing how to log into and out of and lock (see *EcoStruxure™ Process Expert, User Guide*) software components.

Users and Profiles

First Time Installation

After you install EcoStruxure Process Expert for the first time, the system administrator (*SecurityAdmin* user) needs to create users and assign them *ESX PE* (Process Expert) and corresponding *ESX CE* (Control Expert) profiles in Security Editor. This is required for users to log in and use the software.

Computer With Existing Users

If on the computer on which you install the system server, *ESX HDCS* groups exist and contain users, these users are created in Security Editor. This can be the case if you used an earlier supported EcoStruxure Process Expert version for which you have added users to the *ESX HDCS* groups as part of your RBAC configuration (**Local** authentication type).

Each user has the following configuration in Security Editor:

- Name: Same as the Windows username
- State: Disabled
- Password: *password*
- Associated profile: Same as the *ESX HDCS* groups it belongs to plus, the required *ESX CE* profile.

NOTE: If Control Expert is installed on the system server computer, you may need to enter a password, [page 85](#).

The system administrator needs to enable the users by using the **Users** tab and change their password.

⚠ WARNING
UNAUTHENTICATED ACCESS
Immediately change the default password of users to which an <i>ESX PE</i> profile is associated.
Failure to follow these instructions can result in death, serious injury, or equipment damage.

If you were using groups on the domain controller (**Domain** authentication type), create users in Security Editor as you would do for a first-time installation.

Password Prompt During System Server Installation

If Control Expert is installed on the computer where you install the system server, a dialog box may open prompting you to enter the Security Editor administrator password so that *ESX PE* and *ESX CE* profiles and existing users, if applicable, can be created in Security Editor.

Version of Control Expert installed on the computer	Administrator password in Security Editor	Password to enter during installation
The same version as that installed by EcoStruxure Process Expert	The password for the <i>SecurityAdmin</i> user was changed.	The password for the <i>SecurityAdmin</i> user.
	Default password for the <i>SecurityAdmin</i> user.	No password prompt is shown.
An earlier version	A password for the <i>supervisor</i> user was set.	The default password for the <i>SecurityAdmin</i> user: <i>Azertyuiop12!</i>
	No password (default configuration).	

NOTE: If you enter an incorrect password three times, the dialog box closes and installation continues but *ESX PE* and *ESX CE* profiles and existing users are not created in Security Editor. You must start the process to create them manually after installation completes by double-clicking the *Unity.Profiles.exe* file at the path *C:\Program Files\Schneider Electric\EcoStruxure\Process Expert\Vm*. You are prompted for the password for the *SecurityAdmin* user as described in the table above.

Process Expert Profiles

Non-editable profiles exist in the **Profiles** tab of Security Editor.

The following profiles are created for product **Process Expert** to cover the various tasks that a user can perform when using EcoStruxure Process Expert.

Profile	Access rights
<i>ESX PE Server Admin</i>	Full access to the menu bar of the system server console and its commands. No access to client functionality.
<i>ESX PE Engineer</i> ⁽¹⁾	Perform tasks on the engineering client that are directly related to systems. No access to: <ul style="list-style-type: none"> System server commands in the server console (the server console can be opened and locked). Operation client functionality Global Templates Explorer Global Root folder, its subfolders, and the corresponding context menu commands in the Content Repository explorer
<i>ESX PE Template Designer</i> ⁽¹⁾	Perform tasks on the engineering client that are directly related to Global Templates and not systems. No access to: <ul style="list-style-type: none"> System server commands in the server console (the server console can be opened and locked). Operation client functionality Explorers other than Global Templates Explorer and Content Repository explorer Systems folder, its subfolders, and the corresponding context menu commands in the Content Repository explorer Inspect > External References context menu command of a template in the Global Templates Explorer.

Profile	Access rights
<i>ESX PE Operator</i>	Full access to the functionality of the operation client only. No access to: <ul style="list-style-type: none"> System server commands in the server console (the server console can be opened and locked). Engineering client functionality
(1) Both profiles combined give full access to the functionality of the engineering client.	

Required Control Expert Profile for Each Process Expert Profile

To use the Control Participant or its services (for example, generation or build of a Control project), for each *ESX PE* profile that you associate to a user, associate also an *ESX CE* (Control Expert) profile as defined in the following table.

The *ESX CE* profiles exist in the **Profiles** tab of Security Editor for product **Control Expert**.

<i>ESX PE</i> profile associated to user	Required <i>ESX CE</i> profile
<i>ESX PE Server Admin</i>	<i>ESX CE Engineer</i> (formerly <i>ehdcs_admin</i>)
<i>ESX PE Engineer</i>	
<i>ESX PE Template Designer</i>	
<i>ESX PE Operator</i>	<i>ESX CE Operator</i> (formerly <i>ehdcs_operator</i>)

Creating Users and Associating Profiles

To create users that can log in and use EcoStruxure Process Expert functionality depending on their associated profile, proceed as follows.

NOTE: To associate profiles to existing users when using the centralized authentication mode with LDAP protocol, use the **Login Policies** tab of Security Editor on the system server computer.

Step	Action
1	Open Security Editor and log in by using the <i>SecurityAdmin</i> credentials on the following computer depending on the login policy that you want to use: <ul style="list-style-type: none"> The system server computer for local authentication mode. A remote server computer for centralized authentication modes.
2	Select the Users tab and click Add .
3	In the Add a user dialog box, enter a username, password, select one of the <i>ESX PE</i> profiles to associate to the user, and click OK . Result: The user appears in the User(s) list of the Users tab. NOTE: Usernames are case-sensitive when entered in the EcoStruxure Process Expert login window.
4	To associate the required <i>ESX CE</i> profile to the user, select the user in the list, select Control Expert in the Profile(s) section under Product , select the profile under Profile(s) , and click Apply .
5	To associate one or more additional <i>ESX PE</i> profiles to the user or modify the initial profile selection, select the user in the list, select Process Expert under Product , select the profile(s) under Profile(s) , and click Apply .
6	Associate the required <i>ESX CE</i> profile if not associated yet by following step 4.
7	Close Security Editor and save changes.

After logging into EcoStruxure Process Expert, users can view which profiles are assigned to them in the **User Information** dialog box.

User Information

The **User Information** dialog box contains the following information about the user who is logged in:

- The **User** name as created in Security Editor.
- The name of the computer running the system server of this EcoStruxure Process Expert infrastructure.
- Profiles associated to the user.

You can open the dialog box from the user menu in the toolbar of each EcoStruxure Process Expert component.

You can [back up user data](#), page 92.

Login Policies

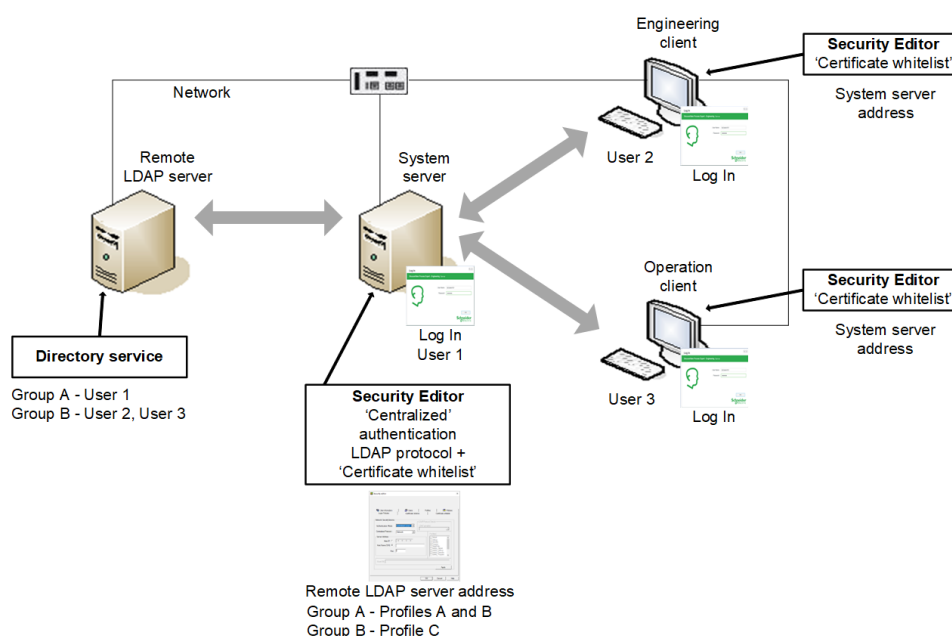
Centralized Authentication Mode Working Principle

The following figure illustrates the login policy with **Centralized** authentication mode and **LDAP** centralized protocol. Users are created by using a directory service that supports Lightweight Directory Access Protocol (LDAP) and hosted on a remote server computer. Microsoft Active Directory (AD) is an example of directory service that supports LDAP.

Credentials are queried by *SecurityService* from the system server computer to authenticate users.

The configuration of the authentication mode, the protocol, and the assignment of profiles to users is performed by using Security Editor on the system server computer.

On remote clients, the server certificate authority must be trusted for users to log in.



NOTE: You can also combine centralized with local authentication as a fallback mode and/or use Security Editor on the remote server computer instead of an LDAP directory service.

For configuration details, refer to *Login Policies* in *EcoStruxure™ Control Expert, Security Editor, Operation Guide*.

Workflow to Implement Centralized Authentication with LDAP Protocol

The table outlines the steps that the *SecurityAdmin* user needs to complete to authenticate users on a remote LDAP server.

Stage	Description
1	After installation of EcoStruxure Process Expert completes, open Security Editor on the system server computer and log in.
2	By using the Login Policies tab, select one of the centralized authentication modes ⁽¹⁾ and LDAP as protocol.
3	Enter the address of the LDAP server, an LDAP group, and the Process Expert profiles, page 84 that you want to assign to the users that belong to this LDAP group. NOTE: For information on the LDAP server and groups, contact your system administrator or IT department.
4	Trust the LDAP server certificate authority, page 91 by entering the address of the LDAP server computer in the Certificate whitelist tab.
5	Ensure that the SecurityService as server check box in the Server section is selected.
6	Close Security Editor and save changes.
7	On the LDAP server, add one or more users to the groups that you have selected in step 3.
8	On computers on which an EcoStruxure Process Expert client is installed, open Security Editor, log in, and trust the server certificate authority, page 91 by entering the address of the system server computer in the Certificate whitelist tab.
9	Close Security Editor and save changes.
(1) When Authentication Mode contains two modes (for example, Centralized,Local), the second mode (Local) is used only if the user cannot be authenticated by using the first mode (for example, if the connection to the remote server is interrupted). This requires that the users and their profiles are also configured in Security Editor on the system server computer to allow local authentication.	

Workflow to Implement Centralized Authentication with Network Protocol

The table outlines the steps that the *SecurityAdmin* user needs to complete to authenticate users on a remote server computer on which Security Editor is installed.

Stage	Description
1	After installation of EcoStruxure Process Expert completes, open Security Editor on the system server computer and log in.
2	By using the Login Policies tab, select one of the centralized authentication modes ⁽¹⁾ and Network as protocol.
3	Enter the address of the remote computer on which Security Editor is installed and which will be used to administer users.
4	Trust the server certificate authority, page 91 by entering the address of the remote server computer in the Certificate whitelist tab.
5	In the Server section of Security Editor, ensure that the SecurityService as server check box is selected.
6	Close Security Editor and save changes.
7	On the remote computer, open Security Editor, log in, and create users and assign them Process Expert profiles, page 84 as needed.
8	Ensure that the SecurityService as server check box in the Server section is selected.
9	Close Security Editor and save changes.
10	On computers on which an EcoStruxure Process Expert client is installed, open Security Editor, log in, and trust the server certificate authority by entering the address of the system server computer in the Certificate whitelist tab.
11	Close Security Editor and save changes.
(1) When Authentication Mode contains two modes (for example, Centralized,Local), the second mode (Local) is used if the user cannot be authenticated by using the first mode (for example, if the connection to the remote server is interrupted). This requires that the users and their profiles are also configured in Security Editor on the system server computer to allow local authentication.	

Trusting the Server Certificate Authority

The *SecurityAdmin* user can trust the server certificate authority on a client computer by following these steps.

Step	Action
1	On the computer from which you want to connect an engineering or operation client to a remote system server, open Security Editor by clicking Start > Programs > EcoStruxure Control Expert > Security Editor and log in.
2	In the IP and Port fields of the Certificate whitelist tab, enter the IP address and port of the system server computer. Alternatively, you can enter the name of the computer in the Name field.
3	Click Verify Certificate to query the certificate.
4	Save and close Security Editor and start the client.

NOTE: To trust the server certificate authority on the system server computer because the centralized protocol that is selected in Security Editor is **Network** or **LDAP**, page 88, enter the IP address and port of the remote server on which Security Editor or the LDAP server is installed in the **Remote Certificate** section of Security Editor on the system server computer.

Backing Up and Restoring Users and Profiles in Security Editor

Overview

The Backup and Restore Tool for Security Editor lets you create a backup file on the system server computer that contains the data of users that exist in Security Editor.

Only the *SecurityAdmin* user can back up and restore data.

Restoring a backup file overwrites data of users that exist in Security Editor and have the same name.

Backed Up Data

A backup file created by using the Backup and Restore Tool contains the following Security Editor data:

- Users
- The user password
- The user status (enabled/disabled)
- The profiles associated to the user

NOTE: Configurations made in the **Login Policies** tab are not backed up.

Backup File Location

Do not create backup files under the Windows created *C:\Users* folder of the computer (for example, the **Documents** folder); otherwise, the backup may not complete. Instead, create or use a unique file path to your backup folder.

Opening the Backup and Restore Tool

To open the Backup and Restore Tool, double-click the *SecurityEditorBackupRestore.exe* file located at the path *C:\Program Files\Schneider Electric\EcoStruxure\Process Expert\Utilities\SecurityEditorBackupRestore* on the system server computer and log in by entering the *SecurityAdmin* user password.

You must have administrator rights on the computer and Security Editor must be closed.

Backing Up User Data

Step	Action
1	Open the Backup and Restore Tool on the system server computer. Result: The Back Up and Restore buttons are enabled.
2	Click Back Up .
3	Browse to a folder on the local computer that is not a user folder and click OK . Result: The <i>BackupFile.zip</i> file is created and a confirmation message is displayed. NOTE: The tool overwrites <i>BackupFile.zip</i> files that exist in the selected folder.
4	Close the Backup and Restore Tool.

Restoring User Data

Step	Action
1	Open the Backup and Restore Tool on the system server computer. Result: The Back Up and Restore buttons are enabled.
2	Click Restore .
3	Browse to the folder containing the <i>BackupFile.zip</i> file, select it, and click OK . Result: The user data is restored to Security Editor and a confirmation message is displayed. Data of users that exist in Security Editor and have the same name as those being restored is overwritten.
4	Close the Backup and Restore Tool.

Certificate Installation Workflow - Distributed System Infrastructure

The table outlines the steps to install certificates in order to use the software when the various components are installed on different computers.

Stage	Description
1	<p>On the system server computer, generation of a password-protected root CA certificate, page 98 by a user with administrator rights.</p> <p>This step is performed by using the System Server Configuration Wizard.</p> <p>This also installs a set of entity certificates on this computer, which is required for the system server to run.</p> <p>NOTE: If you want to use your own root certificate file (.pfx), install only certificates, page 99 in the System Server Configuration Wizard.</p>
2	<p>On each computer of the EcoStruxure Process Expert system infrastructure, installation of a set of entity certificates, page 101 by a user with administrator rights, who knows the root CA certificate file location and password.</p> <p>This step is performed by using a client configuration wizard.</p> <p>This also installs the root CA certificate on each computer.</p>

Certificate Installation Workflow - All-in-One Architecture

The table outlines the steps to install certificates in order to use the software when the various components are installed on the same computer.

Stage	Description
1	<p>Generation of a password-protected root CA certificate, page 98 by a user with administrator rights.</p> <p>This step is performed by using the System Server Configuration Wizard.</p> <p>This also installs a set of entity certificates on this computer.</p> <p>NOTE: If you want to use your own root certificate file (.pfx), install only certificates in the System Server Configuration Wizard.</p>

Guidelines

The following are guidelines related to the expiration of certificates.

Certificate	Guidelines
Root CA certificate	Stop using the software as soon as you receive a notification about the upcoming expiration of a certificate and install new certificates. If you keep using the software after certificates have expired, software Participant services (for example, refinement) or runtime navigation services may not function properly.
Entity certificates	

The following are guidelines for sharing the root CA certificate file (.pfx) to make it accessible to computers of a distributed EcoStruxure Process Expert infrastructure when you install entity certificates.

Sharing method	Guidelines
A shared folder	Restrict access permissions so that only the user who needs to install entity certificates on the computer can access the folder.
	Once entity certificates are installed, disable folder sharing.
A removable drive	Once entity certificates are installed, remove the drive.
	Do not use the drive for another purpose and keep it in a safe place.

The following are guidelines for the validity period of entity certificates.

Process Expert component usage	Guidelines
Normal use	Use the default validity period or shorter.
Temporary or occasional use	Limit the validity to one day.

NOTE: Once you have generated a certificate, you cannot modify its validity period. To change it, generate a new certificate.

Certificate Properties

Certificates are installed on a machine basis and are valid for the users who can use EcoStruxure Process Expert.

You can check whether root CA and entity certificates are installed on the local computer and view information about these certificates in the **Microsoft Management Console** (in a Windows 10 operating system, use the *certlm.msc* service of the local computer).

The following set of entity certificates is generated on each machine and can be found under **Personal\Certificates**:

- System server: *EcoStruxure Hybrid DCS Server*
- Engineering client: *EcoStruxure Hybrid DCS Engineering Client*
- Operation client: *EcoStruxure Hybrid DCS Operation Client*

They are issued by *EcoStruxure Hybrid DCS Root*, which is the root CA certificate generated by EcoStruxure Process Expert and located in **Trusted Root Certification Authorities\Certificates**.

Modifying the Software Installation

After you have installed entity certificates on a computer, if you install a new client on this computer, you do not need to install an additional entity certificate.

However, if only clients are installed and you add the system server, install new certificates by using the **System Server Configuration Wizard**. You can reuse the same root CA (.pfx) that you have used to install entity certificates for the clients.

Generating and Installing Root CA Certificates

Overview

The **Security** section of the **System Server Configuration Wizard** lets you generate a root certificate and private key on the computer on which the system server is installed. Both are stored in a single file (.pfx) that is created in a location that you select.

The default name of the root CA is *EcoStruxure Hybrid DCS Root*.

This operation also generates a set of entity certificates and installs the root CA certificate along with the set of entity certificates on the computer so that you can start the system server.

NOTE: Only root certificate files with the .pfx file extension are supported.

Prerequisites

The following are prerequisites to generating and installing a root CA certificate:

- The system server is installed.
- No EcoStruxure Process Expert component installed on the computer must be running.

Accessing the System Server Configuration Wizard

To open the **System Server Configuration Wizard**, click:

- In the system server console menu bar, **Settings > Basic**.
- In the system server tray icon context menu, **Basic Settings**.

Security Section Description

The following figure shows the **Security** section of the **System Server Configuration Wizard** when you generate and install the root CA and entity certificates.

Item	Description
1	<ul style="list-style-type: none"> Generate and Install Certificates generates and installs both the root CA and a set of entity certificates on the computer. Install Certificates installs only a set of entity certificates on the computer by using an existing root CA certificate, which must be accessible from the computer, page 96. <p>The fields that are displayed depend on the selection.</p>
2	<ul style="list-style-type: none"> When you select Generate and Install Certificates for the first time or after uninstalling certificates, contains the full path to the default root CA certificate file that you are creating. The path is <code>C:\Users\<username>\AppData\Local\Schneider Electric\Process Expert\Certificates</code>. You can edit the full path but the path must exist and you must use the .pfx file extension for the file name. You can create the file at a different location on the local computer, a network location shared, page 96 with the computers running a EcoStruxure Process Expert component (for example, the system server, the engineering client), or on a removable drive (for example, a USB drive). When you select Install Certificates, the field is empty. You must enter the full path or browse to an existing root CA certificate file (.pfx).
3	<ul style="list-style-type: none"> When you select Generate and Install Certificates, you must create a password. Hovering with the pointer over the text field shows a tooltip containing the applicable password rules. It is possible to generate different root certificate files by using the same password. NOTE: You need this password to generate entity certificates on other computers of a distributed EcoStruxure Process Expert system infrastructure. When you select Install Certificates, you must enter the password that was used to generate the root CA certificate. If you have forgotten the password, you need to generate a new root CA certificate.

Item	Description
4	<ul style="list-style-type: none"> When you select Generate and Install Certificates, expiration date of the root CA and entity certificates. You can edit the field. When you select Install Certificates, enter the expiration date of the entity certificates. <p>15 days before the expiration date (see <i>EcoStruxure™ Process Expert, User Guide</i>) and at 24-hour intervals thereafter, a notification about the upcoming certificate expiration is shown:</p> <ul style="list-style-type: none"> For the system server certificate: In the server console (only when the server is starting) and in clients that are connected to the server. For client certificates: In the client when it is starting or running. <p>After this date, a new root CA certificate and/or new entity certificates need to be installed.</p>
5	<p>Depending on your selection, button to proceed with:</p> <ul style="list-style-type: none"> The generation and installation of the CA root and the set of entity certificates on the computer. The installation of the CA root and the set of entity certificates on the computer.
6	Button to uninstall root and entity certificates , page 105 from the computer.
7	Once you have successfully installed certificates on the computer, the fields display the corresponding information. If no certificates are installed on the computer or if the operation did not succeed, the fields are empty.

Generating and Installing Root CA and Entity Certificates on the System Server Computer

To install only entity certificates on the computer, refer to the corresponding procedure, page 101.

Step	Action
1	<p>Open the System Server Configuration Wizard.</p> <p>Result: The Security section is displayed.</p>
2	Select Generate and Install Certificates .
3	<p>Modify the path and/or file name if required. You can create only files with the .pfx extension.</p> <p>NOTE: You need read/write permissions for the folder containing the certificate file.</p>
4	Enter and confirm a password.
5	<p>Modify the expiration date, page 96 if necessary.</p> <p>NOTE: Avoid extending the validity period.</p>
6	<p>Click Generate and Install.</p> <p>Result:</p> <ul style="list-style-type: none"> The root CA certificate file is created at the selected location. A set of entity certificates is installed on the computer. If you are using an all-in-one architecture, the certificate installation process is complete. The fields of the Installed System Server Certificates section are populated. <p>NOTE: If the Certificate Import Wizard dialog box opens, you can click No to retain your Certificate Revocation List (CRL). Clicking either button has no impact on the PKI functionality for EcoStruxure Process Expert. Certificate revocation is not supported.</p>
7	If you are using the System Server Configuration Wizard only to generate and/or install certificates, you can close the window by clicking the close button or Cancel .

Installing Entity Certificates

Overview

You must install a set of entity certificates, page 96 on each computer of a distributed EcoStruxure Process Expert system infrastructure so that clients can connect to the system server. This applies also when using an all-in-one architecture.

Entity certificates of a same system infrastructure must be issued and signed by the same root CA.

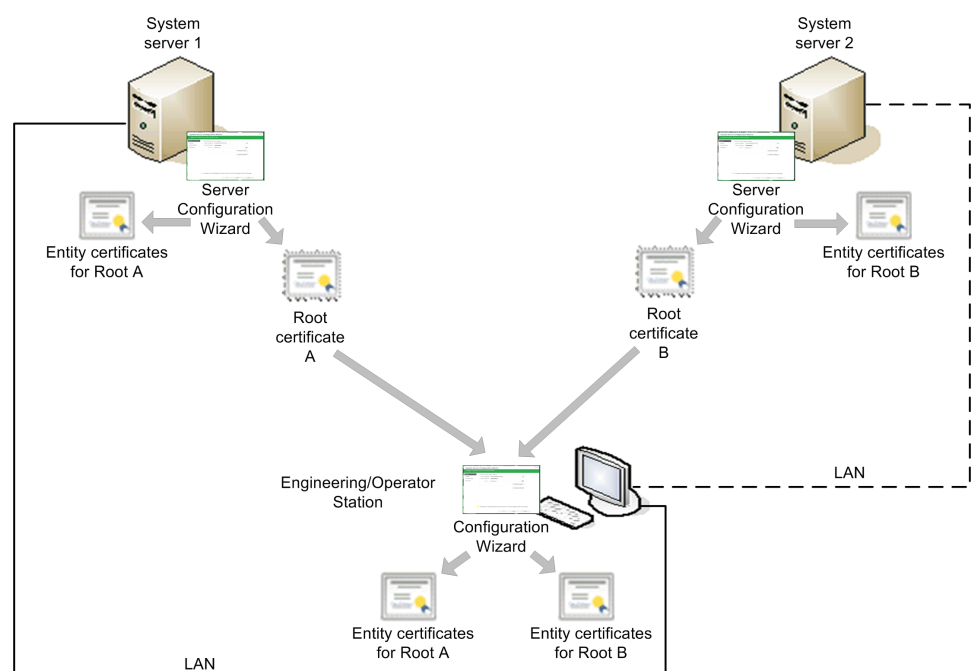
You can test the client/server connection to verify the certificate validity.

Prerequisites

- You must have installed the system server and clients. The component on which you want to install entity certificates must not be running.
- You must have generated a **root CA certificate**, page 98 by using the **System Server Configuration Wizard** or have your own root certificate file (.pfx).
- The folder containing the root certificate file must be accessible from the computer on which the component is installed.

Connecting Clients to Several System Servers Having Different Certificates Installed

If you need to connect a client to several system servers each possessing entity certificates issued by a different root CA, install in the client as many sets of entity certificates as there are system servers. Each set of client entity certificates is generated by using the same root CA as the one used to generate the entity certificates on the system server computer.



Opening Client Configuration Wizards

Step	Action
1	Ensure that clients are closed.
2	In the Windows Start menu, click EcoStruxure Process Expert .
3	Click the Configuration Wizard entry of a component.
4	Go to the Security section.

Security Section Description

The following figure shows the **Security** section of the **Engineering Client Configuration Wizard**. The section is available also in the configuration wizards of the operation client and system server, page 99.

Engineering Client Configuration Wizard

The configuration and installation of certificates is required to help secure client/server communication. Server and client stations should install certificates using the same Root certificate in order to establish the communication.

Security

Install Certificates

Root Certificate File Name: C:\Users\<username>\AppData\Local\Schneider Electric\<software name>\Certificates\<certificate name.pfx> **1**

Password: **2**

Valid Till: 07/24/2018 **3**

Install **4**

Uninstall Certificates

Uninstalls all the installed certificates from this station. **5**

Uninstall

Last Installed Certificates details for server

Installed On: 1/23/2018 1:03:00 PM

Root Certificate Valid Till: 1/22/2020

Entity Certificate Valid Till: 1/23/2020 **6**

Root Certificate File Name: C:\Users\<username>\AppData\Local\Schneider Electric\<software name>\Certificates\<certificate name.pfx>

Closing or cancelling this wizard will not revert the changes done in this page.

< Back Next > Cancel

Item	Description
1	Full path of the root CA certificate file. Once you have successfully generated entity certificates, the last full path that you have entered is retained when you open the same configuration wizard again.
2	Enter the password that was used to generate the root CA certificate. NOTE: If you have forgotten the password, you need to generate a new root CA certificate.
3	Expiration date of the set of entity certificates that are installed on the computer. 15 days before the expiration date (see <i>EcoStruxure™ Process Expert, User Guide</i>), a notification about the upcoming certificate expiration is shown. From then on, you are notified at 24-hour intervals. The expiration notification is displayed in clients that are starting or running. In a distributed EcoStruxure Process Expert system infrastructure, the upcoming expiration of the system server certificate is shown in clients that are connected to this server. After this date, the next time a client attempts to connect to the system server, the entity certificates are considered invalid. A new set of certificates needs to be installed. NOTE: The expiration date cannot exceed the expiration date of the root certificate.
4	Button to proceed with the installation of the root CA and the set of entity certificates on the computer.
5	Button to uninstall root and entity certificates, page 105 from the local computer.
6	Once you have successfully installed certificates on the computer, the fields display the corresponding information. If no certificates are installed on the computer or if the operation did not succeed, the fields are empty.

Installing Entity Certificates

Step	Action
1	Ensure that the EcoStruxure Process Expert components installed on the computer are not running. If you are installing entity certificates for a system server, ensure that clients that connect to it are not running.
2	Open the Security section of the configuration wizard of the component installed on the computer. NOTE: If you have installed several components (for example, an engineering client and an operation client) on the same computer, install certificates once by using the configuration wizard of either of the installed components. If one of the installed components is the system server, you must use the System Server Configuration Wizard . It installs certificates for the clients as well.
3	Enter the full path of the root CA certificate file, page 99 with the .pfx extension.
4	Enter the password for the root CA certificate.
5	Modify the expiration date, page 96 if necessary. NOTE: Avoid extending the validity period.
6	Click Install . Result: The set of entity certificates and the root CA certificates are installed in the local certificate store. NOTE: If the Certificate Import Wizard dialog box opens, you can click No to retain your Certificate Revocation List (CRL). Clicking either button has no impact on the PKI functionality for EcoStruxure Process Expert. Certificate revocation is not supported.
7	For clients that need to connect also to another system server, page 101, repeat the procedure and enter the full path and the password that corresponds to the root CA certificate used on the other system server computer.
8	If you are using the configuration wizard only to install certificates, you can close the window by clicking the close button or Cancel .

Verifying Certificate Validity

The **Test Certificates** button lets you verify if the certificate that is installed on the computer is valid for the system server to which the client is configured to connect, page 113. To perform the test, the computer running the system server must be reachable and the server running. If a connection can be established, the certificate is valid.

The button is located in the **System Server** section of the configuration wizard of the engineering and operation clients.

A notification informs you of the outcome of the test.

Uninstalling Certificates From the Computer

Overview

Uninstalling certificates deletes the EcoStruxure Process Expert root CA and entity certificates from the certificate store of the computer.

The root CA certificate file (.pfx) remains on the computer and can be reused to install new entity certificates.

Prerequisites

You can uninstall certificates from a computer only when the components installed on this computer are not running.

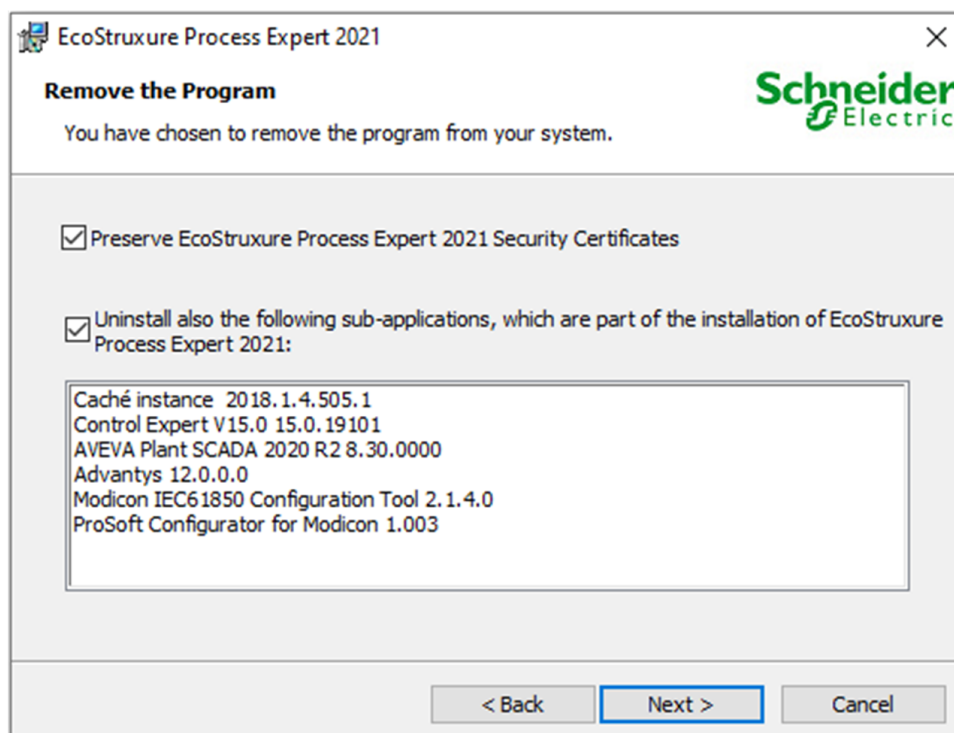
Uninstalling Certificates When Removing the Software

By default, when you remove, page 141 the software from the computer by using the installer or the **Change** command of the Windows **Control Panel**, EcoStruxure Process Expert certificates remain in the certificate store of the computer.

If you reinstall the software or install a subsequent supporting version, these certificates are reused if possible.

Clear the **Preserve EcoStruxure Process Expert Security Certificates** check box to delete EcoStruxure Process Expert root CA and entity certificates from the certificate store.

The following figure shows a sample dialog box featuring this check box.



NOTE: When the root CA certificate file (.pfx) is no longer present, you can reinstall or modify the software on the same computers but you cannot renew entity certificates or install the software on different computers by using this root CA certificate.

Uninstalling Certificates From the Computer

Step	Action
1	Ensure that the EcoStruxure Process Expert components installed on the computer are not running.
2	Open the configuration wizard of a component that is installed on the computer.
3	<p>In the Security section, page 103, click Uninstall.</p> <p>Result: The EcoStruxure Process Expert certificates that were installed on the computer are deleted from the local certificate store.</p>

Configuring the Software

Overview

This chapter describes how to configure the system server, clients, as well as Participants before starting the software for the first time and thereafter, when changes are required.

The configuration is performed by using the various sections of the configuration wizards.

Using Configuration Wizards

Overview

The following configuration wizards are available to facilitate the configuration of software components:

- **System Server Configuration Wizard**
- **Engineering Client Configuration Wizard**
- **Operation Client Configuration Wizard**

Each configuration wizard consists of several sections.

Configuration wizards are used for the initial configuration of the client/server architecture and later to adjust your settings if required. Starting a component without using its configuration wizard applies the default settings that are described in this chapter.

You can open the client configuration wizards through the start menu of Microsoft Windows. The system server configuration wizard is accessible only from the server console, page 127 or its tray icon. You must have the necessary user rights.

NOTE: Configure the system server first because the software provides means to take over server settings when configuring clients to facilitate the configuration process.

Client/Server Configuration and Windows User Accounts

The configuration of the system server and clients that is performed by using the corresponding configuration wizard is tied to the user account that is used to log on to the operating system of the computer. Configuration settings are stored in the local user folder.

When another user logs on to the computer for the first time, the person has to perform the necessary configuration.

If the configuration of the system server changes (for example, because another user has logged on to the computer running the system server, which has loaded the account-specific system server configuration), then the configuration of clients connecting to the server may change as well.

Configuration Wizard Sections

The **System Server Configuration Wizard** features the following sections.

Section	Description
Control Passwords	Used to enable password protection, page 118 at the system level and for Control facet templates of the Global Templates library.
Security	Used to generate the root CA certificate, install entity certificates, and uninstall certificates, page 94.
Audit Trail	Used to enable and configure audit trail, page 121 for system engineering activities performed by users.
Hosting	Used to view and configure communication port, page 111 settings for connections with clients. Also lets you: <ul style="list-style-type: none">• Configure the number of Control Participant sessions.• Set the system server startup mode, page 131.
Data Folders	Used to configure which templates and content containers, page 124 a blank database contains.

The **Engineering Client Configuration Wizard** and **Operation Client Configuration Wizard** feature the following sections.

Section	Description
System Server	Used to view and configure communication, page 111 settings for the connection with the system server.
Security	Used to install entity certificates and uninstall certificates, page 94.

Using Configuration Wizards

When the software is running and you make changes by using a configuration wizard, the changes are applied only when you restart it.

NOTICE

LOSS OF COMMUNICATION

Stop the system server only when no client is running.

Failure to follow these instructions can result in equipment damage.

NOTE: Quit a software component before making changes by using its configuration wizard.

To use a configuration wizard, proceed as follows. You must have the necessary permissions.

Step	Action
1	<p>From the Microsoft Windows Start menu, click EcoStruxure Process Expert and one of the configuration wizards:</p> <ul style="list-style-type: none"> • Engineering Client Configuration Wizard • Operation Client Configuration Wizard <p>For the System Server Configuration Wizard, in the menu bar of system server console, click Settings > Basic (or Basic Settings in the tray icon context menu). The system server needs to be stopped.</p> <p>Result: The selected configuration wizard opens.</p>
2	<p>Verify the settings and/or make necessary changes in the various sections, page 109 of the configuration wizard as described further in this chapter.</p> <p>Clicking Back does not discard your changes.</p>
3	<p>Click Save & Close.</p> <p>NOTE: Click Cancel to discard changes and close the configuration wizard. You cannot cancel the creation of certificates, page 94.</p>

Configuring the System Server and Clients

Overview

This topic describes the parameters that you can configure by using:

- The **Hosting** section for the system server:
 - The client/server communication port.
 - The file transfer port.
 - The number of Control Participant sessions.
 - The system server startup mode
- The **System Server** section for clients:
 - The client/server communication port.
 - The IP address of the system server.

This topic also describes the communication ports that are used by third-party software installed along with EcoStruxure Process Expert.

Communication Port Availability

Before using the system server and its clients, ensure that the ports configured by default are not already used on the computer on which the system server is installed.

In case one of these ports is used, select another port that is available.

To verify port usage on the computer, execute `netstat -a -b` at a command prompt. The command returns a list of ports that are being used and the corresponding application.

Hosting Section Parameters for the System Server

The following table describes the parameters that you can configure in the **Hosting** section of the **System Server Configuration Wizard** window.

Parameter	Description	Default value
Port	<p>Main TCP port that is used by engineering and operation clients to communicate with the system server to load data and execute user commands.</p> <p>NOTE: If you change this value, change it also for each engineering and operation client that connects to the server.</p>	<p>9950</p> <p>NOTE: The same value is configured by default for engineering and operation clients.</p>
File transfer port	<p>TCP port that is used to transfer files between clients, the system server, and software Participants.</p> <p>The port is automatically transferred to clients.</p>	9951
CriticalMessaging port	<p>Port that is used to maintain a continuous communication link between the system server and clients. The port is used by the SystemServer.exe and HostAgent.exe processes.</p> <p>NOTE: If you change this value, change it also for engineering and operation clients that connect to the server.</p>	9949
Caché installation path	Installation path of the third-party software that manages the EcoStruxure Process Expert database.	C:\Program Files\InterSystems\STRUXUREWARE-PEv48
Control Participant Max Instances	<p>Defines the maximum number of Control Participant sessions that you can open simultaneously on each computer on which an EcoStruxure Process Expert client is installed.</p> <p>The setting applies to Control Participant sessions that are used to perform the following actions:</p> <ul style="list-style-type: none"> Configuring M340 and Quantum controllers and PROFIBUS Remote Masters. Refining Control projects (offline and online). Viewing the built Control project. Viewing sections of the Control project in the operation client (runtime navigation services). <p>Range: From 4 to 20</p> <p>NOTE: The number of sessions to configure M580 controllers is not configurable and limited to 4 per Topology Explorer instance (with a maximum of 4 Topology Explorer instances per engineering client).</p> <p>NOTE: The number of sessions to configure STB islands with Advantys Configuration Software is not configurable and limited to 1 per engineering client.</p>	4
Server Startup Mode	<p>Sets the <i>Startup Type</i> of the <i>SE-ServerManager-EcoStruxureProcessExpert</i> service on the computer on which the system server is installed.</p> <p>Possible values:</p> <ul style="list-style-type: none"> Manual: Requires that you use the Start command of the server console or system tray icon to start the system server once you are logged in. Auto: Starts the system server automatically, page 131 when you restart the computer even if you are not logged in. <p>A restart of the computer is required for the setting to take effect.</p>	Manual

NOTE: Ports accept connections from any IP address.

The following table describes additional ports used by the system server.

Protocol	Port	Description
UDP	18080	Logging/display
UDP	18081	Logging

System Server Section Parameters for Clients

The following table describes the parameters that you can configure in the **System Server** section of the **Engineering Client Configuration Wizard** and **Operation Client Configuration Wizard** windows.

Parameter	Description	Default value
Host Name / IP Address	<p>IP address of the computer on which the system server is installed.</p> <p>For example, <i>Server_1</i> or <i>168.190.0.100</i>.</p> <p>NOTE: Ensure that the value for remote and local clients matches the IP address, page 114 configured in the Listening Connections section of the Server Configuration tool when a network adapter is selected. Clients must be closed when the parameter value is changed.</p>	<i>Localhost</i>
Port	<p>TCP port that is used for the client/server connection.</p> <p>NOTE: If you change this value, change it also for the system server and other engineering and operation clients that connect to the same server.</p>	9950 NOTE: The same value is configured by default for the system server.

NOTE: You can test the client/server connection by using the **Test Certificates** button. The system server must be running. A dialog box informs you of the outcome of the test. If you require assistance, refer to the [troubleshooting topic, page 149](#).

Server Configuration Tool

Overview

- The **Server Configuration** tool lets you configure the following:
- The allowlist for file name extensions of configuration files (see *EcoStruxure™ Process Expert, User Guide*) attached to topological entities in engineering clients.
 - The listening connections of the system server, page 115 for the **Topology Explorer** of engineering clients and operation clients.

Opening the Server Configuration Tool

To open the **Server Configuration** tool, from the Windows Start menu on the system server computer, click **EcoStruxure Control Expert > Server Configuration**.

NOTE: You need administrator rights on the computer to open the tool.

Managing File Extensions of Configuration Files

To attach, open, or save a configuration file in the **Topology Explorer**, its file name extension must be on the allowlist.

You can manage the configuration file extension allowlist by opening the **Manage File Extensions** tab of the **Server Configuration** tool.

By default, the following file name extensions are allowed and cannot be removed:

- .stu
- .spe
- .cfg

Allowing File Name Extensions for Configuration Files

Step	Action
1	In the Manage File Extensions tab of the Server Configuration tool, click the Add button in the toolbar.
2	Enter the file name extensions that you want to allow and click OK . Result: The allowed file name extensions are shown in the tab.
3	Click Apply and close the Server Configuration tool.

Removing File Name Extensions for Configuration Files From the Allowlist

Step	Action
1	In the Manage File Extensions tab of the Server Configuration tool, select the file name extensions that you want to remove from the allowlist and click the Delete button in the toolbar.
2	Click Apply , confirm the command, and close the Server Configuration tool.

Configuring the Listening IP Address of the System Server

To manage connections to the system server from clients, proceed as follows.

Step	Action
1	Select the Listening Connections tab of the Server Configuration tool.
2	Select a Listening IP address value from the list: <ul style="list-style-type: none">• 127.0.0.1 (<i>Local connection</i>): The system server only accepts connections from a local client whose Host Name / IP Address parameter, page 111 value (Client Configuration Wizard) is <i>localhost</i> (default value).• 0.0.0.0 (<i>All connections</i>): The system server accepts connections from a local client and remote clients independently of the network they belong to.• Network adapters of the system server computer: The system server only accepts connections from a local client and remote clients that are on the same network as the adapter and whose Host Name / IP Address parameter, page 111 is configured with the adapter IP address.
3	Click Apply , confirm the command, and close the Server Configuration tool.

NOTE: If you require assistance, refer to the troubleshooting topic, page 149.

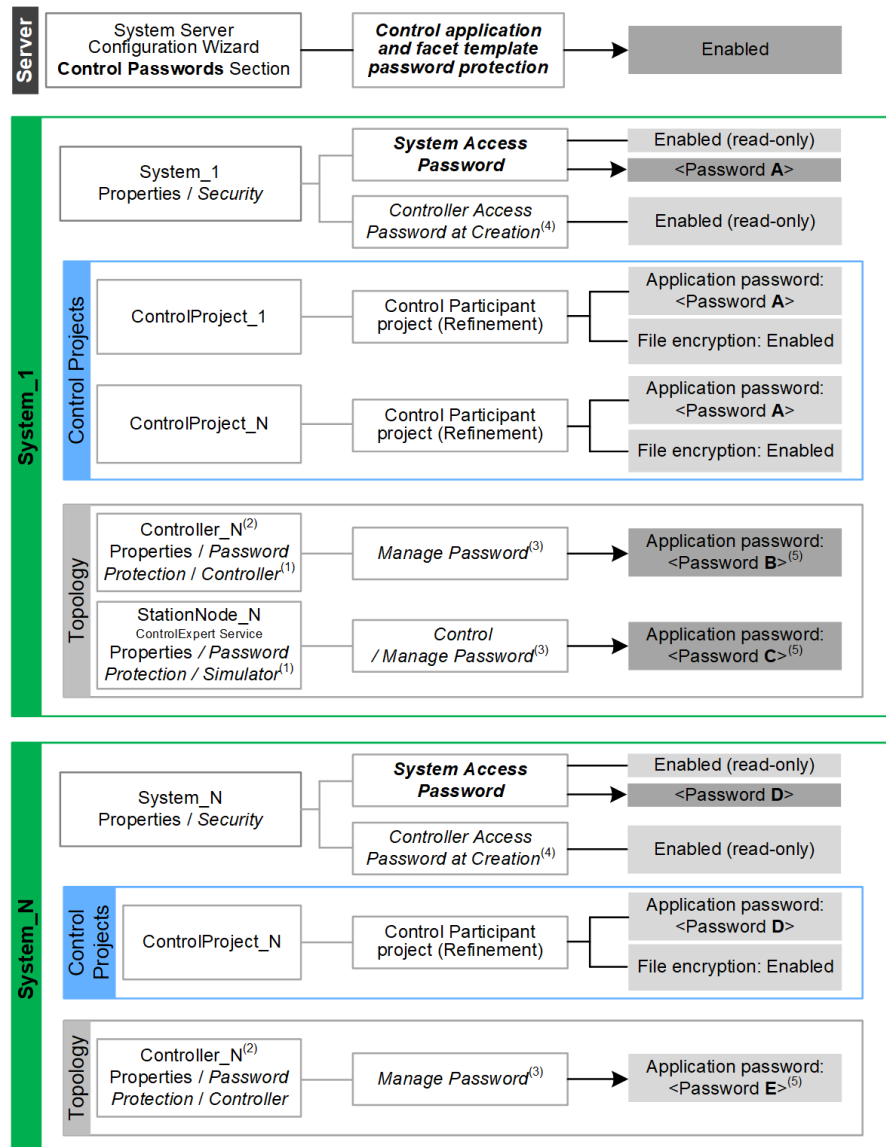
System and Control Facet Template Password Overview

System Passwords

The following diagram shows how enabling the **Control application and facet template password protection** setting at the system server level enforces password management at the system level.

Settings and properties in bold have been introduced as of EcoStruxure Process Expert 2021.

Arrows indicate a user action.



(1) The property is enabled and read-only.

(2) The Control project that opens when you configure a controller also has the application password (with <Password A> set) and file encryption enabled.

(3) Setting a password is mandatory to perform deployment and execution operations.

(4) Formerly *Optional Security Services By Default* property of the system.

(5) The **Controller/Simulator** application password is not replaced by the system access password when you deploy the Control project. File encryption, however, is enabled in the deployed Control project.

NOTE: The properties to manage the application password and file encryption are disabled in the Control Participant (offline and online refinement).

NOTE: When the **Control application and facet template password protection** setting at the system server level is disabled, password management at the system level becomes optional.

For more information, refer to the topics describing how to:

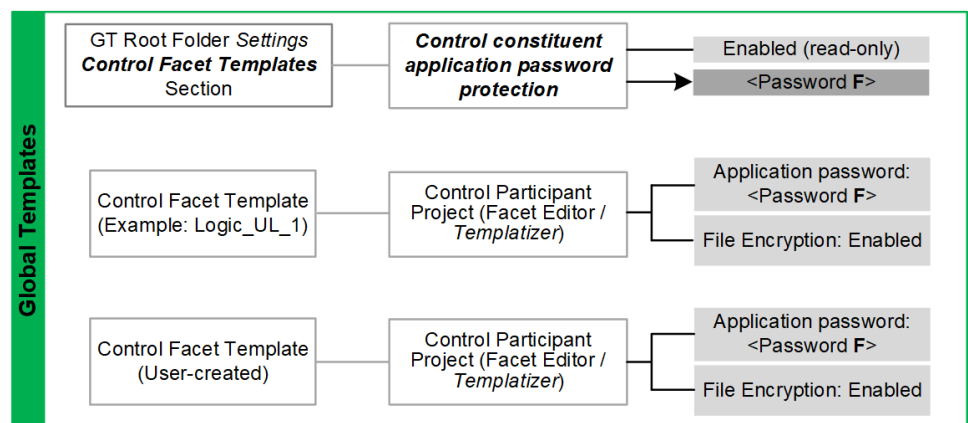
- Enable and disable the **Control application and facet template password protection** setting, page 118.
- Manage the **System Access Password** (see *EcoStruxure™ Process Expert, User Guide*).
- Manage the **Controller Access Password at Creation** property (see *EcoStruxure™ Process Expert, User Guide*).

Global Templates Password

The following diagram shows how enabling the **Control application and facet template password protection** setting at the system server level enforces password management at the template level.

The setting in bold has been introduced as of EcoStruxure Process Expert 2021.

The arrow indicates a user action.



NOTE: The properties to manage the application password and file encryption are disabled in the Control Participant.

NOTE: When the **Control application and facet template password protection** setting at the system server level is disabled, password management at the Global Template level becomes optional.

For more information, refer to the topic describing how to manage the **Control constituent application password** (see *EcoStruxure™ Process Expert, User Guide*) of Control facet templates.

Enabling and Disabling Passwords of Systems and Control Facet Templates

Control Passwords Section

The **Control application and facet template password protection** setting lets you set a password for each system and for the Control facet templates of the Global Templates library.

These passwords are used respectively as:

- Application password of the Control Participant projects of the system.
- Application password of Control Participant STU files, which encapsulate Control logic in Control facet templates.

In addition, it enables file encryption of the Control Participant project files.

The setting configures the following properties:

- The **System Access Password** property (see *EcoStruxure™ Process Expert, User Guide*) of each system.
- The **Control constituent application password protection** setting (see *EcoStruxure™ Process Expert, User Guide*) of the Global Templates library.

Possible values:

- **Enabled**: Enables both properties and requires setting a password for each system and one for the Global Templates library.

It also enables the **Controller Access Password at Creation** property of each system.

The properties cannot be disabled independently anymore.

- **Disabled** (default): Disables the properties and clears passwords. File encryption is disabled. You can enable each property independently if you want to use it.

NOTE: Disabling the setting may take time, page 119.

Changing the value of the setting requires restarting the system server to apply the change and takes about an additional 45 min. to complete with the Schneider Electric Global Templates library. More time is required for the restart if you have installed additional libraries and/or templates.

Enabling the Control application and facet template password protection Setting

If the **Control application and facet template password protection** setting is enabled, you must set the **Control constituent application password** when you start the system server in either situation:

- You start it for the first time after enabling the setting.
- You start it with a blank database.
- You start it after having restored a database for the first time (.dbk or .mdk, page 120 database file).

This password (see *EcoStruxure™ Process Expert, User Guide*) is used as application password of Control Participant STU files, which encapsulate Control logic in Control facet templates.

In addition, you must set a **System Access Password** (see *EcoStruxure™ Process Expert, User Guide*) when you open a system for the first time.

NOTE: After you have entered a password once, you are not required to enter it again until you close the engineering client or restart the system server.

Disabling the Control application and facet template password protection Setting

If you disable the **Control application and facet template password protection** setting (system server level), when you restart the system server, you must enter the following in the **Password Authentication** window:

- The **System Access Password** for each system.
- The **Control constituent application password** for the Global Templates library.

Otherwise, you cannot disable the setting. In such case (for example, if you have forgotten one of the passwords), stop the system server, enable the setting, restart the server, manage the passwords from the engineering client, and start over.

Disabling the setting clears the system access password of each system and the Control constituent password of the Global Templates library.

NOTE: Disabling the **Control application and facet template password protection** setting (system server level) has also the following impact:

- Clears the application password of Control Participant projects of the system.
- Clears the application password of Control Participant STU files, which encapsulate Control logic in Control facet templates.
- Disables file encryption.

System Access Password and Control constituent application password protection When Restoring Databases

The following table describes the impact on system access and Control constituent application password protection when you restore a database.

Restored database	Server on which database is restored		
System Access Password and/or Control constituent application password protection settings	Control application and facet template password protection setting (server level)	System Access Password and/or Control constituent application password protection settings after restoration	Comment
Disabled	Disabled	Remain disabled	Password protection can be enabled after restoration.
	Enabled	Both are enabled	The Control facet template password must be entered during server start, page 118.
Enabled	Enabled	Remain enabled	The same passwords remain in effect.
	Disabled (has never been enabled)	Remain enabled	The same passwords remain in effect.
	Disabled (was disabled after being enabled)	Both are disabled	The system access and Control facet template passwords must be entered during server start., page 119

NOTE: When you restore a database, the state of the **Control application and facet template password protection** setting (server level) that was in effect at the time the backup was created is irrelevant.

Using the System and Global Templates Passwords With Migrated Databases

The system and Control facet template passwords are supported by templates of Schneider Electric General Purpose libraries as of version 2021 and Segment libraries (available on the mySchneider Support Portal, page 7) released as of EcoStruxure Process Expert 2021.

Schneider Electric and user-created templates of earlier versions may not support these passwords. Information about Control facet templates to which the application password could not be applied is shown in the system server console after you start the system server with the **Control application and facet template password protection** setting enabled and set the password. The information is also shown in the notification panel of engineering clients.

Contact your local Schneider Electric service representative if you want to use the system and Control facet template passwords with a migrated database.

Configuring Audit Trail

This topic describes how to enable audit trail for user activities in EcoStruxure Process Expert and the parameters that you can configure when the system server is stopped.

Audit Trail Section

The following figure shows an example of the **Audit Trail** section.

System Server Configuration Wizard

Configure the System Server.

1 Security ☒ Enable Audit Trail

Authentication

Audit Trail

Hosting

Data Folders

Syslog Server Settings

Host Name/ IP Address localhost

Port 514

Retry Interval (Minutes) 2

Test Connection

Install Syslog Server Certificate

Enable Security ☐

Certificate File ...

Password

Syslog Server Certificate CN

Install

Installed Syslog Server Certificate

Certificate File

Valid Till

< Back Next > Cancel

Item	Description
1	<p>When selected (true), the system server sends audit trail messages (see <i>EcoStruxure™ Process Expert, User Guide</i>) to the configured syslog server when the connection is established.</p> <p>Default value: Cleared (false)</p>

The following table describes the parameters of the **Syslog Server Settings** section.

Item	Description
Host Name/IP Address	Name or IP address of the computer on which the syslog server is installed.
Port	Port that is used for communication with the syslog server. Default value: 514 NOTE: The communication protocol that is used is TCP.
Retry Interval	Period (minutes) after which the system server tries to reconnect to the syslog server in case the connection was interrupted and could not be reestablished right away. The system server attempts to reconnect at these intervals until the connection is reestablished. Default value: 2
Test Connection	Click the button to verify if the system server is able to connect to the configured syslog server. A dialog box opens to inform you of the result.

NOTE: Click **Save & Close** in the last section to save your changes.

The following table describes the parameters of the **Install Syslog Server Certificate** section.

Item	Description
Enable Security	When selected, the X.509 certificate that is installed is verified and must be validated when the system server connects to the syslog server. In addition, the Common Name (CN) must match; otherwise, the connection is not allowed. When cleared, the connection with the syslog server is established as anonymous user without using the certificate. NOTE: When security is enabled, ensure that secure communication is enabled for the syslog server before starting the EcoStruxure Process Expert system server; otherwise, the messages that the software sends are not legible in the syslog server application.
Certificate File	Browse button to select the X.509 certificate file (.pfx) that is generated by the syslog server.
Password	Password for the selected certificate file.
Syslog Server Certificate CN	Common Name of the server. Required.
Install	Installs the selected certificate. If a certificate is already installed, it is removed. A dialog box opens after the operation completes and the information in the lower section is updated. NOTE: Once the installation is completed, closing the window or canceling does not remove the certificate.

The following table describes the parameters of the **Installed Syslog Server Certificate** section.

Item	Description
Certificate File	Path to the file (.pfx) that was selected to install the certificate.
Valid Till	Validity of the installed certificate.

NOTE: To view information about the *EcoStruxure Hybrid DCS AuditTrail* certificate, open the **Microsoft Management Console** (in a Windows 10 operating system, use the *certlm.msc* service of the system server computer).

Managing Participant Extensions

Overview

As of version 2021, Participants are not installed in a virtual machine anymore but on the operating system of the computer.

As a result, extensions, such as device type managers (DTMs), generic station description (GSD) files, and electronic data sheet (EDS) files, which are used to update the **Hardware Catalog** need to be installed, [page 46](#) and removed by using the Control Participant on each computer of the EcoStruxure Process Expert infrastructure.

Configuring the Content of Blank Databases

Overview

The **Data Folders** section lets you configure which templates and content containers a blank database contains.

Configure the parameters before starting the system server, page 136 or using the **Create Blank Database** command, page 128.

NOTE: After the blank database has been created, you can import additional templates (see *EcoStruxure™ Process Expert, User Guide*) and content containers (see *EcoStruxure™ Process Expert, Runtime Navigation Services, User Guide*).

Customizing Templates and Content Containers of Blank Databases

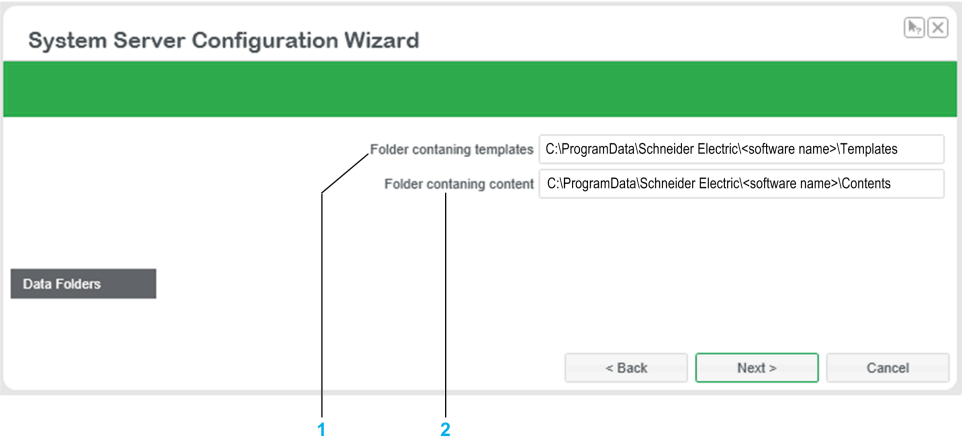
The folder whose path is configured by using the configurable database parameters must be reachable from the system server computer. The folder can contain one or more archive files, which can be located in subfolders.

To create a database that contains no templates and/or content containers, edit the path to point to an empty folder.

To add other templates and/or content containers in addition to those that are located at the default path, copy the corresponding archive files to this folder.

Configurable Database Parameters

The following figure shows a sample **Data Folders** section of the system server configuration wizard. In the path, *software name* includes the major version.



Item	Description
1	By default, path to the folder containing the template archive files, page 57 (.sbk) of a Schneider Electric library. Ensure that the templates (.sbk) that you are adding are compatible, page 54 with this version of the software; otherwise, the system server may not start.
2	By default, path to the folder containing the content container archive files (.cbk) (see <i>EcoStruxure™ Process Expert, Runtime Navigation Services, User Guide</i>) that are extracted to disk during installation of the software. NOTE: Ensure that the selected content containers match the templates that are installed in the database.

Strengthening Communication Security Between the Server and Clients

Overview

This topic describes the steps that help secure communication between the server and remote clients.

Steps

The following procedure applies to Windows Defender and is given as example only. Other antivirus applications may have different configuration steps.

Step	Action
1	On the system server computer, open Windows Defender Firewall with Advanced Security (wf.msc) by using the Microsoft Management Console (mmc.exe).
2	Click Inbound Rules in the left pane. In the Action pane, click New rule... Result: The New Inbound Rule Wizard opens.
3	In step Rule Type , select Custom and click Next . Result: Step Program opens.
4	Select This program path: , set C:\Program Files (x86)\Schneider Electric\Control Expert X\Server\SE.Automation.SystemManager.exe (where X is the version that is installed), and click Next . Result: Step Protocols and Ports opens:
5	Set the following values: <ul style="list-style-type: none"> Protocol Type to TCP, Local Port to Specific Ports and type 19950–19952 as port range. Click Next . Result: Step Scope opens.
6	Leave the settings as they are and click Next . Result: Step Action opens.
7	Select Allow the connection if it is secure and click Next . Result: Step Users opens.
8	Leave the settings as they are and click Next . Result: Step Computers opens.
9	For Authorized computers select Only allow connections from these computers , add authorized computer names, and click Next . Result: Step Profile opens.
10	Select Domain , clear Private and Public , and click Next . Result: Step Name opens.
11	In the Name box, type SystemManager and in the Description box, type TCP rules . Click Finish .
12	In the Inbound Rules pane, copy and paste the SystemManager rule.
13	Select the pasted SystemManager rule and click Properties . <ul style="list-style-type: none"> In the General tab, change the description from TCP rules to UDP rules. In the Protocols and Ports tab: <ul style="list-style-type: none"> Set Protocols Type to UDP, Set Local Port to Specific Ports and type 19950 as port range. Click OK to close the Properties window.
14	Close the Microsoft Management Console .

Starting the Software

Overview

This chapter describes the system server console and the various actions that you can perform by using its commands. It also describes how to start the system server and engineering clients for the first time.

For information on how to start the operation client, refer to the topic describing how to set up runtime navigation services (see *EcoStruxure™ Process Expert, Runtime Navigation Services, User Guide*).

For additional information on how to start and quit the software, including logging into clients and client/server connection, refer to the topic that describes starting and quitting the software (see *EcoStruxure™ Process Expert, User Guide*).

System Server Console and Tray Icon

Overview

As of EcoStruxure Process Expert 2021, when you double-click the system server desktop icon, the system server console is minimized to a system tray icon. If the [server startup mode, page 112](#) is set to *Manual* and you are not logged in, the log-in window opens first.

To open the console, double-click its icon in the system tray.

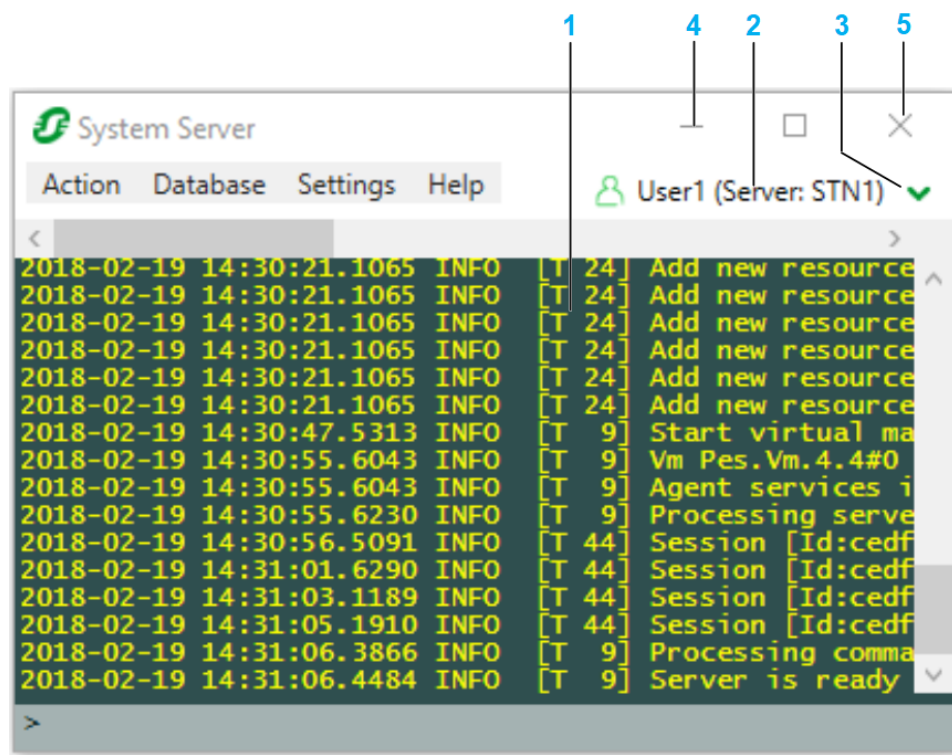
By using the console or the tray icon, you can perform the following actions:

- Start, stop, and configure the system server.
- Back up, restore, and delete databases of the current version of the software.
- Restore databases of an [earlier supported version, page 30](#).
- Back up databases of the current version to migrate them to a subsequent supporting version.
- Create an empty database.

To use the commands of the system server console menu bar or system tray icon context menu, your user must be associated to a [profile](#) that has the necessary rights.

NOTE: To back up individual systems, use the corresponding command from the system context menu in the **Systems Explorer** of the engineering client (see *EcoStruxure™ Process Expert, User Guide*).

System Server Console Description



Item	Description
1	Activity and notification area of the console. The information that is shown is cleared when the console is closed.
2	Full name of the logged-in user and name of computer. If the full name is not defined, the username appears instead.
3	Opens the user menu.
4	Minimizes the console to a system tray icon. NOTE: When the system server is running, the tray icon appears green; otherwise, gray.
5	The behavior depends on the server startup mode, page 112: <ul style="list-style-type: none"> In <i>Manual</i> mode, closes the console and stops the system server. In <i>Auto</i> mode (once the system server computer has been restarted): <ul style="list-style-type: none"> Closes the console but does not stop the system server. The user that is logged into the system server is logged out. Removes the server icon from the system tray. NOTE: Corresponds to the Exit command of the server tray icon context menu.

System Server Commands

The following table describes the commands of the **Action** menu.

Command	Description
Start	Starts the system server. NOTE: If you restored a database of an earlier supported version, it migrates the database, page 66. NOTE: The command is disabled if you have set the Server Startup Mode , page 112 to <i>Auto</i> and the server is already started.
Stop	Stops the system server after you confirm the command (see <i>EcoStruxure™ Process Expert, User Guide</i>).

The following table describes the commands of the **Database** menu. The commands are disabled⁽¹⁾ when the system server is running.

Command	Description
Back Up Database	Opens a Save as dialog box, which lets you save, page 133 the mounted database to disk as one file (.dbk).
Restore Database	<p>Opens an Open dialog box, which lets you mount a database by using a backup file of either format:</p> <ul style="list-style-type: none"> .dbk: Backup files created by using the Back Up Database command of the current version of the software. .mdbk: Backup files created by using the Migrate Database command of an earlier supported version of the software. This mounts the database so that it is migrated, page 66 when you start the system server. <p>Restoring this type of backup file requires that Server Startup Mode, page 112 is set to <i>Manual</i> or that the server service is stopped, page 131.</p> <p>NOTE: The software creates a copy of the database folder, page 133 before restoring the one that you have selected.</p>
Delete Database	<p>Allows you to remove the Caché database entries pertaining to the installed EcoStruxure Process Expert databases.</p> <p>The command is available only in either of the following cases:</p> <ul style="list-style-type: none"> The <i>Db</i> folder on the computer on which the system server is installed is either empty or missing. The <i>CACHE.DAT</i> file is missing in the <i>GLOBAL</i> and <i>SCHEMA</i> subfolders and no <i>System_n</i> system exists in the <i>Db</i> folder. <p>For more information, refer to the troubleshooting section, page 149.</p>
Create Blank Database	<p>Lets you back up the mounted database to a location that you select and starts the system server with a blank database, page 136 after you confirm the command.</p> <p>You can configure, page 124 which templates and content are added to the blank database.</p>
Migrate Database (1)	<p>Opens a Save as dialog box, which lets you save the mounted database to disk as one file (.mdbk).</p> <p>It lets you create a backup file, page 62 of a database that you can migrate to make it compatible with a subsequent supporting version of the software once you have installed it.</p> <p>The command is available only if Server Startup Mode, page 112 is set to <i>Manual</i> or the server service is stopped, page 131.</p> <p>NOTE: You cannot restore this backup file (.mdbk) in the same version of the software. To do so, create a backup file by using the Back Up Database command.</p> <p>NOTE: If the command does not appear in the menu, install a premigration patch, which is included with the later version of the software.</p>
(1) The Migrate Database command is available only when the system server is running.	

The following table describes the commands of the **Settings** menu.

Command	Description
Basic (Settings)	<p>Opens the Server Configuration Wizard window, page 109, which lets you configure settings of the system server and Participants.</p> <p>The command is disabled when the system server is running.</p>
Advanced (Settings)	<p>Gives access to advanced parameters of the system server, Participants, client/server communication, and the database, which you can adjust if you are unable to run the software.</p> <p>The command is available only after you enable the console command prompt, page 130.</p> <p>The command is disabled when the system server is running.</p>
System Backup Scheduler	<p>Lets you schedule the automatic backup of systems (see <i>EcoStruxure™ Process Expert, User Guide</i>).</p> <p>The command is available only when the system server is running.</p>

The following table describes the commands of the **Help** menu.

Command	Description
View Help	Opens the global HTML software help.
About	Opens the <i>About</i> dialog box (see <i>EcoStruxure™ Process Expert, User Guide</i>).

The following table describes the commands of the **User** menu.

Command	Description
Lock⁽¹⁾	Locks (see <i>EcoStruxure™ Process Expert, User Guide</i>) the components where you logged in on the local computer.
User Information⁽¹⁾	Opens the User Information dialog box, page 87.
Log In/Log Out	Lets you log into or out of (see <i>EcoStruxure™ Process Expert, User Guide</i>) the software.
(1) The command is not available in the context menu of the server tray icon.	

Enabling the Console Command Prompt

Enabling the console command prompt requires entering an unlock code. It gives you access to advanced functionality and settings. Contact your local Schneider Electric service representative.

NOTE: Modifying advanced settings may have a negative impact on software functionality.

To enable the console command prompt, proceed as follows.

Step	Action
1	Open the system server console.
2	Press Ctrl+M and enter the unlock code (case sensitive).
3	Press Enter . Result: Entering Maintenance Mode is displayed in the console and the command prompt is enabled.

NOTE: If you enter a wrong code, repeat step 2. To disable the command prompt, press **Ctrl+M** again.

Using the System Server Auto-Start Functionality

Overview

By using the **Server Startup Mode** setting, page 112 of the **System Server Configuration Wizard**, you can configure the system server to start automatically when you restart the computer.

System Server Service

The auto-start functionality relies on the *EcoStruxure Process Expert Server Manager Service* service on the computer on which the system server is installed. It uses the *Local System* account.

By default, the service is set to *Manual* and is stopped. It can only be started by configuring the **Server Startup Mode** setting to *Auto* and restarting the computer.

You can stop the service by opening Windows **Services**.

NOTE: Stopping the service when the system server is started stops the system server.

NOTE: You can start the system server manually, page 128 when the service *Startup Type* is set to *Automatic* in Windows **Services** given you are logged in.

System Server Functionality without Logged-In User

When *EcoStruxure Process Expert Server Manager Service* is running and no user is logged into the system server, clients can connect to the server.

However, you cannot use system server commands, page 128. To use them, a user with the necessary rights must log in.

If you start an engineering or operation client on the system server computer, you must log in (see *EcoStruxure™ Process Expert, User Guide*) to use the client.

Restoring and Migrating Databases With the Auto-Start Feature Enabled

You cannot use the **Migrate Database** command, page 128 and restore database backup files with an .mdbk file extension when *EcoStruxure Process Expert Server Manager Service* is running. Before performing a migration and/or restoration, proceed as follows.

Step	Action
1	Log into the system server.
2	Stop the system server by using the Stop command from the menu bar of the server console or the system tray icon.
3	If the system server console is open, close it. Otherwise, click Exit in the context menu of the server tray icon.
4	Open Windows Services , right-click <i>EcoStruxure Process Expert Server Manager Service</i> , and click Stop .
5	Open the server console by double-clicking the system server desktop icon and log into the server. Result: You can restore database backup files with an .mdbk file extension by using the Migrate Database command from the server system tray icon.
6	Start the system server by using the Start command. Result: You can use the Migrate Database command.

Backing Up and Restoring Databases

Overview

Data of systems that you create is stored in the database. It also contains the templates of the Global Templates library.

You can back up a database as a file (.dbk) and restore a database from such a backup file by using the corresponding commands in the system server console menu bar, page 127.

Database backup files can only be used with the version of the software that was used to create them.

Exceptions apply for certain supported versions of databases that you can restore to migrate them to the current version. This may be the case, for example, for additional releases within the same year (versions with *R•* suffix) or when Participants are compatible from one version to the other.

NOTE: You can also back up and restore individual systems by using the corresponding commands in the context menu of the **Systems Explorer** of the engineering client (see *EcoStruxure™ Process Expert, User Guide*).

Backing Up and Restoring Databases for Migration

To create a database backup file of the current version of the software in order to migrate and reuse with a subsequent supporting version, you may need to use the **Migrate Database** command, page 128.

Language Support When Restoring Databases

Although it is possible to restore a database on an EcoStruxure Process Expert infrastructure that is installed in a different language than the source infrastructure, to help avoid language-related issues with data managed by Participants, follow best practices, page 23.

Controller/Simulator Password Management After Restoring a Database

After you restore a database that contains a controller and/or a workstation for which **Controller** or **Simulator** password protection (see *EcoStruxure™ Process Expert, User Guide*) has been enabled, do the following to deploy a Control Participant project:

- If no password was set, set one.
- If a password was set, enter the password when prompted.

For more information, refer to the topic describing how to manage passwords for deployed Control Participant projects (see *EcoStruxure™ Process Expert, User Guide*).

Managing Database Backup Files

Database backup files that the software creates when you restore databases can use up a lot of disk space. Manage these folders regularly to recover disk space.

Backing Up a Database

You can back up databases only when the system server is stopped.

NOTICE

LOSS OF COMMUNICATION

Stop the system server only when no client is running.

Failure to follow these instructions can result in equipment damage.

To back up the EcoStruxure Process Expert database, proceed as follows.

Step	Action
1	Quit clients that connect to the system server whose database you want to back up (see <i>EcoStruxure™ Process Expert, User Guide</i>).
2	Stop the system server (see <i>EcoStruxure™ Process Expert, User Guide</i>).
3	Close and reopen the system server console if required.
4	From the system server console menu bar or tray icon context menu, click Database > Back Up Database . Result: A Save as dialog box opens.
5	Select a file name and location for the database backup and click Save . Result: The software starts the back-up process and displays Done in the system server console when the operation is completed.

Restoring a Database

When you restore a database, the software creates a copy of the existing database folder before mounting the new database.

The name of the database folder copy is created by adding the suffix `_YYYYMMDDHHMMSS` to the name of the database folder, where `YYYYMMDD` represents the date and `HHMMSS` the time when the copy was created.

The copy of the database folder is stored at the path: `C:\ProgramData\Schneider Electric\Process Expert X`, where `X` corresponds to the version that you are using.

You can restore databases only when the system server is stopped.

NOTICE

LOSS OF COMMUNICATION

Stop the system server only when no client is running.

Failure to follow these instructions can result in equipment damage.

To restore a EcoStruxure Process Expert database, proceed as follows.

Step	Action
1	Quit clients that connect to the system server (see <i>EcoStruxure™ Process Expert, User Guide</i>).
2	Stop the system server (see <i>EcoStruxure™ Process Expert, User Guide</i>).
3	Close and reopen the system server console if required.
4	From the system server console menu bar or tray icon context menu, click Database > Restore Database . Result: An Open dialog box opens.
5	Select a database backup file (.dbk) and click Open . Result: The software: <ul style="list-style-type: none"> Creates a copy the existing database. Starts the restore process of the selected file. Displays Done in the system server console when the database is mounted. NOTE: If the restore operation does not complete successfully, the software restores the previously mounted database.

Starting with a Blank Database

Starting with a Blank Database

At any time, you can start fresh with a blank database, which can contain the templates supplied with the software version, and/or your templates, or no templates.

Configuring the Content of the Database

When you start the system server and a blank database is created, the templates and content containers that are specified in the **Data Folders** section, page 124 of the system server configuration wizard are added to this database.

Methods to Create a Blank Database

The following table describes the methods to create a blank database in various scenarios.

Scenario	Method
Software is installed, no database was restored, and system server has not yet been started.	Starting the system server creates a blank database, page 34.
The database is already mounted. It may have been migrated and/or contains systems that you have created.	Use the Create Blank Database command, page 128 and start the system server.

Starting the System Server

Overview

Before starting the system server for the first time, verify server settings, page 108 from the **System Server** console, page 127 or tray icon.

Start the system server before starting clients.

A first system server start may take several minutes because it imports templates into the Global Templates library and creates the database (this step is not performed if you are migrating a database).

If starting the system server migrates a database, page 66, the start-up time is significantly longer because of the additional steps that the software carries out to migrate it. Depending on the size of the database, the process may take hours.

Once you start the system server, you cannot stop it until startup is completed.

Refer to Starting and Quitting the Software in the *EcoStruxure™ Process Expert, User Guide* for more information on working with the system server and clients.

NOTE: Before you can start the system server, you must:

- Configure role-based access control, page 81.
- Generate and install digital certificates, page 94.

Server Activity Log

The **System Server** console lets you monitor and keep track of the server activity until you stop it. The history of activity data is logged in a log file (see *EcoStruxure™ Process Expert, User Guide*).

Considerations When Using Several System Servers

If a system server and a client are installed on the same computer, the system server cannot start if the client is already running and connected to different system server. In this case, a message appears in the server console.

Starting the System Server Manually for the First Time

To start the system server for the first time, proceed as follows.

Step	Action
1	Configure, page 107 the system server as needed.
2	Ensure that Caché, page 60 is running by verifying the presence and the color of the Caché tray icon. When Caché is running, its tray icon is blue.
3	From the Windows start menu, click EcoStruxure Process Expert > System Server . Result: The log-in window opens.
4	Enter your user name without domain or prefix, your password, and click Log In . Result: The system server console is minimized to a tray icon.
5	To migrate a database, refer to the topic describing database migration, page 66. Otherwise, proceed to step 6.
6	Open the server console from its tray icon and click Action > Start . Result: The system server starts and creates a new, blank database, page 124. If you restored a database backup file in the previous step, the system server migrates this database instead. NOTE: During the system server start, several Participant windows may open briefly. Do not close them manually; otherwise, the functionality of the software may be impacted. NOTE: If you have enabled the Control application and facet template password protection setting, you may be prompted to set a password, page 118.
7	Wait until the server tray icon turns green or the system server console displays the following message at the bottom of the window to start the engineering client, page 139: Server is ready.

Troubleshooting System Server Startup

If you have questions about the system server startup, refer to the troubleshooting topic, page 149.

Starting the Engineering Client

Overview

Start the system server, page 137 before starting a client.

Before you start the engineering client for the first time, configure, page 107 the server settings.

Refer to Starting and Quitting the Software in the *EcoStruxure™ Process Expert, User Guide* for more information on working with the system server and clients.

NOTE: Before you can start the engineering client, you must generate and install digital certificates, page 94.

Client Activity Log

The notification panel lets you monitor and keep track of the engineering client activity until you stop the system server. To keep the history of data that is displayed in the notification panel, export the data (see *EcoStruxure™ Process Expert, User Guide*).

Other client activity is logged in log files (see *EcoStruxure™ Process Expert, User Guide*).

Starting the Engineering Client

After an unexpected interruption of the client/server connection, the states of both the engineering client and the system server may have become inconsistent. This can be the case, for example, if at the time of the interruption an operation was in progress, such as, an import of several Participant projects or pasting of many instances.

NOTICE

LOSS OF COMMUNICATION

After an interruption of the client/server connection, verify that the last operation executed by the software was completed successfully, and if necessary, repeat the last operation.

Failure to follow these instructions can result in equipment damage.

NOTE: Use the notification panel of the engineering client to verify the status of each task executed by using a task menu command. The history of other client-related activity data is logged in log files (see *EcoStruxure™ Process Expert, User Guide*).

To start the engineering client for the first time, proceed as follows.

Step	Action
1	Configure the server settings as needed by using the Engineering Client Configuration Wizard .
2	<p>With the system server running, from the Windows start menu, click EcoStruxure Process Expert > Engineering Client.</p> <p>Result: A splash screen appears to indicate that the engineering client is starting. After a few moments, the log-in window opens.</p> <p>NOTE: If you are already logged into (see <i>EcoStruxure™ Process Expert, User Guide</i>) another EcoStruxure Process Expert component on this computer (for example, the system server) the engineering client window opens without displaying the log-in window.</p>
3	<p>Log in by entering your user name without domain or prefix and your password.</p> <p>NOTE: Close the log-in window to quit the engineering client.</p>
4	<p>Click Log In.</p> <p>Result: The engineering client window opens.</p>

NOTE: If you start the engineering client before the system server, the client displays a notification that it cannot locate the server. If the system server is starting, the splash screen of the client is displayed until the server is running.

Modifying, Repairing, and Removing the Software

Overview

This chapter describes how to modify, repair, and remove EcoStruxure Process Expert.

Modifying the Software Installation

Overview

By using the **Modify** functionality of the installer, you can perform the following actions after you have installed at least one EcoStruxure Process Expert component on the computer:

- Install one or more additional components (for example, an engineering client).

However, you cannot reinstall a subcomponent that you have removed by using the Microsoft Windows **Control Panel** (for example, Modicon IEC 61850 Configuration Tool). In this case, use the [repair functionality](#), page 144).

- Uninstall one or more installed components.

You can access the functionality from either:

- The installation package.
- The **Uninstall or change a program** window of the Microsoft Windows **Control Panel**. Select the **Change** command for **EcoStruxure Process Expert**.

When you remove an installed component, the installer verifies the integrity of the files of remaining components.

NOTE: To remove the software from the computer use the [remove functionality](#), page 146.

Associated and Third-Party Software Components

When you modify the installation, do not restart the computer if prompted by the installer of the Control or Supervision Participant. Restart the computer only after the installation of EcoStruxure Process Expert is completed entirely.

If you install a new software component on the computer, required associated and third-party components are installed as well. However, if you uninstall a software component, [associated and third-party components](#), page 35 are not uninstalled.

Software Licenses

When you add and/or remove software components from the computer, ensure that you:

- Return licenses that have become unnecessary by using the Floating License Manager.
- Activate licenses for newly installed components as needed.

For information on the return process, see *Schneider Electric Floating License Manager, User Manual*.

Modifying the Software Installation

You can modify the software installation only when the system server is stopped.

NOTICE

LOSS OF COMMUNICATION

Stop the system server only when no client is running.

Failure to follow these instructions can result in equipment damage.

NOTICE

LOSS OF DATA

Back up the database before modifying the installation.

Failure to follow these instructions can result in equipment damage.

NOTE: For more information, refer to the topic describing how to back up the database, page 133.

To modify the software installation on a computer by using the installation package, proceed as follows.

Step	Action
1	Quit clients connected to the system server (see <i>EcoStruxure™ Process Expert, User Guide</i>).
2	Stop the system server (see <i>EcoStruxure™ Process Expert, User Guide</i>).
3	Close Control Expert and AVEVA Plant SCADA running outside EcoStruxure Process Expert.
4	Back up the database of the software infrastructure.
5	On the computer on which you want to modify the installation, double-click the <i>setup.exe</i> file that is located in the root of the installation package. Result: The installer dialog box opens.
6	Select Modify and click Next .
7	The dialog box shows the various software components. Those that are crossed out are not installed on the computer: <ul style="list-style-type: none"> Select the other components that you want to install. Remove the components that you want to uninstall. Do not modify the selection of installed components that you want to keep.
8	Click Next . Result: The software proceeds with the removal and/or installation of components according to your selection.
9	Click Finish to exit the installer.
10	Restart the computer when prompted to complete the installation process.

Repairing the Software

Overview

If a software component does not function properly, you may be able to repair it by using the **Repair** functionality of the installer.

The installer attempts to install missing programs and files, and fix corrupt files and registry entries.

You can access the functionality from either:

- The installation package.
- The **Uninstall or change a program** window of the Microsoft Windows **Control Panel**. Select the **Change** command for **EcoStruxure Process Expert**.

NOTE: Associated and third-party components are not repaired. However, if an associated or third-party component that is required was removed, it is installed. In this case, do not restart the computer if prompted by the installer of the Control or Supervision Participant. Restart the computer only after the repair of EcoStruxure Process Expert is completed.

Repairing the Installation

You can repair an installation only when the system server is stopped.

NOTICE

LOSS OF COMMUNICATION

Stop the system server only when no client is running.

Failure to follow these instructions can result in equipment damage.

NOTICE

LOSS OF DATA

Back up the database before repairing the installation.

Failure to follow these instructions can result in equipment damage.

NOTE: For more information, refer to the topic describing how to back up the database, page 133.

To repair the software on a computer by using the installation package, proceed as follows.

Step	Action
1	Quit clients connected to the system server (see <i>EcoStruxure™ Process Expert, User Guide</i>).
2	Stop the system server (see <i>EcoStruxure™ Process Expert, User Guide</i>).
3	Close Control Expert and AVEVA Plant SCADA running outside EcoStruxure Process Expert.
4	Back up the database of the software system infrastructure.
5	On the computer on which the component that you want to repair is installed, double-click the <i>setup.exe</i> file that is located in the root of the installation package. Result: The installer dialog box opens.
6	Select Repair and click Next . Result: The software attempts to repair the installed software components.
7	Click Finish to exit the installer.
8	Restart the computer when prompted to complete the repair process.

Removing the Software

Overview

This operation removes the software from the computer. The database that contains the data of existing systems is not removed.

Nevertheless, consider [backing up existing databases](#), page 133.

You can access the functionality from either:

- The installation package.
- The **Uninstall or change a program** window of the Microsoft Windows **Control Panel**. Select **EcoStruxure Process Expert**.

To remove software components individually, use the [modify functionality](#), page 142.

A restart is required to complete the process of uninstalling the software from the computer.

NOTE: The process does not remove the Schneider Electric License Manager and Floating License Manager.

Removing Digital Certificates

Removing the software may delete [digital certificates](#), page 105.

Removing Associated and Third-Party Components

By default, when you remove the software by using the installer or the **Change > Remove** command for **EcoStruxure Process Expert** in the Microsoft Windows **Control Panel**, the process also removes the following software (if installed):

- InterSystems Caché, the application managing the database.

NOTE: The *InterSystems* folder is not removed. You must remove it manually. The folder is located at the path: *C:\Program Files*.

- Control Expert
- Security Editor

NOTE: On the system server computer, it also removes the Security Editor database, which contains the Role-Based Access Control configuration. [Back up, page 92](#) users before removing the system server or Control Expert.

- Advantys Configuration Software
- Modicon IEC 61850 Configuration Tool
- ProSoft Configurator for Modicon
- AVEVA Plant SCADA

NOTE: The following components are not removed and must be removed manually:

- AVEVA Plant SCADA Deployment
- AVEVA Plant SCADA Connectivity Server
- AVEVA Industrial Graphics Server
- AVEVA Plant SCADA Security Configuration
- AVEVA Plant SCADA Project DBF AddIn

Clear the check box to keep these applications on the computer.

If you remove the software by using the **Uninstall** command for **EcoStruxure Process Expert** in the Microsoft Windows **Control Panel**, these applications are not removed.

Removing Hotfixes

You can remove hotfixes that have been applied to the software by using the **Uninstall** command from the Microsoft Windows **Control Panel**. Navigate to the **View installed updates** window under **Programs and Features**.

Removing to Install an Earlier Version of the Software

If you are removing the software to install an earlier version, also remove the following third-party components, [page 147](#):

- Remove the InterSystems Caché application.
- Delete the *InterSystems* folder, which is located at the path: *C:\Program Files*.

Returning Licenses

When you remove the software from the computer, consider returning your licenses by using the Floating License Manager so that you may activate them again on a different computer.

For information on the return process, see *Schneider Electric Floating License Manager, User Manual*.

Removing EcoStruxure Process Expert

You can remove the software only when the system server is stopped.

NOTICE

LOSS OF COMMUNICATION

Stop the system server only when no client is running.

Failure to follow these instructions can result in equipment damage.

NOTICE

LOSS OF DATA

Back up the database before removing the installation.

Failure to follow these instructions can result in equipment damage.

NOTE: For more information, refer to the topic describing how to back up the database, page 133.

The table describes the procedure to remove the software from the computer by using the installation package.

Step	Action
1	Quit Schneider Electric applications that are running, clients, and stop the system server (see <i>EcoStruxure™ Process Expert, User Guide</i>).
2	Close Control Expert and AVEVA Plant SCADA running outside EcoStruxure Process Expert.
3	Back up the database.
4	On the computer on which the component that you want to remove is installed, double-click the <i>Setup.exe</i> file located in the root of the installation package. Result: The installer dialog box opens.
5	Click Next .
6	Select Remove .
7	Follow the instructions on screen.
8	Click Finish to exit the installer.
9	Restart the computer when prompted to complete the removal process. NOTE: You can click No to restart the computer yourself later. However, a restart of the computer is required before you start a new installation of EcoStruxure Process Expert.

Troubleshooting

Troubleshooting Installation

Invalid Drive Notification During Installation

If you copy the installation package (ISO file) from the external hard drive to the computer and start the installation from the computer when the copy is complete, you may receive a notification about an invalid drive (1327) if you disconnect the external hard drive before the installation is finished.

Restart the installation and leave the external hard drive connected to the computer until the installation of the software is finished.

Installation Does Not Complete

Ensure that the path to files of the installation package does not exceed 260 characters, whether you are accessing it on the local computer or from a network location.

Unable to Uninstall the Software by Using the Control Panel

If you are trying to remove the software by using the **Uninstall** command in the Microsoft Windows **Control Panel** and you receive a notification that the software cannot be uninstalled because the installation log file cannot be opened, proceed as follows.

Step	Action
1	Open Task Manager .
2	Stop the explorer.exe process.
3	Restart the explorer.exe process by clicking from the menu of the Task Manager , File > New Task (Run...) .
4	Enter explorer.exe and click OK .
5	Uninstall the software again by using the Uninstall command.

Notification During Reinstallation Of the Software

During the reinstallation of the software, a dialog box about InterSystems Caché opens containing the message *Error. CctrlInstallStartCP(STRUXUREWAREPE) failed. Return value: 1.*

Reason: The temporary files in the **%TEMP%** folder of the computer exceed the limit of 65,535 files. When the installation tries to create new temporary files, it cannot do so because the file limit has been reached. Therefore, the installation does not complete successfully and an unrelated message is reported.

Solution: Delete no longer required files in the **%TEMP%** folder of the computer before installing the software.

Troubleshooting the System Server

Delay Starting the System Server

If you experience delays of several minutes when starting the system server and you have configured several Enterprise license servers in the License Manager, verify that each IP address can be reached from the computer on which the system server is installed.

For more information, refer to the topic describing the configuration of Enterprise license servers (see *EcoStruxure™ Process Expert, Licensing Guide*).

System Server Not Starting

If the system server console displays **Cannot load Counter Name data because an invalid index “ ” was read from the registry** shortly after starting the server, proceed as follows.

Step	Action
1	Open a command prompt as administrator.
2	Change to <code>C:\Windows\SysWOW64</code>
3	Execute <code>lodctr /r</code>
4	Press Enter . NOTE: The Unable to rebuild performance counter setting from system backup restore, error code is 2 message may be displayed.
5	Restart the system server.

System Server Startup Troubleshooting Related to the Database

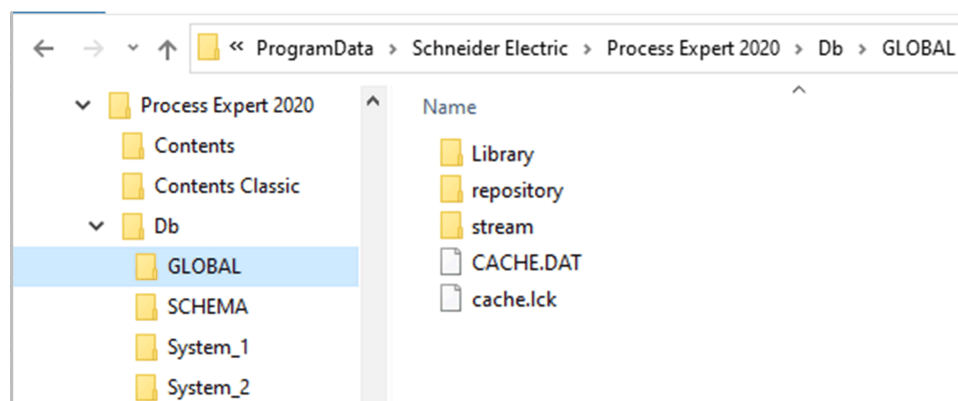
If the software displays notifications about the system server not starting, you may have deleted the *Db* folder or its content, entirely or partially, on the computer on which the system server is installed.

Notifications appear in:

- The system server console with text in red.
- The notification panel.

The *Db* folder contains the files of databases where the software stores data of the Global Templates library and of existing systems. The default path to the *Db* folder is *C:\ProgramData\Schneider Electric\Process Expert X*, where *X* corresponds to the version that you are using.

The following figure shows an example of the contents of the *Db* folder for a healthy database with two systems created. The right-hand section of the window shows the *CACHE.DAT* file that exists in the *GLOBAL* and *SCHEMA* subfolders.



NOTE: Systems that appear in the *Db* folder keep their default name (*System_n*) even if you rename them in the **Systems Explorer**.

Deleting the *Db* folder or some of its contents creates an inconsistency with the database entries that exist in the Caché database.

In such case, remove the Caché database entries pertaining to the installed databases to make them consistent with the file structure on the computer.

To remove Caché database entries, proceed as follows.

Step	Action
1	In the system server console menu bar, page 128 or tray icon context menu, click Database > Delete database . Result: The Delete Database dialog box opens.
2	Click Yes . Result: The Caché database entries are removed. NOTE: Click No to close the Delete Database dialog box without removing Caché database entries.
3	Wait until the server console displays Done to start the system server.

System Server Startup Troubleshooting Related to a Missing Directory

The system server displays a notification about a missing directory during startup if the following conditions apply:

- You are using an operating system configured in a language other than English.
- The username of the logged-in user contains characters that are not part of the US-ASCII character table.

Use only a username that contains characters of the US-ASCII character table to log into the operating system of computers on which the system server and engineering clients are installed.

Troubleshooting Client/Server Communication

Topology Initialization

If the **Initializing Topology** dialog box opens when you try to open the **Topology Explorer** on a remote client, verify that the server and corresponding client settings are configured on the respective computers as described in the following table.

System server setting	Corresponding remote client setting
Ensure that Listening IP Address is set to a network adapter or 0.0.0.0 in the Server Configuration tool, page 114.	Ensure that the IP address that is configured for Listening IP Address is entered in Host Name / IP Address of the Engineering Client Configuration Wizard, System Server section, page 112. NOTE: Clients must be closed when the value is changed.
	Open Control Expert, open User Preferences from the toolbar, select the Networks and Servers section, and ensure that the IP address that is configured for Listening IP Address is entered in Control Expert Server Address . NOTE: You do not need to log into Control Expert to configure the IP address. However, logging in lets you verify that the client can connect to the server. To log in, use the same user as for the EcoStruxure Control Expert client.
	Ensure that the system server IP address that is configured for Listening IP Address is entered in the Certificate Whitelist tab, page 91 of Security Editor.
Ensure that the <i>SE System Manager ControlExpert</i> . <i>Topology 15.3</i> service, page 18 is running.	No configuration is required. If you start the service, log out and then, log into clients connecting to the server. If the problem persists, restart clients.

NOTE: Ensure that the same port value is used in the various configuration windows.

Network Connections

The system server and its engineering stations need to be connected to the same Ethernet network by a cable connection so that the system server, engineering, and operation clients can communicate. This can be a network that is dedicated to client/server communication.

If the computer on which the system server is installed is also connected to another network (for example, an enterprise network providing access to the Internet), ensure that an interruption of this network connection does not block communication on the client/server network. This may happen, for example, if a domain firewall is configured to disable the communication ports of the computer in case the connection to the enterprise network is interrupted.

Negative Connection Test Result

A button to test the client/server connection is located in the **System Server** section of the client configuration wizards, page 108.

If the result of the connection test is negative, verify the following:

- The validity of the digital certificates, page 94.
- The port configuration, page 111.

Communication Port Usage

The software uses communication ports for client/server communication. If you experience communication errors, verify whether the ports are already used.

Refer to the topic describing how to configure the system server and clients, page 111.

CPU-Intensive Operations

Performing CPU-intensive operations (for example, importing many instances or mapping many interfaces) by using a client on a computer on which the system server is installed may lead to CPU starvation.

As a result, actions that you execute immediately after such CPU-intensive tasks may trigger notifications about client/server communication interruptions.

Increase the priority of the **EngineeringClient.exe** or **OperationClient.exe** process to *Above Normal* by using the **Details** tab of the Windows **Task Manager**.

Troubleshooting the Caché Database

Problem Description

The InterSystems Caché database does not start if you have changed the name of the computer while Caché was running and have restarted the computer. The Caché icon in the Windows tray remains gray.

Attempting to start the Caché database manually opens the **Cache Terminal could not start (112)** dialog box.

Caché software stores the name of the computer in temporary files. When it starts, it compares the name of the computer with the name stored in the files. If they do not match, the Caché database does not start.

Solution

To change the name of the computer on which the Caché application is installed, first stop the Caché application, page 60.

Starting Caché

To start the Caché database again, proceed as follows.

Step	Action
1	Browse to <i>C:\Program Files\InterSystems\STRUXUREWAREPEv48\mgr</i> .
2	Delete the following files: <ul style="list-style-type: none">• <i>cache.ids</i>• <i>cache.lck</i>
3	Start the Caché, page 60 database.

Troubleshooting Control Participant Services

Control Participant Services Are Unavailable

If the system server displays **Failed to create tool <Participant.Version>. The user logged has no profile related to the proposed product** in the console while starting, the [certificates, page 82](#) for the Control Participant may be missing or invalid.

In this case, you may not be able to configure controllers and refine, generate, or build Control projects.

The system administrator needs to open Security Editor, verify the status of the product certificates in the **Certificate Actions** tab, and generate them, if needed.

For more information on certificates of Security Editor, see *EcoStruxure™ Control Expert, Security Editor, Operation Guide*.

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