SIEMENS

SIMATIC

Process control system PCS 7 Software update without utilization of new functions V9.1 SP1

Service Manual

Security information 1

Preface 2

Introduction 3

Overview of the update tasks 4

Preparing for the software update 5

Installation of SIMATIC PCS 7 and settings on the ES and OS 6

Adaptations in the SIMATIC PCS 7 project on the ES 7

Downloading to target systems 8

Activating operator stations 9

Updating SIMATIC BATCH stations 10

Updating SIMATIC Route Control stations 11

Update by keeping the installed PLC blocks libraries
Valid for SIMATIC PCS 7 as of V8.2.1 according to V9.1 SP1

11/2021
A5E50318242-AB

Legal information

Warning notice system

This manual contains notices you have to observe in order to ensure your personal safety, as well as to prevent damage to property. The notices referring to your personal safety are highlighted in the manual by a safety alert symbol, notices referring only to property damage have no safety alert symbol. These notices shown below are graded according to the degree of danger.

⚠ DANGER

indicates that death or severe personal injury **will** result if proper precautions are not taken.

⚠ WARNING

indicates that death or severe personal injury **may** result if proper precautions are not taken.

⚠ CAUTION

indicates that minor personal injury can result if proper precautions are not taken.

NOTICE

indicates that property damage can result if proper precautions are not taken.

If more than one degree of danger is present, the warning notice representing the highest degree of danger will be used. A notice warning of injury to persons with a safety alert symbol may also include a warning relating to property damage.

Qualified Personnel

The product/system described in this documentation may be operated only by **personnel qualified** for the specific task in accordance with the relevant documentation, in particular its warning notices and safety instructions. Qualified personnel are those who, based on their training and experience, are capable of identifying risks and avoiding potential hazards when working with these products/systems.

Proper use of Siemens products

Note the following:

⚠ WARNING

Siemens products may only be used for the applications described in the catalog and in the relevant technical documentation. If products and components from other manufacturers are used, these must be recommended or approved by Siemens. Proper transport, storage, installation, assembly, commissioning, operation and maintenance are required to ensure that the products operate safely and without any problems. The permissible ambient conditions must be complied with. The information in the relevant documentation must be observed.

Trademarks

All names identified by ® are registered trademarks of Siemens AG. The remaining trademarks in this publication may be trademarks whose use by third parties for their own purposes could violate the rights of the owner.

Disclaimer of Liability

We have reviewed the contents of this publication to ensure consistency with the hardware and software described. Since variance cannot be precluded entirely, we cannot guarantee full consistency. However, the information in this publication is reviewed regularly and any necessary corrections are included in subsequent editions.

Siemens AG
Digital Industries
Postfach 48 48
90026 NÜRNBERG
GERMANY

A5E50318242-AB
Ⓟ 12/2021 Subject to change

Copyright © Siemens AG 2021.
All rights reserved

Table of contents

1 Security information 5

2 Preface 7

3 Introduction 13

3.1 Defining a strategy for the software update 13

3.2 General requirements 15

3.3 Important Information for Software Update without Utilization of New Functions 17

3.4 Information on Products from the SIMATIC PCS 7-Add On Catalog 20

3.5 Licensing with the Automation License Manager 21

4 Overview of the update tasks 23

4.1 Information about software update procedure 23

4.2 Overview of the procedure 24

5 Preparing for the software update 27

5.1 Preparatory tasks 27
5.1.1 Overview of preparations 27
5.1.2 Exchanging data via OPC A&E 27
5.1.3 How to Back Up SIMATIC PCS 7 Project Data 28
5.1.4 How to Back Up User Created Libraries 30
5.1.5 Operator and Display Texts in Blocks 31
5.1.6 How to export operator and display texts 32
5.1.7 Backing up pictures for user-defined status displays. 32
5.1.8 Backing Up the License Keys and Authorizations 33

6 Installation of SIMATIC PCS 7 and settings on the ES and OS 35

6.1 Overview of Installation and Settings on the ES and OS 35

6.2 How to Update SIMATIC PCS 7 36

6.3 Installation of Additional SIMATIC PCS 7 Libraries 38

6.4 How to Install Additional SIMATIC PCS 7 Libraries 39

7 Adaptations in the SIMATIC PCS 7 project on the ES 41

7.1 Updating a SIMATIC PCS 7 project 41

7.2 General adaptations 42
7.2.1 Overview of General Adaptations in the Project 42
7.2.2 Changing the Configuration of Multilingual Texts 42
7.2.3 Importing Data from the User Archives 42
7.2.4 How to update the configuration of the operator stations 43
7.2.5 How to Check the Plant Hierarchy Consistency 44
7.2.6 How to update the hardware configuration for SIMATIC PCS 7 AS RTX 44
7.2.7 How to migrate from PDM V6.0.5.5 to PDM V9.1.x 45

7.2.8 How to configure the SIMATIC PDM Server ... 46

7.3 Adaptations in NetPro and conversion of the CFC/SFC charts ... 48
7.3.1 How to Check and Adapt the Connection Data in NetPro ... 48
7.3.2 How to convert the CFCs and Shared Declarations ... 49

7.4 Adaptation of OS-relevant settings ... 51
7.4.1 Overview of Adaptation of OS-relevant Settings ... 51
7.4.2 How to Synchronize OS Basic Pictures, Local Computer Actions, and Faceplates ... 51
7.4.3 Mixed operation and visualization of AS blocks from different PCS 7 versions ... 54
7.4.4 How to Update the Picture Objects ... 55

7.5 Adaptations for the Process Historian ... 57
7.5.1 Adaptations for the Process Historian at a glance ... 57
7.5.2 How to update the Process Historian and Information Server ... 57

7.6 Adaptations for the Maintenance Station ... 58
7.6.1 Overview of the Maintenance Station update ... 58
7.6.2 How to change the OPC Server, adapt the SNMP configuration and update SIMATIC PDM ... 58
7.6.3 How to update the diagnostics settings ... 60
7.6.4 How to update the diagnostics screens ... 61

7.7 Additional options ... 63
7.7.1 Overview of additional options ... 63
7.7.2 Updating the SIMATIC PCS 7 Web Option for OS ... 63
7.7.3 Updating SIMATIC PCS 7 Components that Use SIMATIC Logon Services ... 63

7.8 Work for the OS in SIMATIC Manager ... 64
7.8.1 Overview of compiling ... 64
7.8.2 How to Compile the OS ... 64

8 Downloading to target systems ... 67

8.1 Downloading to target systems ... 67

9 Activating operator stations ... 69

9.1 Overview of activating the operator stations ... 69

10 Updating SIMATIC BATCH stations ... 71

11 Updating SIMATIC Route Control stations ... 73

Index ... 75

Security information

1

Siemens provides products and solutions with industrial security functions that support the secure operation of plants, systems, machines and networks.

In order to protect plants, systems, machines and networks against cyber threats, it is necessary to implement – and continuously maintain – a holistic, state-of-the-art industrial security concept. Siemens' products and solutions constitute one element of such a concept.

Customers are responsible for preventing unauthorized access to their plants, systems, machines and networks. Such systems, machines and components should only be connected to an enterprise network or the internet if and to the extent such a connection is necessary and only when appropriate security measures (e.g. firewalls and/or network segmentation) are in place.

For additional information on industrial security measures that may be implemented, please visit
https://www.siemens.com/industrialsecurity.

Siemens' products and solutions undergo continuous development to make them more secure. Siemens strongly recommends that product updates are applied as soon as they are available and that the latest product versions are used. Use of product versions that are no longer supported, and failure to apply the latest updates may increase customer's exposure to cyber threats.

To stay informed about product updates, subscribe to the Siemens Industrial Security RSS Feed under
https://www.siemens.com/industrialsecurity.

Preface

2

Purpose of this documentation

This documentation provides a comprehensive overview of the steps you must take to adapt your existing SIMATIC PCS 7 process control system to the new SIMATIC PCS 7 version. It supports you in updating SIMATIC PCS 7 projects and guides you through installation and commissioning of the current software.

The contents of the documentation are directed toward service personnel, commissioning personnel, and experienced SIMATIC PCS 7 users with the necessary system knowledge. The documentation provides instructions for carrying out the software update.

Refer to the documentation for specific products for information regarding the handling of these products.

Scope of the documentation

This documentation applies to the software package *Process Control System; SIMATIC PCS 7 V9.1 SP1*.

Options for accessing PCS 7 documentation

The documentation required for SIMATIC PCS 7 includes the following types:

- **SIMATIC PCS 7 Readme**
  The readme file is available in two versions:
  - **SIMATIC PCS 7 Readme (offline)**
    This version is installed by SIMATIC PCS 7 Setup. The file only contains general information and links to documents on the Internet.
  - **SIMATIC PCS 7 Readme (online)**
    This version contains all information on the installation and use of SIMATIC PCS 7 in the format which is already familiar to you. The file is only available on the Internet to keep it always up-to-date.

    Note

    The information provided in the *PCS 7 Readme* (online) on the Internet takes precedence over **all** other PCS 7 documentation. Refer PCS 7 Online Readme (https://support.industry.siemens.com/cs/cn/en/view/109801032).

    Read this *PCS 7 Readme* carefully, because it contains important information and amendments on SIMATIC PCS 7.

- **PUD Manager**
  The "PUD Manager" an innovative tool to access documentation, comes with SIMATIC PCS 7 USB flash drive. Some of the highlights:
  - Create your own Manual library.
  - Customize the documentation set according to your needs.
  - Efficient search feature to access your information.

  For more information on PUD Manager, refer *Process Control System PCS 7; PUD Manager Online Help*.
  The PUD Manager can also be accessed using the SIMATIC Manager as shown below:
  SIMATIC Manager > Help > Introduction
  As soon as the user opens the PUD Manager, user can find the documentation stored in a hierarchical way:
  SIMATIC PCS 7 System Documentation
  - PCS 7 - Documentation V9.1 SP1
  - PCS 7 - Operating instructions - OS Process Control V9.1 SP1
  - PCS 7 - Installation Manual - PC configuration V9.1 SP1
  - PCS 7 - Configuration Manual - Engineering System V9.1 SP1
  - PCS 7 - Configuration Manual - Operator Station V9.1 SP1

  However, you can extend and update the scope of available user documentation to your needs by downloading the individual zip files provided for the manuals and adding it under the "Pendingupdates" folder.
  To integrate or update documents, the user must exit the PUD Manager from the system tray, run the PUD application as an administrator and make all the hidden folders visible.
  The downloaded package (Zip file) must be stored in the directory:

ProgramData > Siemens > PUDManager > Public > BaseSnippetsRepository > PendingUpdates
User can download the Zip files from the following link Plant and User Documentation Manager for SIMATIC PCS 7 (https://support.industry.siemens.com/cs/de/en/view/109748882).
SIMATIC PCS 7 Product Documentation
Product documentation contains information about special hardware and software components. The individual documents provide detailed information on the specific component.

Full versions of the documentation are available from the "Technical Documentation SIMATIC PCS 7" website: PCS 7 Technical documentation (https://support.industry.siemens.com/cs/ww/en/view/109801081)
You can find additional information in the product overview *Process Control System PCS 7; PCS 7 - Documentation*; Section "Options for accessing the documentation".

Documentation for the software update

You can find all documentation on the topic of "Software update" on the Internet.

Documentation	Contents
Manual *Software update without utilization of new functions*	Describes the procedure for the software update of SIMATIC PCS 7 projects without utilization of new functions. • Original version of the existing project: SIMATIC PCS 7 as of V8.2.1 or higher. • Project to be updated to the following version without utilization of new functions: SIMATIC PCS 7 V9.1 SP1
Manual *Software update with utilization of new functions*	Describes the procedure for the software update of SIMATIC PCS 7 projects with utilization of new functions. • Original version of the existing project: SIMATIC PCS 7 as of V8.2.1 or higher. • Project to be updated to the following version with utilization of new functions: SIMATIC PCS 7 V9.1 SP1

Additional documentation for the software update

Additional information from the following documentation is required for carrying out the software update:

Documentation	Contents
Manual *Process Control System PCS 7; Service Support and Diagnostics*	Ensuring the availability of a SIMATIC PCS 7 System; contains information on creating backups and how to perform firmware updates.
Manual *Process Control System PCS 7 PCS 7 PC Configuration*	SIMATIC PCS 7 PC - Hardware and Installation; Windows settings and tools; Software packages and required license keys.

Documentation	Contents
Configuration manual *Process Control System PCS 7; Engineering System*	Guide to configuration steps in SIMATIC Manager, CFC, SFC, NetPro
Configuration manual *Process Control System PCS 7; Operator Station*	Guide to configuration steps in WinCC
Function manual *Process Control System PCS 7; High Availability Process Control Systems*	Guide to configuration steps for High Availability process control systems
Documentation *Process Control System PCS 7; Released Modules*	All modules released for SIMATIC PCS 7 are listed together with the following information: • Product designation • Article number • Firmware version • Brief description
Online help *WinCC Information System*	Describes the updating of WinCC projects.
Process Control System PCS 7; Web Option for OS manual	Describes the installation and use of the Web Option for OS in SIMATIC PCS 7.
Manual *Process Control System PCS 7; OpenPCS 7*	Describes how an OPC A&E server with hierarchical access is used in SIMATIC PCS 7 systems
Function manual *Process Control System PCS 7; High Availability Process Control Systems*	Describes the principles of use of high Availability (redundant) components in SIMATIC PCS 7.
SIMATIC manual *S7 F/FH Automation Systems* *SIMATIC S7 F Systems*	Describes the configuration and programming of S7 F/FH fail-safe systems using S7 F systems. Contains important information which must be taken into account when installing and using the S7 F system optional package in SIMATIC PCS 7.

Required basic knowledge

General knowledge in the area of automation engineering and basic knowledge of SIMATIC PCS 7 is required to understand this documentation. You also need to know how to use PCs with Windows operating systems.
The following documentation provides basic information on working with SIMATIC PCS 7:

- Configuration manual *Process Control System PCS 7; Engineering System*
- Configuration manual *Process Control System PCS 7; Operator Station*
- Getting Started *Process Control System PCS 7; Part 1*

Conventions

In this documentation, the names of elements in the software interface are specified in the language of this documentation. If you have installed a multi-language package for the operating system, some of the designations will be displayed in the base language of the operating system after a language switch and will, therefore, differ from the designations used in the documentation.

If you use the operating system Windows 10, you can find the Siemens SIMATIC programs in the "Start" menu under **Siemens Automation**.

Changes compared with previous versions

Below, you will find an overview of the most important changes compared with previous versions:

As of PCS 7 V9.1 SP1

Following Process Historian and Information Server upgrades are supported:

- 2014 SP3 Update 6 to 2020 SP1
- 2020 to 2020 SP1

Introduction

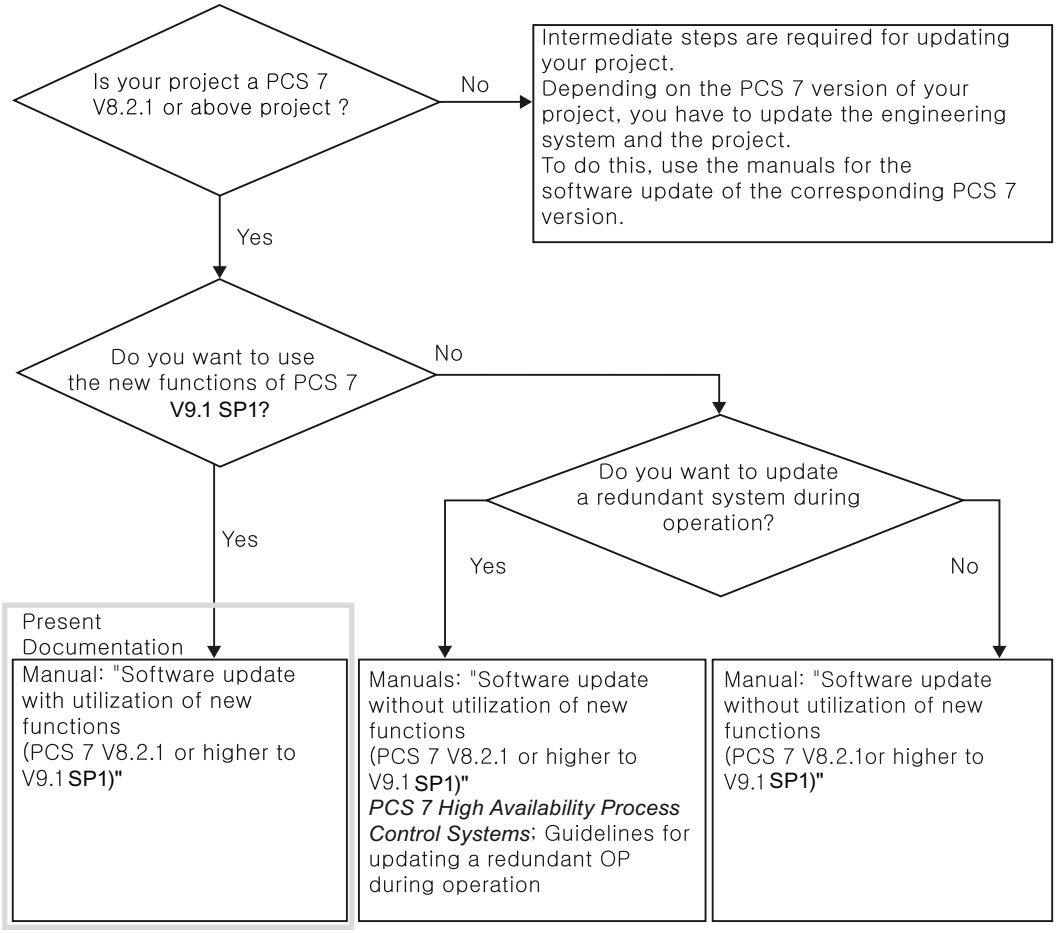
3

3.1 Defining a strategy for the software update

Decision process

The selection and use of the correct documentation depends on the comprehensiveness of your software update. the current status of the software and any boundary conditions that may exist.

The figure below shows you the documentation you should use to update a SIMATIC PCS 7 plant.



Note

Operating systems

Observe the requirements for the operating systems. You can find additional information on this in the documentation *Process Control System PCS 7; PCS 7 Readme (online)*.

Note

Intermediate steps required for the software update

If you cannot directly upgrade to the current SIMATIC PCS 7 version of a SIMATIC PCS 7 project, the intermediate steps are required. The steps described in the accompanying documentation must be completed.

Note

"SIMATIC PCS 7 BOX RTX" cannot be updated. As WinAC RTX doesn't support new operating systems like Windows 10.

See also

General requirements (Page 15)

3.2 General requirements

General requirements for updating the software

- Your PC hardware must meet the hardware requirements of the current PCS 7 version. For additional information, refer to the documentation *Process Control System PCS 7; PCS 7 - Readme (online)*
- The PC where the PCS 7 software is installed must meet one of the following requirements:
  - It can access the PCS 7 software via a network (sharing of a network folder or USB flash drive).
  - It has its "own" USB flash drive.

  Note

  You must complete the software update before beginning with any additional changes to the configuration.

- Only use the latest library versions for PCS 7 libraries

  Recommendation:
  Check the compatibility of the library versions using the compatibility tool.
  Siemens offers a compatibility tool for automation and drive technology. You can find the compatibility tool on the Internet:
  Compatibility tool (https://support.industry.siemens.com/cs/ww/en/view/64847781).

Note

If AS blocks from other PCS 7 versions are used in the project, it will be necessary to update these blocks via a software update using new functions.

You can find the download files for setups of older versions of the PCS 7 Library, the PCS 7 Basis Library or the PCS 7 Advanced Process Library on the Internet (https://support.industry.siemens.com/cs/ww/en/view/109480136).

Note

- Process Historian (PH) upgrade from 2014 SP3 Update 6 to 2020 SP1 requires a change of the operating system to Windows Server 2019. It is executed by means of full backup and full restore of the PH database.
- Information Server (IS) upgrade from 2014 SP3 Update 6 to 2020 SP1 requires a change of the operating system to Windows Server 2019. It is executed by means of full backup and full restore of the IS database.

Asian text in PCS 7

In the following cases, you need a USB hardlock for your PCS 7 version:

- You want to install PCS 7 on an Asian operating system
- You want to install an Asian version of PCS 7
- You want to display Asian text in the user interface

The USB hardlock stores the license information you need to operate and configure your version of PCS 7. Please contact your Siemens representative for information on the available Asian language versions.

Note

A message indicates missing ASIA hardlock in a non-Asian project

Check the language of the operating system and PCS 7.
When language columns are configured for Asian text in a PCS 7 project and you do not need this Asian text, you can delete these language columns from the text library of all OS projects. It is then possible to operate with a license key for the PCS 7 version and without a USB hardlock.

3.3 Important Information for Software Update without Utilization of New Functions

Factors to consider before updating a software without utilization of new functions

- SIMATIC PCS 7 of versions older than V9.1 cannot be directly upgraded to V9.1.1. The user has to reset and upgrade the machine to any one of the following operating systems, and install PCS 7 V9.1.1 as a completely new installation:
  - Microsoft Windows 10 Enterprise LTSC 2019
  - Microsoft Windows Server 2019
- SIMATIC PCS 7 V9.1 can be directly upgraded to V9.1.1.
- SIMATIC PCS 7 V9.1.1 supports Microsoft SQL Server V2017.
- To upgrade Process Historian included in the older versions than SIMATIC PCS 7 V9.1 to Process Historian 2020 SP1, operating system has to be changed to Windows Server 2019.
- SIMATIC PCS 7 can only run on operating systems that have been approved for SIMATIC PCS 7. You can find information on approved operating systems in the *Process Control System PCS 7; PCS 7 Readme* documentation (Internet version). This file contains additional information pertaining to the operating systems and necessary service packs.
  The Server operating system is required for the following PC stations:
  - Server (redundant and non-redundant) for OS, SIMATIC BATCH, SIMATIC Route Control
  - Server for Web Option for OS
  - Server for engineering station with multiproject (central data store) for engineering with multiple engineering stations
- When the operating system needs to be changed:
  Ensure that the hardware of the PC stations is suitable for use with the updated SIMATIC PCS 7 version (e.g. operating systems, network adapter).
  Read section "How to Check and Adapt the Connection Data in NetPro (Page 48)".
- The software update of password-protected projects requires SIMATIC Logon on an ES.
- For projects with activated FDA access protection for WinCC tag export, you have to open the WinCC project in SIMATIC Manager beforehand.
- Ensure that your hardware meets the requirements for SIMATIC PCS 7. You can find more information in the documentation *Process Control System PCS 7 Catalog Overview; Released Modules*. If system components are not suitable for the updated version of SIMATIC PCS 7, you must replace them. In some cases, you must adapt or redo the configuration of the components that have been replaced in the updated project.
- You need upgrade license keys to update SIMATIC PCS 7:
  V8.2.1/V9.0.3 to V9.1.

- The automation system can remain in the RUN state during a software update without utilization of the new functions. The process can be continued. Program changes can be downloaded during operation. Functions that require a new library version (for example, SIMATIC Route Control) require a STOP of the automation system.
- The manual contains some sections that are not listed in the overview. Observe the information provided in these sections when updating the software and check whether this information is relevant to your SIMATIC PCS 7 system.

Why to consider updating software without utilization of new functions?

- You do not need any new hardware or firmware for your automation system.
- You want to perform the software update without a great deal of configuration effort.
- The process can always be operator-controlled and monitored, if you use redundant OS servers and update the software accordingly.
  You can find more information about this in the manual *Process Control System PCS 7; High Availability Process Control Systems* > Guidelines for updating a redundant OS in runtime.

Note

Projects older than SIMATIC PCS 7 V8.2.1

If you are running an older PCS 7 (<V8.2.1) we recommend to update it to PCS 7 V8.2.1. Follow the steps in the corresponding manuals.

Projects with add-on applications/products

Note

In some cases, add-on applications/products require intermediate steps. Read the relevant documentation before starting the software update.

Downloading Changes

Note

Sequencers from SFC charts are not canceled during a software update, provided no changes have been made within the sequencer.

Libraries

As of SIMATIC PCS 7 V9.0, the libraries of SIMATIC PCS 7 are updated with each SIMATIC PCS 7 version. The following libraries are installed by default:

- **SIMATIC PCS 7 Basic Library**
  Contains the blocks of the SIMATIC PCS 7 Basic Library of SIMATIC PCS 7.
  The SIMATIC PCS 7 Basic Library is a prerequisite for the use of the SIMATIC PCS 7 Library and the Advanced Process Library.
- **Advanced Process Library**
  Contains the blocks of the SIMATIC PCS 7 Advanced Process Library.

Note

Library required

Installation of additional SIMATIC PCS 7 libraries is required for the software update **without** utilization of new functions.

You can find additional information on this in the section "Installation of Additional SIMATIC PCS 7 Libraries (Page 38)".

Utilization of new functions

New functions can be implemented by performing additional steps after the software update.

You can find information on this in the current manual *Process Control System PCS 7; Software update with utilization of new functions*.

See also

Defining a strategy for the software update (Page 13)

3.4 Information on Products from the SIMATIC PCS 7-Add On Catalog

Important Information

If you have used SIMATIC PCS 7 add-on products (software packages or hardware components) in your process control system, ask your SIMATIC PCS 7 contact for advice.

3.5 Licensing with the Automation License Manager

Managing the License Keys

Both license keys and authorizations can be transferred using the Automation License Manager. In the following, the term "license key" is always used even when a product uses the old license scheme based on authorizations.

Different types of licenses are used in the Automation License Manager.

Each license consists of a basic license type and a license type.

Licensing levels

You can find an overview about licenses and configuration limits in the following documents:

- Catalog *ST* SIMATIC *PCS 7* in the Internet via Technical Support (https://www.siemens.com/automation/service)
- Documentation *Process Control System PCS 7;* Licenses and Configuration Limits (see Preface: Options for accessing SIMATIC PCS 7 documentation)

Additional information

Online help for *Automation License Manager*

Overview of the update tasks

4

4.1 Information about software update procedure

The following tables provide an overview of all of the necessary steps for updating software without utilization of new functions.

Rules to Follow Based on the Tables

- Use these tables as guidelines for systematically carrying out all of the updating steps in a sequence.

  Note

  The exact sequence of configuration steps specified in this documentation must be followed in order to carry out the software update.

- You will receive information for every step as to where you must carry out the configuration work.
- You can perform the full functional expansion of the SIMATIC PCS 7 project at a later point in time.

4.2 Overview of the procedure

The following is a general overview of the procedure for updating software. This document contains comprehensive instructions on every step in the table below.

Note

Pre-existing configurations should not be modified when a software update is in progress.

Recommendation:

Finish updating the engineering system and the project before you begin to update other PC stations.

Legend for overview

X - perform this step at the relevant stations

Overview of the procedure

Step	Action	ES	OS server	OS client	AS
Backing up the SIMATIC PCS 7 project to be updated					
1	Backing up project data (Page 28)	X			
2	Backing up the libraries you created (Page 30)	X			
3	Exporting operator and display texts (Page 32)	X			
4	Checking the network adapter	X	X	X	
5	Backing Up the License Keys and Authorizations (Page 33)	X	X	X	
Installation and settings on the ES and OS					
6	Installing additional libraries (Page 38)	X	X	X	
General adaptations in the project					
7	Updating the OS with the Project Migrator (Page 43)	X			
8	Checking the PH consistency (Page 44)	X			
9	Updating the hardware configuration (Page 44) (only applies in the current context to SIMATIC PCS 7 AS RTX)	X			
10	Configuring the PDM server address (Page 46)	X			
Adaptations in NetPro and conversion of the CFC/SFC charts					
11	Checking and adapting the connection data in NetPro (Page 48)	X			
12	Converting the CFC charts and SFC charts (Page 49)	X			
Adaptation of OS-relevant settings					
13	Synchronizing OS root screens, local computer actions and faceplates (Page 51)	X			
14	Updating picture objects (Page 55)	X			
Adaptations for the Maintenance Station					
16	Changing the OPC Server and adapting the SNMP configuration (Page 58)	X			
17	Updating the diagnostics settings (Page 60)	X			
18	Updating the diagnostics screens (Page 61)	X			

Step	Action	ES	OS server	OS client	AS
Additional options					
19	Updating PCS 7 Web Option for OS (Page 63)	X	X		
20	Updating SIMATIC PCS 7 Components that Use SIMATIC Logon Services (Page 63)	X	X	X	
Work for the OS in SIMATIC Manager					
21	Compiling the OS (Page 64)	X			
Downloading to target systems					
22	Downloading to target systems (Page 67) For more information on the download options, refer to the *Process Control System PCS 7; Engineering Station* Configuration Manual.	X	X	X	X
Activating operator stations					
Sequence for activating process mode (Runtime): • Master server (OS server) • Standby server (redundant OS server) • OS clients					
23	Checking the settings on the OS servers		X		
24	Checking the settings on the OS clients			X	
SIMATIC BATCH software update					
25	Updating SIMATIC BATCH stations (Page 71)	Only for projects with SIMATIC BATCH			
SIMATIC Route Control software update					
26	Updating SIMATIC Route Control stations (Page 73)	Only for projects with SIMATIC Route Control			

Preparing for the software update

5

5.1 Preparatory tasks

5.1.1 Overview of preparations

Overview of the procedure

Note

You must perform the steps listed below prior to carrying out an update in order to prevent data being lost.

It is essential that you back up your SIMATIC PCS 7 project before you start the software update.

Step	Action	ES	OS server	OS client	AS
1	Backing up project data (Page 28)	X			
2	Backing up the libraries you created (Page 30)	X			
3	Exporting operator and display texts (Page 32)	X			
4	Checking the network adapter	X	X	X	
5	Backing Up the License Keys and Authorizations (Page 33)	X	X	X	

Additional preparations

Note

Updating SIMATIC BATCH

If you want to use and update SIMATIC BATCH in the project, make sure to read the important information in "Updating SIMATIC BATCH stations (Page 71)" in preparation for the update.

5.1.2 Exchanging data via OPC A&E

If you exchange data in the SIMATIC PCS 7 system by means of OPC A&E, observe the information in the *Process Control System PCS 7; OpenPCS 7* documentation when updating the software.

5.1.3 How to Back Up SIMATIC PCS 7 Project Data

Carry out the following instructions in order.

Requirements

Note

Before you install or update SIMATIC PCS 7, you must prepare and backup your original project so that you can perform the software update.

NOTICE
Ensuring safe system configuration If you want to perform a software update in runtime, you must ensure the following: • All configurations are complete. Keep this in mind especially when you apply the engineering with several engineering stations (multi-engineering). • All changes are loaded in the system.

Archiving a project

1. In SIMATIC Manager, select the menu command **File > Archive**.
   The "Archive" dialog box opens.
2. Select the "Multiprojects" (or "User projects") tab.
3. Select the project from the list that you wish to archive.
4. Click "OK" to save your settings.
   The "Archive - Select Archive" dialog box opens.
5. Make the settings for the drive and the folder for the archive file.
   Recommendation:
   Select a name for the project's archive file which indicates the date on which archiving took place.
   Example: "yearmonthdayprojectname"; 151230pcs7proj
6. Click "Save" to apply your settings.
   The archiving process begins.

Note

The archived project reflects the state of the project before the software update.

Comparing Time Stamps

1. Open your SIMATIC PCS 7 project in SIMATIC Manager.
2. In the component view, select the chart folder of an AS.

3. Double-click on any chart.
   The CFC editor opens.
4. Select the menu command **PLC > Compare**.
5. Compare the time stamps "Last compilation" and "Compilation of the loaded program".

If the time stamps are...	... then
Identical	1. Click "Close". The dialog box is closed.
Different	1. Select the menu command **PLC > Download**. 2. Select the "Changes" check box and apply all other standard settings. 3. Click "OK". Changes start to be downloaded. 4. If changes have been downloaded without errors, select the menu command **PLC > Compare**. The "Last offline program change" and "Last online program change" time stamps must match up.

6. Perform steps 2 to 5 for each automation system.

Reading Back the AS Parameter Settings

If parameters which are not in the configuration have been set in the AS, you will be able to read these settings back into the project.

⚠ CAUTION

Parameters will be overwritten

Please note that the parameters in the configuration will be overwritten. The decision concerning whether to use this function will depend on the nature of the system involved and must be made by the skilled personnel with responsibility for the system.

1. Open your SIMATIC PCS 7 project in SIMATIC Manager.
2. In the component view, select the chart folder of an AS.
3. Double-click on any chart.
   The CFC editor opens.
4. Select the menu command **Chart > Read Back**.
5. Select the entries "Program on the CPU" and "Only data relevant for operator control and monitoring" in the "Read Back" dialog box.
6. Click "OK".
   The read-back process begins.
7. Perform steps 2 to 6 for the automation systems whose current parameters you require.

Backing Up OS Data

If you want to operate the OS server on a newly installed PC following the software update, we recommend you back up the OS project of the OS server.

By default, the configuration data and the archive data of the OS are stored in the OS project of the OS server.

To back up data, compress the project paths in this folder. Save the backup on a suitable medium.

SIMATIC PDM

SIMATIC PDM configuration data is included automatically in the backup of a SIMATIC project.

SIMATIC PDM - Device descriptions

These PDM device descriptions are not included in the update installation of SIMATIC PCS 7. By default, SIMATIC PDM installs the Siemens device descriptions.

- Make sure that the device descriptions utilized in the project are available for the integration. To do this, create a list of the utilized device descriptions. You can save this list (menu command **Save device list as**).
- Recommendation:
  Back up the created device libraries with the Device Integration Manager using one of the following actions:
  - Copy
  - Save as compressed archive
  - Burn to DVD

5.1.4 How to Back Up User Created Libraries

Introduction

Generate a backup copy of any project library that contains a collection of user-specific blocks for the project to be updated so that you can retrieve this data after having updated the software. Carry out these steps for each library that you would like to back up.

Procedure

1. Start SIMATIC Manager.
   No SIMATIC PCS 7 project must be open.
2. In SIMATIC Manager, select the menu command **File > Archive**.
   The "Archiving" dialog box opens.
3. Open the "Libraries" tab.
4. Select the library to be backed up and click "OK".
   The "Archiving - Select an Archive" dialog box opens.

5. Specify the file name and the storage path.
6. Click on the "Save" button.

Additional information

- Online help for *STEP 7*

5.1.5 Operator and Display Texts in Blocks

Information in Faceplates

Faceplates visualize processes on the operator station and provide the plant operator with information, such as:

- Measured values
- Operating limits
- Units
- Block operator texts

Change in Operator and Display Texts in Blocks

If you have modified the operator texts or display texts in the blocks so that they do not correspond to the delivery state and you want to use the new SIMATIC PCS 7 blocks, you must back up these "old" operator texts or display texts.

Diagnostic screens with project-specific adaptation

Back up diagnostics screens that have been adapted to a specific project.

Exporting Operator and Display Texts

In the SIMATIC Manager, you can export information from parameters, signals, and messages to a file (in *.csv format).

You can edit this file in standard MS Office applications such as Excel and Access. The same mechanisms are used for the export as are used for changeover to project-specific languages.

5.1.6 How to export operator and display texts

Requirement

- The required language is installed in your project.

Note

You can view the languages available in the project in SIMATIC Manager using the menu command **Options > Language for Display Devices.** The number of available languages is specified when Windows is installed (system characteristics).

Procedure

1. Open the project to be updated in the SIMATIC Manager.
2. Select the master data library folder in the Component View.
   If this folder is not available, select the project folder.
3. Select the **Options > Manage Multilingual Texts > Export** menu command.
   The "Export user texts" dialog opens.
4. Make the following settings:
   - Select the storage location and format of the export file (*.xls or *.csv) in the "Text tables" area.
   - Select the target language and source language that correspond with the display language in the "Language" area.
5. Click "OK".
6. If you have to manage several project-specific languages, repeat steps 3 to 5. Please note that you then have to set different export file names or target directories.

5.1.7 Backing up pictures for user-defined status displays.

If prior to SIMATIC PCS 7 V8.1 you have used your own pictures when creating the status displays for user-defined extended status displays, you should save these screens (EMF files) in a separate folder.

Procedure

1. Open the "GraCS" folder in the OS project folder in Windows Explorer.
2. Create a folder for your own pictures.
3. Copy the pictures (EMF files) that are used into the newly created folder.

For more information on user-defined status displays, refer to the *Process Control System PCS 7;* Operator Station manual.

5.1.8 Backing Up the License Keys and Authorizations

Introduction

You must backup the license keys/authorizations stored on your hard disks **before** changing the operating system or using new PC stations.

Note

You can backup all License Keys to a License Key USB flash drive that is available as of SIMATIC PCS 7 V7.1 or higher. You must transfer the authorizations to a License Key disk/multi-authorization disk.

Use the Automation License Manager for this purpose.

After installing the operating system, you can re-install the backed-up license keys using the "Automation License Manager" program.

An upgrade of the license keys (Upgrade license key and PowerPack license key) is only possible when the license keys to be updated are available on the corresponding PC station.

Additional information

- Online help for *Automation License Manager*
- Online help for *WinCC Information System > Authorizations*

Installation of SIMATIC PCS 7 and settings on the ES and OS

6

6.1 Overview of Installation and Settings on the ES and OS

Overview of the procedure

Step	Action	ES	OS server	OS client	AS
6	Updating SIMATIC PCS 7	X	X	X	
7	Installing additional libraries (Page 38)	X	X	X	

6.2 How to Update SIMATIC PCS 7

Requirements

- The SIMATIC PCS 7 project data is backed up.
  You can find detailed information about how to back up project data in the *Process Control System PCS 7; Service Support and Diagnostics* manual, section "Safeguarding Availability, Data backup".
- The hardware planning and hardware update are complete.
- The necessary preparations have been made.
- The operating system of the PC station to be updated is updated.
  You can find information on approved operating systems in the documentation *Process Control System PCS 7; PCS 7 Readme*.
- Read the latest information in the documentation *Process Control System PCS 7; PCS 7 Readme*.
  - Hardware and software requirements, installation
  - If you use an INTEL network adapter, install the driver suitable for your device type and operating system version.
    You can find information on the drivers in the documentation *Process Control System PCS 7;* PCS 7 Online Readme (https://support.industry.siemens.com/cs/ww/en/view/109801032).
  - Information on the software for the automation system of SIMATIC PCS 7 BOX:
    The software for time synchronization must be installed for an update of SIMATIC PCS 7 BOX and SIMATIC PCS 7 AS RTX.

Note

Software update of password-protected projects

The software update of password-protected projects requires SIMATIC Logon on an ES.

SIMATIC PDM

Install SIMATIC PDM on the engineering station if using the Maintenance Station of SIMATIC PCS 7 and if the project contains intelligent field devices configured with SIMATIC PDM. The PDM Server must be installed on the engineering station for the complete Asset Management functionality.

Read the information and requirements in the readme for the current version of SIMATIC PDM.

Note

Installing SIMATIC PDM

If you are using a PDM version lower than V8.0 SP1 and want to perform an update installation, uninstall the old PDM version before the installation.

Installing PCS 7

If you use the "Update" function in the PCS 7 setup, we recommend you reboot the PC before performing the installation.

1. Insert the *Process Control System; SIMATIC PCS 7* USB flash drive into the USB drive.
2. Select the "Update" setup type.
   You can find a detailed description of how to install the required software in the *Process Control System PCS 7; PCS 7 PC Configuration* documentation, in the section "How to Install PCS 7 Software".

Note

During the installation, a message will appear several times prompting you to reboot your PC. Reboot the PC. The installation then continues automatically.

Additional information

- Documentation *Process Control System PCS 7; PCS 7 Readme* (see "Preface (Page 7)")
- Manual *Process Control System PCS 7; PCS 7 PC Configuration*

6.3 Installation of Additional SIMATIC PCS 7 Libraries

Post-installing libraries used in the project

Depending on the blocks used, you have to post-install libraries and update the blocks used in the project with the blocks of the following libraries:

- SIMATIC PCS 7 Basis Library
- SIMATIC PCS 7 Advanced Process Library (PCS 7 APL)
- SIMATIC PCS 7 Library

Download of setups for SIMATIC PCS 7 libraries

We strongly recommend to use the latest library versions for SIMATIC PCS 7 libraries.

You can find the download files for setups of older versions of the SIMATIC PCS 7 Library, the SIMATIC PCS 7 Basis Library or the SIMATIC PCS 7 Advanced Process Library on the Internet (https://support.industry.siemens.com/cs/ww/en/view/109480136).

SIMATIC PCS 7 faceplates of the SIMATIC PCS 7 library are contained in the project

- SIMATIC **PCS 7 Library used**
  If you are using the SIMATIC PCS 7 Library in the project to be updated, you must install the SIMATIC PCS 7 Faceplates V7.1.3.1 on the following PC stations after the installation of SIMATIC PCS 7:
  - Engineering station
  - All operator stations (all types)

Basic Installation Procedure

The procedure is described in the section "How to install additional PCS 7 libraries (Page 39)".

An AS download without a stop is possible. You can find the basic procedure for this in the *Process Control System PCS 7; Engineering System* configuration manual.

6.4 How to Install Additional SIMATIC PCS 7 Libraries

Note

Post-installing or removing SIMATIC PCS 7 libraries

If you install or remove an older version of the SIMATIC PCS 7 Library, SIMATIC PCS 7 Basis Library or SIMATIC PCS 7 Advanced Process Library after the installation of SIMATIC PCS 7, you must post-install the current SIMATIC PCS 7 version of the SIMATIC PCS 7 Basis Library. Install the required library by using the SIMATIC PCS 7 Setup. See section "Installation of Additional SIMATIC PCS 7 Libraries (Page 38)".

You can find the download files of the setups for SIMATIC PCS 7 libraries of older versions of the SIMATIC PCS 7 Library, the SIMATIC PCS 7 Basis Library and the SIMATIC PCS 7 Advanced Process Library on the Internet (https://support.industry.siemens.com/cs/ww/en/view/109480136).

You can find information about the versions of the libraries (including updates) in the file *Process Control System PCS 7; PCS 7 Readme (online)* (see "Preface (Page 7)").

Requirements

- The operating system including the required components is installed.
- SIMATIC PCS 7 has been installed.
- All applications are closed.
- The software needed for the required library is available, for example, on a shared drive in the network.

Procedure

The following steps serve as an example.

1. Run the "SETUP" program.
2. Select a setup language.
3. Click "Next".
4. Follow the instructions of the setup wizard and then close the setup program.
5. After installing all the required libraries, you need to install the following libraries from the latest *Process Control System; SIMATIC PCS 7* USB flash drive over them using the setup of PCS 7:
   - SIMATIC PCS 7 Advanced Process Library (APL)
   - SIMATIC PCS 7 Basic Library

   Note

   Installing the current library by means of the PCS 7 setup

   The SIMATIC PCS 7 setup always installs the latest version of the library that is available in the USB flash drive.

Additional information

You can find additional information on the libraries supplied with SIMATIC PCS 7 on the Internet.

- *SIMATIC PCS 7 Basis Library Readme V9.1.1 (online)*
- *SIMATIC PCS 7 Advanced Process Library Readme V9.1.1 (online)*
- *SIMATIC PCS 7 Basic Faceplates Readme V9.1.1 (online)*
- *SIMATIC PCS 7 Library*: *LIB-Readme.wri* file

Adaptations in the SIMATIC PCS 7 project on the ES 7

7.1 Updating a SIMATIC PCS 7 project

Basic procedure

This section describes how to update your SIMATIC PCS 7 project for use with SIMATIC PCS 7. The SIMATIC PCS 7 project is updated on the ES in offline mode. Thus, system operation is not affected. The target stations will only be loaded once all the update steps listed below have been performed. For more information on downloading, refer to the *Process Control System PCS 7; Engineering Station* Configuration Manual.

Note

If you want to reuse existing projects without updating the automation system, you also need to install the libraries of the existing project.

You can find additional information on this in the section "Installation of Additional SIMATIC PCS 7 Libraries (Page 38)".

7.2 General adaptations

7.2.1 Overview of General Adaptations in the Project

Overview of the procedure

Step	Action	ES	OS server	OS client	AS
8	Updating the OS with the Project Migrator (Page 43)	X			
9	Checking the Plant Hierarchy consistency (Page 44)	X			
10	Updating the hardware configuration for the SIMATIC PCS 7 BOX and SIMATIC PCS 7 AS RTX (Page 44)	X			
11	Configuring the PDM Server address (Page 46) (for projects with SIMATIC PDM V8.0 only)	X			

7.2.2 Changing the Configuration of Multilingual Texts

If you want to use additional interface languages, please take note of the information below.

Changing Multilingual Texts

If you want to display text in more than one language in PCS 7 (for example, message texts or OS area IDs), always use the export/import function to change the multilingual texts (menu command **Options > Manage Multilingual Texts > Export** and then **Import** after the changes have been made).

Note

If you change individual texts with the functions in CFC, SFC or PH, be sure to immediately compile the texts in all locations (for example, all block types and all copies of a block). Otherwise, inconsistencies may occur and lead to the display of an incorrect language version of this text.

7.2.3 Importing Data from the User Archives

Import Runtime Data

Note

You must always import runtime data from the user archives in the language in which the runtime data was exported.

7.2.4 How to update the configuration of the operator stations

If the configuration of an OS in a multiproject or project does not correspond to the installed SIMATIC PCS 7 version, this is automatically detected in SIMATIC Manager as of SIMATIC PCS 7 V8.2 SP1 or higher.

Requirements

- Only for password-protected projects:
  Deactivate password protection for the following actions.

Procedure

Carry out the following steps for a given OS project:

1. Open your project/multiproject in the component view of SIMATIC Manager.
2. Select an OS project of your choice.
   If required, the "Migrator" dialog window is opened by the system.
   The message "Migration is required ..." is displayed.
3. Click "Yes".

   Note

   Declining migration

   If you decline the migration, you cannot change the OS project or load it.

   You can start the migration at any time. To do this, select the menu command **Options > Migrate OS projects**.

4. Check the project language set in the "Migrator" dialog box. If necessary, set the project language in which the project was created.
   Recommendation:
   No settings are required in the dialog box.
   - If you clear the "Migrate database only..." check box, considerably more time will be needed for the migration.
   - The migration of the excluded components in process mode has no effect on process mode.
5. Click "Next".
   The configuration of all operator stations contained in the multiproject/project is performed.

Duration of the update process

Note

Depending on the scope, the update process can take several hours.

Additional information

- Online help *WinCC Information System > Migration*
- Configuration manual *Process Control System PCS 7; Operator Station*

7.2.5 How to Check the Plant Hierarchy Consistency

This step shows you if all the data in the plant hierarchy is consistent.

Requirement

- The project in SIMATIC Manager is open in the plant view.

Procedure

The following steps can be performed for the multiproject or for each individual project (in the multiproject).

1. In the tree view, select the object to be checked (e.g., the multiproject).
2. Select the **Options > Plant Hierarchy > Check Consistency** command.
   The program checks the Plant hierarchy.
   The "Check Consistency – Log" dialog box opens.
3. Correct any errors if inconsistencies are found.

Note

If you need information on the possible inconsistencies, click the "Help" button in the "Check Consistency - Log" dialog box.

7.2.6 How to update the hardware configuration for SIMATIC PCS 7 AS RTX

The steps described below only have to be carried out for projects with SIMATIC PCS 7 AS RTX implementation.

Replacing the automation system in the hardware configuration of the PC station.

Requirements

- The AS version in HW Config is not up to date (Version 3.3 or older)
- The assignments of communication processors to the master systems are known
- The WinAC RTX Version on SIMATIC PCS 7 AS RTX is V4.6 or newer

Procedure

1. Open the HW Config of the PC station (SIMATIC PCS 7 AS RTX).
2. Select the PROFIBUS CP to which the distributed I/O is connected.
3. Select the **Edit > Master system > Disconnect** menu command.
4. Select the CP.
5. Select the menu command **Edit > Delete**.
6. Select the "Win LC RTX" CPU in the rack in HW Config.
7. Go to the "SIMATIC PC Station > Controller > Win LC RTX" folder in HW Config.
8. Double-click the object "V4.6".
   The "Insert ..." dialog box opens.
9. Click "Yes".
   The controller is replaced.
10. Go to the" SIMATIC PC Station > Controller > Win LC RTX > V4.6" folder in HW Config.
11. Select the PROFIBUS CP used (default: CP 5613).
12. Drag-and-drop the selected PROFIBUS CP to the controller slot in the station window.
    The "Properties ..." dialog box opens.
13. Select the entry of the associated bus system from the "Subnet" list.
14. Click "OK".
    The "Insert master system" dialog box opens.
15. Select the entry of the associated bus system from the "Subnet" list.
16. Click "OK".
17. Select the **Station > Save and Compile** menu command.

7.2.7 How to migrate from PDM V6.0.5.5 to PDM V9.1.x

Preparing project in the old SIMATIC PCS 7 environment

- Integrate all used EDD packages in the project via "Device Integration Manager" to ensure HWK object types exist in this environment
- Clean up all the projected field devices in the old environment by executing the following steps:

1) Delete all non real existing devices from the HW Config	
2) Delete all non communicative devices from the HW Config by clicking the following icon:	
3) Delete all non EDD assigned devices by clicking the following icon:	

Migrating to new SIMATIC PCS 7 version

Execute the folllowing steps to migrate to the new SIMATIC PCS 7 Version:

1) Open the clean old project in the new environment	
2) Execute PDM function "Synchronize with HW-Config"	
3) Check all non EDD-assigned devices by clicking the following icon	
4) Assign correct EDD manually	
5) Open "Process device plant view" and execute "Load to PG/PC" for all field device	

7.2.8 How to configure the SIMATIC PDM Server

This section only applies to plants with a maintenance station.

Requirements

- The project/multiproject has been created.
- The SIMATIC PDM (Server) software package is installed on the Engineering Station.

Note

Requirements for use of SIMATIC PDM

Observe the conditions for the use of SIMATIC PDM versions.
Information is available in the SIMATIC PDM Readme (online).

- Specifying the name of the PC station (computer name)
  You can find information about this in the documentation *Process Control System PCS 7; PCS 7 - PC Configuration*.

Note

The following names must be identical when you configure an OS or BATCH server and an engineering station:

- Computer name
- Name of the PC station

Procedure

1. Select the **Options > SIMATIC PDM > Settings** command in SIMATIC Manager.
   The "SIMATIC PDM settings" dialog box opens.
2. Select the "Maintenance Station" tab.

3. Go to the input field and enter the project/multiproject in which you have defined the MS server or execute the following steps:
   - In a multiproject:
     Click "Current Multiproject" or "Browse." You can select the current project using the "Browse" button.
   - For a project:
     Click on "Current Project" or "Browse." You can select the current project using the "Browse" button.
4. Click "OK".
5. Open SIMATIC Manager in the component view.
6. In the project, select the engineering station in which you wish to insert the "PDM Server" object.
7. Double-click the "Configuration" object in the detail view.
   The hardware configuration of the SIMATIC PC station opens.
   If you cannot see the hardware catalog, select the **View > Catalog** menu command.
   The hardware catalog opens.
8. Select **SIMATIC PC Station > PDM Server** from the list in the folder.
9. Drag and drop the "PDM Server" object to the PC station of the engineering station.
10. Select the menu command **File > Save**.
11. Download the configuration to the engineering station.

Requirements for diagnostics with SIMATIC PDM

The following conditions must be met for diagnostics of PDM devices from any station (OS client, maintenance server, etc.):

- The engineering station is accessible.
- SIMATIC PDM is active. (This is the default scenario after the configuration has been downloaded.)

Additional information

- STEP 7 and SIMATIC PDM Online Help
- Whitepaper *SIMATIC; Security concept PCS 7 and WinCC - Main document*

7.3 Adaptations in NetPro and conversion of the CFC/SFC charts

Overview of the procedure

Step	Action	ES	OS server	OS client	AS
12	Checking and adapting the connection data in NetPro (Page 48)	X			
13	Converting the CFC and SFC charts (Page 49)	X			

7.3.1 How to Check and Adapt the Connection Data in NetPro

In NetPro, you check the configuration to the target stations:

- Connection data
- Configuration data

Note

Operating system change

When you change the operating system, the network adapters may be detected in a different order in the system. This is caused by the operating system.
Take this into consideration with systems with multiple network adapters and adapt the configuration accordingly in HW Config.

Update the version of the communication components in the Station Configuration Editor and HW Config.

Requirement

- The SIMATIC PCS 7 project is open on the ES.

Procedure

1. Select the SIMATIC PCS 7 project in SIMATIC Manager.
2. Select the menu command **Options > Configure Network**.
   NetPro opens.
3. Select the menu command **View > Cross-Project Network View**.
   The cross-project network view is displayed.
   This allows you to toggle directly between all projects in the multiproject.

4. Check the connections to the various stations: AS-OS, AS-AS, ES-AS.
   You can make any necessary changes when the "cross-project network view" is deactivated.
   You must configure the connection between the ES and AS if you want to check the communication for process mode (runtime) on the ES. This requires the following steps to be taken:
   - Select the menu command **New Connection** in the shortcut menu of the WinCC application.
   - Select the destination: AS or OS.
   - Select the connection.
   - Select the name for the connection.
   - Click "OK".

   Recommendation
   To enable you to easily identify the connections, we recommend that they be assigned default names in accordance with the name of the target.
   Example:
   You configure an OS to AS_X connection.
   The corresponding connection name could be "ASX_connection".
5. If you use time synchronization, you must check the time settings of the network adapters (e.g. CP 1623) in the ES and OS. Double-click the network adapter of the OS/ES. Time-of-day mode must be selected for time synchronization on the "Options" tab.
6. If you have made changes in NetPro, you must perform a "Save and Compile" operation with the "Save and Compile All" option.

7.3.2 How to convert the CFCs and Shared Declarations

Requirement

- The SIMATIC PCS 7 project is open on the ES.

Converting CFC charts

This procedure must be carried out for all S7 programs in your SIMATIC PCS 7 project -

1. Open a CFC chart and move any block it contains.
   This change immediately start the conversion dialog.
2. Click "Yes".
   The "Convert Format" message window opens.
3. Click “Yes".
4. Click "OK".

5. Execute a complete compilation of the S7 program.
6. Download changes to the automation system.

NOTICE
Updating a redundant OS in runtime Updating according to the manual *Process Control System PCS 7, High Availability Process Control Systems*; Guidelines for updating a redundant OS in runtime If you update a redundant OS during operation, do not load the AS until phase 3 (in step 6 of the *Process Control System PCS 7; High Availability Process Control Systems* manual).

Note

- If CMTs are used in the project, the CMs (Control Modules) have to be converted. This conversion can be triggered by changing a comment in the CM.
- If you use SFCs in your project, please note that you need to update the SFC blocks.

Converting shared declarations

This procedure must be carried out for all projects in your SIMATIC PCS 7 multiproject -

1. Open the "Shared declarations" folder in the project.
2. Click these objects, e.g. Units (display them).
3. Make any necessary adjustments (e.g. create new unit).
   The change starts the conversion dialog immediately.

Additional information

SFC Readme

7.4 Adaptation of OS-relevant settings

7.4.1 Overview of Adaptation of OS-relevant Settings

Overview of the procedure

Step	Action	ES	OS server	OS client	AS
16	Synchronize OS basic pictures, local computer actions, and faceplates (Page 51)	X			
17	Updating picture objects (Page 55)	X			

User interface and design

After the software update, the design of the user interface for process mode **must** be set to the following:

WinCC 3D

This setting is available automatically in projects created as of SIMATIC PCS 7 V8.0 or higher. Other designs are not approved for SIMATIC PCS 7.

You need to check or change this setting for existing projects.

- Ensure that all projects in a plant have uniform settings for the design.
- If you change the setting for the WinCC design, check the appearance of objects you have created yourself and adapt them if necessary.

7.4.2 How to Synchronize OS Basic Pictures, Local Computer Actions, and Faceplates

You have to transfer OS basic pictures and local computer actions to your project. The faceplates of the project can continue to be used.

Synchronization in the OS Project Editor

You perform this procedure with the OS project editor, which is included in WinCC Explorer.

Requirements

- The operator stations contained in the SIMATIC PCS 7 project have been updated with the Project Migrator.
- The SIMATIC PCS 7 OS is open in WinCC Explorer.

Procedure

Following steps are to be performed for the projects of each operator station (server and clients).

1. Select the OS Project Editor and select the menu command **Open** in the shortcut menu.
2. Select the "Complete configuration" check box on the "General" tab.
3. Click the "Layout" tab.
4. Select the required layout and the monitor configuration.
5. Click the "Basic Data" tab. Make the required settings in accordance with the "Basic Data" table below.
6. Only carry out this step if the "For observation only" authorization level must be activated for some users after the software has been updated.
   Select the "Message Display" tab.
   Activate the required message filters (see the "Message Filters" table below).

   Note

   No settings are necessary for the software update on the remaining tabs. The default settings can be applied.

7. Click "OK".

Basic Data

Dialog Area	Note	Action
Top left window	This window lists all basic pictures having a different product version and project version change date. Every basic picture with a selected check box is overwritten in the project version at the start of the OS Project Editor with the pictures from the product version.	None. The root screens marked with a red "X" cannot be deselected.
Top right window	This window lists all local computer actions having a different product version and project version change date. Every local computer action with a selected check box is overwritten in the project version at the start of the OS Project Editor with the corresponding local computer action from the product version.	None. The root screens marked with a red "X" cannot be deselected.
Bottom left window	This window lists all faceplates having a different product version and project version change date.	• If you want to replace the faceplates available in the project with those of the relevant product version, select the corresponding check box. The settings provided by the product will then be applied. • If you have made project-specific customizations to the color ranges of the faceplates of the Advanced Process Library and do not want to reset them, make sure that the "Update palette colors of Advanced Process Library" check box is not selected. (default setting). • If you want to restore the default, select the check box "Update palette colors of Advanced Process Library".

Note

Ensure that the "Update Dynamic Wizard Scripts" check box is selected.

Message Filters

Parameters	Meaning
Messages that can be acknowledged in a separate list	The message windows have two message lists. One list shows all messages from the area for which the user has access rights for all "operator process controls". The user can acknowledge messages in this list. The other list shows all messages from the area for which the user has an "authorization for area" but no access rights for "operator process controls". The user cannot acknowledge messages in this list. The message line in the overview area only shows messages that can be acknowledged with the access right for "operator process controls".
Messages that can be acknowledged on a separate page (switch-selectable)	Both of the message pages indicated above are available to the user. Only messages from areas for which the user has access rights for "operator process controls" are displayed on the message page with only one list and in the message line of the overview area.

Additional information

- Online help *WinCC Information System* > Options > Options for Process Control > OS Project Editor
- Online help *OS Project Editor*

7.4.3 Mixed operation and visualization of AS blocks from different PCS 7 versions

Definition of Mixed Operation

Mixed operation is the visualization of AS blocks from different SIMATIC PCS 7 versions on one OS client.

Compatibility of the PCS 7 faceplates

As of SIMATIC PCS 7 V8.2 SP1 the APL faceplates can be used to monitor and control APL blocks of compatible SIMATIC PCS 7 versions.

You can find additional information about this in the section "General requirements (Page 15)"; General requirements for updating the software

Rules

Process pictures can visualize the signals that AS blocks receive from different APL library versions.

The same block icons for AS blocks from different library versions can be shown in the process pictures of an OS. If an OS is assigned to several AS, only AS blocks of the following versions of the Advanced Process Library can be configured for each AS:

- AS blocks from SIMATIC PCS 7 V8.2.1
- AS blocks from SIMATIC PCS 7 V9.0.x

The block icons are inserted into the process pictures when the OS is compiled. The standard picture "@PCS7TypicalsAPLV9.pdl" serves as template for creating/updating the block icons of all AS in the process pictures.

7.4.4 How to Update the Picture Objects

Introduction

If you have manually inserted and interconnected picture objects from a template picture into a process picture, you must manually update these picture objects.

When the picture objects are updated, the block icons of the previous SIMATIC PCS 7 version are replaced with the block icons of the current SIMATIC PCS 7 version.

You have to use the corresponding template picture that you used for configuration to update the picture objects.
Recommendation: Perform the update one by one with each template picture of the library used.

- For block icons of the SIMATIC PCS 7 library:
  "@Template.pdl" or "@@PCS7Typicals.pdl"
- For APL block icons
  - "@PCS7TypicalsAPLV9.pdl"
  - "@TemplateAPLV9.pdl"

Only the block icons of the selected template picture are updated.

Requirements

- The operator stations contained in the SIMATIC PCS 7 project have been updated with the Project Migrator.
- All basic pictures are replaced with the OS Project Editor.
- The SIMATIC PCS 7 OS is open in WinCC Explorer.
- Read the following section in the *Process Control System PCS 7; Operator Station* configuration manual; section "Rules for using multiple template files".

Procedure

1. Open any WinCC picture containing a picture object in the Graphics Designer. Select the picture object.
2. In the dynamic wizard, open the "Picture Functions" tab and select "Update Picture Objects". This "Dynamic Wizard" dialog opens.

3. Click "Next".
4. Select the "Yes, all pictures" check box.
5. Click "Next".
6. Select the template in the list which has been configured with the picture objects of the OS. (Default:@Template.pdl)
7. Select the default "TemplateControl.cfg" configuration file in the "Please specify name of configuration file" field.
8. Click "Next".
9. Click "Finish".
   Generation of the picture objects is initiated in the Dynamic Wizard.

7.5 Adaptations for the Process Historian

7.5.1 Adaptations for the Process Historian at a glance

Overview of the procedure

Step	Action	ES	OS server	PH/IS	AS
17	Updating Process Historian and Information Server		X		

7.5.2 How to update the Process Historian and Information Server

You must update the following PC stations, if they were present in the SIMATIC PCS 7 project before the software update:

- Process Historian (PH)
  You can find information on this in the *SIMATIC HMI; Process Historian* system manual.

NOTICE
Upgrading Process Historian before the OS servers in runtime You must first upgrade the Process Historian server to Process Historian as of SIMATIC PCS 7 V9.1 SP1 from SIMATIC PCS 7 V9.1 before you • Upgrade a SIMATIC PCS 7 plant to version SIMATIC PCS 7 V9.1 SP1 in runtime • And simultaneously upgrade the operating systems of the OS servers • Or replace the hardware of the OS servers You can only start upgrading the OS servers in runtime when the Process Historian is in the "Active" operating state and all pending restores have been executed. Start the restore operation multiple times, if necessary, if you still detect data gaps. You can start the restore operation manually in the management console or with the PH tray icon.

- Information Server (IS)
  You can find information on this in the *SIMATIC HMI; SIMATIC Information Server* system manual

NOTICE
PH redundancy PH redundancy will be not supported with SIMATIC PCS7 V9.1.1. If the user has redundant PH, it has to be degraded to a single PH.

7.6 Adaptations for the Maintenance Station

7.6.1 Overview of the Maintenance Station update

Perform additional steps for updating an MS server.

Overview of the procedure

Step	Action	ES	OS server	OS client	AS
20	Changing the OPC Server and adapting the SNMP configuration (Page 58)	X			
21	Updating the diagnostics settings (Page 60)	X			
22	Updating the diagnostics screens (Page 61)	X			

7.6.2 How to change the OPC Server, adapt the SNMP configuration and update SIMATIC PDM

OPC Server version

The following section provides information on updating the version of the OPC server.

- The OPC server version to be used is V8.2.
- Replace the OPC server if necessary.

Requirements

- The blocks, charts and OS pictures of the project are updated.
- The SIMATIC programs and OS are compiled.
- The PC stations of the Maintenance Station (MS Server and MS Client) are updated in a similar way to an OS.
- MS single station system
  - An OPC server is configured on the PC station of the MS single station system.
- MS multiple station system
  - In a system with redundant MS Servers, you configured an OPC Server both for the PC Station of the MS Server and for the PC Station of the redundant partner.
- Lifebeat monitoring is disabled
  If you use the Maintenance Station in the project, lifebeat monitoring must be disabled.

Procedure

1. Select the PC station in the Component View.
   - In an MS multiple station system, this is the PC Station of the MS Server or of the redundant partner.
   - In an MS single station system, this is the PC Station of the MS single station system.
2. Double-click the "Configuration" object in the detail view to open HW Config.
   The hardware configuration of the SIMATIC PC station opens.
   If you cannot see the hardware catalog, select the **View > Catalog** menu command.
   The hardware catalog opens.
3. Select the current version of the OPC Server from the hardware catalog at **SIMATIC PC Station > User application > OPC Server** and drag-and-drop it to the position of the OPC Server.
4. Click "OK" to confirm the replacement of the OPC Server.
5. Save and compile your changes.
6. Select the "OPC Server" object in the rack.
7. Select the menu command **Station > Properties**.
8. Open the "SNMP" tab.
9. Click the "Export Tags for WinCC" button.
10. Select the **Station > Save and Compile** menu command.
11. Repeat steps 1 to 5 if using the MS Server in a redundant MS multiple station system.

Updating SIMATIC PDM

Perform the following actions if the project contains field devices that were configured in SIMATIC PDM:

1. Select the **Options > SIMATIC PDM > Settings** command in SIMATIC Manager.
   The "SIMATIC PDM settings" dialog box opens.
2. Select the "Maintenance Station" tab.
3. Enter the file path of the PCS 7 project.
4. Click "OK".

Install SIMATIC PDM from the *Process Control System; SIMATIC PCS 7* USB flash drive. Refer to the PDM Readme.

When you open a project in SIMATIC Manager, the SIMATIC PDM-related project data is updated automatically.

Note

It is recommended to save the exported configuration file for later use like after the upgrade/ reinstall the same settings can be implemented. For more information, refer *Help for SIMATIC PDM V9.2 SP1; Extended parameter selection*.

Note

Updating SIMATIC PDM to V9.2

During the update of projects with SIMATIC PDM up to V8.0, new PLT IDs are assigned to the configured ASSETMON objects. Then, perform the following steps:

- Adapt these PLT IDs to the corresponding ASSETMON block instances.
- Compile the automation systems.
- Create the diagnostics screens again.
- Compile the corresponding operator stations.

7.6.3 How to update the diagnostics settings

Introduction

If you operate a SIMATIC PCS 7 Maintenance Station in your project, various settings must be migrated when upgrading to the current SIMATIC PCS 7 version.

Requirement

Note

If the project was retrieved

If the project was retrieved to update the software, additional steps are necessary when you use a Maintenance Station:

1. Compile the hardware configurations of all automation systems.
2. Compile all automation systems with the option "Update module drivers".

Procedure

1. Select the multiproject in the plant hierarchy.
2. Select the **Options > Plant Hierarchy > Settings...** menu command.
   The "Customize Plant Hierarchy" dialog opens.

3. Select the "Migrate diagnostic settings" check box.

Note

This field is grayed out if this action is not required.

4. Click "OK".

Note

If you want to restore the project-specific changes, you have to adapt the automatically created overview screen. After the "Migrate diagnostic settings" function, copy the project-specific changes from the renamed overview screen of the project that is to be updated to the current overview screen.

7.6.4 How to update the diagnostics screens

Updating the diagnostics screens has the following effects:

- Pictures in the AS objects area
  Block icons that represent racks will be repositioned in the picture.
  You can move the block icons to different positions.
- Pictures in the PC Stations and network objects area
  The block icons will possibly overlap in these pictures.
  You can move the block icons to different positions.

Requirements

- The OS Project Editor was executed. It is not necessary to make any settings in the OS project editor.
- A backup copy of the diagnostics screens with project-specific adaptations has been generated.
- An asset ID has been assigned to each AS and PC station in HW Config.
- Diagnostics settings are updated.

Procedure

1. Select the multiproject (project) in the plant hierarchy.
2. Select the **Options > Plant Hierarchy > Create/Update Diagnostics Screens** menu command.
   Update the diagnostics screens. You can find information on this in the *Process Control System PCS 7; Operator Station Configuration Manual*.
3. Compile the OS of the Maintenance Station.
4. Update the server data of the MS server.
5. Download the MS server.

Additional information

For information on options for accessing maintenance functions, refer to the following documentation:

- You can find an explanation of how to work with the maintenance station in process mode in the *Process Control System PCS 7; OS Process Control* function manual.
- Configuration manual *Process Control System PCS 7; Operator Station*
- Function manual *Process Control System PCS 7; Maintenance Station*

7.7 Additional options

7.7.1 Overview of additional options

Overview of the procedure

Step	Action	ES	OS server	OS client	AS
23	Updating the SIMATIC PCS 7 Web Option for OS (Page 63)	X	X		
24	Updating SIMATIC PCS 7 Components that Use SIMATIC Logon Services (Page 63)	X	X	X	

7.7.2 Updating the SIMATIC PCS 7 Web Option for OS

Requirement

In order to utilize the full functional scope of the *SIMATIC PCS 7 Web Option for OS*, you may only use blocks from the current SIMATIC PCS 7 library in the PCS 7 project.

Procedure

- You update the OS Web server, an OS client, similar to an OS client.
- The process pictures that will be opened on a Web client must be "published" again.

Additional information

For more information, refer to the *Process Control System PCS 7; Web Option for OS* Manual.

7.7.3 Updating SIMATIC PCS 7 Components that Use SIMATIC Logon Services

Additional information

- Refer to the respective components that use SIMATIC Logon to find detailed instructions about the setup, configuration and changes needed for SIMATIC Logon.
- You can find basic, generally applicable information about SIMATIC Logon in the online help for SIMATIC Logon.

7.8 Work for the OS in SIMATIC Manager

7.8.1 Overview of compiling

Overview of the procedure

Step	Action	ES	OS server	OS client	AS
25	Compiling the OS (Page 64)	X			

7.8.2 How to Compile the OS

Requirements

- The PC station has been configured.
- The configuration in CFC and SFC has been completed.

Note

If you have changed unit and operator texts of the block types in the master data library, be sure to set your default language as the "Language for display devices".

Procedure

Note

You can find additional information about the compilation options in the configuration manual *Process Control System PCS 7; Engineering Station*.

1. Select the object (multiproject, project, station) in SIMATIC Manager that you wish to compile or compile/download.
2. Select the **PLC > Compile and download objects** command in SIMATIC Manager.
   The "Compile and download objects" dialog box opens.
3. Open the tree structure.
4. Activate the check box in the "Compile" column for all objects that you want to compile.
5. Click the "Operating State" button and check the operating states of your objects (RUN, activated, etc.) so that you can make the correct settings for compilation.
6. Select the OS that you wish to compile.
7. Click "Edit".
   The "Settings: Compile OS ... Areas ..." dialog box opens.

8. Click "Next".
   The "Settings: Compile OS ... Network Connections ..." dialog box opens.
9. Click "Next".
   The "Settings: Compile OS ... Compilation Data and Scope of Compilation" dialog box opens.
10. In the "Scope" group, activate the "Entire OS" and "With memory reset" check boxes.
11. Click "Apply".

    Note

    Once you have completed your settings for compiling an operator station, please wait until the compilation settings have been saved and the download dialog box appears.

12. Make the required settings for the individual objects.
13. Click "Help" in the dialog box for detailed information about the settings.
14. Click the "Start" button.
    Compilation starts.
15. Follow the instructions on the screen.
16. If you wish to see a log of the compilation once it is complete, click the following buttons in the "Display Log" area:
    - "Single object": The detailed compilation log of the selected OS is displayed.
    - "All": Displays the results of all compilations (without details).

Downloading to target systems

8

8.1 Downloading to target systems

Once you have updated your SIMATIC PCS 7 project in the Engineering Station, download the changes to the target systems.

NOTICE
Updating a redundant OS in runtime Updating a redundant OS during operation (according to the manual SIMATIC Process Control System PCS 7, High Availability Process Control Systems; Guidelines for updating a redundant OS in runtime) If you update a redundant OS during operation, do not load the AS until phase 3 (in step 6 of the High Availability Process Control Systems manual).

Requirement

- The network addresses and network settings of the PC stations are configured.
- The configuration of the PC stations match in HW Config and in the Station Configuration Editor.
- The PC station has been configured.
- The configuration and connection data of all stations has been downloaded via NetPro.

Procedure

1. Use the search box in the start menu to open "Set PG-PC Station".
2. Check the setting of the access points on each PC station (locally).
3. You can successively download all target systems systematically and automatically.
   In the SIMATIC Manager, select the menu command **Target system > Compile and Download Objects**.

Additional information

You can find additional information about this in the *Process Control System PCS 7; Engineering System* manual.

Activating operator stations

9

9.1 Overview of activating the operator stations

Introduction

Sequence for activating process mode (Runtime):

- Master server (OS server)
- Standby server (redundant OS server)
- OS clients

Note

Before opening the projects downloaded to the redundant servers make sure the "Simatic Shell->Redundancy settings..." was configured.

Overview of the procedure

Step	Action	ES	OS server	OS client	AS
25	Activate the OS Servers		X		
26	Activate the OS Clients			X	

Updating SIMATIC BATCH stations

10

Information on updating SIMATIC BATCH is available in the following documentation:

- Manual *SIMATIC Process Control System PCS 7; SIMATIC BATCH*
- *SIMATIC BATCH Readme*; Part B, Installation

Note

Note the following when updating the software to SIMATIC PCS 7 V9.1.1 (with SIMATIC BATCH):

- No batches should be actively running, because the BATCH database is restored from a backup for the software update.
- Set the BATCH Start Coordinator to "Manual" start mode before you update the software.

It is essential that you observe these points when you **prepare** the software update. You can find additional information on this in the section "Overview of preparations (Page 27)".

Updating SIMATIC Route Control stations 11

You can find information about this in the *Process Control System PCS 7; SIMATIC Route Control* documentation.

Note

Library of SIMATIC Route Control V9.1.1

You should apply the library of SIMATIC Route Control V9.1.1 for SIMATIC Route Control V9.1.1.

Index

B

Backup, 27

C

Changing the Configuration of Multilingual Texts, 42
Checking and adapting connection data in NetPro, 48
Checking Plant hierarchy consistency, 44
Compiling the OS, 64
Converting CFC/SFC charts, 49

D

Documentation
    Access options, 8
    for planning and configuration, 8

E

Exporting
    Operation and display texts, 32

I

Import Runtime Data, 42
Importing Data from the User Archives, 42
Information on software update, 17
Installation
    PCS 7, 36
    SIMATIC PDM, 36
Installation and Settings, 35
    ES and OS, 35

L

Library
    Backing up user-created libraries, 30
    Installing additional libraries, 39
License key, 21
Licensing with the Automation License Manager, 21

M

Migrating diagnostics settings, 60
Mixed operation, 54

O

Operating principle, 63
    PCS 7 Web Option for OS, 63
Operation and display texts
    Exporting, 32
Operator texts or display texts, 31
OS
    Overview of compiling, 64
    Overview of the activation, 69
    Updating with the Project Migrator, 43
    User Interface in Process Mode, 51
Overview
    Adaptation of OS-relevant settings, 51
    Adaptation on operator stations, 51
    Adaptations in NetPro, 48
    Converting CFCs/SFCs, 48
    General adaptations in the project, 42
    Software update procedure, 24
Overview of activating the operator stations, 69
Overview of additional options, 63
Overview of downloading, 67

P

Password protection, 43
Preparing for the software update, 27
Project Migrator
    Password protection, 43

R

Requirements, 15
Runtime data, 42

S

Selecting the Correct Documentation, 13

U

Updating
    BATCH, 71
    OS with Project Migrator, 43

PCS 7 components that use SIMATIC Logon services, 63
PCS 7 project, 41
Updating PCS 7, 36
User Interface in Process Mode, 51

W

Web Option for OS, 63
WinCC 3D design, 51