SIEMENS

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SIMATIC

Process Control System PCS 7 PC Configuration and Authorization (V7.1)

Operating Manual

03/2009
A5E02122540-01

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

with a safety alert symbol, indicates that minor personal injury can result if proper precautions are not taken.

CAUTION

without a safety alert symbol, indicates that property damage can result if proper precautions are not taken.

NOTICE

indicates that an unintended result or situation can occur if the corresponding information is not taken into account.

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 device/system may only be set up and used in conjunction with this documentation. Commissioning and operation of a device/system may only be performed by **qualified personnel**. Within the context of the safety notes in this documentation qualified persons are defined as persons who are authorized to commission, ground and label devices, systems and circuits in accordance with established safety practices and standards.

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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 adhered to. The information in the relevant documentation must be observed.

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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.

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GERMANY

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Preface

1

Purpose of this documentation

This documentation provides you with an overview of the PC components used in PCS 7. It contains the following information:

- The PC components you can use for specific PCS 7 applications
- The software and hardware you require for specific PC components.
- The licenses you require for individual products.
- The potential PC configurations for an application.
- How you can set up and configure your PC network.

This documentation is intended for persons involved in configuration, commissioning, and service.

Required basic knowledge

To understand this documentation, you should be familiar with automation engineering and process control engineering.

You should also have experience of using PCs and similar (for example programming devices) and the Windows operating system used.

Validity of the documentation

The documentation is valid for the software package *Process Control System; PCS 7 Toolset* as of V7.1.

Readme file

You can read the latest information about the documentation in the Readme file:

- The Readme file can be found on the DVD *Process Control System; PCS 7 Toolset*.
- You can open the Readme file after having installed PCS 7 by selecting the **Start > SIMATIC > Product Info > <language*> > PCS 7 - Readme** command.
  * Select your regional <language>.

Conventions

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

Changes compared with the previous version

Below you will find an overview of the most important changes in the documentation compared with the previous version:

- Maintenance station client on engineering station or OS client.
  You will find information about this in section "Maintenance station multiple station system (Page 26) ".

Additional support

If this manual does not contain the answers to any questions you may have about how to use the products described, please contact your local Siemens representative.

You can locate your local representative at:

(http://www.siemens.com/automation/partner)

The guide that provides details of the technical documentation offered for the individual SIMATIC products and systems is available at:

(http://www.siemens.de/simatic-tech-doku-portal)

The online catalog and online ordering system are available at:

(http://mall.automation.siemens.com/)

Training Centers

Siemens offers a number of training courses to familiarize you with the SIMATIC S7 automation system. Please contact your regional training center or our central training center in D 90327 Nuremberg, Germany for details:

Telephone: +49 (911) 895-3200 *)

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Technical support for all A&D products can be accessed

- via the online Support Request form at (http://www.siemens.de/automation/service)
- Phone: + 49 180 5050 222 *)
- Fax: + 49 180 5050 223 *)
- You can find additional technical support information in the Internet at (http://www.siemens.de/automation/support-request)

Service & Support on the Internet

In addition to our documentation pool, we also offer you a knowledge base on the Internet.

(http://www.siemens.com/automation/partner)

Here you will be able to access:

- The newsletter, which will keep you constantly up-to-date with the latest information about our products
- The right documents via our Service & Support search facility
- A forum that provides users and specialists with an international platform for exchanging experiences
- Your local Automation & Drives representative
- Information about local service, repairs, spare parts The "Our service offer" section offers even more options.
- *) Please note the following if you call the phone number listed: You may incur costs which vary from the standard costs for land lines. Calls from a cellular network may be more expensive.

PCS 7 glossary

You will find a PCS 7 glossary containing definitions of important technical terms used in this documentation on the DVD *SIMATIC PCS 7; Manual Collection* or in the PCS 7 software via the SIMATIC Manager Help menu (menu command **Help > Contents >** "Glossary" button).

PC components of a PCS 7 system

2

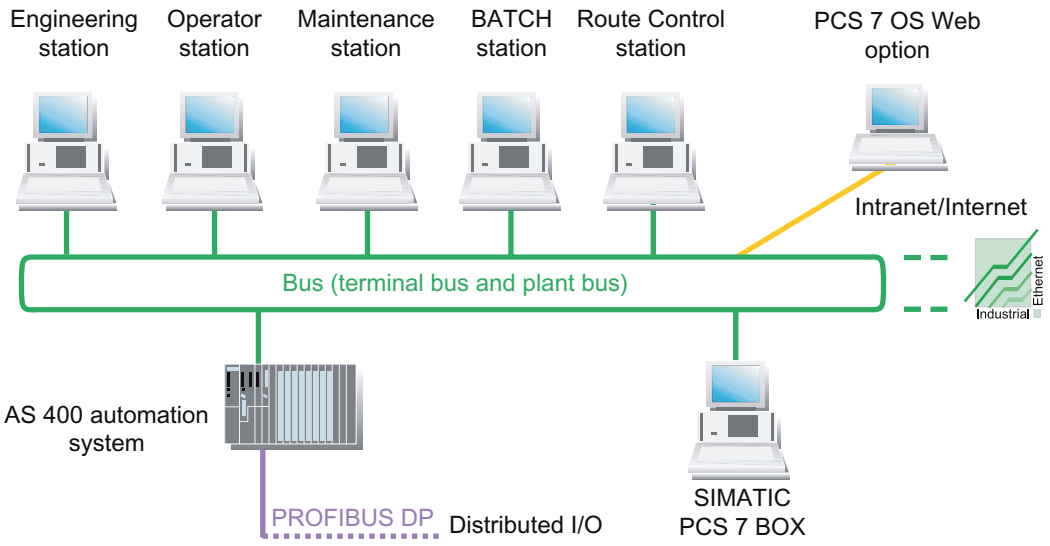
2.1 Basic configuration of the PCS 7 system

Overview

In a PCS 7 system, PC components are used for the following stations:

- Engineering stations (ES)
- Operator stations (OS)
- Maintenance station (MS)
- BATCH stations (BATCH)
- Route Control stations (RCS)
- Stations for connecting SIMATIC PCS 7 to the SIMATIC IT environment

PCS 7 refers to these stations collectively as "PC stations". The following figure outlines the most important components in a PCS 7 plant.



Legend for figure

Station	Function
Engineering station (Page 15)	You configure and download all system components of PCS 7 with the engineering station: Operator stations, BATCH stations, Route Control stations, automation systems, central and distributed I/O. Engineering stations are PCs on which the PCS 7 engineering software is installed for the configuration of a PCS 7 project.
Operator station (Page 16)	The operator station is used to operate and monitor the PCS 7 system in process mode. You connect the operator station to the plant bus to enable the required data communication with the automation system. Operator stations are PCs on which the PCS 7 OS software is installed. The operator station can be designed as a single station system for smaller plants and less stringent requirements. In larger plants with more stringent requirements, the OS can be designed as a multiple station system with OS servers and OS clients.
Maintenance station (Page 16)	The maintenance station is used for the diagnostics and asset management of a PCS 7 plant. The maintenance station can be structured as a single station system or multi station system. The Maintenance Station uses PCS 7 OS software and is configured for diagnostics through the use of additional functions.
BATCH station (Page 16)	The BATCH station is used to operate and monitor batch process sequences in process mode. A connection to an operator station is required for data communication with the automation system. The BATCH station is connected to the terminal bus for this purpose. BATCH stations are PCs on which the SIMATIC BATCH software is installed.
Route Control station (Page 16)	You use a route control station (RCS) to automate the transport of materials and products in a PCS 7 plant. The route control station is connected to the plant bus to provide the required data communication. A connection to an operator station is required to display messages. Route Control stations are PCs on which the SIMATIC Route Control software is installed.
Bus system (terminal bus and plant bus) (Page 41)	The PCS 7 AS, OS, BATCH, RCS and ES components communicate (between and among each other) via a bus system (Industrial Ethernet). In PCS 7 plants, this bus is divided into: • A terminal bus for communication between the following components: – Operator control and monitoring systems (OS, BATCH, RCS) – Engineering station – Higher-level components (for example, MES, office networks) • A plant bus for communication between: – Servers (OS, RCS) and automation systems – Automation systems (SIMATIC connections)
Automation system	The automation system performs the following tasks: • The AS acquires and processes the process tags from the connected I/O (centralized and distributed) and outputs control information and set points to the process. • The AS supplies the operator station with data for visualization. • The AS recognizes operator inputs and returns them to the process.
SIMATIC PCS 7 BOX (Page 33)	An industrial PC, which comprises the functions of a PCS 7 process control system (engineering, automation, operator control and monitoring) when used in conjunction with a distributed I/O. You can use SIMATIC PCS 7 BOX for small stand-alone systems or combined AS/OS stations that can be integrated in the PCS 7 network.

2.2 Fault-tolerant (redundant) configurations

Introduction

The use of fault-tolerant components in a process control system minimizes the risk of a production downtimes. A redundant design ensures increased availability of a control system. This means that all components involved in the process have a backup and perform a portion of the control tasks.

If a fault occurs or one of the process control system components fails, the still functional redundant component takes over the control task.

Redundancy for PC stations in a PCS 7 plant

You can use redundant components in PCS 7 to ensure high availability of PC stations.

- Note the following properties for redundant server pairs:

Property	Description
Reaction to server failure	In a project with a redundant server pair, the advantage is that if one of the servers fails, operator control and monitoring of the process can continue via the redundant server.
Number of servers	Maximum 12 servers (pairs) in a PCS 7 plant
Behavior from the client perspective	From a client perspective, a redundant server pair behaves like **one** server.
Configuration	You configure all of the configuration data for one server only. You then download the configuration data to both redundant servers.

- Note the following properties for redundant network components:

Property	Description
Switch over in the event of a terminal bus failure	The following network cards are used for a redundant connection of the PC stations to a terminal bus: • PCI network adapters: Intel® PRO/1000 MT Server Adapter Intel® PRO/1000 GT Desktop Adapter • PCIe network adapters: Intel® PRO/1000 PT Server Adapter Intel® PRO/1000 PT Desktop Adapter You can find additional information on this in the manual *Process Control System PCS 7; Fault-tolerant Process Control Systems*.
Switch over in the event of a plant bus failure	CP 1613 or CP 1623 is used for a redundant connection of the PC stations to a plant bus. You can find additional information on this in the manual *Process Control System PCS 7; Fault-tolerant Process Control Systems*.
Response to cable failure (disruption in a ring line)	The typical networks in a ring structure in PCS 7 feature cable redundancy. The network remains in operation even if one cable fails.

Property	Description
Response to failure of network adapters of PCs or switches	If you use redundant network adapters and redundant network connections, the network remains in operation even when a network adapter or switch fails.
Configuration	*ProSet®* from Intel is used to configure the network properties.

Recommendations

You should always use redundant server pairs when the availability of the respective application is critical to your PCS 7 plant.

If PC stations of a PCS 7 plant are integrated into a domain, we recommend that you use several domain controllers.

Additional information

- You can find information about the client-server architecture in the section "Differences between a Multiple Station System and a Single Station System (Page 16)"
- You can find information on how to activate redundancy in the section "Configuring redundancy for redundant servers (Page 95)".
- You can find information about activating redundancy for operator stations in the manual *Process Control System PCS 7; Fault-Tolerant Process Control Systems*.
- You can find information about configuring and implementing redundancy for BATCH stations in the manual *Process Control System PCS 7; SIMATIC BATCH*.
- You can find information about configuring and implementing redundancy for Route Control stations in the manual *Process Control System PCS 7; SIMATIC Route Control*.

2.3 Options when working with engineering stations

Working with several PCs

You have a variety of options available when working on engineering stations to engineer PCS 7 systems. You can, for example, use more than one PC when engineering a PCS 7 system if a single PC is inadequate for the job.

The difference between working with multiple PCs when engineering and working with a single engineering station only involves a few steps.

Property	Working with multiple engineering stations	Working with a single engineering station
Area of application	• Medium-sized and large systems • Configuration phases • Spatially distributed configuration of engineering stations	• Small systems • Local operator stations • Training systems
Monitors	1 or 2 recommended	
Combination/ Method	• PCS 7 project engineering with several engineering stations (Page 19)	• Engineering of a PCS 7 project on a single PC (Page 20) • Combination of engineering station and operator station on a single PC (Page 21) • Engineering with SIMATIC PCS 7 BOX: You will find information on this in the manual *Process Control System PCS 7; SIMATIC PCS 7 BOX*

2.4 Differences between multiple station systems and single station systems

You can configure each PCS 7 application for process mode, for example OS, BATCH, RCS, Maintenance Station, as a single station system or a multiple station system with client-server architecture.

Definition of a multiple station system

A multiple station system is a system of related PCs in which the functionality of a PCS 7 application in a client-server architecture is distributed over several PCs, for example, OS clients and OS servers. The PCS 7 Toolset DVD provides the appropriate client or server software for this.

In the case of multiple station systems, we recommend that you configure a terminal bus (separate from the plant bus) for data communication between clients and servers.

Definition of a single station system

A single station system or "single station" is a PC that provides the entire functionality of a PCS 7 application, for example the operator station. The PCS 7 Toolset DVD provides the "single station" software for this.

You can connect single station systems to the plant bus as well as to the terminal bus (for example, when there are also multiple station systems in the PCS 7 plant).

Properties of multiple and single station systems

Property	Multiple station system	Single station system
Areas of application	Medium-sized and large systems	• Small systems • Local operator stations • Training systems
Configuration	Client-server architecture with multiple PCs: • Operator station multiple station system (Page 22) • BATCH station multiple station system (Page 24) • Route Control station multiple station system (Page 25) • Maintenance station multiple station system (Page 26)	One PC for all functions of a PCS 7 application: • OS single station system (Page 29) • BATCH single station system (Page 31) • Route Control single station system (Page 32) • SIMATIC PCS 7 BOX stations (Page 33) • Maintenance station single station system (Page 33)
Workstations	Up to 32 workstations per server	1 workstation with a maximum of 4 monitors (depending on the application)

Property	Multiple station system	Single station system
Availability	To guarantee high availability of the PCS 7 plant, you can configure the server as redundant server pairs (PCs): • Operator station – OS server – Central archive server – MS server • BATCH station – BATCH server • Route Control station – Route Control server You can find additional information on this in the section "Fault-Tolerant (Redundant) Configurations (Page 13)".	
Number of servers	Maximum 12 server (pairs) in the PCS 7 plant. The following each count as **one** server: • Server for multiple station systems • Redundant server pair • MS server • Central archive server	

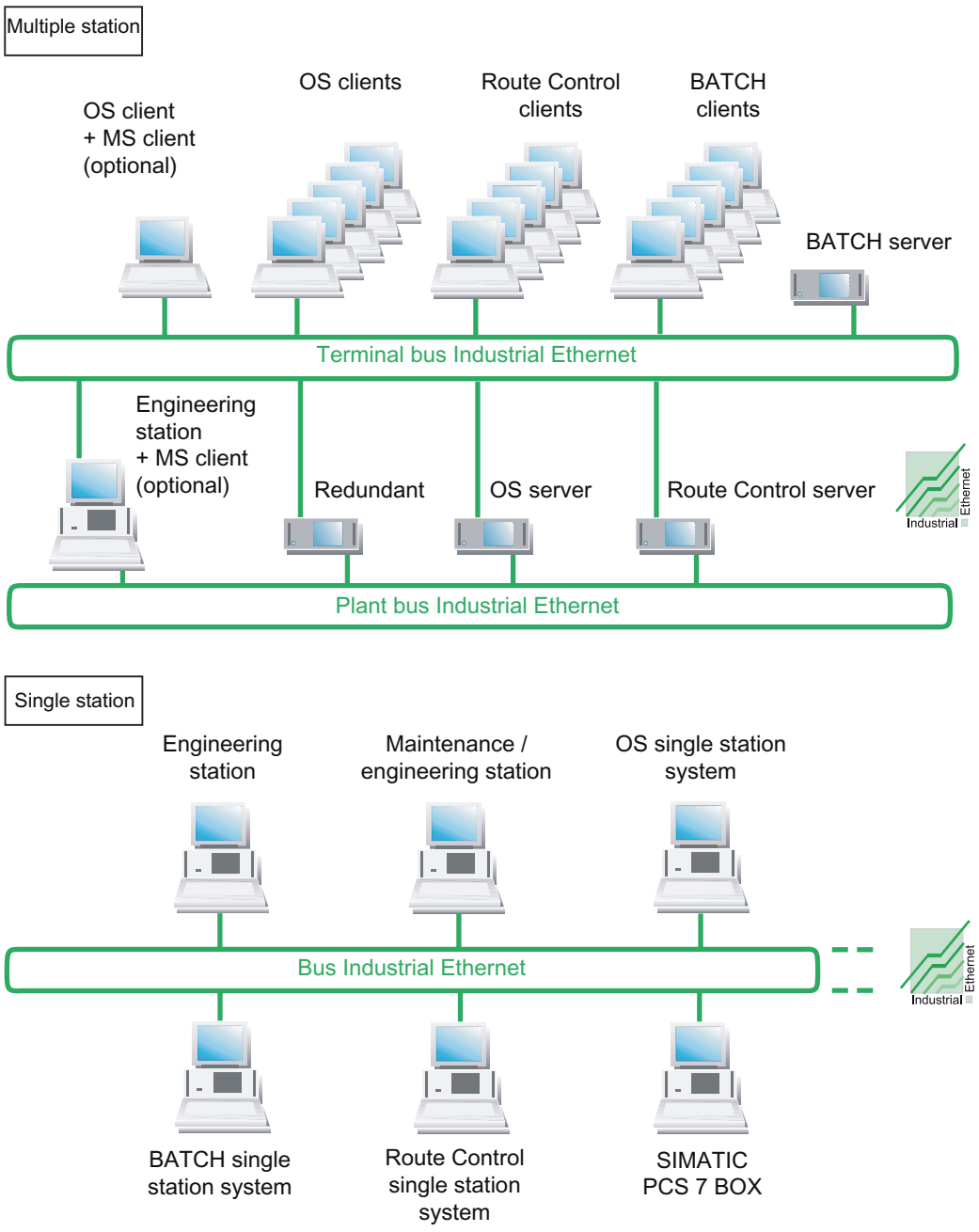
Intranet and Internet connection

You can realize the Intranet and Internet connection via OpenPCS 7 or PCS 7 Web Option.

You can find additional information about this in the sections "Remote Access to the OS Using PCS 7 OS Web Option (Page 35)" and "Access to PCS 7 Data Using OpenPCS 7 (Page 38)".

Example configuration

The following example configuration shows the use of multiple station and signal station systems in a PCS 7 plant:



See also

Tasks of terminal bus and plant bus (Page 41)

2.5 Solutions for engineering stations

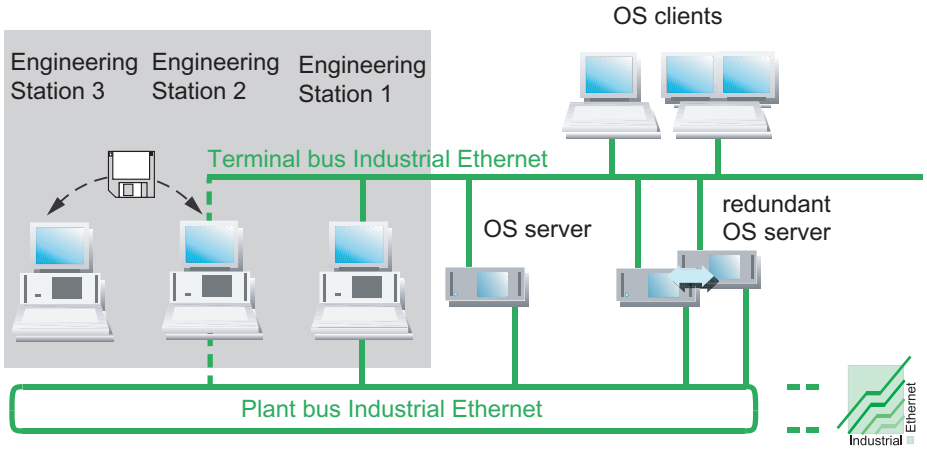
2.5.1 Engineering for a PCS 7 project with multiple engineering stations

Distribution of engineering tasks

You can distribute the engineering tasks for a PCS 7 plant over several engineering stations. PCS 7 provides the following options for this:

Option	Application
Configuring in a multiproject	You can use multiproject engineering to allow several project teams to work on complex projects at the same time. The engineering stations can be connected over a network or be located in separate areas.
Branching and merging charts of a project	You can branch and merge the projects at the chart level (S7 program) to allow several engineers to work at the same time.
Configuring over a network	Several engineers can work on specific parts of a project (for example, AS, OS) stored on a central engineering server at the same time, working from their networked engineering stations.

Example configuration for multiproject engineering



More information

The engineering procedure is described in detail in the Configuration Manual *Process Control System PCS 7; Engineering System.*

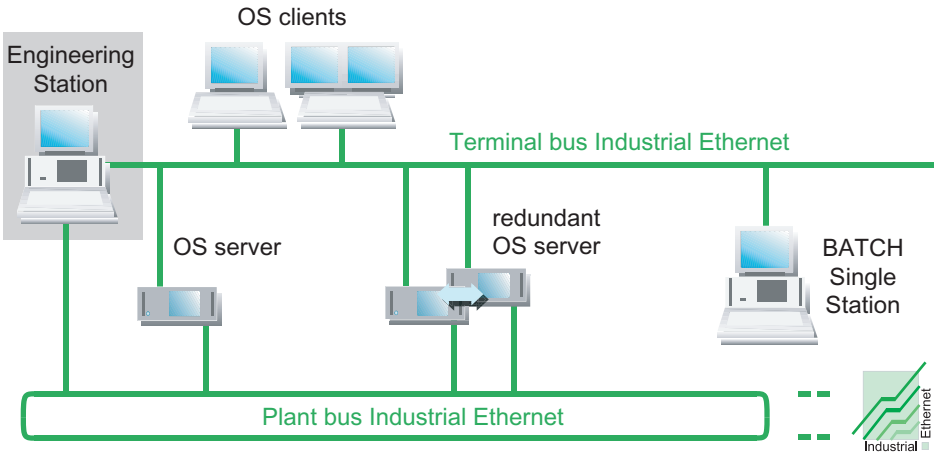
2.5.2 Engineering for a PCS 7 project with a single PC

Central engineering

You can configure a PCS 7 system centrally for all PCS 7 applications (OS, BATCH, Route Control, AS) with a single engineering station.

Connect the engineering station to the plant bus and terminal bus if you want to download the configuration data to the target systems and test it in process mode.

Example configuration



SIMATIC PCS 7 BOX

SIMATIC PCS 7 BOX can also be used as an engineering station for small standalone systems. You can find additional information about this in the manual *Process Control System PCS 7; SIMATIC PCS 7 BOX*.

2.5.3 Combination of engineering station and operator station on a single PC

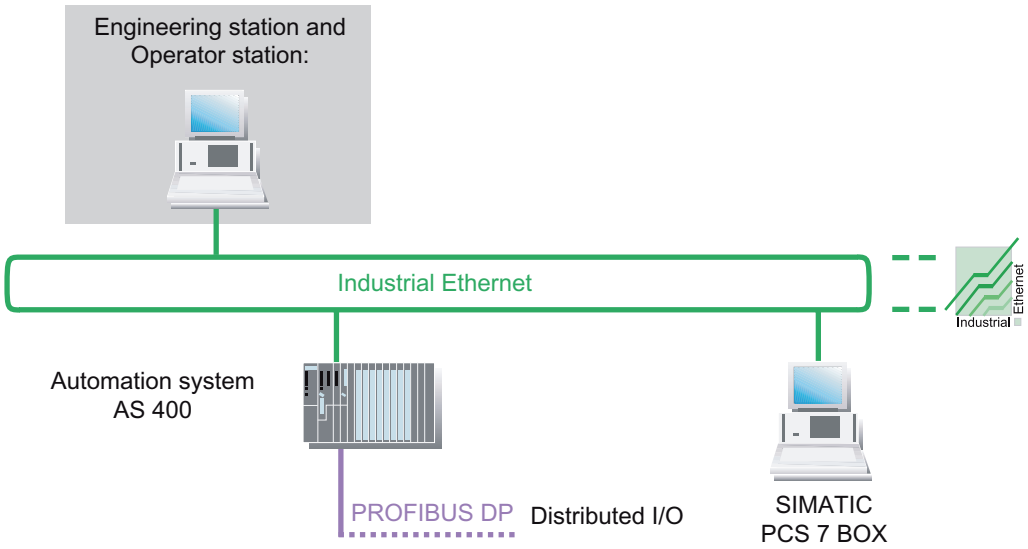
Engineering station and operator station on a single PC

You can configure a small system, such as a training station, centrally for all PCS 7 components, for example with OS, BATCH, Route Control, AS, with a single engineering station.

You can combine the engineering station and an operator station for this purpose. The operator station is configured as a so-called single station system in this case.

The example configuration below shows a plant with a common plant/terminal bus. Various functions are carried out via this bus, for example loading the configuration data to the target systems, testing the system and process mode.

Example configuration



SIMATIC PCS 7 BOX

SIMATIC PCS 7 BOX can also be used as an engineering station for small standalone systems. You will find additional information on this in the section "SIMATIC PCS 7 BOX Stations (Page 33)" and in the manual *Process Control System PCS 7; SIMATIC PCS 7 BOX*.

2.6 Solutions for multiple station systems

2.6.1 Operator station multiple station system

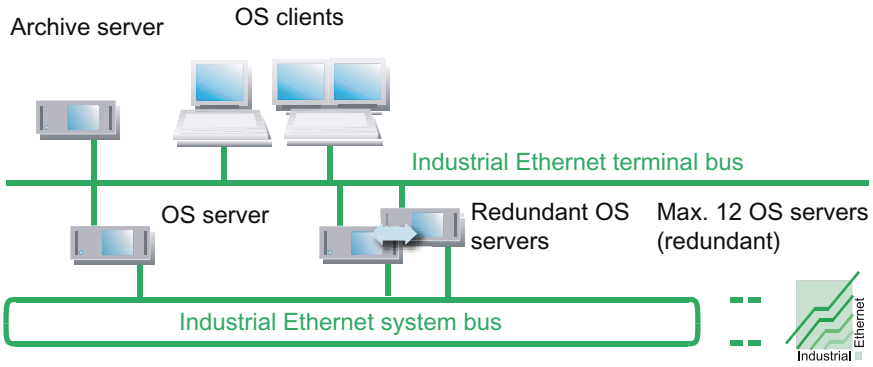
Operator station as multiple station system with client-server architecture

- The OS multiple station system consists of OS clients (workstations), which are supplied with data (project data, process values, archives, alarms, and messages) from an OS server (or multiple OS servers) via a terminal bus (OS LAN).
- The OS server can supply process data to up to 32 OS clients.
- The OS clients can access data from up to 12 OS servers simultaneously (multi-client mode).
- Up to 4 monitors can be connected to a workstation (OS client) via a multi-VGA card. You can operate the resulting system areas with a single keyboard and mouse.
- The OS servers feature additional client functions that allow them to access data on other OS servers (their archives, messages, tags and variables). Process pictures from an OS server can then also contain tags of other OS servers.
- You can achieve high availability for the operator station by configuring redundant OS servers or by using more than one OS server with the same configuration. You will need the "SIMATIC PCS 7 Server Redundancy" software package for redundant OS servers.

Note

If you operate no more than four OS clients on an OS server, you can use the OS server as an operator control and monitoring station.

Example configuration



Central archive server

You can configure an OS server as a central archive server.

- The central archive server is a node on the terminal bus and is not connected to the plant bus.
- The central archive server can be configured redundantly.

You can find additional information on this in the section "Long-term archiving using the central archive server (Page 28) ".

Maintenance station

The maintenance station is based on the operator station, with extra functions added for diagnostics. The maintenance station can therefore also be structured as a multiple station system.

You can find additional information on this:

- In the section "Maintenance station multiple station system (Page 26)"
- In the configuration manual *Process Control System PCS 7, Operator Station*

PCS 7 OS Web Option for a multiple station OS system

In PCS 7 you can use Internet Explorer to access the OS of a PCS 7 system, provided that the PCS 7 OS Web Option is installed on it and the necessary access rights have been set in the network.

You will find additional information on this in the section "Remote access to the OS with the PCS 7 OS Web Option (Page 35)".

2.6.2 BATCH station multiple station system

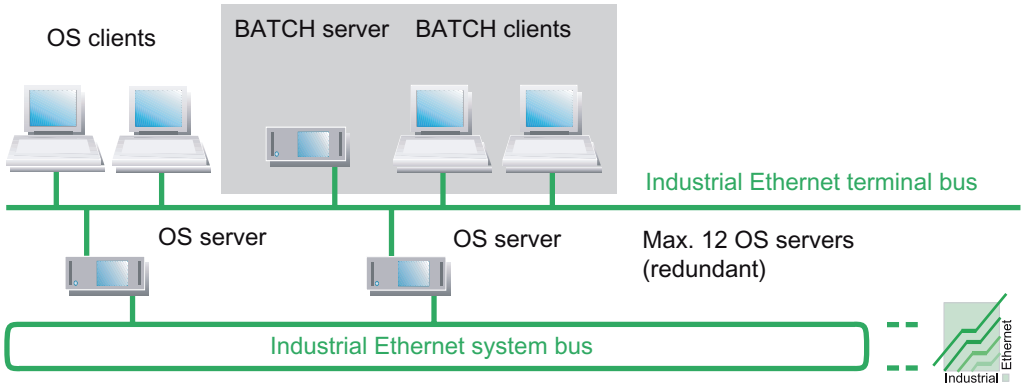
BATCH station as multiple station system with client-server architecture

- A BATCH station multiple station system consists of BATCH clients (workstations) that are supplied with data (project data, process values, archives, alarms and messages) from a BATCH server via a terminal bus.
- A BATCH server supplies process data to up to 32 BATCH clients.
- There can only be one BATCH project with one BATCH server in a PCS 7 plant. Only one BATCH project can be activated on a BATCH server.
- You can use a BATCH client to operate and monitor several PCS 7 systems. To do this, start several BATCH client applications on the BATCH client and select different batch projects at the start (each with one BATCH server). It is advisable to use a multi-VGA card for such instances.
- You can achieve high availability for the PCS 7 system by configuring a redundant BATCH server. In terms of the number of servers in a PCS 7 project, a BATCH server set up as redundant is considered a BATCH server.

Note

If you operate no more than four BATCH clients on a BATCH server, you can use the BATCH server as an operator control and monitoring station.

Example configuration



2.6.3 Route control station multiple station system

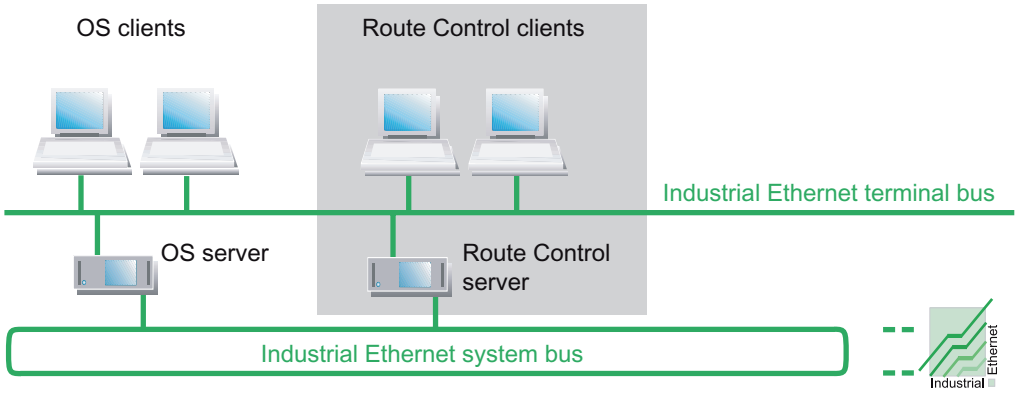
Route Control station as multiple station system with client-server architecture

- A route control station multiple station system consists of route control clients (workstations) that are supplied with data (project data, process values, archives, alarms and messages) from a route control server via a terminal bus.
- A route control server supplies process data to up to 32 route control clients.
- There is only one route control project with one route control server in a PCS 7 system (even when redundant).
- The route control server requires a connection to an OS to store messages.
- Up to 4 monitors can be connected to a workstation (route control client) via a multi-VGA card. You can operate the resulting system areas with a single keyboard and mouse.
- You can achieve high availability for the route control station by configuring a redundant route control server. In terms of the number of servers in a PCS 7 project, a redundantly configured route control server is counted as a single route control server.

Note

If you operate no more than four route control clients on a route control server, you can use the route control server as an operator control and monitoring station.

Example configuration



2.6.4 Maintenance station multiple station system

Introduction

The maintenance station is used for the diagnostics and asset management of a PCS 7 plant.

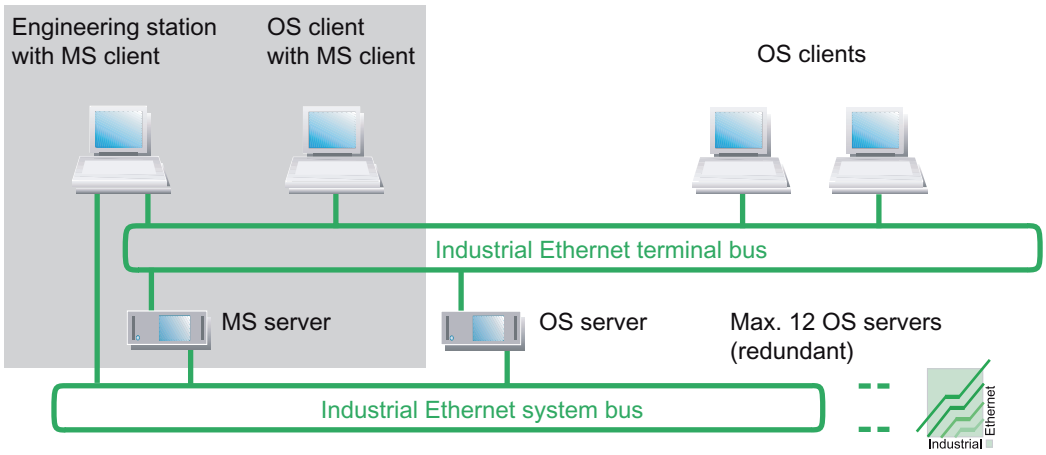
Maintenance station as multiple station system with client-server architecture

The maintenance station as a multiple station system consists of the following components:

- Maintenance server (MS server for short)
  The MS server concentrates the picture information and data required for system diagnostics on one PC. The MS server needs the following data to display information, such as project data, alarms, messages on the MS client:
  - Server data from the OS servers
  - Configuration of the network components

  You can achieve high availability for the maintenance station by configuring a redundant MS server.
- Maintenance client (MS client for short)
  The MS client uses diagnostic screens to visualize the diagnostic status and provides required operator control and monitoring functions.
  - The engineering station or an OS client can be used as the MS client.
  - Up to 4 monitors can be connected to a MS client via a multi-VGA card. You can operate the resulting system areas with a single keyboard and mouse.

Example configuration



Notes on installing the maintenance station

Note the following points during installation:

- The MS server is an OS server configured for system diagnostics.
- The MS client can be used on the engineering station or an OS client. You can find instructions for configuration in the configuration manual *Process Control System PCS 7; Operator Station*.

You can find additional information about installation in the section "How to install the PCS 7 software (Page 89)".

Additional information

- Appendix "Approved configurations (Page 219)"
- Configuration manual *Process Control System PCS 7, Operator Station*

2.6.5 Long-term archiving with the central archive server

Introduction

The central archive server is used for long-term archiving of diverse data from PCS 7 in a central database. Using the central archive server, you can manage measured values and messages transferred from the OS archives, OS reports and batch data of SIMATIC BATCH. The archive data is available regardless of the status of PCS 7 runtime systems. This allows you to view all data clearly organized using Internet Explorer.

You can achieve high availability of the central archive server by configuring the central archive server redundantly.

Functions

You can perform the following functions with the central archive server:

- Archive messages and process values from PCS 7 OS
- Archive OS reports
- Archive batch data from SIMATIC BATCH
- Transfer all archive data to external storage media
- Catalog all archive data
- Display messages using filter functions
- Display the process values in graphs and tables using filter functions
- Export process values as a CSV or XML file
- Display the archive data of a batch
- Display archive data in a web-based display

Access protection

You can configure access protection with user-specific rights on the central archive server.

Notes on installing the central archive server

Note the following points during installation:

- To improve performance, install the central archive server on a separate PC.
- We recommend a RAID system for data integrity.

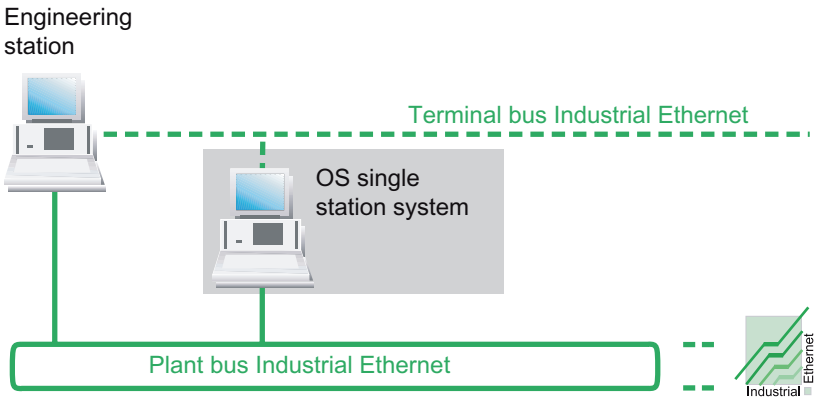
2.7 Solutions for single station systems

2.7.1 OS single station system

OS as single station system on a single PC

- The OS single station system is an operator station on a single PC with complete operator control and monitoring functionality for a PCS 7 project (process cell/unit).
- The OS single station system on the plant bus can be used in parallel with additional single station or multiple station systems.
- You can achieve higher PCS 7 system availability by configuring redundant OS single station systems or by using more than one OS single station system with the same configuration. You can also use the WinCC/Redundancy software to operate two OS single station systems redundantly.
- The OS single station system can also be used in combination with an engineering station on a PC.
  You can find additional information on this in the section "Combination of engineering station and operator station on a PC (Page 21)".
- You can also use the OS single station system in combination with an engineering station and an automation system on a PC. This solution is offered as the SIMATIC PCS 7 BOX.

Example configuration



PCS 7 OS Web Option for an OS single station system

In PCS 7 you can use Internet Explorer to access the OS of a PCS 7 system, provided that the PCS 7 OS Web Option is installed on it and the necessary access rights have been set in the network.

You can find information on this in the section "Remote access to the OS using PCS 7 OS Web Option (Page 35)".

Additional information

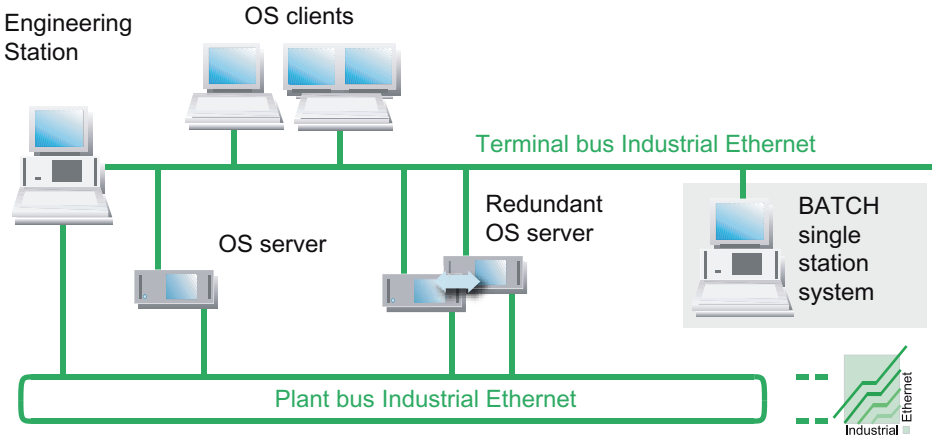
- Section "Combination of engineering station and operator station on a single PC (Page 21)"
- Function manual *Process Control System PCS 7; SIMATIC PCS 7 BOX*

2.7.2 BATCH single station system

BATCH as single station system on a single PC

- The BATCH single station system is a BATCH station on a single PC. Complete operator control and monitoring functionality is available for a process cell. A BATCH single station system is associated with a BATCH project (process cell/unit).
- A connection to an operator station (OS server) is required for data communication with the automation system.
- You use a BATCH single station system to operate and monitor an entire plant. When several process cells are operated in parallel, an additional BATCH single station system with corresponding connections to the OS server is needed for each process cell. If you are monitoring several systems, we recommend using a BATCH station multiple station system (Page 24).
- If several BATCH single station systems are used: Each BATCH single station system used must be connected to another OS system.
- You can operate BATCH single station systems redundantly.
- A connection to an OS server must exist in order to use process mode.

Example configuration



2.7.3 Route Control single station system

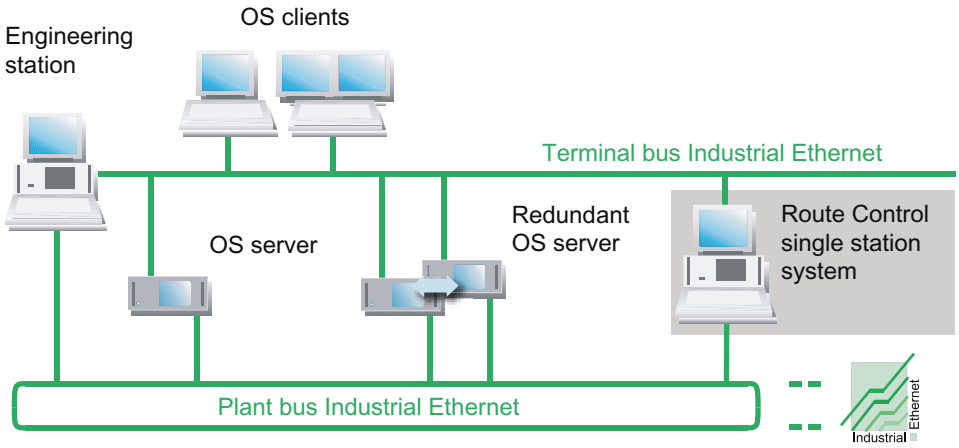
Route Control as a single station system on a single PC

- The route control single station system is a route control station on a single PC. You use the route control single station system to automate the movement of materials and products in a PCS 7 plant.
- You can operate route control single station systems redundantly.
- A connection to an OS server must exist in order to use process mode.

Note

If you use route control single station systems with other route control systems at the same time, the areas controlled by a system must be separated.

Example configuration



2.7.4 Maintenance station single station system

Overview

The maintenance station is used for the diagnostics and asset management of a PCS 7 plant.

The maintenance station as a single station system consists of a PC station with engineering station, OS single station system and maintenance station.

Additional information

- Section "Maintenance station multiple station system (Page 26)"
- Section "OS single station system (Page 29)"
- Section "Combination of Engineering Station and Operator Station on a Single PC (Page 21)"
- Appendix "Approved Configurations (Page 219)"
- Configuration manual *Process Control System PCS 7, Operator Station*

2.7.5 SIMATIC PCS 7 BOX stations

SIMATIC PCS 7 BOX stations as complete systems for small systems

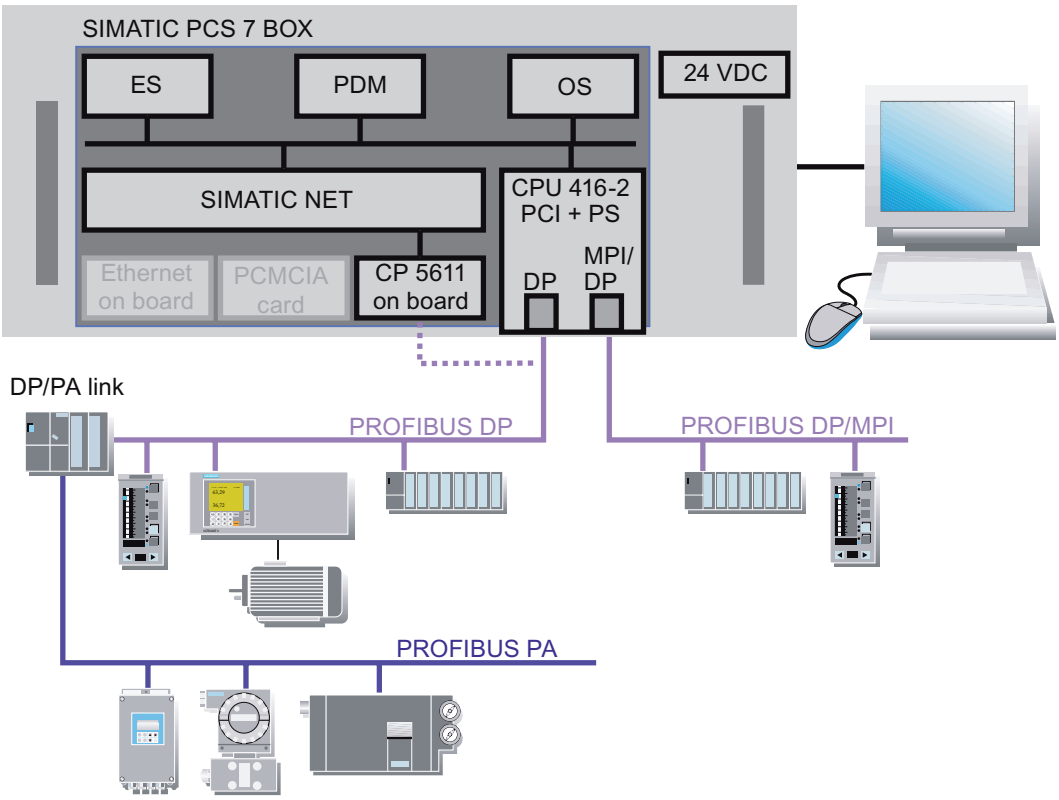
SIMATIC PCS 7 BOX PCs with various hardware configurations and software installations are available for use as a PC station or automation system in PCS 7.

The following configurations (product bundles) are available:

- SIMATIC PCS 7 BOX 416 with "WinAC Slot 416" hardware automation system in equipment variants:
  - Runtime system with AS and OS functionality.
  - Complete system with AS, ES and OS functionality.
- SIMATIC PCS 7 BOX RTX with "WinAC RTX" software automation system in equipment variants:
  - Runtime system with AS and OS functionality.
  - Complete system with AS, ES and OS functionality.
- SIMATIC PCS 7 AS RTX is a Microbox automation system consisting of the basic components:
  - "WinAC RTX" software automation system
  - MS Windows operating system
  - SIMATIC PC DiagMonitor diagnostics software

Example configuration

The following figure shows an example of a SIMATIC PCS 7 BOX 416 as a complete system with AS, ES, OS and connected distributed I/O.



Ordering information

You can find the ordering information for product bundles PCs in the *ST PCS 7* catalog.

Additional information

- Section "Selecting the Correct License Keys/Authorization (Page 126)"
- Section "Software Packages and Required License Key (Page 176)"
- Manual *Process Control System PCS 7; SIMATIC PCS 7 BOX*

2.8 Solutions for accessing PC stations

2.8.1 Remote access to the OS using PCS 7 OS Web Option

PCS 7 OS Web Option for remote access to the OS

You can use the PCS 7 OS Web Option for operator control and monitoring of automated processes with PCS 7 via the Intranet/Internet.

PCS 7 OS Web Option consists of two components:

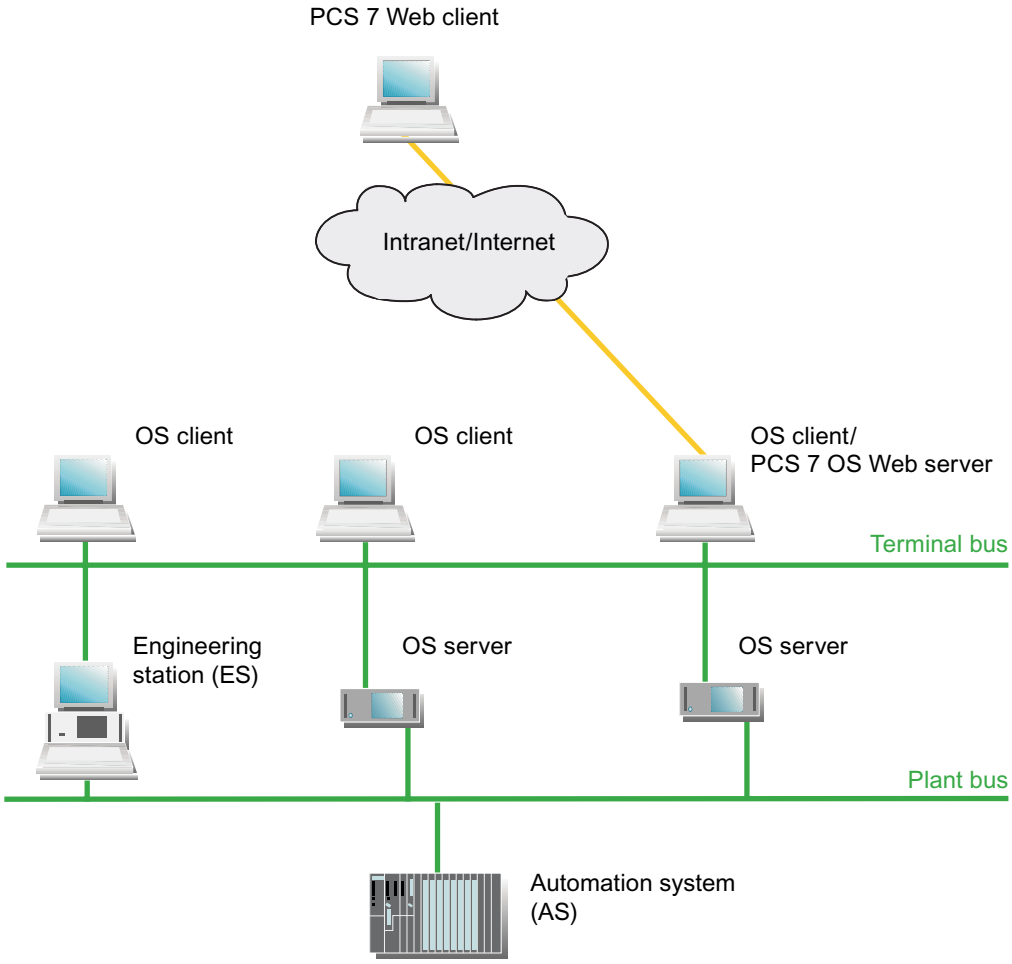
- PCS 7 Web server
  Within an OS, the PCS 7 Web server is an OS client with PCS 7 Web server functionality. The function of the Web server can be a "Web standard server" or "Web diagnostics server".
- PCS 7 Web client
  The PCS 7 Web client accesses project data available on the PCS 7 OS Web server via the Intranet/Internet, with the help of Internet Explorer. The process can be operated and monitored.
  The function of the client can be a "WebNavigator client" or "WebNavigator diagnostics client".

PCS 7 OS Web Option can be used in a PCS 7 plant with the following configurations:

- For an OS multiple station system
  - Configuration with PCS 7 Web server and PCS 7 Web client (both of the same type "Standard" or "Diagnostics")
- For an OS single station system
  - Configuration with PCS 7 Web server and PCS 7 Web client (both of the same type "Standard")
  - Configuration with PCS 7 Web diagnostics server and PCS 7 WebNavigator diagnostics client

Example configuration

The following figure is an example of a configuration using a PCS 7 Web server and Web client ("Standard" or "Diagnostics").



Notes on the PCS 7 Web server and Web client

- For an OS multiple station system:
  - An OS client that is configured as a PCS 7 OS Web server can no longer be utilized as an operator station (OS client) within the PCS 7 plant.
  - The maximum number of Web clients per PCS 7 Web server is restricted by the license key (licensing for 3, 10, 25 or 50 Web clients).
- For an OS single station system:
  - The OS single station system that is configured with the PCS 7 Web server can still be utilized within the PCS 7 plant as an operating station (OS).
  - An OS single station system (as a PCS 7 Web server) can simultaneously access data on up to 3 Web clients.
  - A WebNavigator diagnostics client can simultaneously access data on up to 3 OS single station systems (PCS 7 Web diagnostics server).
- The maximum number of Web clients is limited by the license key.

More information

- You will find additional information in the manual *Process Control System PCS 7; OS Web Option*.

2.8.2 Access to PCS 7 data using OpenPCS 7

OpenPCS 7

Data from a PCS 7 plant can be made available to third-party systems using OLE DB or OPC via a PC station with OpenPCS 7, a so-called Open PCS 7 station.

You can use OpenPCS 7 at the following levels:

- Automation level
- Plant control and production control levels
- MES level (Manufacturing Execution Systems)
- ERP level (Enterprise Resource Planning)

Configuration of the OpenPCS 7 station

The OpenPCS 7 station is a PC on which a server for OPC and OLE/DB is installed.

The OpenPCS 7 station performs the following tasks:

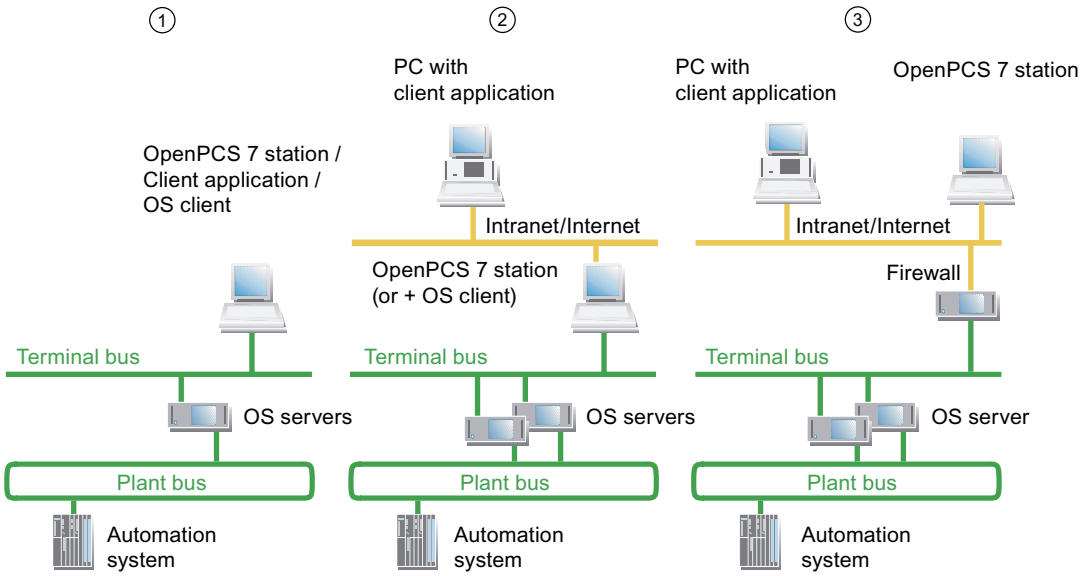
- It makes the PCS 7 data of the automated process available over the OPC interface.
- It allows the client applications (OPC or OLE DB) to access the available PCS 7 data.

The OpenPCS 7 station is connected to the PCS 7 plant via the terminal bus.

In process mode, the OpenPCS 7 station communicates with the automation systems via the operator station (OS server).

Examples of configurations

Typical configurations with OpenPCS 7 are shown in the following figure.



No.	Configuration	Area of application
1	OpenPCS 7 station, OS client, and client applications (OPC or OLE/DB) on a shared PC	Single station system: Recommended for small systems
2	OpenPCS 7 station and client applications (OPC or OLE/DB) on separate PCs connected by an additional network (Internet/Intranet in the figure). With this configuration, the OpenPCS 7 station can also be installed on an OS client.	Multiple station system with client-server architecture: Recommended for medium-sized and large systems
3	OpenPCS 7 station and client applications (OPC or OLE/DB) on separate PCs connected by an additional network (Internet/Intranet) and access the terminal bus of the PCS 7 plant protected by a firewall.	Multiple station system with client-server architecture: Recommended for medium-sized and large systems

OpenPCS 7 can also be installed on the following PC stations:

- OS single station system
- OS server
- Central archive server "CAS"

Interface formats

The client applications access data on the OpenPCS 7 station via interfaces.

OpenPCS 7 uses the following interface formats for data communication:

- OPC DA (Data Access)
- OPC A&E (Alarm and Event and Historical Alarm and Event)
- OPC HDA (Historical Data Access)
- OLE/DB (integration of data in applications that support OLE (for example, MS Office))

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

Accessing data of redundant server pairs

You can access data of redundant server pairs using the OpenPCS 7 station. If a PC station (master) fails, the redundant PC station is connected automatically for the next read job.

If the connection is interrupted during a read job, the OpenPCS 7 station attempts to read data from the redundant partner.

Possible access depending on the license key used

PCS 7 data can be accessed via OpenPCS 7 under the following conditions as regards license keys:

- If you use the "OpenPCS 7/WinCC" license key and operate the OpenPCS 7 station on an OS client, the OS client must be in process mode.
- If you use the "OpenPCS 7" license key, you can always access PCS 7 data via OpenPCS 7.

Additional information

- *Process Control System PCS 7; Engineering System* Manual
- Manual *Process Control System PCS 7; Operator Station*
- *Process Control System PCS 7; OPC A&E for PCS 7* Manual

2.9 Connecting PC stations

2.9.1 Tasks of terminal bus and plant bus

Overview

With PCS 7, the AS, OS, BATCH, Route Control and ES communicate via a bus system, based on an industrial Ethernet.

The bus system in PCS 7 consists of:

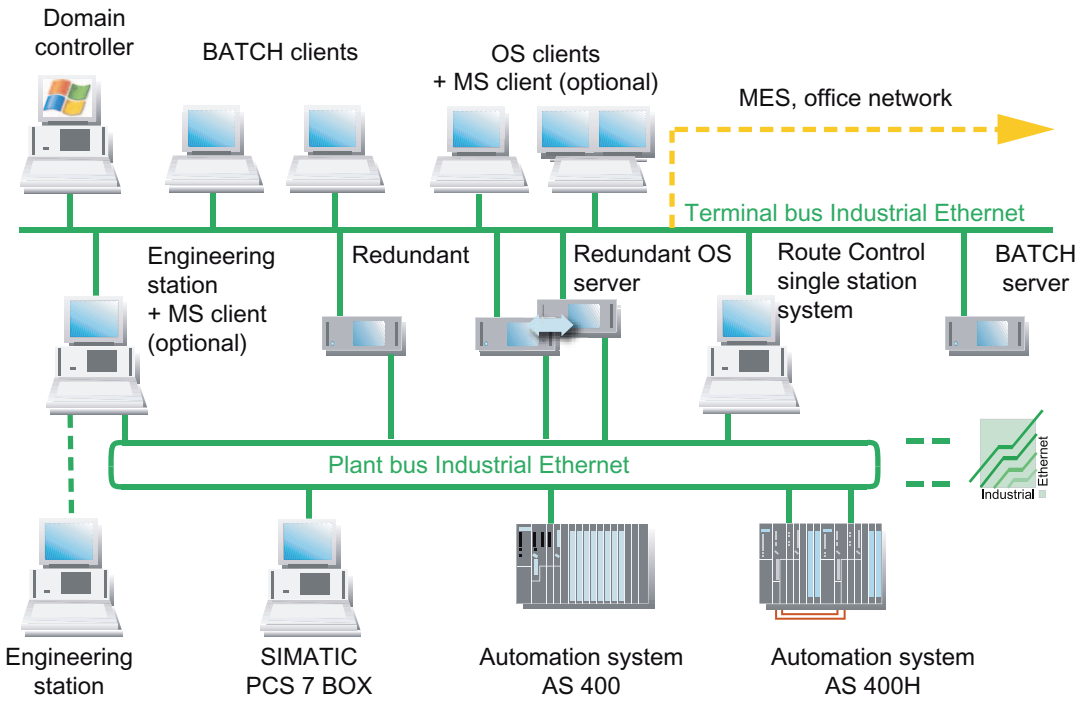
- Terminal bus
- Plant bus

In multiple station systems we would recommend separating the terminal bus and plant bus. In small systems, a bus system with a shared plant/terminal bus can be used.

You can find additional information on this in the section "Differences between multiple station systems and single station systems (Page 16)".

A description of an example for a small system is available in the section "Combination of engineering station and operator station on a single PC (Page 21) ".

Example configuration



Topology

The terminal bus and plant bus can be configured as follows:

- As Industrial Ethernet (10/100 Mbps and 1 Gigabit/s)
- Bus, tree, ring, star or redundant ring structures

Data communication

- Terminal bus
  The following table shows data communication in the PCS 7 plant.

  PCS 7 is also connected to components at higher levels, for example MES level and office networks, via the terminal bus.

Data exchange	Between the following components:
Download of the configuration data	Engineering station and the following stations: • Operator control and monitoring systems (OS server, OS clients) • BATCH stations (BATCH server, BATCH clients) • Route Control stations (Route Control server, Route Control client)
Communication between the servers	• OS servers • BATCH servers and OS servers relevant to BATCH
Transmission of data processed by the servers to the operator control and monitoring stations (clients)	• OS server and OS clients • BATCH server and BATCH clients • Route Control server and Route Control clients

- Plant bus

Data exchange	Between the following components:
Download of the configuration data	Engineering station and automation system
Operating and monitoring of the processes	Automation systems and OS server, Route Control server communication path: CPU -> CP -> BUS -> network adapter (CP) -> OS/RCS Note: Communication with SIMATIC BATCH is from the OS server to the BATCH server via the terminal bus.
Communication between automation systems (SIMATIC communication)	Automation systems Communication path: CPU -> CP -> BUS -> CP -> CPU

More information

- You can find information on the following topics in the Configuration Manual *Process Control System PCS 7, Engineering Station:*
  - Cables and network components
  - Distances between the components of a PCS 7 plant
  - Topology, operating ranges and parameters
- Section "Basic configuration of the PCS 7 system (Page 11)"
- Section "Components for connection to the terminal bus/plant bus (Page 56)"

2.9.2 Connection to the terminal bus/plant bus

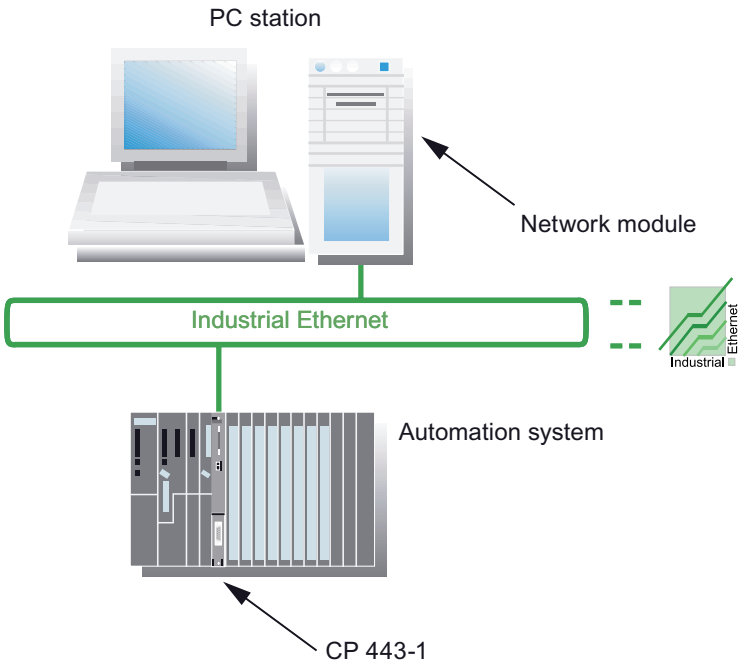
Attachment of OS, BATCH, Route Control and ES

You connect operator stations, BATCH stations, route control stations and engineering stations to Industrial Ethernet using PCS 7 communications modules. The communications modules use a slot in the PC/PG. You use different communication modules depending on your requirements.

Additional information

You will find an overview of the communication modules available in the section " Components for connection to the terminal bus/plant bus (Page 56) ".

Example configuration



Connecting the AS

You connect automation systems to Industrial Ethernet using the CP 443-1 communications processor or the CPU's Ethernet interface. The protocols used are TCP/IP, ISO, and UDP.

Cables and network components

You can find information on the following topics in the configuration manual *Process Control System PCS 7, Engineering Station:*

- Cables and network components
- Distances between the components of a PCS 7 system

Redundant bus systems

You can use redundant communication paths in PCS 7. You can find information on this in the Function Manual *PCS 7; Fault-Tolerant Process Control Systems*.

2.9.3 Connecting PC Stations via Wireless LAN

Connecting a PC station via Industrial Wireless LAN (IWLAN)

Industrial Wireless LAN (IWLAN) enables you to integrate mobile or stationary PC stations via an access point in a PCS 7 plant. You can integrate the following PC stations:

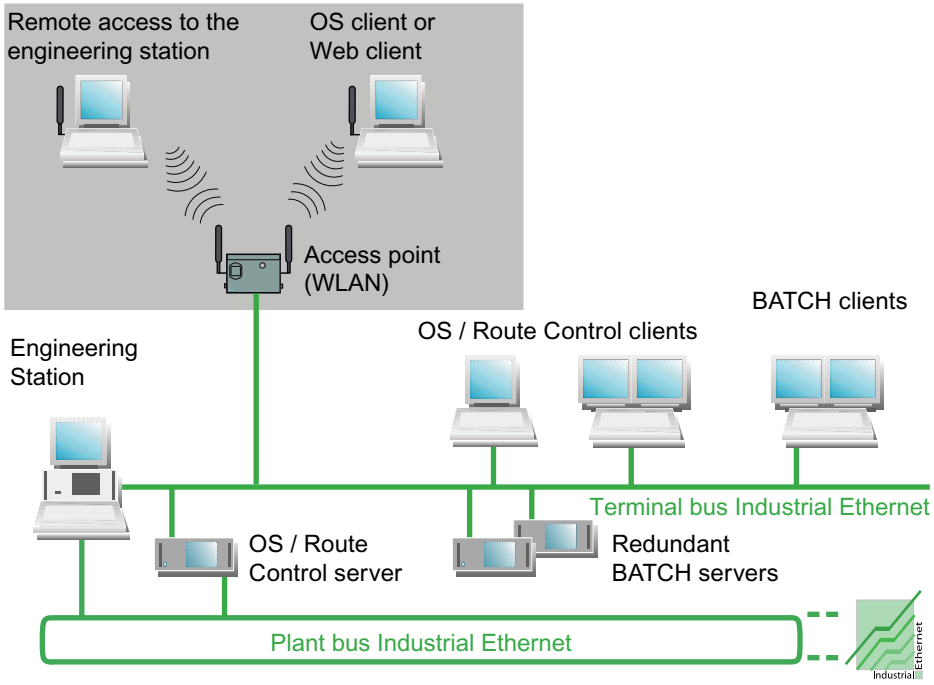
- OS clients
  Up to 2 OS clients (to IWLAN)
- Web clients
  Up to 2 Web clients to a PCS 7 OS Web server (to IWLAN)
- PC station
  One PC station for remote access to an engineering station using NetMeeting or Remote Desktop, during commissioning, for example

Components for IWLAN in PCS 7

The *PCS 7 - Released Modules* documentation lists the network and PC components that are approved for IWLAN in PCS 7.
You can find the documentation on the PCS 7 Toolset DVD or following installation of PCS 7 with the menu command **Start > SIMATIC > Documentation > <language> > PCS 7 - Released Modules**.

Example for IWLAN in PCS 7

The following figure show a basic configuration of WLAN components in a PCS 7 plant.



Additional information

You can find detailed information on WLAN components, installation guidelines and settings in the following documentation:

- Product Information *Process Control System PCS 7; PCS 7 - Released Modules*
- System manual *SIMATIC NET; Basics - Industrial Wireless LAN*
- Operating instructions *SIMATIC NET; SCALANCE W788-1PRO (Access Point), SCALANCE W788-2PRO (Dual Access Point), SCALANCE W788-1RR (Access Point iPCF), SCALANCE W788-2RR (Dual Access Point iPCF)*
- Operating instructions *SIMATIC NET; CP 7515*

2.9.4 Time-of-day synchronization

System-wide Time Synchronization

To obtain process data that can be evaluated, all the components of the process control system need to work with an identical, synchronized time of day. This allows you to assign messages in the correct sequence over time. The result is then consistent regardless of the time zone in which the messages originate.

One system component must be the clock for all other components so that all process control system components work with an identical time. The PCS 7 component that functions as timer is referred to as the time master. Components such as the central plant clock SICLOCK or an OS server can be configured as the time-of-day master.

The time master is responsible for distributing the time signal to the PCS 7 components to be synchronized, for example, operator stations and automation systems.

Synchronization options

The following table below shows the PCS 7 components for which time synchronization is possible:

Station	Synchronization
Operator station and Maintenance Station	• Via the terminal bus • Via the plant bus
BATCH station	• Via the operating system
Route Control station	• Via the operating system
SIMATIC PCS 7 BOX	• Via the integration in a PCS 7 plant
AS	• Via the plant bus
Domains	• Via the domain controller as the time-of-day master on the terminal bus
Time master	• The time master is integrated in a PC or connected to the Ethernet network as a bus component. • The time master can be any device which can transmit a time signal via the Ethernet network (a PC, for example).

More information

You can find information on time synchronization in the *Process Control System PCS 7; Time Synchronization* manual.

Hardware for PC stations

3

3.1 Preconfigured PC systems for PCS 7 (product bundles)

PC hardware for engineering stations (ES) and operator stations (OS)

Special versions of the basic hardware (product bundles or bundle PC) are available for engineering stations (ES) and operator stations (OS).

The bundle PCs are preconfigured PC systems for PCS 7, which have been optimized for the specific area of application.

The preconfigured PC systems that are available for PCS 7 can be found in the current *ST PCS 7* catalog under the keyword "Entry level systems".

We recommend SIMATIC PCS 7 BOX PCs for use in small standalone systems or for combined AS/OS stations in the PCS 7 network.
You can find additional information on this in the manual *Process Control System PCS 7; SIMATIC PCS 7 BOX*.

If you use other types of PCs for PCS 7, you will find the relevant hardware requirements in the section "Recommended basic hardware configuration (Page 52)".

Color monitors

Siemens industrial monitors are available for use as PCS 7 process monitors, depending on the prevailing environmental conditions.

We recommend you use monitors with a minimum resolution of 1280 x 1024, which will enable you to fully utilize the graphical options offered by the PCS 7 software.

Network connection

All PCS 7 product bundles are configured for a Windows workgroup.

If you include preconfigured PC systems in a Windows domain, you must reactivate the security settings by means of the PCS 7 setup.

You can find additional information about security settings in the section "How to retro-activate the security settings for PCS 7 (Page 155)".

More information

- Catalog *ST PCS 7*
- Catalog *ST PCS 7.1* (Add-ons for SIMATIC PCS 7)

3.2 Basic hardware configuration

Introduction

This section contains information on equipping the PC stations with basic hardware:

- Recommended basic hardware configuration
- Minimum basic hardware configuration

Recommended basic hardware configuration

We recommend the following configuration for PC components (the higher the quality of the equipment, the better):

Parameters	**Central engineering station with server operating system, central archive server, PCS 7 OS/SIMATIC BATCH/SIMATIC Route Control on a PC, engineering station, OS server, OS single station system Maintenance Station, PCS 7 Web server, OS client, and BATCH client on a PC, BATCH server, BATCH single station system, Route Control server, Route Control single station system**	**OS client, BATCH client, Route Control client**
PC (see catalog "ST PCS 7")	SIMATIC Rack PC 547B	
Processor	Intel Core2Duo E6600	
Clock-pulse rate	2.40 GHz	
Second-level cache (SLC)	4 MB	
Front-side bus (FSB)	1066 MHz	
Work memory (RAM)	2.0 GB	1.0 GB
Hard disk	250 GB SATA RAID 1 array in servers and ES/OS single station systems 250 GB SATA in client systems	250 GB SATA
Partition size	C:\ 50 GB	C:\ 50 GB

Parameters	**Central engineering station with server operating system, central archive server, PCS 7 OS/SIMATIC BATCH/SIMATIC Route Control on a PC, engineering station, OS server, OS single station system Maintenance Station, PCS 7 Web server, OS client, and BATCH client on a PC, BATCH server, BATCH single station system, Route Control server, Route Control single station system**	**OS client, BATCH client, Route Control client**
Mains adapter/communications interfaces • a) For communication on the terminal bus • b) For communication on the plant bus	• To a): RJ45 onboard Gigabit Ethernet • To b): CP 1613 or CP 1623 or BCE network adapter for engineering station and OS server	To a): RJ45 onboard Gigabit Ethernet
Opt. drive	• For all apart from engineering station: DVD-ROM • For engineering station: DVD+/-RW	DVD-ROM

Parameters	SIMATIC BOX PC 627B	SIMATIC Microbox PC 427B
Processor	Intel Core2Duo Mobile T7400	Pentium Mobile M738
Clock-pulse rate	2.16 GHz	1.4 GHz
Second-level cache (SLC)	4 MB	2 MB
Front-side bus (FSB)	667 MHz	400 MHz
Work memory (RAM)	2.0 GB	1.0 GB
Hard disk Partition size	160 GB SATA C:\ 30 GB	Compact Flash card: 2.0 GB
Mains adapter/communications interfaces	• 2 x RJ45 onboard Gigabit Ethernet • Onboard CP 5611 • In "SIMATIC PCS 7 BOX RTX" product bundle with additional CP 5613 A2	• 2 x RJ45 onboard Gigabit Ethernet • Onboard CP 5611
Opt. drive	DVD-ROM	
Special features		Without fan

Note

Please note the following:

- For multiproject engineering, it is beneficial for the engineering stations if you use PCs with high clock-pulse rates, large main memories and hard disks, and high-speed disk drives.
- If the central archive server is used in conjunction with large amounts of data, we recommend that you use the premium server found in the PCS 7.1 catalog (Add-ons for SIMATIC PCS 7).

Minimum basic hardware configuration

We recommend the following minimum configuration for smaller projects:

Parameters	**Central engineering station with server operating system, central archive server; PCS 7 OS/SIMATIC BATCH/SIMATIC Route Control on a PC**	**engineering station, OS server, OS single station system, Maintenance Station, PCS 7 Web server, OS client and BATCH client on a PC, BATCH server, BATCH single station system, Route Control server, Route Control single station system**	**OS client, BATCH client, Route Control client**	**SIMATIC PCS 7 BOX 416 (requirements for the basis PC must be a BOX PC 627 or better)**
Processor	Intel Pentium IV	Intel Pentium IV	Intel Pentium IV	Pentium Mobile
Clock-pulse rate	>= 2.0 GHz	>= 2.0 GHz	>= 2.0 GHz	>= 2.0 GHz
Hard disk Minimum partition size	>= 120 GB C:\ 20 GB	>= 120 GB C:\ 20 GB	>= 80 GB C:\ 20 GB	80 GB C:\ 20 GB
Work memory (RAM)	2 GB	1 GB	512 MB	1 GB
Network adapters/Communications interfaces • a) For communication on the terminal bus • b) For communication on the plant bus	• To a): RJ45 connector (fast Ethernet) • To b): CP 1613 or CP 1623 or BCE network adapter for engineering station and OS server	• To a): RJ45 connector (fast Ethernet) • To b): CP 1613 or CP 1623 or BCE network adapter for engineering station and OS server	To a): RJ45 connector (fast Ethernet)	To a): 2 x RJ45 connectors (fast Ethernet) available on SIMATIC BOX PC 627.
Opt. drive	DVD-ROM	DVD-ROM	DVD-ROM	DVD-ROM

Latest information in the Readme file

Always read the latest information in the *Process Control System PCS 7; PCS 7 Readme* document on the PCS 7 Toolset DVD for every new PCS 7 version.

More information

- Catalog *ST PCS 7*
- Catalog *ST PCS 7.1* (Add-ons for SIMATIC PCS 7)

3.3 Components for connection to the terminal bus/plant bus

Attachment of OS, BATCH, Route Control and ES

You can connect the following PC stations to Industrial Ethernet via communication modules or network adapters:

- Operator stations
- BATCH stations
- Route Control stations
- Engineering stations

The communication modules require a slot in the PC or programming device (PG). A variety of communication modules can be used depending on the requirements:

Connection to the terminal bus

For connection to the terminal bus:

- Standard communication modules (for example, Intel® PRO/1000 GT Desktop Adapter)
- Redundant connection of the PC station to the terminal bus:
  Two network adapters working in team mode on a PC.
  - PCI network adapters:
    Intel® PRO/1000 MT Server Adapter
    Intel® PRO/1000 GT Desktop Adapter
  - PCIe network adapters:
    Intel® PRO/1000 PT Server Adapter
    Intel® PRO/1000 PT Desktop Adapter

Connecting to the plant bus

- We recommend the following network adapter for connecting the plant bus and communication connections to a maximum of 8 communication partners (automation systems or servers):
  - PCI network adapter: Intel® PRO/1000 GT Desktop Adapter
  - PCIe network adapter: Intel® PRO/1000 PT Desktop Adapter
- Communications processors with onboard processors are used if the maximum number of 8 automation systems per operator station is not sufficient or if fault-tolerant automation systems are connected to the plant bus:
  - CP 1613 with S7-1613 software
  - CP 1623 with S7-1623 software
  - CP 1613 with S7 REDCONNECT software for redundant communication with S7-400H/FH
  - CP 1623 with S7 REDCONNECT software for redundant communication with S7-400H/FH

Note

Communication can be established with up to 64 automation systems (including redundant systems) using CP 1613 or CP 1623 communication modules.

Firewall on the plant bus

If you use a firewall on the plant bus, you will need one of the following types of the CP 443-1 communications processor for the SIMATIC stations:

- CP 443-1 EX 10 with firewall version V2.5.5 or later
- CP 443-1 EX 11 with firewall version V2.5.5 or later
- CP 443-1 EX 20

Driver

The driver software for the communication modules described above is available on the PCS 7 Toolset DVD. You can find additional information on this in the section "Overview of additional devices and drivers for PCS 7 (Page 115)".

Time synchronization

CP 1613 and CP 1623 support time synchronization on Industrial Ethernet (Fast Ethernet). A PC with a CP 1613 or CP 1623 can receive time frames from the following time transmitters:

- SIMATIC S7-400/H/FH with CP 443-1
- SIMATIC NET time transmitters for Industrial Ethernet (for additional information see catalog *IK PI*)
- SIMATIC SICLOCK
- PC with CP 1613 or CP 1623

Licensing for network card with configured terminal bus

NOTICE
If you use a CP 1613 or CP 1623 on the plant bus and configure the terminal bus in NetPro, you will require a BCE license.

See also

Tasks of terminal bus and plant bus (Page 41)

3.4 Optional hardware components

Overview

Component	Application
chip-card reader	This is used to access the PC stations via chip cards. All authorized users need a chip card. Chip-card readers can be used for serial and USB interfaces. The driver for chip-card readers with a COM port is installed automatically when you install PCS 7, except for devices of the type "OMNIKEY CardMan." The associated drivers for the chip-card readers "OMNIKEY CardMan 3111" and "OMNIKEY CardMan 3121 USB" is available on the PCS 7 Toolset DVD in the folder "Additional_Products \ Drivers \ CHIPCARD." **Notes:** • If SIMATIC Logon is used: – For the chip-card reader "OMNIKEY CardMan 3111", install the driver "CardMan3111_V1_1_2_1.exe". – For the chip-card reader "OMNIKEY CardMan 3121 USB", install the driver "CardMan3x21x86_1_1_2_4.exe". • Using WinCC User Administrator: – For the chip-card reader "OMNIKEY CardMan 3111", install the two drivers "CardMan3111_V1_1_2_1.exe" and "CT-API_V4_0_2_2.exe". – For the chip-card reader "OMNIKEY CardMan 3121 USB", install the two drivers "CardMan3x21x86_1_1_2_4.exe" and "CT-API_V4_0_2_2.exe".
Printer	Use a graphics-enabled printer or a line printer for message sequence reports. Printers must be supported by the operating system.
Signal module	You can use the signal module to control three visual or acoustic signal transmitters. You assign tags to these three signal transmitters in the WinCC editor "Audible signal device". If a tag has the status "1", the corresponding signal transmitter of the signal module is activated. The signal transmitter is acknowledged/reset via the software or an external acknowledgment on the signal module. A group signal is also available to you on the signal module. The group signal is triggered when one of the three signal transmitters is present and can control an acoustic or visual signal transmitter. Connecting a signal module also facilitates sign-of-life monitoring thanks to the watchdog function.
Sound card	You can use a standard sound card to expand OS single station systems and OS clients. Files, such as a "*.wav", are played back through suitable devices (loudspeakers, piezo transmitters) via the signal module.
Radio clock	This is used to synchronize the PCs and plant bus.
Intrinsically safe operating unit	If required, use an intrinsically safe PC operating unit (add-on product) in hazardous areas, zone 1 or 2 - distances of up to 750 m are possible.
Multi-VGA cards	Install a multi-VGA graphics card in a PC used as: • An engineering station or • A client for an operator station or SIMATIC Route Control This allows you to connect up to four monitors to a PC (for clients and engineering stations).

Component	Application
EPROM programming device **USB prommer**	This allows you to program SIMATIC memory cards and EPROM modules.
Redundant network adapters	These allow you to connect PC stations to the redundant terminal bus.

Additional information

- Catalog *ST PCS 7*

See also

Overview of additional devices and drivers for PCS 7 (Page 115)

3.5 Configuring and ordering

Station configuration software

On the *Interactive Catalog CA01; Automation and Drives* CD, you will find configuration software that you will find useful when creating your PC networks.

Ordering information

You can find the ordering information for tested PC configurations and software components in the *Process Control System PCS 7; ST PCS 7 Catalog*. The components offered represent the optimal basis for your plant for all areas of application. The catalog offers turn-key solutions.

Custom solutions

For custom solutions for PC systems (for example, RAID systems), contact your Siemens representative in the sales and service locations that are responsible for your company.

You can locate your Siemens representative at:

http://www.siemens.com/automation/partner

Installing PC stations

4

4.1 Overview of the installation procedure

Introduction

Below you will find a practical outline of the basic procedure for installing PC stations for PCS 7.

Siemens AG offers training courses on PC and network administration. Please contact your regional training center or the central training center for more information.

Overview of the individual steps for installation

This overview shows the recommended sequence of installation tasks.

Step	What?
Installation of the operating system	
1	Installing the operating system (Page 71)
2	Installing operating system service packs (Page 74)
3	Setting the location where the swap file is to be stored (Page 75)
4	Making system settings (Page 76)
5	• Installing the Message Queuing service for Windows XP Professional (Page 78) • Installing the Message Queuing service for Windows Server 2003 (Page 79)
6	Installing additional components (Page 80)
7	Configuring the server function for the central archive server (Page 81)
8	Installing additional services for SIMATIC BATCH (Page 82)
9	Setting the color scheme and font size (Page 83)
10	Creating a backup (Page 84)
Installation of PCS 7	
11	Install the PCS 7 software (Page 89)
12	Installing the central archive server (StoragePlus) (Page 93)
13	Configuring the redundancy for redundant servers (Page 95)
14	Installing a PC for PCS 7 OS Web Option (Page 95)
15	Activating the firewall in PC stations (Page 100)
16	Installing additional communication modules and PCS 7-specific settings (Page 106)
17	Installing interfaces for the plant/terminal bus (Page 107)
18	Licensing and authorizing the PCS 7 software (Page 120)
19	Preparing PC stations - an overview (Page 140)
20	Creating a backup (Page 84)

PCS 7 security settings in the network

SIMATIC Security Control (SSC) is called up automatically in the PCS 7 setup.
SIMATIC Security Control makes all necessary security settings for the PC station so you don't have to.

Installing the Microsoft SQL Server for PCS 7

The Microsoft SQL Server is required in PCS 7 for the specific PC stations: for example, operator station, engineering station.

For PCS 7 V7.1 and higher, the server is installed via the PCS 7 system setup and is automatically selected when required by the configuration to be installed for the PC station.

You can find additional information on this in the section "Installing the PCS 7 software (Page 85)".

4.2 Hard disk partitioning

Partitioning the hard disks

If you are not using a preconfigured PC from a PCS 7 product bundle, but instead a different type, divide the PC's hard disk into the following partitions to facilitate easy data backup.

- For the operating system and the PCS 7 installation: at least 20 GB
- For PCS 7 project structures: at least 15 GB, possibly several partitions
- For backups: Back up to a data storage medium which will not be affected should the PC or hard disk containing the original data fail, for example, CD, MOD, or even the network.

If you are using a preconfigured PC from a product bundle, the partitions are already set up.

For additional information about the minimum hardware requirements, refer to the document *Process Control System PCS 7; PCS 7 Readme*.

Example

Example of a hard disk with 120 GB:

Drive letter	Size in GB	Drive name	Formatting	Intended use
C:	20	SYSTEM	NTFS	Operating system installation and PCS 7 installation
D:	60	DATA	NTFS	PCS 7 project data
...	...	BACKUP	NTFS	Backup files

4.3 Installing the operating system

4.3.1 Notes on installing the operating system

Introduction

Only appropriately qualified personnel may install the operating system, particularly the servers, and configure networks.

Integration in networks

You can integrate PC stations for PCS 7 in a network. Note the following:

Note

Install the PC stations locally or in a workgroup. Using this procedure prevents group guidelines or domain restrictions from hindering the installation.

Do not use the following PC stations in PCS 7 for domain management (as DHCP or DNS server, for example):

- OS server
- BATCH server
- Route Control server

If a server (OS server, BATCH server, Route Control server) is also used as a server for these services, then the PCS 7 functions may be impaired due to overloading of the PC's resources.

NOTICE

Only install PCS 7 software products listed in this documentation on a PC station. This especially applies to PC stations for process mode (OS, SIMATIC BATCH, SIMATIC Route Control).

Installing and simultaneously activating applications that are not approved by Siemens can adversely impact the PCS 7 system performance.

The user bears sole responsibility when third-party products are used.

If you require third-party products, these should be installed before you install PCS 7. PCS 7 and these third-party products should not run at the same time.

Reinstalling and updating

Note the following general information in regard to updating software.

NOTICE

Please note the following:

- If the operating system for PCS 7 has not been installed on the PC station yet, reinstall the PC. This requires the operating system to be changed.
- Check the suitability of your hardware before performing a new installation. More information is available in the file *PCS 7 Process Control System, PCS 7 Readme*.
- Back up your authorizations.
- Save your unchanged project and associated data prior to reinstallation (in an image, for example). You can find additional information about this in the manual *Process Control System PCS 7; Service Support and Diagnostics*.
- Make the preparations for updating the software. You can find additional information about this in the manuals *Process Control System PCS 7; Software Update*.
- Back up the data required for the software update.
- Format the hard disks and create new partitions.

Operating systems

There are different procedures that depend on the various 32-bit operating systems:

- Procedure for installation with Windows XP Professional
- Procedure for installation with Windows Server 2003

Possible operating systems and their use in PCS 7: You can find additional information on this in the appendix "Software packages and required license keys (Page 176)".

Note

You can operate domain controllers with the following operating systems:

- Windows Server 2003
- Windows Server 2000

Languages for the operating system

The menus for configuration and for the process management can be displayed in the following languages:

- Chinese
- German
- English
- French
- Italian
- Spanish

The PCS 7 product bundle PCs are provided with a multilingual operating system.

The default language is English; the multilingual packages which include German, French, Italian and Spanish are installed.

If you install a PC yourself, we recommend the following when selecting the operating system language:

- If the PC users only use one language, select the operating system language used for configuration/process management.
- If the PC users use several languages, select a multilanguage operating system (with English as the default) and also install the additional Multilingual User Interface Packs.

Name of the PC station

Do not use underscores in the name of a PC station. Otherwise, problems may arise when accessing data using the StoragePlus WebViewer. You will find the name of the PC in the Windows Control Panel under "System", on the "Computer Name" tab.

Note

When configuring an OS or BATCH server and an engineering station, note that it is essential that the PC station name must be the same as that of the server PC (computer name).
Exception: When setting up a Maintenance Station (see *Process Control System PCS 7; Operator Station* Configuration Manual).
More information is available in *WinCC information system* under "Working with projects > Appendix > Invalid characters."

4.3.2 PC configuration security settings

Introduction

Current production methods increasingly require process control systems and the IT environment to come together. The need to connect company networks to public ones brings with it increased hazard potential. Information system and network security has therefore become an important factor in operating process control systems. Accurate knowledge of the sources of risks and the implementation of measures to prevent these risks from occurring is of utmost importance.

Comprehensive knowledge of administrating Microsoft Windows networks is required if you want to integrate PCS 7 PC stations into a PC network.

Recommendations and instructions

The manual *Process Control System PCS 7; Security Concept PCS 7; Recommendations and Notes* helps Administrators to plan and configure PC networks:

- It will give you an overview of network, computer and user management, as well as the management of user and access rights in PCS 7.
- It will provide you with important information about integrating PCS 7 networks into the Windows management system.
- You will learn what the options are available for time synchronization in a PCS 7 plant.
- You can find information about how to establish patch management and secure communication paths between the PC stations in a PCS 7 plant.

Note

This manual builds on the options available in Windows XP Professional and Windows Server 2003 and requires knowledge of how these operating systems are used and managed.

Network

You must isolate the network for a PCS 7 plant via switches, routers, or gateways to ensure that no faults reach the PCS 7 plant, via office networks, for example.

Security settings on a PC

When you install PCS 7, you can either activate the required security settings on the PC when the installation is taking place or at a later time.

NOTICE
When the PCS 7 plant is operated in a domain, the security settings must be coordinated over the entire domain. Coordinate the security settings with the appropriate Administrator.

Virus scanners and updates

Virus scanners and updates approved for PCS 7 can be installed later.

NOTICE
Please note that some updates will require you to restart your PC and cannot, therefore, be installed in process mode.

Additional information

- You can find additional information about security settings in:
  - Section "How to retro-activate the security settings for PCS 7 (Page 155)"
  - Section "Installing security patches, hotfixes, service packs (Page 154)"
- You can find additional information about virus scanners and updates in:
  - Section "Virus scanners (Page 163)"
  - Section "Installing security patches, hotfixes, service packs (Page 154)"
- Document *Security concept PCS 7 and WinCC - Basic Document*
- File *pcs7-readme*

4.3.3 How to install Windows XP and Windows Server 2003

Requirement

All the necessary modules and devices have been installed in your PC.

Procedure

Note

For a multi-language installation, the names of dialog boxes appear in square brackets "[...]".

1. Insert the installation CD for the operating system in the CD drive.
2. Follow the Setup instructions for installing the operating system.
3. Make the settings for your specific system in the "Regional and Language Options" dialog box.
4. Make the settings for your specific system in the "Personalize Your Software" dialog box.
5. Enter your product key in the "Product Key" dialog box. You can find it on the CD envelope.
6. The "Licensing Modes" dialog box only appears in the setup for Windows server 2003 and not in Windows XP.

   The default setting for the licensing mode is: "per server".

   Select the "per device or per user" radio button for the licensing mode if more than one server or more than five clients are present in one area.
   In this context, "area" means a subnet, a workgroup or a domain.

   Note

   One standard Windows 2003 Server software package contains licenses for five seats. Ensure you have the correct number of licenses.

7. Make the settings for your specific system in the "Computer Name and Administrator Password" dialog box.

   Note

   Recommendation: Select short and descriptive computer names that provide some information about the role of the PC station in the overall system.

   Use only letters and number for the computer names.

8. Make the settings for your specific system in the "Date and Time Settings" dialog box.
9. You can make the settings in the "Network Settings" dialog box now or later.
10. Make the settings for your specific system in the "Workgroup or Computer Domain" dialog box. You can also configure this later.

The installation is complete.

Installation of specific language components for a multilingual installation

1. Start the setup on the *Multilingual User Interface Pack* CD.
2. Follow the Setup instructions for the installation.
3. In the "Windows Multilingual User Interface Pack" dialog box, select the languages to be made available in the menus and dialogs (multiple languages can be selected). Select the default language. Select the "Match Language for non-Unicode ..." and "Match the default shell ..." check boxes.
4. Follow the Setup instructions for the installation.
5. Reboot the PC.

Settings made after installation of the Windows multilingual user interface pack

The selected language is English.

1. Select the menu command **Start > Settings > Control Panel > Regional Language Options**.
   The "Regional and Language Options" dialog box opens.
2. Open the "Regional Options" tab and make the settings for your specific system.
3. Open the "Languages" tab and make the settings for your specific system.
4. Open the "Advanced" tab and make the settings for your specific system.
5. Reboot the PC.

Adding additional system components

1. Select the menu command **Start > Settings > Control Panel > Add or Remove Programs**
   The "Add or Remove Programs" dialog box opens.
2. Click the "Add/Remove Windows Components" button.
   The "Window Components Wizard" opens.
3. Activate the check boxes for the enabling components in the list as shown in the following table.
4. Click "Next".
5. Click "Finish".
   This completes the installation.

Activate the options in the 'Windows Components Wizard' dialog box.

Component	Procedure
Accessories and Utilities	1. Click "Details". 2. Clear the check box for "Games" when installing Windows XP. 3. Click "OK".
Internet Information Services (IIS)	• When using the PC under PCS 7 or WinCC options **activate** the service as: – OS Web server – Central archive server – PC station where BATCH archives are stored • **Deactivate** the service for all other installations. Under Windows XP: 1. Activate the "Internet Information Services (IIS)" service. Under Windows Server 2003: 1. Activate the "Application server" check box. 2. Click "Details". 3. Activate the "Internet Information Services (IIS)" service.
Message queuing	1. **Activate** the service.

More information

- Section "How to install the Message Queuing Service for Windows XP Professional (Page 78)"
- Section "How to install the Message Queuing Service for Windows Server 2003 (Page 79)"

4.3.4 How to install service packs for the operating system

Introduction

If you installed the operating system without a service pack, you will need to install the service pack before continuing.

Versions

Note

Refer to the *pcs7-readme* file to find out which version is required.

Requirements

- The operating system has been installed.
- The PC station is operated locally or in a workgroup (but is still not included in a domain).

Procedure

1. Insert the installation CD in the CD drive.
2. Double-click the appropriate "<operating system>.exe" file to start the installation routine.
3. Select the "I agree with the license agreement" check box and click "Install".
4. When the installation has been successfully completed, reboot the computer and remove the installation CD.

Additional information

- Section "Installing security patches, hotfixes, service packs (Page 154)"

4.3.5 How to configure paged memory

Introduction

The operating system requires additional disk space for the paging file (virtual memory; this is created by default on the operating system partition).

Rules for setting the size of the paging file

The size of the paging file depends on the memory configuration of the PC. We recommend the following settings:

- Specify about 1.5 to 2 times the RAM available in the PC for the paging file.
- Enter the same value for the initial size and maximum size of the paging file.

Requirement

- The PC station is operated locally or in a workgroup (but is still not included in a domain).

Procedure

1. Select the "My Computer" object in the Windows Explorer.
2. Select the menu command **File > Properties**.
3. Open the "Advanced" tab.
4. In the "Performance" group, click "Performance Options".
   The "Performance Options" dialog box opens.
5. Open the "Advanced" tab.
6. In the "Virtual Memory" group, click "Change".
7. Use the option "User defined size" to enter the required values.
8. Click "OK" to save the settings.
9. Close all open dialog boxes by clicking "OK".

4.3.6 How to make additional system settings

Requirement

The PC station is operated locally or in a workgroup (but it has not yet joined a domain).

Procedure

1. Select the menu command **Start > Settings > Control Panel > Administrative Tools > Computer Management > Local Users and Groups** to set up the users.
   You can find additional information on this in the section "Setting up user groups and users (Page 96) ".
2. Select the menu command **Start > Settings > Control Panel > Display**.
   The dialog box for setting the display properties opens.
   - Select the screen resolution in the "Settings" tab.
     We recommend the setting "1280x1024" for PCS 7.
     The higher resolution allows you to better utilize the display features of the PCS 7 software, for example, for the online operation of faceplates from the libraries. Please ensure that you have installed appropriate drivers and are using suitable monitors.
   - Open the "Screen Saver" tab.
   - In the "Screen saver" area, select "None" from the drop-down list.
   - In the "Monitor power" area, click the "Power..." button.
   - In the "Settings for ... power scheme" area, select "Never" in all the drop-down lists.
   - Click "OK" to close the dialog box.
3. Select the data throughput for network applications for a Windows server.
   - Windows Server 2003: Select the menu command **Start > Settings > Network Connections**.
   - Select the network connection for the terminal bus.
     Recommendation: Name the network connections in accordance with use, for example, terminal bus or plant bus.
   - Select the menu command **File > Status**.
   - Select the "General" tab.
   - Click "Properties".
   - Select "File and Printer Sharing for Microsoft Networks".
   - Click "Properties".
   - Activate the "Maximize data throughput for network applications" option.
   - Click "OK" to close the dialog box.
4. Disable the energy saving option for network adapters.
   You can find additional information on this in the section "How to disable the power saving options of network adapters (Page 111) ".

5. Select the menu command **Start > Settings > Control Panel > Administrative Tools > Computer Management > System Tools > Event Viewer** to check that all services and drivers are functioning correctly.
6. OS server: In the Control Panel, select the "Background services" radio button.
   - Select the menu command **Start > Settings > Control Panel > System**.
     The "System Properties" dialog box opens.
   - Select the "Advanced" tab.
   - In the "Performance" area, click the "Settings" button.
   - Select the "Advanced" tab.
   - For Windows Server 2003: In the "Processor scheduling" area, select the "Background services" radio button.
   - Click "OK" to close the dialog box.

4.3.7 How to install the Message Queuing Service for Windows XP Professional

Introduction

Install the Message Queuing service on the PC station prior to installing PCS 7.

Requirements

- The Windows XP Professional operating system must be installed, along with a service pack and Internet Explorer.
- The PC station is operated locally or in a workgroup (but it has not yet joined a domain).
- You are logged in to Windows XP Professional as an Administrator.

Procedure

1. Select the menu command **Start > Settings > Control Panel > Add or Remove Programs**.
2. Click the "Add/Remove Windows Components" button.
3. Select the "Message Queuing" component.
   The "Details" button is active.
4. Click "Details".
   The "Message Queuing" dialog box opens.
5. Select the "General" subcomponent.
   Disable all other subcomponents and click "OK".
6. Click "Next".
7. If you have stored the software for the Message Queuing service on the PC with the operating system, the installation will start immediately. If the software for the Message Queuing service is not yet available, the "Data Medium" dialog box opens:
   – Insert the required Windows installation CD into the CD drive.
   – Click "OK".

   MS Message Queuing is installed.
8. Click "Finish" to close the Wizard.
9. Use the Event Viewer to check that the Message Queuing services have been activated correctly:
   – Select the menu command **Start > Settings > Control Panel > Administrative Tools > Event Viewer**.
   – In the tree view, select "Event Viewer > Application".

   The Message Queuing service has been installed correctly if the "Source" column contains the entry "MSMQ".

Incorrect function

If an error message appears under "Description" in the "Event Properties" dialog box, the installation has not been executed correctly. Uninstall and then reinstall "Message Queuing Services".

4.3.8 How to install the Message Queuing Service for Windows Server 2003

Introduction

Install the Message Queuing service on the PC station prior to installing PCS 7.

Requirements

- The Windows Server 2003 operating system must be installed along with a service pack and Internet Explorer.
- The PC station is operated locally or in a workgroup (but it has not yet joined a domain).
- You are logged in to Windows Server 2003 as an Administrator.

Procedure

1. Select the menu command **Start > Settings > Control Panel > Add or Remove Programs**.
2. Click the "Add/Remove Windows Components" button.
3. Select the "Application Server" line (do not check the box) and click the "Details" button. The "Application Server" dialog box opens.
4. Select the "Message Queuing" line (do not check the box) and click the "Details" button. The "Message Queuing" dialog box opens.
5. Check the "Shared Components" box. Uncheck all other boxes and click "OK".
6. If the software for the Message Queuing service is stored on the PC with the operating system, the installation will start immediately. If the software for the Message Queuing service is not yet available, the "Data Medium" dialog box opens.
   - Insert the required Windows installation CD into the CD drive.
   - Click "OK".

   MS Message Queuing is installed.
7. Click "Finish" to close the Wizard.
8. Use the Event Viewer to check that the Message Queuing services have been activated correctly:
   - Select the menu command **Start > Settings > Control Panel > Administrative Tools > Event Viewer**.
   - In the tree view, select "**Event Viewer > Application**".

   The Message Queuing service has been installed correctly if the "Source" column contains the entry "MSMQ".

Incorrect function

If an error message appears under "Description" in the "Event Properties" dialog box, the installation has not been executed correctly. Uninstall and then reinstall "Message Queuing Services".

4.3.9 How to install additional components

You need to install additional Microsoft components for some PC configurations. You will find these components on the PCS 7 Toolset DVD in the "Microsoft" folder or on the "Microsoft_ServicePacks_&_Tools" DVD.

Note

If you install an additional Microsoft component for a PC configuration, you will find the latest information about it in the *pcs7 Readme* file.

Languages

Install the additional Microsoft components in the language of the operating system.

The language versions of this component can be differentiated by a language-specific directory and/or the language detection in the file name.

Language	Language code	Directory on the "Microsoft_ServicePacks_&_Tools" DVD
German	german	ServicePack\WinXP_SP3\German\WindowsXP-KB936929-SP3-x86-DEU.exe
English	english	ServicePack\WinXP_SP3 \english\ WindowsXP-KB936929-SP3-x86-ENU.exe
French	french	ServicePack\WinXP_SP3 \french\ WindowsXP-KB936929-SP3-x86-FRA.exe
Italian	italian	ServicePack\WinXP_SP3 \italian\ WindowsXP-KB936929-SP3-x86-ITA.exe
Spanish	spanish	ServicePack\WinXP_SP3 \spanish\ WindowsXP-KB936929-SP3-x86-ESN.exe

Procedure

1. Insert the DVD in the DVD drive.
2. Select the relevant folder on the DVD.
3. Install the components named in the *pcs7 Readme* file.

4.3.10 How to configure the server role for the central archive server

Introduction

If you use the StoragePlus software package on an OS server, perform the following steps on this OS server.

Requirement

- The Windows Server 2003 operating system is installed.

Procedure

You need to configure IIS, ASP.NET for Windows Server 2003:

1. In the Windows start menu, select the menu command **Settings > Server Configuration Wizard**.
   The "Server Configuration Wizard" opens.
   Click "Next."
2. No settings are needed on the following page. Click "Next".
3. A process indicator shows the entry of the network settings and is automatically closed on completion. If the Windows firewall displays a security query, click "No longer block" to acknowledge.
4. The server configuration type page is optionally displayed.
   Select the "Custom configuration" option.
   Click "Next".
5. On the next page, select the "Application server (IIS, ASP.NET)" item for "Server function".
   Click "Next".
6. On the next page, activate the check box for the item "Activate ASP.NET."
   Click "Next".
7. Follow the instructions on the screen.

4.3.11 Installing additional services for SIMATIC BATCH

Introduction

If you want to transfer SIMATIC BATCH archives using FTP, then additional installations are required on the PC stations.

In addition to the services being installed

PC station	Service or software that needs to be installed
PC station to which the BATCH archives are transferred	IIS service FTP service
PC station from which the transfer of BATCH archives will be activated	FTP service
PC station from which the transferred BATCH archives will be accessed	BATCH Control Center (BatchCC)

Additional information

- You will find additional information on configuring services in the manual *Process Control System PCS 7; SIMATIC BATCH*.

4.3.12 How to set color schemes and font sizes

Introduction

The settings for the color scheme and font size can sometimes change automatically when other programs are installed. Correct the following settings, if necessary.

- Color scheme
- Font size
- Display effects

Procedure

1. In the Window Start menu, select the menu command **Start > Settings > Control Panel > Display**.
   The "Display Properties" dialog box opens.
2. Select the "Appearance" tab.
3. Make the following settings:
   - Select the "Windows -- Classic" item in the "Windows and Buttons" drop-down list.
   - Select the "Windows Classic" item from the "Color scheme" drop-down list.
   - Click "Apply".
   - Click "Advanced".
     The "Advanced Appearance" dialog box opens.
   - Select the "Active Title Bar" item from the "Screen element" drop-down list.
   - Select the dark blue menu surface from the "Color" drop-down list.
   - Select the dark blue menu surface from the "Color 2" drop-down list.
   - Click "OK".
4. Select the "Normal" item in the "Font size" drop-down list.
5. Click "Effects".
   The "Effects" dialog box opens.
6. Clear the "Show contents of window while dragging" check box.
7. Close all open dialog boxes by clicking "OK".

4.3.13 Creating a backup

Recommendation

After restarting and testing the installation, create a backup of the partitions on which the operating system/PCS 7 software is installed.

We recommend creating an image of the installation for backing up partitions and hard drive data. An image allows you to restore partition and hard drive data at any time or to prepare the PC for a software reinstallation.

Note

Please note that neither license keys nor authorizations can be backed up along with the data.

- Move authorizations and license keys to a different medium (license key diskette, partition, etc.) before creating the image.
- In selecting image software, ensure that it is suitable for the operating system in use.
- To create an image, follow the image software manufacturer's instructions.

4.4 Installing the PCS 7 software

4.4.1 Notes on installing PCS 7

Introduction

The PCS 7 software contains applications that allow you to configure systems and operate and monitor them in runtime. In addition to the applications of the basic software, there are numerous optional packages and upgrade packages that you can install later and use for special applications.

Refer to the latest *ST PCS 7* catalog to learn about all of the software packages released for PCS 7 and how they can be used. You can find a detailed introduction in the manual *Process Control System PCS 7; Engineering System*.

The following describes the installation for the basic PCS 7 software.

Versions of the software package

You can find information on the software packages and versions associated with the current PCS 7 Toolset DVD in the *Process control system PCS 7; PCS 7 Readme* file on the PCS 7 Toolset DVD.

Latest information about the installation

Note

Please note the following:

- When installing PCS 7 in a network, make sure that at least one DVD drive and one diskette drive are available.
- Read the latest information about installation and the software and hardware requirements in the *Process control system PCS 7; PCS 7 Readme* file on the PCS 7 Toolset DVD.
- If you install PCS 7 in a domain, be aware of the group policies or other restrictions that may hinder the installation. Consult the appropriate Administrator as regards these settings and the required approvals and authorizations.
- If you want to use the Windows firewall, you must wait until PCS 7 is installed before activating it.

Rules for the installation and use of PCS 7 and other software

NOTICE
Only the software products listed in this manual should be installed on a PCS 7 PC. This applies in particular to PC stations used for process mode (OS, BATCH, Route Control). Installing and simultaneously activating applications that are not approved by Siemens can adversely impact the PCS 7 system performance. The user bears sole responsibility when third-party products are used. If you require third-party products, these should be installed before you install PCS 7. PCS 7 and these third-party products should not run at the same time.

Several PCS 7 applications on a single PC station

A PC station can be used to run a single PCS 7 application (such as OS server). It can also be used to run several PCS 7 applications (such as OS server and BATCH client). You can find additional information on this in the appendix "Approved configurations (Page 219)".

Installing the Microsoft SQL Server for PCS 7

The Microsoft SQL Server is required in PCS 7 for the specific PC stations: for example, operator station, engineering station.

For PCS 7 V7.1 and higher, the server is installed via the PCS 7 system setup and is automatically selected when required by the configuration to be installed for the PC station.

The user group "SQLServer2005MSSQLUser$<RECHNERNAME>$WINCC" is created with the installation of the SQL Server.

You can find additional information on this in the section "Setting up user groups and users (Page 96)".

Security settings with the SIMATIC Security Control

Settings are required in the registry, in DCOM and in the Windows firewall exception list for trouble-free operation of the PCS 7 software. When the PCS 7 setup is completed, the "SIMATIC Security Control" dialog box appears, allowing you to make these settings. You have the following options:

- If you want to apply the settings immediately, click "Apply".
- If you want to make the settings at a later point in time, select the menu command **Start > SIMATIC > SIMATIC Security Control > All Settings**.
- If you start "SIMATIC Security Control" via the menu command **Start > SIMATIC > SIMATIC Security Control > Settings Made**, the settings already transferred to the operating system will be displayed.

Note

The settings must be reset after a change of the work environment, for example of domains in the workgroup or vice-versa. To do this, use the menu command **Start > SIMATIC > SIMATIC Security Control > All Settings**.

The settings in the exception list of the Windows firewall are applied to the area of the local network (subnet). If your PC stations are located in different networks (subnets), you need to change this area.

The settings in the exception list of the Windows firewall are made when the Windows firewall is disabled.

You can find additional information on this in the section "How to retro-activate the security settings for PCS 7 (Page 155)".

Note

For PCS 7 product bundle PCs such as SIMATIC PCS 7 BOX and SIMATIC IPC, note the following:

- When in factory state, the settings are made in the registry, in DCOM and in the exception list for the Windows firewall.
- When the systems as of V7.0 are in factory state, the local Windows firewall is disabled.
- The log of firewall events is disabled.

NOTICE
When the PCS 7 plant is operated in a domain, the security settings must be coordinated over the entire domain. Coordinate the settings with the appropriate Administrator.

4.4.2 How to install in a network

Preparation

If you want to install several PCs, make the following preparation:

Copy the content of the PCS 7 Toolset DVD to a hard disk that can be accessed by all the PCs. In this way, you can install several PCs at one time.

Rules

Observe the following rules when installing PCS 7 over a network

- Make sure the PC is set up to automatically restore the link to the directory containing the PCS 7 software after a PC restart.
- Set up a share for the directory (folder or drive) on which the PCS 7 software is available.
- Set up the following access rights for the share:
  - Operating user: Read
  - System: Read

Procedure

1. Copy the files of the DVD to a folder.
   Then continue working on the PC on which you want to install PCS 7.
2. In Windows Explorer look for the folder in the network on which you saved the copy of the DVD.
3. Call up the setup.
   You will find more information on this topic in the section "How to install the PCS 7 software (Page 89)".

4.4.3 How to install the PCS 7 software

Introduction

The PCS 7 Toolset DVD contains the complete software for the PCS 7 applications. Depending on the PCS 7 application in question, you only need to install certain applications from the PCS 7 Toolset DVD. In this phase you are supported by the PCS 7 system setup.

Licensing

You can transfer the license keys required for the software package either before or after the PCS 7 installation.

You will find a description of the license concept in the section " Licensing and authorizing PCS 7 software (Page 120) ".

Checking the installation requirements

The PCS 7 system setup automatically checks whether the software components needed for the PCS 7 installation are already installed on the PC.
Missing software components are indicated with a message. The setup program is terminated after the message is confirmed. You must install the missing software components. Then, restart the PCS 7 system setup.

Requirements

- The operating system is installed and all the steps described in the "Installation of the Operating System" section have been completed.
- All communications processors have been installed in the PC.
- You have administrator rights on the PC station.

Starting the PCS 7 setup

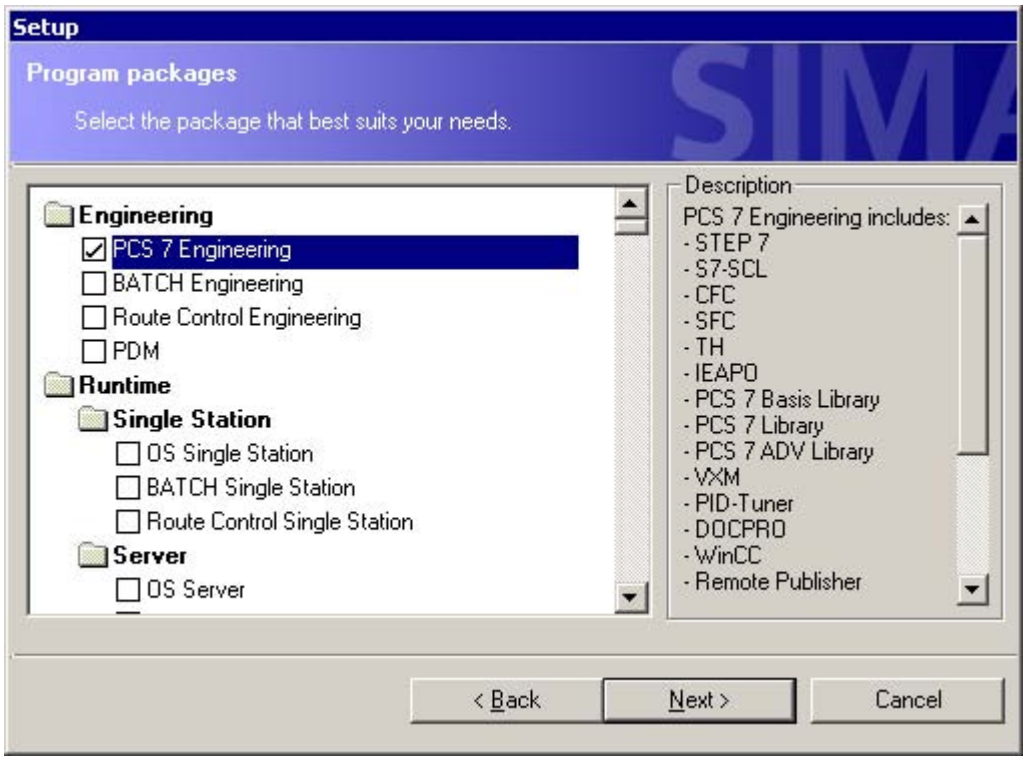
1. Insert the PCS 7 Toolset DVD in the DVD drive.
2. Double-click on "Setup.exe" to start the setup.
   Setup starts.

Settings in the setup

Below you will find information about the settings made in the setup dialog boxes, listed in the order in which they are processed:

1. Setup language
   - For example, "English" and "Next"
2. Welcome
   - ... "Next"
3. Product information
   ... Read this if needed and "Next".
4. License agreement
   - ... Activate the check box "I accept the conditions of the licensing agreement as well as the conditions of the Open Source Licensing Agreement".
   - ... "Next"
5. Setup type
   - ... Activate the "Install" or "Update" check box and click "Next".
6. User information
   - Enter the user information and "Next".
7. Installation type
   - ... Activate the "Package installation" check box to install the preselected software package.
   - ... Click "Browse" if you want to set a different destination folder.
   - ... "Next"

8. Program package



   – The program packages are shown. You can add additional PCS 7 packages. Activate the corresponding check boxes.
   You can find approved combinations in the section "Approved configurations (Page 219)".
   – ... "Next"

9. Programs
   – ... The required programs are shown. You can add additional software.
   – ... "Next"

10. If it is necessary to install the Microsoft SQL Server for the selected software components, a dialog box for the SQL Server license appears here. Enter the required and desired settings and operations.

11. Ready to install the selection.
   – The software installed on the PC for this PCS 7 application is listed in the display window.
   – ... "Install"

12. SIMATIC Security Control
    The top section of the "SIMATIC Security Control" dialog box shows the security settings which the PCS 7 system setup can make automatically.
    Read the information in the bottom section of the "SIMATIC Security Control" dialog box and select the appropriate button.

    Note

    If you do not use the security settings in the "SIMATIC Security Control" immediately, take into account that these settings are required for trouble-free operation of the PCS 7 software.
    These settings apply, for example, to the registry, DCOM, OPC applications and the Windows firewall exception list.

    You can find additional information on this in the section "How to retro-activate the security settings for PCS 7 (Page 155)".

13. Close the dialog box when the installation is complete.
14. Reboot the PC.

PC station as a file server for storing projects for multiproject engineering

Note

If a PC station is to be used as a file server for multiproject engineering, an engineering station must be installed in the Windows Server 2003 operating system.
PCS 7 licenses are not required for this file server.
You can find more rules about storing projects on network servers in the online help for STEP 7 Help.

Setting the network connection to the terminal bus

If several network adapters are installed in the PC, network connections to the terminal bus must be set in order for the PC to be operated in the PCS 7 plant.

You can find additional information on this in the section "How to set the communication module for connecting to the terminal bus (Page 147)".

Display of installed software

You can check which software packages are installed on the PC.

Select the menu command **Start > SIMATIC > PCS7 > Installed Software**.
You will find the installed software packages in the "Products" tab.

4.4.4 How to install the central archive server (StoragePlus)

Introduction

When installing a central archive server (StoragePlus server) with the PCS 7 Toolset DVD, perform the following steps in the setup during installation:

Note

When installing the central archive server and StoragePlus, set the same language for the logged on user and the default user.

Requirements

- Application servers (IIS and ASP.net) are installed.
- The computer name is assigned for the specific system.

Making settings in the "StoragePlus Installation Settings" dialog box

1. Click the "Install" button in the "Ready to install the selection" setup dialog box.
   The "StoragePlus Installation Settings" dialog box opens.

   Note

   You cannot change the settings in the "StoragePlus Installation Settings" dialog box once they have been made.

2. Make the following settings:

Where?	What?
Name of the database:	Enter a unique database name.
Path of the database:	When updating PCS 7: Enter the path for the database file on the local hard disk of the server.
Path of the data log:	Enter the path of the data log.
Shared archive directory:	Enter the path and name of the shared archive directory. The shared archive is used as a common location for swapping out the archive segments and reports of the OS server to the central archive server (backup path).

You can find additional information on this in the section "How to install the PCS 7 software (Page 89)".

Note on installation

Please note the following:

- The names of the database files are derived from the individual database names as follows:
  - Configuration database - name of database file: "DBName.mdf"
  - Configuration database - name of database log file: "DBName.ldf"
  - Runtime database - name of database file: "DBName_D.mdf"
  - Runtime database - name of database log file: "DBName_D.ldf"
- If you wish to use an existing database, note that you also have to use the name of the database and corresponding path where it is located.

The following recommendations for distributing the archives on the partitions provide optimized performance and operating security:

- Do not set the paths for the interim archive or the shared archive directory to the partition containing the Windows operating system.
- Do not store any other data (swap file of the operating system, for example) on the following partitions:
  - The partition of the shared archive directory
  - The partition of the interim archive, if you have selected the "Fraction of hard disk capacity" option for automatic archiving
    With this option, the time period which the total archive can encompass depends on the remaining free space in the partition. This determines how far back you can access the tag logging data.
- Ensure that there is enough free space on the partition for the shared archive directory so that the OS server can continue to swap out archive segments even after process mode has ended on the central archive server.

We recommend the following to increase the performance of the central archive server when large amounts of data are involved:

- Use a central archive server with several hard disks.
- Do not set the path of the database to the hard disk where the operating system of the PC station is installed (additional hardware required).

Increased performance and data security

Please note the following:

- We recommend the use of RAID systems (RAID 0) to increase performance.
- We recommend the use of RAID systems (RAID 1) to increase data security for the central archive server.
- If the central archive server is used in conjunction with large amounts of data, we recommend that you use the premium server listed in the *ST PCS 7.1* catalog (SIMATIC PCS 7 add-ons).

4.4.5 Configuring redundancy for redundant servers

Introduction

You will need to configure the redundancy monitoring for redundant servers in PCS 7.

The following connections are available for redundancy communication:

- For OS servers and SIMATIC Route Control:
  Zero-modem cable to COM interface or network cable (cross-over cable) to an additional Ethernet network adapter.
- With BATCH servers:
  Network cable (cross-over cable) to an additional Ethernet network adapter.
  If using a PC as a BATCH server, this is the only type of redundancy connection permitted!

You can find additional information about configuring redundancy in the section "How to activate redundancy for fault-tolerant PCs (Page 157)".

More information

- You will find information on configuring fault-tolerant components, redundancy and redundancy monitoring for redundant servers in the manual *Process Control System PCS 7; Fault-tolerant Process Control Systems*.

4.4.6 Installing a PC for PCS 7 OS Web Option

Installation of PCS 7 Web server and PCS 7 Web client

All information and step-by-step instructions for installing PCS 7 Web server and PCS 7 Web client can be found in the *Process Control System PCS 7; PCS 7 OS Web Option* Manual.

More information

- Section "Software packages and required license keys (Page 176)"

4.4.7 Setting up user groups and users

Some user groups and users are created automatically when PCS 7 software is installed. The follow table shows the user group a user must be a member of to be able to use installed software.

Note to the reader for the "User Groups and users" table

- The "Installation / Group in Setup" column defines the software that must be installed on the PC station in order for the user groups and users to be created.
- The "Component" column defines the standard component in the PCS 7 system setup which creates the user groups and users.
- The "User group / users" column lists the user groups and users which are automatically created when a software package is installed. The **user groups** are marked "bold".
- The "Members" column lists the users that are assigned to a user group in a PCS 7 plant.
- The "SQLServer2005MSSQLUser$<COMPUTERNAME>$WINCC" user group is created automatically for the installation of the SQL Server.
  The "COMPUTERNAME" is the name of the PC station. You can check this name in the "Computer name" tab which can be found under the menu command Start > Settings > Control Panel > System.
  All members of the "HMI" user group must be added to this group in order to work with PCS 7.
  For further information, refer to the section titled "How to assign the SQL access permissions for OS users (Page 144)".

User groups and users

Installation / Group in Setup	Component in Setup	User group / users	Members
Operating system	-	**Power User**	Add all users of a PCS 7 PC to this user group.
SQL Server for PCS 7	-	**"SQLServer2005MSSQ..."** User group of the SQL Server (see above note)	Add all members of the "HMI" user group to this user group.
Engineering	PCS 7 Engineering	**HMI**	OS project engineer Project administrator Operator Operator groups
	BATCH Engineering	**SIMATIC BATCH**	BATCH project engineer
	Route Control Engineering	**RC_ENGINEER** **RS_MAINTENANCE** **RC_OPERATOR_L1** **RC_OPERATOR_L2** **RC_OPERATOR_L2**	Route Control project engineer Route Control administrator (with all rights) Operators You can find additional information about operator authorization in the *Process Control System PCS 7; SIMATIC Route Control* Manual.
Runtime / Server	OS server	**HMI**	Project administrator Operator Operator groups
	BATCH server	**SIMATIC BATCH**	Operator
	Route Control server	**RS_MAINTENANCE** **RC_OPERATOR_L1** **RC_OPERATOR_L2** **RC_OPERATOR_L2**	Operator
Runtime / Single station	OS single station	**HMI**	Project administrator Operator Operator groups
	BATCH single station	**SIMATIC BATCH**	Operator
	Route Control single station	**RS_MAINTENANCE** **RC_OPERATOR_L1** **RC_OPERATOR_L2** **RC_OPERATOR_L2**	Operator
Runtime / Client	OS clients	**HMI**	Project administrator Operator Operator groups
	BATCH clients	**SIMATIC BATCH**	Operator
	Route Control clients	**RS_MAINTENANCE** **RC_OPERATOR_L1** **RC_OPERATOR_L2** **RC_OPERATOR_L2**	Operator
SIMATIC Logon		LOGON_Administrator	

User management options

Distinguish between the following:

- User management in Windows, without SIMATIC Logon:
  - User management on a single PC
  - User management performed from a central location in Windows (PCs in a domain)
- User management expanded to include SIMATIC Logon

  Many PCS 7 applications support central user management with the "SIMATIC Logon" software. SIMATIC Logon is based on the main mechanisms of Windows user management.
  SIMATIC Logon provides the following enhancements for user management:
  - User management is expanded to include SIMATIC Logon from a central location in Windows (PCs in a domain)
  - User management is expanded to include SIMATIC Logon on a single PC

Setup of Windows users for PCS 7

The user who installs the PCS 7 components is automatically entered as a user of these components in Windows management.

If you want to authorize other users to use a PCS 7 component, they must be set up in Windows and assigned to the relevant PCS 7 components (user groups).

Basic procedure

- Run the following functions centrally in Windows for all options for setting up users and user groups:
  - Definition of users and user groups that are available on the Windows Server in question
  - Definition of passwords
- The following applies to defining user roles with the SIMATIC Logon:

  You can assign users and user groups particular roles within some PCS 7 applications (for example, SIMATIC BATCH).

  Example: SIMATIC BATCH
  - User permissions in a user role (global)
  - Permitted user roles per computer (for each specific computer)
  - Permitted user roles per unit (for each specific unit)
- The PCS 7 applications are supplied with information about the logged on user via the central logon service and can be informed of any change of the logon, etc.

Basic procedure in a Windows domain

Note

A domain administrator is responsible for producing users and groups in a domain. This administrator must have the necessary experience and authorization to administer the network.

Domain administrators in PCS 7 plants

Note

Domain administrators have special rights for managing the network, for example for user management or including PC stations in a domain.
We recommend not using these rights when working in the PCS 7 project.

More information

- Manual *SIMATIC; SIMATIC STEP 7*
- Online help *WinCC Information System*
- Manual *Process Control System PCS 7; SIMATIC BATCH*
- Manual *Process Control System PCS 7; SIMATIC Route Control*
- Manual *SIMATIC; SIMATIC Logon*

4.4.8 Firewall in PC stations

Windows firewall

PCS 7 uses the operating system's firewall (see *pcs7 readme*).

The "SIMATIC Security Control" performs the necessary settings in the Windows firewall exceptions list.
You will find more information on this topic in the section "How to retro-activate the security settings for PCS 7 (Page 155) ".

Requirement for using a firewall on the plant bus

The CP 443-1 must have particular firmware versions installed if you intend to use a firewall on the plant bus.

Additional information

- Section "Components for connection to the terminal bus/plant bus (Page 56)"
- Section "How to change the settings of the Windows firewall for OpenPCS 7 (Page 156)"

4.4.9 Reinstallation or updating

If a PCS 7 software package is already installed on the PC, a dialog box for the type of installation appears during the PCS 7 system setup. You can specify which type of installation you require in this dialog box:

- Reinstallation
- Update

Reinstallation

A reinstallation allows you to install additional software packages on your PC.

Update

An update replaces existing software packages with newer versions of the software. Make sure that you select the latest software packages of the new version.

Recommendation:

Reboot the PC station before updating the PCS 7 software.

Note

Some of the PCS 7 software packages automatically restart the PC station when updating.

Note

If you want to update a PCS 7 project of a previous PCS 7 version with a current PCS 7 version, then follow the descriptions provided in the software update manuals.

You can find additional information in the manual *Process Control System PCS 7; Software Update*.

4.4.10 Expanding a central archive server from the "non-redundant" to the "redundant" type

Starting situation

There is a non-redundant central archive server (CAS) in a PCS 7 plant.

Expansion

The non-redundant central archive server is to be converted to a redundant type. The system is supplemented by an additional PC station, which is operated as a redundant partner.

Naming convention

The non-redundant central archive server is referred to as "CAS1" hereafter;
the additional PC station is referred to as "CAS2" hereafter.

More information on the requirements and configuration of a central redundant archive server is available in the *Process Control System PCS 7; Fault-Tolerant Process Control Systems* manual.

Requirements

- The software update of the PCS 7 plant is complete.
- All archive segments previously connected to the central archive server "CAS1" are separated **manually**.
- The requirements for redundancy under PCS 7 must be met by the PCs of "CAS1" and "CAS2," for example suitable hardware, same configuration of the hard disks.
- The operating system is installed on the PC of "CAS2" in accordance with the software requirements for central archive servers. All the required operating system settings have been made and the necessary components are available.
- There is a redundancy cable between the PCs of "CAS1" and "CAS2" and the redundancy interface is configured.

  You can find additional information on this in the section "How to activate redundancy for fault-tolerant PCs (Page 157)".
- The PCs of "CAS1" and "CAS2" are available via the terminal bus.

Procedure

1. Define the path of the project directory on "CAS1".
   Select the object of the station in the ES project under the PC station of "CAS1" and "WinCC CAS Appl.". Select "Object properties> Target OS > Path to target OS computer" in the shortcut menu.
2. Define the name of the StoragePlus database and the configured path "Common Archive Name" on "CAS1."
   The name and path is available in the StoragePlus Administration Console under "System Configuration > Common." The default name is "_ARCHIVE_01_.*." The path is in the field of the same name "Common Archive Name."
3. Define the path of the StoragePlus database in the installation directory on "CAS1."
   You define the path in Windows Explorer by searching for the database names established under step 2, for example "...\StoragePlus\Database."
4. Add a new PC station for the "CAS2" in the ES project.
   In HW Config, configure the “WinCC CAS Appl. (stby)" application and the connection to the terminal bus.
5. In the ES project, change the configuration of the central archive server "CAS1" from "non-redundant" to the "redundant" type.
   Select the "Target OS" tab in the object properties of "CAS1" and select the name of "CAS2" in the field "Standby OS."
6. Configure the target path for the PC station "CAS2."
   Select the tab "Target OS" and "Master OS" in the properties of "CAS2" and configure the path in the field "Path to target OS and master OS."
7. Generate the server data for "CAS1."
   In the ES project, select the menu command "Generate server data" in the shortcut menu of "CAS1."
8. Exit process mode on the PC of "CAS1." Restart the "CAS1" PC station.
9. Exit the "SQL Server (WinCC)" service via the service console on "CAS1."
   Note: Administrator rights are required.
10. In Windows Explorer, copy the StoragePlus databases including path from "CAS1" to "CAS2." You have specified the path, for example "...\StoragePlus\Database," and the database name in steps 2 and 3.
    Restart the "CAS1" PC station.
11. Run a complete load for "CAS1" and start process mode.
12. Install the central archive server on the "CAS2" PC station.
    To do this start the setup on the PCS 7 Toolset DVD and select the "Central Archive Server" option from the "Program packages" dialog box under the "Runtime > Server" directory.
13. Adjust the path and name of the StoragePlus databases to match the paths and database names used in step 10. Complete the "CAS2" installation.
14. Update the server data for all OS clients to be shown in the process mode archive values.
    Open the WinCC project of the OS client on the ES. Select the "Server Data" object in the tree view.
    Select the shortcut menu command "Update...".

15. Select the shortcut menu command "Configure..." and configure the preferred server for this OS client in the following dialog box.
    Repeat these steps for all OS clients.
16. Load the target system for all OS clients in the ES project whose server data was updated in the previous steps.
17. Load the target system for all operator stations which previously swapped out archives to the central archive server "CAS1."
18. Run a complete load for "CAS2" and start process mode.

See also

Configuring redundancy for redundant servers (Page 95)

4.4.11 Removing PCS 7

If you want to update your PCS 7 software, it can be installed over the old one.

If you no longer require PCS 7 on the PC station, you can remove the PCS 7 software by performing the steps described below.

Recommendation

You can use the procedure described below to remove the PCS 7 software and its components.
However, we recommend the following procedure:

- Remove the license keys.
- Backup the data which is still required, for example, the default folder with the PCS 7 projects.
- Format the PC's hard disk.
- Reinstall the PC.

Procedure

1. Select the menu command **Start > Settings > Control Panel**.
   The "Control Panel" dialog box opens.
2. In the tree structure, double-click on **Add or Remove Programs**.
   The "Add or Remove Programs" dialog box opens.
3. Click "Change or Remove Programs".
4. Select "SIMATIC PCS 7" from the list.
5. Click "Remove".
   Follow the instructions to remove the PCS 7 software.
6. Repeat the previous step for all PCS 7 components, such as CFC, SFC.

Note

After the removal of the components, the default folder containing PCS 7 projects is retained.

4.5 Installing drivers for PCS 7

4.5.1 Drivers for communications processors

4.5.1.1 Drivers for communications processors

Introduction

The PCS 7 system setup automatically installs the required drivers for the communications modules. This is only possible when the communications modules have been be inserted in the PC prior to installation of PCS 7.

If the type of communications module changes after a PCS 7 installation, you will have to reinstall the driver for the communications modules from the PCS 7 Toolset DVD ("SIMATIC NET PC Software" software package).

Plug-and-play capability

The communications processors used for PCS 7 support plug-and-play. The required settings are made automatically when the PC starts up.

Note

If plug-and-play components are not detected, check in the BIOS whether the detection of plug-and-play components is activated. You can find additional information on this in the documentation of the BIOS manufacturer.

Detection of plug-and-play components is activated as default for SIMATIC PCS 7 BOX.

Changing protocols on the bus (Industrial Ethernet)

If you need to change the protocol of a bus in a system, from TCP to ISO protocol for example, you will need to set a mixed protocol (TCP and ISO) briefly on the engineering station.

Now load the configuration data onto the AS and the operating and monitoring systems.

NOTICE
Do not disable the TCP/IP or ISO protocol during operation since they are both needed for configured operation!

4.5.1.2 How to install drivers for communications modules

Requirement

- The communications modules have been installed in the PC.

Starting PCS 7 Setup

1. Insert the PCS 7 Toolset DVD in the DVD drive.
2. Double-click on "Setup.exe" to start the setup.
   Setup starts.

Running Setup

Below you will find information about the settings made in the setup dialog boxes, listed in the order in which they are processed:

1. Setup language
   – ... For example, "English" and "Next"
2. Welcome
   – ... "Next"
3. Product information
   – ... Read this if needed and "Next".
4. License agreement
   – ... Activate the check box "I accept the conditions of the licensing agreement as well as the conditions of the Open Source Licensing Agreement".
   – ... "Next"
5. Setup type
   – ... Activate with the check box "Install" and "Next".
6. User information
   – ... Enter the user information and "Next".
7. Installation type
   – ... Activate the "User-defined installation" check box and "Next".
8. Programs
   – ... Activate the "SIMATIC NET PC Software" check box and "Next".
9. Ready to install the selection.
   – ... "Install"
   The installation of the software package starts and a window shows its progress.

10. Close the dialog box when the installation is complete.
11. Reboot the PC.

Note

Additional steps are required if a communications processor without a stand-alone processor has been subsequently installed: You can find additional information on this in the section "How to configure standard communication modules (Page 109)".

4.5.1.3 How to configure standard communication modules

Settings for BCE and SOFTNET CPs

If the system has a separate bus (terminal bus and plant bus), we recommend that you select the ISO protocol and disable the TCP/IP protocol for the plant bus. There are exception with communication to:

- SIMATIC PCS 7 BOX
- SIMATIC PCS 7 AS RTX
- Automation systems in which the CPU has an integrated Ethernet interface.

Note

You select the protocol for the plant bus during configuration of the communication modules in HW Config and/or NetPro.

Requirements

- PCS 7 has been installed.
- There is no communication.
- The user programs are closed.
- The network adapter is not CP 1613 or CP 1623.
  The CP 1613 or CP 1623 uses another type of connection (S7 connection).

Procedure

1. Select the menu command **Start > Settings > Network Connections**.
2. Right-click the communications processor (connection) for the plant bus for which you wish to disable the TCP/IP protocol, and select the menu command **Properties**.
3. Deactivate the check box "Internet protocol (TCP/IP)" and in the area "Components checked are used by this connection" activate "SIMATIC Industrial Ethernet (ISO)" to use the ISO protocol. Click "OK".

   If a note appears stating that some additional services ("File and Printer Sharing", "Client for Microsoft Networks") have been disabled, just ignore it.
4. For PCs with several network adapters:
   - Select the menu command **Advanced > Advanced Settings**.
   - Select the network connection to the terminal bus in the "Connections" area.
   - Move the selected network connection to the top position using the arrow keys.
5. Click "OK" to close the dialog boxes.
6. Reboot your PC to activate the settings.
7. Select the menu command **Start > Settings > Network Connections**.

8. Clear the following options for the communications processor on the plant bus:
   – "Client for Microsoft Networks" check box
   – "File and Printer Sharing for Microsoft Networks" check box
9. Click "OK" to close the dialog boxes.

Note

Also refer to the notes in the *WinCC Information System*, under the topic "Special Communication Features for a Server with Several Network Adapters".

4.5.1.4 How to disable the power saving options of network adapters

Introduction

Many modern network modules and network adapters support energy management features. You can reduce energy consumption with these features.

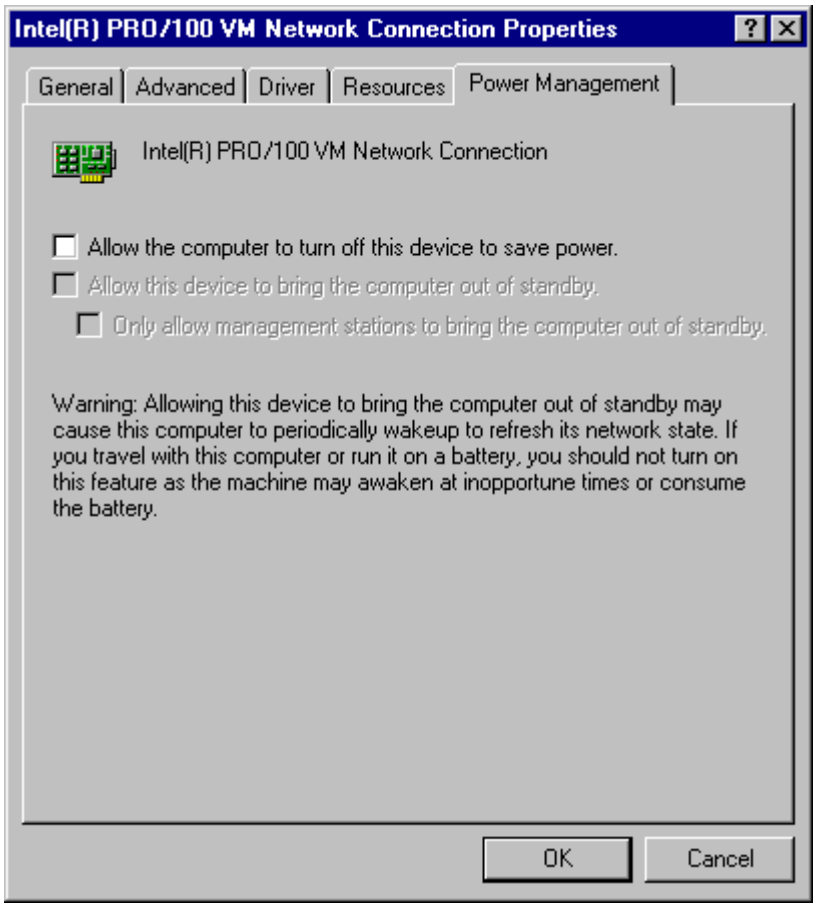
Energy saving options allows the PC to monitor the activity of input devices. If energy saving options are activated, they shut the PCS 7 PC down or trigger a restart if the PC is inactive for a set period of time.

We recommend you disable the energy saving option for all PCs involved in the process mode.

Procedure

1. Windows Server 2003: Select the menu command **Start > Settings > Network Connections**.
2. Select the network connection.
3. Select the menu command **File > Properties**.
4. Select the "General" tab.
5. Click "Configure".
   The "Properties <network adapter>" dialog box opens.
6. Check all the displayed tabs to see whether the PC can disable the network adapter in order to save power (see figure below).

7. Deactivate the "Allow the computer to turn off this device to save power" check box.



8. Close the dialog box by clicking "OK".

4.5.1.5 How to prepare a PC Station with CP 1613 / 1623 for operation in PCS 7

Introduction

When a CP 1613 or CP 1623 communication module is used in a PC station, the NDIS adapter needs to be configured in the following cases:

- You want to monitor the diagnostics of network components on the plant bus with a maintenance station (MS).
  A CP 1613 or CP 1623 is used in the PC of the maintenance station for accessing the plant bus.
- An automation system in a SIMATIC PCS 7 BOX is to be loaded using an external engineering station.
  A CP 1613 or CP 1623 is used in the engineering station for accessing the plant bus.

NDIS standard

The "Network Driver Interface Specification (NDIS)" standard enable operation of multiple communication modules or simple network adapters in a PC. It also allows the use of several protocols on a communication module or network adapter.

Configuring the network settings of the NDIS adapter

Note

Carry out these steps on the PC station for each CP 1613 or CP 1623 of the PC station. As of PCS 7 V7.1 the communication module is automatically installed with the NDIS adapter and only needs to be configured.

1. Select the menu command **Start > Settings > Control Panel > Network Connections**.
   The "Network Connections" dialog box opens.
2. Select the menu command **View > Details**.
3. With the right mouse button, select the communication module with one of the following names in the column "Device name:"
   - If a CP 1613 is used:
     Device name "SIMATIC Miniport CP1613 Ax PCI Adapter"
   - If a CP 1623 is used:
     Device name "SIMATIC Miniport CP1623 PCIe Adapter"

   Select the shortcut menu command **Properties**. The "<Network Connection> Properties" dialog opens.

   Recommendation:
   First, select the shortcut menu command **Rename**. Enter a meaningful name, for example "CP 1613_NDIS_Adapter_No_1."
4. Select the connection "Internet Protocol (TCP/IP)" in the "General" registry. Click "Properties".
   The "Internet Protocol (TCP/IP) Properties" dialog box opens.

5. Activate the "Use the following IP address" check box.
   Configure the following fields for the specific plant:
   - IP address
   - Subnet mask
6. Click "OK".
7. Close the dialog box "<Network Connection> Properties" by clicking "OK."

Result

The network settings for the NDIS adapter are now applied.

4.5.2 Additional Devices and Drivers for PCS 7

4.5.2.1 Overview of additional devices and drivers for PCS 7

Introduction

If you want to use particular properties of PCS 7, additional drivers are available on the PCS 7 Toolset DVD.

Overview of additional devices and drivers

Application	Driver	Driver location on PCS 7 Toolset DVD	Additional information
Multiple monitors on a single PC	Matrox Multi VGA	Additional_Products \ Drivers \ Display	Section "How to activate a multi-VGA graphics card (Page 116)"
Acoustic or visual signal transmitter	Horn module	The required drivers are automatically installed with PCS 7.	Configuration manual *Process Control System PCS 7; Operator Station*
Acoustic signal transmitter	Sound card	Not included on the PCS 7 Toolset DVD – Located on sound card or standard Windows installation medium	Section "Assigning the driver to the sound card (Page 118)"
Time signal via DCF77	Time reception service	Additional_Products \ Drivers \ DCF77	Section "How to activate the DCF77 reception service (Page 119)"
Chip cards	Smart card reader	The driver for certain smart card readers with a COM port is installed automatically when you install PCS 7. The drivers for the smart card readers OMNIKEY CardMan 3111 and 3121 are available on the PCS 7 Toolset DVD in the folder "Additional_Products \ Drivers \ CHIPCARD." Note: Please note the section " Optional hardware components (Page 59)."	*WinCC Information System*

4.5.2.2 How to activate a multi-VGA graphics card

The procedure below describes how to retro-install a Matrox multi-VGA graphics card in a PC station with an onboard graphics card.

Multi-VGA graphics card

The following graphic cards are recommended for PC stations in PCS 7:

- G450 MMS
  Order number:6ES7652-0XX03-1XE0 (2 monitors) or 6ES7652-0XX03-1XE1 (4 monitors)
- G200 MMS (previous model)
  Order number: 6ES7652-0XX02-1XE0 (2 monitors) or 6ES7652-0XX02-1XE1 (4 monitors)

Note

When using Matrox graphic cards make sure to note the instructions in the WinCC information system under:
- Options > Options for Process Control > OS Project Editor > Split Screen Manager > Notes on Multi-VGA
- Release Notes > Control Options > Multi-VGA

Driver

If the G200 MMS multi-VGA graphics card is used in PCS 7 V7.0 or higher, we recommend that you also use the Matrox "5.96.005" driver. You will find this driver on the PCS 7 Toolset DVD in the folder "Additional Products > Drivers > DISPLAY > Matrox_G450_MMS > XP2K_596_005.exe".

Preparation

1. Shut the PC station down.
2. Install the multi-VGA graphics card in the PC station, taking the information contained in the PC station user manual into account.
3. Start Windows in safe mode. To do this, press the F8 key when powering up the PC.
4. Disable (but do not remove) the onboard graphics card in the Device Manager as follows:
   - In the shortcut menu of My Computer on the desktop, select the Device Manager with the menu command **Properties > Hardware > Device Manager**.
   - In the Device Manager, disable the onboard graphics card by right-clicking on Graphics Card.

   Note

   This procedure saves you from having to reinstall the onboard graphics card, should you want to reactivate it at a later time.
5. Restart the PC and change the onboard graphics card to PCI in the PC station BIOS.
   - You reach the BIOS by pressing the F2 key when the PC station is starting up.
   - In the BIOS select "Main > Boot Options > Primary Display" and change "AGP VGA" to "PCI VGA".
   - Reset the PCI bus configuration in the BIOS under "Advanced > Reset Configuration Data > Yes".
   - Save the changes in the BIOS and start up the PC in the "VGA compatible" Windows mode.

Procedure

1. Install the driver for the multi-VGA graphics card.
2. Restart your PC.
3. Finally, the parameters of the multi-VGA graphics card need to be set.
   You will find more information on this topic in the WinCC Information System:
   - Options > Options for Process Control > OS Project Editor > Split Screen Manager > Notes on Multi VGA.
   - Options > Options for Process Control > OS Project Editor > Split Screen Manager > How to set the Multi-VGA parameters under Windows XP and Server 2003.
   - Release Notes > Options for Process Control > Multi VGA

   Note

   The "Matrox screen properties" are only displayed in the Control Panel if the Matrox graphics card driver is installed.
   Do not enter any settings in the "Multiple Display Setup" tab. Do not start, under any circumstances, the "Matrox Hybrid Display".

4.5.2.3 Assigning the driver to the sound card

Introduction

You can use standard sound cards to output acoustic messages.

The driver for the sound card must be assigned in Windows.

Requirements

The sound card has been installed.

Procedure

1. Select the "Workplace" symbol on the Windows desktop.
2. In the shortcut menu, select the menu command **Workplace > Manage**.
   The "Computer management" dialog box opens.
3. Navigate through the directory structure to the "Device Manager" directory.
4. If the hardware of the sound card is installed, but the driver is not yet assigned, the "?" symbol is displayed in the right-hand window.
5. Select the menu command **Update Driver...** in the shortcut menu of the "?" symbol. The wizard starts.
6. In the first window, select the option "No, not this time."
   Click "Next."
7. In the next window select the option "Install from a list or specific location." Click "Next".
8. Select the option "Search for the best driver in these locations."
   Deselect the suboption "Search removable media (floppy, CD-ROM, ...)". Activate the option "Include this location in the search:" Open the selection dialog by clicking "Browse," and select the directory "<installation directory> \ SIEMENS \ WINCC \ Options \ Drivers."
   Click "OK" to close the selection dialog. Click "Next".
9. Click "Finish." The wizard is exited.
10. Reboot the PC.

Result

The sound card driver has been assigned.
In the dialog box "Computer Management" the symbol "?" is now replaced by "PCS 7". The subentry "Signal Unit PCI Adapter" is listed under this symbol for the sound card.

Additional information

You can find additional information about configuring sounds and assigning them to events in the configuration manual *Process Control System PCS 7; Operator Station*.

4.5.2.4 How to activate the DCF77 reception service

DCF77 reception service

The DCF77 reception service performs the following tasks:

- Evaluation of time signals from the DCF77 transmitter of the Physikalisch-Technische Bundesanstalt in Mainflingen in Darmstadt, Germany.
- Comparison of the time signals with the system time of the PC station.
- Correction of the system time, if necessary.

A receiver module reads in the time signals in different ways. The reception service expects the time signals over one of the serial ports of the PC station.

Note

You can use the "DCF77 Reception Service" application as a client application to synchronize any number of PCs without the DCF77 module.

Requirement

The DCF77 receiver module has been connected to an available serial port on the PC station.

Procedure

1. Select the "Additional_Products \ DCF77Client" folder on the PCS 7 Toolset DVD.
2. Run the "SETUP.exe" program.
3. If necessary, use the control panel to change the settings.

4.6 Licensing

4.6.1 Licensing and authorizing PCS 7 software

Important terms

The following table lists terminology that is important for licensing:

Term	Description
License	A license provides the right to use products. This right is in the form of: • CoL (Certificate of License) • License key
CoL (**C**ertificate **o**f **L**icense)	The CoL certifies the license. The product may only be used by the license owner or authorized persons.
License key	The license key is the "technical representative" of the license (also called an "electronic license stamp").
Authorization	The authorization is a "technical representative" of a license, which was granted for older versions of software packages. It has the same function as a license key. Authorizations cannot be saved on a license key USB stick.

Note

In this section, we only use the term **license key**, even if a product is still using the older "authorization".

License properties

Every license is made up of a basic license type and a license type.

The basic license type defines how many PC stations the associated software may be installed and used on. The license type defines any applicable restrictions on how the associated software may be used.

- The following basic license types are available to you:

Basic license type	Description
Single license	With this license, the software may be used on any single computer. The type of permissible usage is defined in the Certificate of License.
Floating license	With this license, the software may be used on any computer within a network. The software may be installed on several computers for this purpose.

- The following license types are available to you:

License types	Description
Unlimited license	With this license, the software may be used without restriction.
Count relevant license	With this license, software usage is restricted to: • The number of process objects, archive tags, process tags ("tags") defined in the contract, depending on the licensed software. **Display:** The licensed number is displayed in the Automation License Manager under "Scope."
Countable Objects License	With this license, software usage is restricted to: • The number of process objects defined in the contract. **Display:** The values are displayed in the Automation License Manager under "Scope" in the format: **"X(Y)"** Value "X" = number of licenses still available for process objects. Value "Y" = maximum licensed number of process objects. **Calculation:** The number of process objects loaded into the AS is calculated by the executing application and is subtracted from the available process objects in the value "X." The value "X" is always updated by the executing application. The value for reducing configured process objects can therefore increase again. The value "Y" always indicates the maximum licensed number of process objects and is therefore not changed.
Rental license	With this license, software usage is restricted to: • The number of operating hours defined in the contract • The number of days after first use defined in the contract Note: The information area of the task bar will display tooltips telling you how long the rental license has left to run.

License types	Description
Trial license	With this license, software usage is restricted to: • A maximum of 14 days, for example • A certain number of days after first use • Test and validation purposes (disclaimer of liability)
Pay per use license	With this license, software usage is restricted by the terms of use defined in the contract.
Demo license	With this license, software usage is restricted to: • The number of operating hours defined in the contract • The number of days after first use defined in the contract Note: The information area of the task bar will display tooltips telling you how long the demo license has left to run.
Contract license	With this license, the software may be used without restriction.
Upgrade license	Specific system status requirements may have to be met for an upgrade to be performed: • With an upgrade license, a license of an "old" version x can be converted to a version >x+.... • An upgrade may become necessary due to an increased quantity structure, for example.

Note

Not all products support all license types. In the *Automation License Manager* you can see which license form is valid for a specific product.

PCS 7 without a license key

You may use the *PCS 7 Engineering Toolset* software package in a trial version for up to 14 days.

Note

You can activate the trial (demo) mode the first time the software is used.

Missing license key

When a software program requests a license key, but it cannot be located on the network in a "valid" format, it is described as a "missing license key".

Automation License Manager

All license keys are managed in a central location using the *Automation License Manager* software, which is installed by means of the PCS 7 system setup.

Virus-free

Note

Check that your PC is virus-free prior to each installation/uninstallation of a license key.

Viruses may pass between the hard disk and storage medium (license key USB stick, license key diskette) when using this method.

Write protection must not be activated when transferring license keys.

Additional information

- Manual *Automation License Manager*

4.6.2 How to transfer license keys

Introduction

The following license keys are transferred with the *Automation License Manager* software:

- License keys belonging to licenses purchased at a later date.
- License keys stored at locations which cannot be accessed by a computer's applications

Possible license key storage locations

- License key USB stick
- License key diskettes
- Local storage media
- Storage media on connected computers
- Removable disks (for example USB stick, but not CDs or DVDs)

Note

The '"authorizations" which are the licenses for older versions of software packages cannot be saved on a license key USB stick or any other USB stick.

Options for transferring license keys

The *Automation License Manager* gives you the following options for transferring license keys between the various possible storage locations:

- Drag-and-drop
- Cut and paste
- Offline transfer

Requirement

The *Automation License Manager* has been started up.

Procedure - Drag-and-drop

1. Select the appropriate view using the menu command **View > Manage**.
2. On your own or the connected computer, open the storage location where you wish to insert the license keys.
3. On your own or the connected computer, open the storage location from where you wish to remove the license keys.
4. Select the license keys, hold down the left mouse button and drag the license keys to the folder where you wish to insert them.
   The license keys are transferred.

Procedure - Cut and paste

1. Select the appropriate view using the menu command **View > Manage**.
2. On your own or the connected computer, open the storage location from where you wish to cut the license keys.
3. Select the menu command **Edit > Cut**.
4. On your own or the connected computer, open the storage location where you wish to paste the license keys.
5. Select the menu command **Edit > Paste**.
   The license keys are transferred.

Procedure – Offline transfer

The *Automation License Manager* online help describes how to perform an offline license key transfer.

Defective cluster on hard disk

Note

As part of the license key safety system, when license keys are transferred, clusters identified as "defective" are created on the target drive. You must not reconstruct these clusters, as this will destroy the license keys.

Backing up license keys

The *Automation License Manager* enables you to back up **all** license keys (authorizations).

Read the information under "Possible license key storage locations" provided above.

4.6.3 Selecting the correct license keys/authorizations

Introduction

The **configurable** size of a PCS 7 plant is scalable. The software product licenses for a engineering station, operator station, SIMATIC BATCH station, Route Control station and SIMATIC PDM are available with different scales. You can expand these quantity structures using additional power packs.

Note

In this section, we only use the term "license key", even if a product is still using the older "authorization".

Process object

In PCS 7 as of version 7.0, the following applies for licensing of "PO" process objects:

All SFCs and all block instances which can be operated and observed and produce messages are considered to be PCS 7 process objects. These are the objects that are transferred to the OS and require licenses.
An operating control and monitoring block in CFC has the "S7_m_c" attribute in the block properties.
A process object may include the following blocks and objects:

- Blocks for operating and monitoring a system
- Objects for automation
- Objects for signal acquisition and signal processing (not channel driver blocks)

You can find additional information about process objects in the manual *Process Control System PCS 7; Engineering System* for example, in the section "Counting and booking process object licenses".

Levels of licenses

The following table shows the available system size increments (for each component of the process control system).

Component of process control system	Levels of licenses		Comment
Engineering system (ES)	Engineering (CFC)	Max. PO: • Unlimited	• "PCS 7 - Engineering" license; license key "CFC" • The licensing levels "250", "1000", "2000" PO are no longer relevant for engineering with CFC as of V7.0.
	WinCC: only Engineering	• Unlimited	• License key "WinCC ES PO" • For ES without runtime.
	WinCC: Engineering and runtime	• 250 • 1000 • 2000	• For single station systems and small systems. • License key "WinCC RC PO (x)"; (x) = Number of licensed PO.
	Downloading to SIMATIC stations	Max. PO: • 100 • 250 • 1000 • 2000 • 10000	• "PCS 7 - Runtime License AS" license; license key "AS RT PO" • The objects that can produce messages and can be operated and monitored are considered process objects (PO). • The license type of these license keys is "Count relevant license".
Operator station (OS)	Max. PO: • 250 • 1000 • 2000 • 3000 • 5000 • 8500 (for OS servers only)		• License key "WinCC RC PO (x)"; (x) = Number of licensed PO. • Single station system: maximum 5000 PO • OS server: Maximum 8500 PO per OS server • Maximum number of PO = 60000 For 12 servers, however, max. 5000 PO per OS server.
OS client			WinCC RT PO Client
Central archive server			WinCC RT PO Client
Archiving (OS server and central archive server)	Max. archive tags: • 1500 • 5000 • 10000 • 30000 • 80000 • 120000		• You can archive a maximum of 1,000 archive tags per second with an OS server. • You can archive a maximum of 12,000 archive tags per second with a central archive server. The license for 512 archive tags is included in all OS server licenses. If you want to archive more archive tags, you can install several license keys and add their licensed tag values.

Component of process control system	Levels of licenses	Comment
Maintenance Station (MS)	Max. asset tags (hardware components): • 10 • 100 • 1000	• Number of monitored hardware components within a PCS 7 project. • The license type of these license keys is "Count relevant license".
PCS 7 OS Web Option	Max. WebNavigator clients: • 3 • 10 • 25 • 50	Number of Web clients on the Web server.
	Max. WebNavigator diagnostics clients: • 3	
BATCH stations (batch processes)	Max. units: • 10 • 20 • 40 • 100 • Unlimited	Number of units within a PCS 7 project. • The number of units that can be processed depends on the utilization of the BATCH server.
Route Control Station (Route Control)	Max. routes: • 30 • Power pack 30 -> 100 • Power pack 100 -> 300	Number of activated routes in process mode (material transports) The base of 30 active routes can be increased to the next highest level using a power pack.
PDM	Max. number of devices: • 1 (PDM Single Point) • 4 (PDM Basic) • 128 • 512 • 1024 • 2048 • unlimited	Number of configurable devices

Component of process control system	Levels of licenses		Comment
SIMATIC PCS 7 BOX	Engineering	Max. PO: • 250 • 1000 • 2000	• Limits the sum of all process objects on the ES. • You can find additional information in this table for the engineering system (ES).
	Operator station	Max. PO: • 250 • 1000 • 2000	• Limited to 2.000 PO per single station system
	Downloading to SIMATIC stations	Max. PO (tags): • 3 x 100	• The license type of these license keys is "Count relevant license". • You can find additional information in this table for the engineering system (ES).
	PDM	Max. devices: • 4 • 128	• Limited to 128 devices per SIMATIC PCS 7 BOX 416
	Maintenance Station	Asset tags (hardware components): • 10 • 100	• The license type of these license keys is "Count relevant license". • You can find additional information in this table for the Maintenance Station (MS).
	BATCH	Max. units: • 10	• Limited to 10 units per SIMATIC PCS 7 BOX 416
	Route Control	Max. routes: • 30	• Limited to 30 routes per SIMATIC PCS 7 BOX 416

List of license keys

You can find an overview of license keys in the section "Software Packages and Required License Key (Page 176)".

4.6.4 Calculating the process objects for the SIMATIC station

License key for the AS

The required license key for all SIMATIC stations depends on the total number of process objects loaded and configured in a project (multiproject).

When an AS is loaded, the loaded process objects are evaluated. The following procedure shows you how to calculate the number of process objects configured in a project or multiproject.

PCS 7 V7.0 or higher:
The number of process objects loaded into the AS is calculated by the executing application and is subtracted from the available process objects of the license. The value for the number of available process objects is always updated by the executing application. The license key "AS RT PO" of the type "Countable Objects" is used.
For further information, refer to the section titled "Licensing and authorizing PCS 7 software (Page 120)".

Requirement

SIMATIC Manager is open.

Procedure

1. Select the multiproject or project in the component view.
2. Select the **Options >PCS 7 license information** menu command.
   The "PCS 7 license information" dialog box opens.
3. Select the entry "Process objects (AS RT PO)" in the left-hand table.

Result

The corresponding number of process objects is displayed in the right-hand window "Configured license objects."

Note

The display of the license objects is based on the multiproject or project selected in the SIMATIC Manager.

The following information is also displayed below the window:

- The existing license.
- The number of licenses currently still available and of process objects that can still be configured with them.

4.6.5 Determining Process Objects of CFC

Overview

The following applies for the licensing of CFC objects:

- Licensing of objects in CFC prior to V7.0:
  In PCS 7 prior to V7.0, there were several licensing levels for the configured CFC objects based on the maximum number of objects that could be operated and monitored.
  As of V7.0 there is only the "unlimited" license for the number of **configured** objects in CFC Engineering.
  In process operation as of version V7.0, however, only those objects are license-relevant that count as process objects as described in the next section.
- Licensing of process objects as of V7.0:
  As of V7.0, process objects (PO) requiring licenses are considered those that can be operated and monitored **and** can produce messages. These objects have the block attribute "S7_m_c" and require the "PCS 7 - Runtime License AS" license with the "AS RT PO" license key.

The display in the "PCS 7 license information" dialog box is relevant for determining the objects that require a license. For a description of the procedure see the section "Calculating the process objects for the SIMATIC station (Page 130)".

More information

You can find additional information on process objects:

- In the section "Selecting the correct license keys/authorizations (Page 126) ".
- In the manual *Process Control System PCS 7; Engineering System* for example, in the section "Counting and booking process object licenses".

Display of the objects in the "PCS 7 license information" dialog boxes and the statistics function in the CFC editor

The displays in the two dialog boxes differ as follows:

- "PCS 7 license information" dialog box
  After the "Process objects (AS RT PO)" dialog box has been selected, those objects are displayed in this dialog box that can be operated and monitored **and** can produce messages. Only these require a license for process operation and the license key "AS RT PO".
- Statistics function in the CFC editor:
  In the CFC editor you can use the **Options > Chart Reference Data** menu command to open the "Chart reference data" dialog box. Statistical values for CFC are displayed by using the **View > Statistics** menu command. The "Block instances" directory displays all the objects that can be operated and monitored under the entry "of which are OCM capable", **regardless** whether or not they can generate messages.

4.6.6 Calculating the process objects for the operator station

License key for process objects

License keys for operator stations are differentiated as follows:

- RT license keys
  RT license keys permit unlimited (in terms of time) use of WinCC in process mode (runtime mode). You can only use the editors for a limited period of time in demo mode.
- RC license keys
  RC license keys permit unlimited (in terms of time) use of WinCC in process (runtime) mode and configuration mode.

This license key allows you to operate and monitor a defined number of configured process objects with the operator station.

Projects which use SIMATIC BATCH require a larger number of process objects.

Selecting the "WinCC RC PO" license for the engineering station

The "WinCC RC PO" license is suitable for single station and smaller systems.

The number of process objects can be determined for each OS.
The OS with the largest determined number of process objects controls the license selected.

The number of process objects comprises the following:

- Number of processes objects of individual SIMATIC stations that are assigned to the corresponding OS.
- Number of tags configured "manually in WinCC". (Calculation: Number of WinCC tags / 25 = 1 PO)

License key for archive values

This license key allows you to archive a defined number of archive values with the operator station. The basic package is supplied with a license key for 512 archive values.

The license key required for archiving archive values in the OS project depends on the number of values configured for archiving.

License key designations

The license key RT (x)/RC (x) defines how many process objects (PO) are permitted.

Example 1: WINCC RC PO (2000)

The following configuration is possible with this license key (RC):

- Up to **2000** process objects
- Up to 512 archive values

Example 2: WINCC Archive (1500)

This license key enables you to increase by 1,500 the number of archive values which can be configured for the archive server.

License key for OS clients

A "WinCC RT PO Client" license key is required for OS client process mode.

Requirements

- SIMATIC Manager is open.
- The "Compile OS" function is executed in the SIMATIC Manager. The number of configured process objects can then be determined.

Procedure

Proceed as follows to determine the configured and licensed process objects and archive values of the OS:

1. Select the multiproject or project in the component view.
2. Select the **Tools > PCS 7 License Information** menu command.
   The "PCS 7 license information" dialog box opens.
3. To determine the process objects of the OS select the entry "Process objects in WinCC" in the left-hand table.
   The corresponding number of process objects is displayed in the right-hand window "Configured license objects".
4. To determine the number of archive values of the OS select the entry "Archive tags" in the left-hand table.
   The corresponding number of archive tags is displayed in the right-hand window "Configured license objects". A difference is made between a short-term archive and a long-term archive.

   For the calculation of the required "WinCC Archive" license on the central archive server, the two displayed values for the short-term and long-term archive must be added. The sum of the two values must be smaller than the value of the "WinCC Archive" license.

Note

The display of the license objects is based on the multiproject or project selected in the SIMATIC Manager.

Extending the number of licensed archive values

The number of licensed archive tags can be increased by installing more "WinCC Archive" keys on the PC. The number of licensed archive values of each license key are then added.

Example

If you need to archive approx. 11,000 archive values, then install the following license keys.

- "WinCC Archive (1500)" license key with max. 1,500 archive values
- "WinCC Archive (10000)" license key with max. 10,000 archive values

Thus licensing 11,500 archive values.

More information on license key levels is available in the section "Selecting the correct license keys/authorizations (Page 126)."

Insufficient license key

Note

If you open a project with an insufficient number of configurable process objects, the OS program switches to demo mode automatically.

If an RT/RC license key is present, the maximum number of configurable process objects is always permissible on an OS client, as the number of configurable process objects is only checked on an OS server.

4.6.7 Calculating the archive values for the central archive server

Introduction

The **archive values** of all OS servers in a PCS 7 plant are archived on a central archive server. The sum of the archive values of all OS servers gives the number of licensed archive values.
The sum of the archive values in a project or multiproject can be determined with the following description.

License keys for the central archive server

The following license keys are required for the central archive server:

- License key for operating an OS client: WinCC RT PO Client
- License key for the "StoragePlus" software package: StoragePlus
- To use the central archive server: WinCC Server
- To use the redundant central archive server: WinCC Redundancy
- To use the archives: WinCC Archive
- To view archived data: WinCC DataMonitor

Requirement

SIMATIC Manager is open.

Procedure

1. Select the multiproject or project in the component view.
2. Select the **Options >PCS 7 license information** menu command.
   The "PCS 7 license information" dialog box opens.
3. Select the "Archive tags" entry in the left-hand table.

Result

The corresponding number of archive tags is displayed in the right-hand window "Configured license objects". A difference is made between a short-term and a long-term archive.

For calculating the required "WinCC Archive" license on the central archive server, the two displayed values for the short-term and long-term archive must be added. The sum of the two values must be smaller than the sum of the installed "WinCC Archive" licenses.

Note

The display of the license objects is based on the multiproject or project selected in the SIMATIC Manager.

If redundant OS servers are used, the number of archive values must be doubled.

4.6.8 Calculating the asset tags (hardware components) for the maintenance station

License key for Maintenance Station

The license type of these license keys is "Count relevant license". The licensed scope is added together when several license keys are installed.

This license key allows you to monitor a defined number of diagnostic objects (asset tags).

Example: Existing "Maintenance RT (100)" license key

This license key is sufficient for diagnosing up to 100 hardware components with a Maintenance Station. If you have three Maintenance RT (100) license keys on a Maintenance Station, you will be able to diagnose up to 300 hardware components.

Components with diagnostics capability

The following components with diagnostics capability are classed as asset tags within a PCS 7 project:

- PC stations
- Network components with diagnostics capability (for example, switches)
- Automation systems (CPU)
- Distributed I/O (ET 200 station)
- Field devices with diagnostics capability

Requirement

SIMATIC Manager is open.

Procedure

1. Select the multiproject or project in the component view.
2. Select the **Options > PCS 7 license information** menu command.
   The "PCS 7 license information" dialog box opens.
3. Select the entry "Diagnostic objects (Maintenance RT)" in the left-hand table.

Result

The corresponding number of diagnostic objects is displayed in the right-hand window "Configured license objects".

Note

The display of the license objects is based on the multiproject or project selected in the SIMATIC Manager.

4.6.9 Calculating the units for the BATCH station

License key for BATCH station

A defined number of units can be operated and monitored with this license key. The number of units that can be processed depends on the utilization of the BATCH server.

Example: Existing "BATCH 20 UNITs" license key.

The license key for BATCH servers is sufficient to configure up to 20 units.

Requirement

SIMATIC Manager is open.

Procedure

1. Select the multiproject or project in the component view.
2. Select the **Options > PCS 7 license information** menu command.
   The "PCS 7 license information" dialog box opens.
3. Select the entry "SIMATIC BATCH units" in the left-hand table.

Result

The corresponding number of SIMATIC BATCH units is displayed in the right-hand window "Configured license objects".

Note

The display of the license objects is based on the multiproject or project selected in the SIMATIC Manager.

4.6.10 Calculating the routes for the route control station

License key for Route Control station

For the process mode of SIMATIC Route Control, the number of active routes (material transports) is relevant and not the number of configured routes. The number of routes active in process mode is based on the process.

Example: Existing "Route Control Server (300)" license key

This license key for Route Control servers can be used to simultaneously activate up to 300 routes in process mode.

Determination of routes

The following options are available for determining the number of routes:

- The status bar in the Route Control center shows how many routes were active at the same time after restarting the Route Control server.
- The number of routes can be determined in the "PCS 7 license information" dialog box in the SIMATIC Manager. More information is available in the following text.

Determining the number of routes in the SIMATIC Manager

1. Select the multiproject or project in the component view.
2. Select the **Tools > PCS 7 License Information** menu command.
   The "PCS 7 license information" dialog box opens.
3. Select the entry "Route objects (Route Control Server)" in the left-hand table.
   The corresponding number of routes is displayed in the right-hand window "Configured license objects".

Note

The display of the license objects is based on the multiproject or project selected in the SIMATIC Manager.

Insufficient license key – server license key is installed

Note

If the Route Control server detects a license key for 30, 100 or 300 routes when powering up, the maximum number of material transports that can occur at any one time is limited to this value. I.e. when the server receives its 31st, 101st or 301st route request, the Route Control center shows that there is no license key or that it has been exceeded. The Route Control server runs on.

Insufficient license key – server license key is not installed

If there is no license key installed on the Route Control server, the server is limited to a maximum of 300 routes (maximum limit). Since the Route Control server has no information on the actual system size, it adopts a safe stance - you can still run the system without a license. The fact that there is no license is indicated on the Route Control center.

New license

If you have installed the license, restart the Route Control server.

4.7 Preparing PC stations

4.7.1 Preparing PC stations - an overview

Introduction

After installing the PCS 7 software, configure and set up the communication interfaces.

Requirements

- The PCS 7 software and PCS 7 hardware have been installed.
- The communications processors have been installed.

Note

To commission SIMATIC PCS 7 BOX, use the manual *Process Control System PCS 7, SIMATIC PCS 7 BOX.*

Overview of the individual steps

The following settings must be performed on all PC stations to allow all automation systems (AS) and PC stations (for example OS, BATCH) of a PCS 7 project to be configured, loaded and tested from one central engineering station (ES).

These settings first have to be made on the central engineering station.

Step	What?
1	Create the "Logon_Administrator" user group for SIMATIC Logon (Page 141)
2	Issue SQL access rights for OS users (Page 144)
3	Set the language for a user (MUI) (Page 145)
4	Set the communication module for connecting to the terminal bus (Page 147)
5	Set up the connection between the PC station and plant bus (Page 149)
6	Set the standard network adapters (Page 151)
7	Change the transfer rates and operating modes in the PC network (Page 152)
8	Install security patches, hotfixes, service packs (Page 154)
9	Activate security settings for PCS 7 (Page 155)
10	Change the firewall settings for OpenPCS 7 (Page 156)
11	Activate redundancy for high-availability PCs (Page 157)
12	Download the network configuration to the PC stations (Page 159)

4.7.2 How to create user groups for SIMATIC Logon

Introduction

If you want to use SIMATIC Logon for access protection in a PCS 7 plant, you have to set up the "Logon_Administrator" user group.

Note

You can set up the "Logon_Administrator" group on the following PCs:·

- On the local station
- On a domain which can be accessed from the local station.

Procedure

1. Select the menu command **Start > Settings > Control Panel > Administrative Tools > Computer Management**.
2. In the tree view, select "System > Local Users and Groups > Groups".
3. Select the menu command **Action > New Group**.
   - Create user groups in accordance with their corresponding tasks (for example, operators, service engineers, managers).
   - If you want to use SIMATIC Logon functions, create the "Logon_Administrator" group.
4. In the tree view, select "System > Local Users and Groups > Users".
5. Select the menu command **Action > New User** to create all users (with password) and user groups in the Windows network (Windows server).
6. Assign all users who are going to work with the "Configure SIMATIC Logon" dialog box to the "Logon_Administrator" group.

   Note

   You should only assign users to the "Logon_Administrator" Windows group. If you assign subgroups to the "Logon_Administrator" Windows group, the members of the subgroups will be blocked from accessing the "Configure SIMATIC Logon" dialog box. It is not possible to authenticate any members of a subgroup.

Users in a Windows domain

NOTICE
SIMATIC Logon users must be direct members of a Windows group. These users may not be members of a subgroup of a Windows group.

Requirements for defining user roles with SIMATIC Logon

- SIMATIC Logon is installed on every PC with a PCS 7 application.
- The group "Logon_Administrator" is created on one PC (logon computer).

Information on the next steps

- You will find instructions on how to use SIMATIC Logon to set-up user roles and assign them to the defined Windows user groups in the manual *SIMATIC; SIMATIC Logon*.
- You will find information on the additional settings you need to make in the documentation relating to the applications that use SIMATIC Logon for access management purposes.

More information

- Manual *SIMATIC; SIMATIC Logon*

4.7.3 How to set the NTFS authorizations for OS Users

A user must be a member of the following groups in order to access an OS project:

- "SIMATIC HMI" group and / or "SIMATIC HMI VIEWER" group

Requirement

You are logged on as an Administrator.

Procedure

1. Open Windows Explorer.
2. In the tree view, select the drive on which the OS project is stored.
3. Select the menu command **File > Properties**.
   The "... Properties" dialog box opens.
4. Select the "Enable" tab.
5. Click on "Authorizations".
   The "Authorizations for ..." dialog box opens.
6. Delete all groups apart from the "SIMATIC HMI" and "SIMATIC HMI VIEWER" groups. Click on "OK".
7. Select the "Security" tab.
8. If they are not listed already, add the "SIMATIC HMI" and "SIMATIC HMI VIEWER" groups to the "Groups or User Names" list.
9. Issue "Full access" authorization for the "SIMATIC HMI" and "System" groups.
10. Issue "Read only" authorization for the "SIMATIC HMI VIEWER" group.
11. Delete user account "Anyone". Click "OK".

4.7.4 How to assign the SQL access permissions for OS users

Introduction

Since Microsoft SQL Server 2005 does not support additional user groups, you must enter all members of the "SIMATIC HMI" user group into the following user group:

"SQLServer2005MSSQLUser$<RECHNERNAME>$WINCC"

Requirements

- The local users for PCS 7 process mode have been created.
- The users for process mode are members of the "SIMATIC HMI" user group.
- You are logged on as an Administrator.

Procedure

1. Select the menu command **Start > Settings > Control Panel > Administrative Tools > "Computer Management" dialog**.
2. In the tree view, select folder **System > Local Users and Groups > Users**.
   All local users are displayed in the detailed window.
3. Check that all local users have been created for process mode.
4. In the tree view, select folder **System > Local Users and Groups > Groups**.
   All local groups are displayed in the detailed window.
5. Select group "SQLServer2005MSSQLUser$<RECHNERNAME>$WINCC".
6. Select the menu command **Action > Add Member...**.
   The "SQLServer2005... Properties" dialog box opens.
7. Click the "Add" button.
   The "Select Users, Computers or Groups" dialog box opens.
8. Enter the members of the "SIMATIC HMI" user group as users of the "SQLServer2005MSSQLUser$<RECHNERNAME>$WINCC" group.

More information

- Online help *WinCC Information System*

4.7.5 How to set the language for a user (MUI)

Introduction

To work with PCS 7 optimally, we recommend that you make all the language settings to meet the needs for the specific system.

In PCS 7 you can set the interface language to one of the following for the engineering system and for process mode (depending on the languages installed):

- Chinese
- German
- English
- French
- Italian
- Spanish

Requirement

An operating system with a multilanguage user interface is installed.

Note

When installing the central archive server and StoragePlus, set the same language for the logged on user and the default user.

Procedure

1. Select the menu command **Start > Settings > Control Panel > Regional and Language Options**.
2. Select the "Regional Options" tab.
   Recommendation: Make these settings in accordance with your PCS 7 plant.
3. Select the "Languages" tab.
4. In the "Language used in menus and dialogs" area, select the desired language from the drop-down list.

   Note

   The drop-down list only contains languages which are installed.

5. If you want to use this language for the default user (all new users), perform the following steps:
   - Select the "Advanced" tab.
   - Recommendation: In the "Language for non-Unicode programs" area, select the language in which you want to install PCS 7 from the drop-down list.
   - Recommendation: In the "Code page conversion tables" area, check the box for the language in which you want to install PCS 7.
   - In the "Default user account settings" area, check the "Apply all settings to the current user account and to the default user profile" box.
   - Reboot the PC.

     Note

     Once the central archive server and StoragePlus have been installed, you can change the language for the default user.

4.7.6 How to set the communication module for connecting to the terminal bus

Introduction

Below you can find information about how to select the communication modules for connecting to the terminal bus you will use to configure the PC stations.

Note

If you use a PC station as a single-station system with no connection to other PC stations, the following steps do not need to be taken.

Setting the network connection to the terminal bus

1. Select the PC station (My Computer) in the tree view of Windows Explorer.
2. Select the "SIMATIC Shell" folder.
3. Select the **Settings** command from the shortcut menu.
   The "Select Terminal Bus" dialog box opens.
4. In the "Network Adapters" group, select the communication module via which you want to communicate on the terminal bus.
5. Click "OK".

NOTICE
If you confirm the dialog box that follows, the network connection to this PC station will be temporarily interrupted.

6. Confirm the dialog box that follows.
   The network adapter is reinitialized.

Configure connection sequence for several network adapters

1. Select the menu command **Start > Settings > Network Connections**.
   The "Network Connections" dialog box opens.
2. Select the menu command **Advanced > Advanced Settings**.
   The "Advanced Settings" dialog box opens.
3. Select the "Adapters and Bindings" tab.
4. Check that the connection via which the PC station on the terminal bus is to communicate is at the top of the "Connections" list. If necessary, move this connection to the top.

Note

If redundant network adapters are used, the shared TEAM connection must be at the top of the list. You can find additional information on this in the manual *Process Control System PCS 7; Fault-tolerant Process Control Systems*.

NOTICE
Once new network adapters have been installed, the most recently entered connection appears at the top of the list. Ensure that the connection via which the PC station on the terminal bus communicates is at the top of the list.

5. Click "OK".

See also

How to activate redundancy for fault-tolerant PCs (Page 157)

4.7.7 How to set up the connection between the PC station and plant bus

Introduction

You next check or assign the addresses on the plant bus and the access point for downloading and configuring the PC stations.

Perform the following steps:

- PC stations on the plant bus
  Check or assign addresses of the network adapters:
  - PC station on plant bus connected via CP 1613 or CP 1623 communications processor.
  - PC station on plant bus connected via standard network adapter (only if the ISO protocol is used on the plant bus).
- All PC stations:
  - Check the access point for each PC station.

Requirement

The Configuration Console has been opened via the menu command **Start > SIMATIC > SIMATIC NET > Configuration Console**.

PC station on plant bus connected via CP 1613 or CP 1623 communications processor

If the PC station on the plant bus is to communicate via the CP 1613 or CP 1623 communications processor, perform the following steps for all CP 1613 processors:

Note

If you have reinstalled the PCS 7 software on the PC station, the first two steps preceded by "Standard" are not required.

1. "Standard": In the tree view, select "Modules > <Name of Network Adapter for Communication with the Plant Bus> > General".
2. "Standard": Set the operating mode to "PG mode" for **every** PC network module you want to configure.
3. In the tree view, select "Modules > <Name of Network Adapter for Communication with the Plant Bus> > Address".
4. Set the addresses (either TCP/IP address or MAC address, depending on the protocol).

PC station on plant bus connected via standard network adapter

If you want to use the ISO protocol on the plant bus, but you do not know the MAC addresses of the network adapters, perform the following steps for all standard network adapters:

1. In the tree view, select "Modules > <Name of Network Adapter for Communication with the Plant Bus> > Address".
2. Make a note of the MAC address, which you will need when configuring the PC station.

Check the access point for each PC station.

Perform the following steps on all PC stations:

1. In the tree view, select the "Access Points" folder.
2. In the list, select "S7ONLINE".
3. Select **Properties** in the context menu.
   The "S7ONLINE properties" dialog box opens.
4. Check the entry in the "Assigned interface parameter assignment" box. "PC internal (local)" must be set. Change the settings, if necessary.
5. Click "OK".

4.7.8 How to make the settings for standard network adapters

Procedure

If you want to use the TCP/IP protocol on the plant bus, you will need to perform the following tasks for all standard network adapters on the plant bus:

1. Select the menu command **Start > Settings > Network Connections**.
   The "Network Connections" dialog box opens.
2. Select the plant bus in the "Network Connections" dialog box.
3. Select the menu command **File > Properties**.
4. Select the "Internet Protocol (TCP/IP)" item from the displayed list.
5. Click "Properties".
6. Configure the TCP/IP address:

   Typical: "Use the following IP address:" check box

   – Enter the IP address.
   – Enter the subnet mask.
7. Click "OK".
   The TCP/IP addresses are set.

Settings when using two or more network adapters

Note

Setting the order

If several standard network adapters are used (for example, 3COM), the adapter for the terminal bus must appear first (Network Properties: "Advanced > Advanced Settings"). Any non-functioning network adapters which are inserted must be disabled.

Following a PCS 7 installation, a dialog box appears in which you must select the network adapter for the terminal bus. When an adapter is selected, confirm it with "OK" and then confirm the "Reinitialize" dialog box with "Yes".

4.7.9 How to change the transmission rate and the mode in the PC network

Introduction

For communication in a network, ensure the following parameters are set consistently for all network nodes:

- Transmission rate
- Operating mode

Note

The factory settings for Siemens devices are set so that parameters for the transmission rate and operating mode are identified **automatically** (autonegotiation).

This setting **only** needs to be changed if nodes which do not have access to the "Autonegotiation" setting must be communicated with in the network.

Automatic identification of the transmission rate and operating mode

Autonegotiation refers to the automatic identification/negotiation of the transmission rate (10/100 Mbps) and the operating mode (full duplex/half duplex).

- Full duplex is an operating mode with bidirectional data communication, where the communication partners can send data on the transmission link independently of one another.
- Half duplex is an operating mode with bidirectional data communication, where only one communication partner can send data on the transmission link.

Requirement

The "Autonegotiation" setting needs to be changed if nodes which do not have access to this setting must be communicated with in the network.

Configuring network nodes

Location of use	Network node	Opening the configuration dialog window	Parameter setting
PC	Communication module CP 1613 or CP 1623	1. **Start > SIMATIC > SIMATIC NET > Configuration Console** 2. **PC Station > Modules > Network Parameters**	Activate option buttons for duplex mode and transmission rate.
PC	INTEL network adapter (or other similar standard network adapter) setting	1. **Start > Settings > Control Panel > Administrative Tools > Computer Management > Device Manager > Network adapters** 2. Select network adapter. 3. **File > Properties** 4. "Advanced" tab	Set values for the property. Typical property designation (depending on the network module used): • Link Speed & Duplex Mode • Link Speed & Duplex
Switches	SCALANCE X-400 SCALANCE X-300 SCALANCE X-200 SCALANCE X-200 IRT ESM OSM	• Configuration via Telnet or Web Based Management (WBM) • Open the configuration dialog box for the switch via Internet Explorer: http : \\<TCP/IP address>	Port configuration
AS	Communication module CP 443-1	HW Config: CP 443-1 properties > "Options" tab > "Individual Network Settings" group	In the "Transmission medium/Duplex" drop-down list (default setting: "Automatic setting")

More information

- Operating Instructions *SIMATIC NET; Industrial Ethernet Switches SCALANCE X-200*
- Operating Instructions *SIMATIC NET; Industrial Ethernet Switches SCALANCE X-300*
- Operating Instructions *SIMATIC NET; Industrial Ethernet Switches SCALANCE X-400*
- Manual *SIMATIC NET; Industrial Ethernet Switches; SCALANCE X-300; SCALANCE X-400*
- Manual *SIMATIC NET; Industrial Ethernet OSM/ESM*

4.7.10 Installing security patches, hotfixes, service packs

Introduction

Security patches, hotfixes, and service packs are software packages, which serve to eliminate security vulnerabilities, unwanted software properties, and similar.

Information is provided with the software package explaining the properties that need to be changed and the requirements for its installation.

Note

You will find information on the software version for the current PCS 7 version in the pcs7 readme file.

Microsoft security patches

Siemens tests the compatibility of Microsoft security patches for the Microsoft operating system, the SQL server and Internet Explorer. You will find information on security patches for PCS 7 online from SIMATIC Customer Support under the entry ID: 18490004 (http://support.automation.siemens.com/WW/view/en/18490004).

More information

- Section "How to install service packs for the operating system (Page 74)"

4.7.11 How to retro-activate the security settings for PCS 7

Introduction

If you want to make the settings required for PCS 7 on a PC at a later point in time, perform the following steps:

NOTICE
When the PCS 7 plant is operated in a domain, the security settings must be coordinated over the entire domain. Coordinate the security settings with the administrator responsible. After a change of the work environment, for example of domains in the workgroup or vice-versa, you must also start the "SIMATIC Security Control" and reset the settings.

Requirement

You are logged on to the PC station as an administrator.

Procedure

1. Select the menu command **Start > SIMATIC > SIMATIC Security Control > All Settings**. The "SIMATIC Security Control" dialog box opens.
2. Read the information in the lower section of the "SIMATIC Security Control" dialog box and select the appropriate button.
   - "Save" button
     The settings are not applied. The settings that can be applied to PCS 7 are saved in an XML file.
   - "Print" button
     The settings are not applied. The settings that can be applied to PCS 7 are sent to the printer.
   - "Apply" button
     The settings are applied.
     The button is disabled once the settings have been applied.
   - "Close" button
     The settings are not applied and the dialog box closed.
3. If you have selected the "Save", "Print" or "Apply" options, close the dialog box using the "Close" button.

Result

The settings needed for PCS 7 are applied on the PC.

Note

The status of the Windows firewall remains unchanged in this case.

4.7.12 How to change the settings of the Windows firewall for OpenPCS 7

Introduction

The following settings are only required if PC stations that communicate with the PCS 7 plant via OpenPCS 7 are located outside the local network (subnet) of the PCS 7 plant.

Procedure

1. Select the menu command**Start > Settings > Control Panel > Windows-Firewall.**
   The "Windows-Firewall" dialog box opens.
2. Select the "Exceptions" tab.
3. Activate the following check box in the "Programs and services" list:
   - When connected via OPC: "CCEServer" check box
   - When connected via OLE DB: "SQL Server 2005" check box
4. Click on "Edit".
   The "Edit a Program" dialog box opens.
5. Click on "Change scope...".
   The "Change scope" dialog box opens.
6. Select the "User-defined list" option.
7. Enter the subnets with which the PC stations communicate in the text box.
8. Click on "OK" in the dialog boxes until the "Windows firewall" dialog box is closed.

4.7.13 How to activate redundancy for fault-tolerant PCs

Principle

The following basic steps are required to configure redundant stations.

1. Redundancy cable for PC stations:
   You need to establish a connection through a redundant cable for redundant PC stations. The redundant stations are the PC stations of a pair (server and single station systems).
2. Select the redundancy interface:
   For the redundancy connection between two PC stations, you need to configure the connection path directly on the redundant PC stations.
3. With a server-client architecture, you will need to assign the clients to the servers.

Redundant cable for PC stations

The following redundancy connection options exist:

- With BATCH servers:
  Network cable (cross-over cable) to an additional Ethernet network adapter.
  If using a PC as a BATCH server, this is the only type of redundancy connection permitted!
- With OS servers and Route Control servers:
  Zero-modem cable to COM interface or network cable (cross-over cable) to an additional Ethernet network adapter.

Selecting the redundancy interface

If you want to establish a redundancy connection between two PC stations, OS servers for example, you need to select the connection path to the redundant partners.

A redundancy connection can be established via the "serial port" or a "network adapter".

- BATCH server (redundancy connection only possible through an additional network adapter!)
- OS server
- Route Control server
- Maintenance server
- Central archive server
- Single station systems

You can make the following settings directly on each of the mutually redundant servers and single station systems.

1. Select the PC station (My Computer) in the tree view of Windows Explorer.
2. Select the "SIMATIC Shell" folder.
3. In the shortcut menu, select the menu command **Redundancy Settings ...**.
   The "Redundancy Settings" dialog box opens.
4. In the "Optional connection to the redundant partner" area, configure the connection path.
   For a serial connection:
   - Select the item "COM1" or "COM2" " " in the "Serial port" drop-down list.
   - Select the "----------" item in the "Network adapter" drop-down list.

   For connection via an additional network adapter:
   - Select the "----------" item in the "Serial port" drop-down list.
   - Select the desired network adapter in the "Network adapter" drop-down list.
5. Click "OK".

Additional steps for servers and single station systems (OS, BATCH)

After connecting the PC stations with a redundancy cable and selecting the redundancy interface:

1. Follow the instructions in the function manual *Process Control System PCS 7; Fault-Tolerant Process Control Systems*.

Additional steps for clients (OS, BATCH)

Connect the clients with the redundant servers:

1. Follow the instructions in the function manual *Process Control System PCS 7; Fault-Tolerant Process Control Systems*.

Additional steps for SIMATIC Route Control

1. Follow the corresponding instructions contained in the manual *Process Control System PCS 7; SIMATIC Route Control*.

See also

How to set the communication module for connecting to the terminal bus (Page 147)

4.7.14 Downloading the network configuration to the PC stations

Introduction

To allow you to configure, download and test all automation systems and PC stations (OS, BATCH, RCS) of a PCS 7 project from a central engineering station (ES), make the following network settings and download the configuration to all PC stations.

Additional information

The required steps are described in the configuration manual *Process Control System SIMATIC PCS 7; Engineering System*.

4.8 Notes on add-ons and utilities

4.8.1 Overview of add-on programs and utilities for PCS 7

Introduction

This section provides you with information on add-ons and utilities for PCS 7.

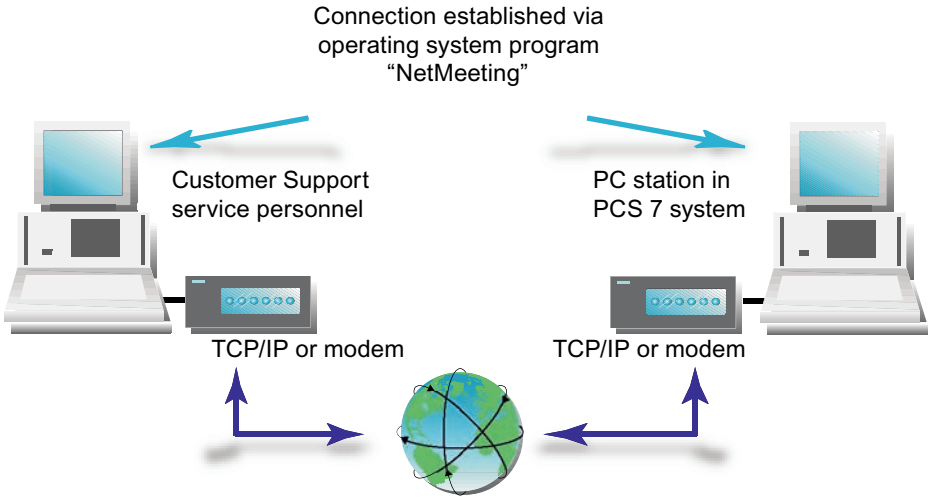
Overview

- Add-ons:
  - Remote diagnostics functions (Page 161)
  - Virus scanners (Page 163)
  - Burner software (Page 163)
  - DiagMonitor (Page 164)
- Utilities:
  - Screen savers (Page 167)
  - Defragmentation programs (Page 167)

4.8.2 Remote diagnostics functions

Options for remote diagnostics and remote administration of a PCS 7 plant

We recommend you use the operating system feature "NetMeeting" for remote diagnostics of PCS 7 plants and for administrative access to PC stations with Windows XP Professional and Windows Server 2003.



Transmission paths

Data can be transmitted on the following paths:

- Telephone line (modem)
- TCP/IP connection (plant-internal network connection)

Security requirements

If you want to perform remote diagnostics on a PCS 7 plant, you must protect that plant against unauthorized access.

Several steps have to be taken in order to implement a security concept. Only when taken together as a whole will these security measures offer the plant optimum protection.

Enabling NetMeeting with an active firewall

If the Windows firewall is activated, you need to set up exceptions for the use of NetMeeting.

1. Select the menu command **Start > Settings > Control Panel > Windows-Firewall**.
   The "Windows Firewall" dialog box opens.
2. Select the "Exceptions" tab.
3. Check the "Remote Desktop" box.
4. Click "Add Program...".
   The "Add a Program" dialog box opens.
5. Click "Browse".
   In the "Browse" dialog box, select the "C:\Program Files\NetMeeting" folder.
6. Select the "conf.exe" file.
7. Click "Open". Click "OK".
   The "conf.exe" program is added to the "Programs and Services" list. The "conf.exe" box is checked for the program.
8. Select "conf.exe" in the "Programs and Services" list.
9. Click "Edit".
   The "Edit Program" dialog box opens.
10. Click "Change scope...". Make your plant-specific setting. The recommended setting is "User-defined list". Enter the addresses of the authorized computers. Click "OK".
11. Click "OK". The "Windows firewall" dialog box opens and the "Exceptions" tab selected.
12. Click "Program ...". The "Add program" dialog box opens.
13. Click "Browse".
14. Select file "mnmsrvc.exe" in the operating system's system folder.
    In the case of a standard installation, you will find this file in "C:\Windows\System32".
15. Click "Open". Click "OK".
    The "mnmsrvc.exe" program is added to the "Programs and Services" list. The "mnmsrvc.exe" box is checked.
16. Click "Edit".
    The "Edit Program" dialog box opens.
17. Click "Change scope...". Make your plant-specific setting.
    The recommended setting is "User-defined list". Enter the addresses of the authorized computers. Click "OK".
18. Click "OK". The "Windows Firewall" dialog box opens.
19. Click "OK". The settings will be accepted.

Additional information

- Document *Security concept PCS 7 and WinCC - Basic Document*
- Operating system online help
- Internet: (http://support.microsoft.com/kb/878451/en)

4.8.3 Virus scanners

Virus scanners

Virus scanners approved for PCS 7 can be installed later.

The following virus scanners are approved for PCS 7:

- Symantec AntiVirus Corporate Edition
- McAfee VirusScan Enterprise
- Trend Micro OfficeScan Corporate Edition

Note

You can find information about the software version of the latest PCS 7 version in the *pcs7 readme* file.

Virus protection

NOTICE
Only copy scanned data to a PC station.

Additional information

You can find additional information in the document *Process Control System PCS 7; Security Information Note: Setting Up Antivirus Software*

You can find the document at:

http://www.siemens.com/automation/service&support

4.8.4 Burner software

Introduction

In the interests of maintaining performance levels, data archiving devices should not be used on PC stations in process mode. We recommend that you only use data archiving devices (for example CD/DVD burners) on the engineering station.

Application

If you have purchased an engineering station as part of a product bundle, this package will include burner software. This burner software can be installed after the main installation. During installation, follow the instructions of the burner software manufacturer.

4.8.5 DiagMonitor

Introduction

The DiagMonitor software is used for early detection and reporting of hardware and temperature problems on the SIMATIC PC. Messages can appear via:

- Ethernet (SNMP)
- Internet/telephone
  - E-mail
  - SMS
- OPC (forwarded to the SIMATIC software applications)
- Web browser

The DiagMonitor software monitors, reports, alarms and visualized application-specific operating states on SIMATIC PCs.

Requirements

The corresponding hardware and software requirements must be observed when using DiagMonitor software.

Note

You will find detailed and current information about the approved PC types and operating systems in the manuals *DiagMonitor Getting Started* and *PC DiagMonitor Software*.

- Hardware
  Only various types of SIMATIC PCs can be used as monitored PCs, for example:
  - SIMATIC PCS 7 BOX PC
  - SIMATIC Microbox PC
  - SIMATIC Panel PC IL
  - SIMATIC Panel PC
  - SIMATIC Rack PC
  - SIMATIC Rack PC IL
- Software
  The DiagMonitor software can be used with various operating systems, for example:
  - Microsoft Windows XP
  - Microsoft Windows Server 2003
  - Microsoft Windows XP Embedded (SIMATIC PC BOX)

Restrictions

Note

Remote monitoring is only possible with the TCP/IP Internet protocol since the required SNMP protocol is available in this protocol family.

Installing the DiagMonitor software

1. Insert the PCS 7 Toolset DVD in the DVD drive.
2. In the Windows Explorer, open the folder **Additional_Products > DiagMonitor**.
3. Run file Setup.exe.
4. Select the language in which the installation is to be performed.
5. Click "OK".
   The "SIMATIC PC DiagMonitor Setup" dialog box opens.
6. Follow the on-screen instructions.
   If you do not want to install the DiagMonitor software in the specified target folder, you can change it by clicking "Browse".
   Three installation options are available in the "Setup Type" window:
   - Custom
     With the Custom installation, only the components you select during setup will be installed.
   - Development
     With the Development installation, only the components which enable the user to develop monitoring applications will be installed.
   - Full
     With the Full installation, all components will be installed. This includes the components of the Custom and Development setups.
7. Select "Custom" and click "Next".

   Note

   Siemens industrial PCs support DiagMonitor software.

8. Click "Next".
   The "Question" dialog box opens.
9. If you want to configure the SNMP service, answer this question with "Yes" and select your service provider.
   You can find additional information on this in the section "Configuring SNMP services".
10. Click "Exit".
    You must restart Windows/your PC before you can use the program.

Configuring SNMP service

1. Select the "Workplace" symbol on the Windows desktop.
2. In the shortcut menu, select the menu command **Workplace > Manage**. The "Computer management" dialog box opens.
3. Navigate through the directory structure to the "Services and Applications > Services" directory.
4. Select the "SNMP service" or "SNMP" entry.
5. Select the shortcut menu command **Properties**.
6. Open the "Security" tab.
7. Select one of the following options:

   "Accept SNMP packages by **every** host" option activated:

   – No other settings are required.

   "Accept SNMP packages by **this** host" option activated:

   – The local address or the local PC name and the address of the maintenance station must be entered for the station being monitored. Both addresses are needed for a redundant MS server.

   – The local address or the local PC name must be entered for the maintenance server.
8. Enter the name with read/write access used in the configuration under "Accepted community names".

Configuring DiagMonitor

Note

The diagnostic monitor's "Management Station" configuration tool can only be started by a user with administrator rights. Perform the configuration on all monitored stations.

1. Select the menu command **Start > SIMATIC > PC DiagMonitor > Management Station**. The "SIMATIC PC DiagMonitor" dialog box opens.
2. Select the menu command **Station > Add**.
3. Make the following settings:
   Select "Local station" or check the "Allow access to all stations" box, or click "Add" and enter the "Name or IP address" of individual PC stations (for example, of the maintenance server).

   – If desired, configure the necessary events, for example, cyclic operating hours alarms (optional setting).

   – If you want to stop the "SIMATIC PC DiagMonitor" Management Station from automatically starting up each time someone logs on, delete the "Management Station" entry under **Start > Programs > Autostart**.

4.8.6 Screen savers

Using a screen saver

It is **not** recommended to use a screen saver on the PC with PCS 7 for the following reasons:

- The screen saver uses CPU time and may therefore cause the system to be overloaded.
- The screen saver reduces the amount of RAM that can be used continuously. There are screen savers with which the amount of RAM used by the screen saver is not freed up.

If you use a screen saver, you should deactivate it when operating PCS 7.

4.8.7 Defragmentation programs

Information about authorizations

Authorizations cannot be saved on a license key USB stick. In this section, we only use the term "license key", even if a product uses "authorizations".

Using defragmenters

Defragmentation programs are used to optimize the time it takes to access a hard disk.

NOTICE
Defragmentation programs that move fixed blocks can destroy license key files required for the authorization of software packages. **Recommendation:** Always exclude the license keys from editing before using the defragmentation program.

Excluding license keys from editing

You can exclude the license keys from editing as follows:

- Transfer all license keys to another storage medium, for example license key USB stick/ license key diskette.
- Transfer all license keys to a partition that is not defragmented, for example the security partition.

Appendix 5

5.1 Appendix A - Use of software packages

5.1.1 Software packages for basic engineering

Brief description of the basic engineering applications

The following applications for basic engineering are installed by the PCS 7 system setup from the PCS 7 Toolset DVD. License keys are required for use.

You will find more information on this topic in the section "Licensing and authorizing the PCS 7 software (Page 120)".

Applications	Brief description
Automation License Manager	For transferring and managing license keys
STEP 7	PCS 7 basic engineering: • SIMATIC Manager for managing project objects • HW Config for the hardware configuration • NetPro for the network configuration
SCL	**S**tructured **C**ontrol **L**anguage (S7 SCL) High-level language for programming user function blocks in accordance with IEC 61131-3
CFC	**C**ontinuous **F**unction **C**hart (CFC) - For the graphical configuration of continuous automation functions in accordance with IEC 61131-3, with test and commissioning functions
SFC	**S**equential **F**unction **C**hart (SFC) - For the graphical configuration of sequential production sequences (step sequencers), with test and commissioning functions
PH	**P**lant **H**ierarchy (PH) - For displaying a project in a plant view; which enables the user to gain a quick overview of project resources
IEAPO	• **P**rocess **O**bject view (PO) - For providing a process-control oriented view of basic automation data • **I**mport **E**xport **A**ssistant (IEA) You will find more information on this topic in the section "Optional software packages (Page 174)".
PCS 7 Library	Standardized process-control libraries with preconfigured and tested blocks and drivers for hardware (e.g., blocks for I/O modules)
WinCC	Visualization and configuration software containing standards for the fast implementation of simple to complex visualization tasks in single or multiple station operation
AS-OS Engineering	AS/OS connection for faceplates, messages, and tags
PV InsInfo-Server	Tool which supplies the WinCC variable browser with ES variables

Applications	Brief description
SIMATIC NET PC Software	Software components for configuring and identifying network adapters installed in the PC
BATCH Engineering	Components for BATCH Engineering: BATCH Base, BATCH Builder, BATCH Blocks, BATCH WinCC Client Options, BATCH WinCC Server Options, BATCH Getting Started You will find more information on this topic in the section "Software packages for SIMATIC BATCH (Page 172)".
Route Control Engineering	Components for Route Control Engineering: Route Control Base, Route Control Engineering, Route Control Library, Route Control Faceplates You will find more information on this topic in the section "Software packages for SIMATIC Route Control (Page 173)".
PDM	Components for engineering field devices You will find more information on this topic in the section "Optional software packages (Page 174)".

5.1.2 Software packages for operator stations

Brief description of the operator station applications

The following applications for operator stations are installed from the PCS 7 system setup on the PCS 7 Toolset DVD. License keys are required for use.

You can find additional information on this in the section "Licensing and authorizing PCS 7 software (Page 120)".

Program name	Brief description
Automation License Manager	For transferring and managing license keys
WinCC	Visualization and configuration software for visualization in single or multiple station operation Level of license keys: For further information, refer to the section titled "Selecting the correct license keys/authorizations (Page 126)".
SFC Visualization	Allows you to display and operate sequence control systems.
PCS 7 Faceplates	Contains standardized libraries with pre-produced and tested blocks (connection to AS and faceplates).
SIMATIC NET PC-Software	The software components included can be used to configure and detect the network adapters fitted in the PC.

5.1.3 Software packages for SIMATIC BATCH

Brief description of SIMATIC BATCH applications

The following applications for SIMATIC BATCH are installed from the PCS 7 system setup on the PCS 7 Toolset DVD. License keys are required for use.

You can find additional information in the section "Licensing and authorization of the PCS 7 software (Page 120)".

Program name	Brief description
Automation License Manager	For transferring and managing license keys
BATCH Base	Basis for all BATCH installations Contains installation of the client database You will need a license key for BATCH API to interface to a higher-level information system.
BATCH Builder	Software package that is installed on the PCS 7 ES and is used to configure BATCH project data. • OM • Builder
BATCH Fastobjects	For installing a database server • POET server • BATCH DBMON
BATCH client	• BCC - The Batch Control Center (BatchCC) is the central component in SIMATIC BATCH for batch scheduling and batch control. BatchCC manages all the data of relevance for SIMATIC BATCH, enabling you to also log all data in the BatchCC. • RZE - The BATCH recipe editor is responsible for producing simple graphics and managing any number of recipes. • BATCH REPORT - The convenient BATCH printing function
BATCH Server	• BCS - BATCH sequence control system and allocation of plant units • CDV - Batch data management records, saves, logs and exports batch data • Level of license keys You can find additional information on this in the section "Selecting the right license keys/authorizations (Page 126)".
BATCH Blocks	BATCH interface blocks
BATCH WinCC Client Options	Faceplates for the PCS 7 OS
BATCH WinCC Server Options	Faceplates for the PCS 7 OS
BATCH Getting Started	Sample project for SIMATIC BATCH

5.1.4 Software packages for SIMATIC Route Control

Brief description of the applications for SIMATIC Route Control

The following applications for SIMATIC Route Control are installed during the PCS 7 setup from the Toolset DVD. License keys are required for use.

You can find additional information in the section "Licensing and authorization of the PCS 7 software (Page 120)".

Program name	Brief description
Automation License Manager	For transferring and managing license keys
Route Control Base	Basis for all Route Control installations Contains documentation on SIMATIC Route Control.
Route Control client	For in-depth diagnostics of the route and its elements
Route Control Engineering	For producing and managing any number of sub-routes with elements
Route Control server	For searching for routes and as an interface between the Route Control center and/or PCS 7 OS and the automation systems License key levels: You can find additional information on this in the section " Selecting the right license keys/authorizations (Page 126) ".
Route Control Library	Contains interface blocks for interconnection with user and other process blocks and faceplates for monitoring and operating routes on the Route Control client.
Route Control Faceplate	Faceplates for the PCS 7 OS

5.1.5 Optional software packages

Introduction

The following applications can be used for engineering special applications. You will need additional license keys.

For additional information please refer to the section "Licensing and authorization of the PCS 7 software (Page 120)".

Note

Information on the software version of the latest PCS 7 version is available in the *Process Control System PCS 7; PCS 7 Readme* file.

Add-ons in the PCS 7 setup

You install these applications via the PCS 7 system setup.

Applications	Brief description
IEAPO	**I**mport-**E**xport-**A**ssistant (IEA) - Tool for rapid bulk engineering (e.g. importing models and process tags) Note: License needed for IEA
S7-PLCSIM	CPU Simulation
SFC Visualization	The SFC visualization option allows you to display and operate sequence controls.
VXM (Version Cross Manager)	Version comparison of engineering data with graphic differential display
PCS 7 PID Tuner	Optimization of control loops
DOCPRO	This is used to produce system documentation and circuit manuals.
OpenPCS 7	OPC interface as basis for the exchange of data throughout the company
PCS 7 Faceplates; PCS 7 Basic Faceplates; PCS 7 Advanced Faceplates	Faceplates for the operator station
DotNet Framework (also ".NET Framework")	A software platform developed by Microsoft for developing and executing programs that were created with different programming languages on various platforms.
SIMATIC Logon	• Assignment of the roles defined for the PCS 7 applications to the Windows users/user groups along with the corresponding administrator rights • Activation of user dialogs for the applications managed with SIMATIC Logon. • Release and logging of functions

Applications	Brief description
SIMATIC PDM	Configuration, parameter assignment, commissioning and diagnostics of intelligent process devices. SIMATIC PDM allows a number of process devices to be configured under one common user interface.
WebNavigator Remote Publisher	For remote publishing of images and other relevant data for a PCS 7 Web server.

Add-ons on own installation media

These applications are not part of the PCS 7 Toolset DVD.

Applications	Brief description
S7-F Systems	For configuring fail-safe functions of a SIMATIC S7-400F / SIMATIC S7-400FH. The application automatically supplements CFC plans defined by the user, adding functions for error detection and fault reaction and offers supportive functions, such as comparing or removing F programs.

More information

For information about the software packages and how to use them, please refer to the brief description *SIMATIC PCS 7 process control system* or the catalog *ST PCS 7*.

5.2 Appendix B - Licensing of software packages

5.2.1 Software packages and required license keys

Introduction

Note

In this section, we only use the term "license key", even if a product is still using the older "authorization".

Software packages and required license keys

The table below shows which license keys you require for each software package.

Legend for the tables:

Column	Value	Meaning
System setup	Yes	Software is installed by PCS 7 Setup.
	No	Software is not installed by PCS 7 Setup.
	No entry	Software is automatically installed by PCS 7 Setup with the software named in the "Comment" column.
PC station/ Comment	X	Mandatory installation of the software.
	(X)	Optional installation of the software. See the "Comment" column.
	(Z)	Information on license key levels is available in the section "Selecting the correct license keys/authorizations (Page 126)."

Note

The "Version" column is empty so that you can enter the correct data for your system documentation. The versions for the current *Process Control System PCS 7; PCS 7 Toolset* program package can be found in the *Process Control System; PCS 7 Readme* file.

				ES package		OS package			Comment
Product name	**Version**	**License key**	**System setup**	**ES**	**Single station system**	**OS single station system**	**OS server**	**OS client**	**X = installation required** **(X) = installation optional** **(Z) Level of license keys -** **Section** "Selecting the correct license keys/authorizations (Page 126)"
PCS 7 ES									
Runtime License AS		AS RT PO		(Z)	(Z)				Scope: Configuration limited to the number of process objects that can be loaded in the AS.
STEP 7		STEP 7	Yes	X	X				H systems are integrated.
		SIK/SIMATIC H Systems Vx.y		(X)	(X)				For H systems: (X) product is always installed if STEP 7 is installed.
CFC		CFC	Yes	X	X				Required for configuring process objects in CFC.
WinCC: Engineering only		WinCC ES PO	Yes	X					
WinCC: Engineering and runtime		WinCC RC PO (Z)	Yes		(Z)	(Z)	(Z)	(Z)	For single station and small sytems.
SFC		SFC	Yes	X	X				
SCL		S7 SCL	Yes	X	X				
PH		PH PO	Yes	X	X				
IEAPO		IEA	Yes	X	X				License key only required to use the IEA option.
AS-OS Engineering			Yes	(X)	(X)				(X) Product is always installed if STEP 7 and WinCC are installed.
PV InsInfo-Server			Yes	(X)	(X)				
SFC Visualization		SFC Visualization	Yes	(X)	(X)	(X)	(X)	(X)	(X) Product is always installed if WinCC is installed.
DOCPRO		SIK/SIMATIC	Yes	(X)	(X)				

				ES package		OS package			Comment
		DOCPRO							
Version Cross Manager		Version Cross Manager	Yes	(X)	(X)				
S7 PLC Simulation		PLCSIM	Yes	(X)	(X)				
PCS 7 Library			Yes	X	X				
PCS 7 faceplates			Yes	X	X	X	X	X	
PCS 7 PID Tuner			Yes	(X)	(X)				
Version Trail			Yes	X	X				
SIMATIC BATCH Engineering			Yes	(X)	(X)				(X) Product only required for SIMATIC BATCH.
Route Control Engineering		Route Control Engineering	Yes	(X)	(X)				(X) Product only required for SIMATIC Route Control.
Maintenance ES		Maintenance ES	Yes	(X)	(X)				(X) Product only required for the Maintenance Station.

				ES package		OS package			Comment
Product name	**Version**	**License keys**	**System setup**	**ES**	**Single station system**	**OS single station system**	**OS server**	**OS client**	**X = installation required** **(X) = installation optional**
Add-on packages for all PCS 7 PCs									
SIMATIC Logon Service		Logon Service	Yes	(X)	(X)	(X)	(X)	(X)	All stations that use applications managed by SIMATIC Logon Service require the SIMATIC Logon Service. The license key is also installed via the system setup if the appropriate license data carrier is connected to the PC or plugged in.
SIMATIC Security Control			Yes	(X)	(X)	(X)	(X)	(X)	Activate security settings for PC stations.

				ES package		OS package			Comment
Product name	**Version**	**License keys**	**System setup**	**ES**	**Single station system**	**OS single station system**	**OS server**	**OS client**	**X = installation required** **(X) = installation optional**
PCS 7 communication									
SIMATIC NET PC SW		BCE	Yes	X	X	X	X		License only for a standard Ethernet interface module (not required for SIMATIC NET CP 1613 or CP 1623)
		Industrial Ethernet SOFTNET-S7 Basic							License for BCE for update of SIMATIC NET 2005.
		Industrial Ethernet SOFTNET S7 Power Pack							License for BCE for update of SIMATIC NET 2005.
		Industrial Ethernet S7-1613 or S7-1623		(X)	(X)	(X)	(X)		For use of SIMATIC NET CP 1613 or CP 1623.
		Industrial Ethernet S7 REDCONNECT		(X)	(X)	(X)	(X)		Only required for connecting to redundant network.
S7 F Systems		SIK/SIMATIC S7 F Systems V(x.x)	No	(X)	(X)				Product is supplied on a separate CD.

				ES package		OS package			Comment
Product name	**Version**	**License keys**	**System setup**	**ES**	**Single station system**	**OS single station system**	**OS server**	**OS client**	**X = installation required** **(X) = installation optional**
SIMATIC PDM									
SIMATIC PDM Basic Software		PDM single point – (1 day) PDM Basic – (up to 4 tags) The following TAG licenses are optionally available: - PDM ("*z") *z = 128, 512, 1024, 2048, unlimited z = number of tags (devices)	Yes	X	X				SIMATIC PDM Basic software includes the following licenses: • Communication via HART modem • Communication via RS232 • Communication via PROFIBUS DP/PA, 4 tags You can find additional information in the documentation relating to SIMATIC PDM.
		PDM integration in STEP 7	Yes	(X)	(X)				This is only required if PDM is to be integrated in HW Config.
		PDM Routing	Yes	(X)	(X)				Data routing in PCS 7 / S7-400
		PDM HART Mux	Yes	(X)	(X)				Communication via standard HART multiplexer

				ES package		OS package			Comment
Product name	**Version**	**License keys**	**System setup**	**ES**	**Single station system**	**OS single station system**	**OS server**	**OS client**	**X = installation required** **(X) = installation optional** **(Z) Level of license keys - Section** "Selecting the correct license keys/authorizations (Page 126)"
Operator station									
WinCC Basic System		WinCC RC PO (Z) /WinCC RT PO (Z) WinCC Archive (Z)	Yes	(Z)	(Z)	(Z)	(Z)	(Z)	Only WinCC RT PO Client for OS client
		WinCC Server	Yes	(X)			X		
		WinCC Redundancy	Yes				(X)		Only required for redundancy
		WinCC User Archives	Yes		(X)	(X)	(X)	(X)	
WinCC LTO		WinCC Advanced Process Ctrl	Yes	X	X	X	X	X	
		Chip card	Yes		(X)	(X)	(X)	(X)	WinCC chip-card reader required (only active in process mode)
Drivers (Multi VGA)			No	(X)	(X)	(X)	(X)	(X)	Suitable graphics card drivers for the version (see readme.wri)
PCS 7 faceplates			Yes	X	X	X	X	X	Automatically installed with WinCC.
OPC			Yes	X	X	X	X	X	Automatically installed with WinCC.

				ES package		OS package			Comment
SIMATIC NET		BCE	Yes	(X)	(X)	(X)	(X)		License only for a standard Ethernet interface module (not required for SIMATIC NET CP 1613 or CP 1623)
		Industrial Ethernet S7-1613 or S7-1623		(X)	(X)	(X)	(X)		For use of SIMATIC NET CP 1613 or CP 1623
		S7 REDCONNECT		(X)	(X)	(X)	(X)		Only required for connecting to redundant network.
WinCC Connectivity Station		WinCC Connectivity Station							
Web server		WinCC WebNavigator (Z)	Yes			(Z)		(Z)	**Note:** Server operating system required

				OS package		Comment
Product name	**Version**	**License keys**	**System setup**	**OS server for BATCH**	**OS client for BATCH**	**X = installation required** **(X) = installation optional** **(Z) Level of license keys -** **Section** "Selecting the correct license keys/authorizations (Page 126)"
Operator station for BATCH						
WinCC Basic System		WinCC RC PO (Z) /WinCC RT PO (Z) WinCC Archive (Z)	Yes	(Z)	(Z)	Only WinCC RT PO Client for OS client
		WinCC Server	Yes	(X)	X	
		WinCC Redundancy	Yes		(X)	Only required for redundancy
		WinCC User Archives	Yes	(X)	(X)	
WinCC LTO		WinCC Advanced Process Ctrl	Yes	X	X	
		Chip card	Yes	(X)	(X)	Chip-card reader required for WinCC (only active in process mode)
SFC Visualization		SFC Visualization	Yes	X	X	
PCS 7 Faceplates			Yes	X	X	Automatically installed with WinCC.

				OS package		Comment
SIMATIC NET		BCE	Yes	(X)		License only for a standard Ethernet interface module (not required for SIMATIC NET CP 1613 or CP 1623)
		Industrial Ethernet S7-1613 or S7-1623	Yes	(X)		For use of SIMATIC NET CP 1613 or CP 1623.
		S7 REDCONNECT		(X)		Only required for connecting to redundant network.
BATCH WinCC Client Options			Yes	X	X	
BATCH WinCC Server Options			Yes	X		

Product name	Version	License keys	System setup	Central archive server	Redundant central archive server	Comment X = installation required (X) = installation optional (Z) Level of license keys - Section "Selecting the correct license keys/authorizations (Page 126) "
Central archive server						
WinCC Basic System		WinCC RT PO Client WinCC Archive (Z)	Yes	(Z)	(Z)	
		WinCC Server	Yes	X	X	
		WinCC Redundancy	Yes	(X)	X	
WinCC LTO			Yes			
StoragePlus		StoragePlus	Yes	X	X	
BATCH Report		-	No	(X)	(X)	Installation is only necessary if batch data is to be output that was archived prior to PCS 7 V7.1. Installation from "Additional_Products \ BATCH_Report__V7.0+SP1+HF4" directory of PCS 7 Toolset DVD

Product name	Version	License keys	System setup	OpenPCS 7 Station	OS client with OpenPCS 7	Comment X = installation required (X) = installation optional (Z) Level of license keys - Section "Selecting the correct license keys/authorizations (Page 126) "
OpenPCS 7						
OpenPCS 7		OpenPCS 7 Station		X	X	
WinCC Basic System		WinCC RC PO (Z) /WinCC RT PO (Z) WinCC Archive (Z)	Yes		(Z)	Only WinCC RT PO Client for OS client
		WinCC Server	Yes		X	
		WinCC Redundancy	Yes		(X)	Only required for redundancy
		WinCC User Archives	Yes		(X)	
WinCC LTO		WinCC Advanced Process Ctrl	Yes		X	
		Chip card	Yes		(X)	WinCC chip-card reader required (only active in process mode)
SFC Visualization		SFC Visualization	Yes		X	
PCS 7 Faceplates			Yes		X	Automatically installed with WinCC.

Product name	Version	License keys	System setup	ES	BATCH single station system	BATCH server, redundant BATCH server	BATCH Client	BATCH Engineering	Comment X = installation required (X) = installation optional (Z) Level of license keys - Section "Selecting the correct license keys/authorizations (Page 126) "
SIMATIC BATCH									
BATCH Base			Yes	X	X	X	X	X	Basic installation for all SIMATIC BATCH PCs
BATCH Builder			Yes	X				X	
BATCH Blocks			Yes	X				X	
BATCH Server		BATCH (Z) UNITs	Yes		(Z)	(Z)			
BATCH API		BATCH API			X	X			
BATCH Fastobjects					X	X			License
BATCH Advanced Report					X	X			
BATCH Separation Procedures/Formulas		BATCH Formula			X	X			
BATCH Hierarchical Recipe		BATCH Hierarchical Recipe			X	X			
BATCH ROP Library		BATCH Library			X	X			
BATCH Client - BCC		BATCH BatchCC	Yes				X		And/or BATCH Recipe System
BATCH Client - RZE		BATCH Recipe System	Yes				X		And/or BATCH Control

Product name	Version	License keys	System setup	ES	BATCH single station system	BATCH server, redundant BATCH server	BATCH Client	BATCH Engineering	Comment X = installation required (X) = installation optional (Z) Level of license keys - Section "Selecting the correct license keys/authorizations (Page 126) "
BATCH Report									Installation is only necessary if batch data is to be output that was archived prior to PCS 7 V7.1. Installation from "Additional_Products \ BATCH_Report__V7.0+SP1+HF4" directory of PCS 7 Toolset DVD.
BATCH Planning		BATCH Planning					X		
Getting Started			Yes				X		

				ES package		Route Control package				Comment
Product name	**Version**	**License keys**	**System setup**	**ES**	**Single station system**	**Route Control single station system**	**Route Control server**	**Route Control client**	**Route Control Engineering**	**X = installation required** **(X) = installation optional** **(Z) Level of license keys - Section** "Selecting the correct license keys/authorizations (Page 126)"
SIMATIC Route Control										
Route Control Base			Yes	X	X	X	X	X	X	
Route Control Engineering		Route Control Engineering	Yes	X	X				X	Wizard in context of SIMATIC Manager, library blocks, engineering tool
Route Control Server		Route Control Server (Z)	Yes		(Z)	(Z)	(Z)			(also redundant*)*
Route Control Client		Route Control Center	Yes		X	X		X		
Route Control Library			Yes	X	X	X			X	
Route Control Faceplate			Yes	X	X	X		X	X	

				Maintenance Station				Comment
Product name	**Version**	**License keys**	**System setup**	**ES**	**Single station system**	**MS Server**	**MS Server Redundant**	**X = installation required** **(X) = installation optional** **(Z) Level of license keys - Section** "Selecting the correct license keys/authorizations (Page 126)"
Maintenance Station								
Maintenance Station		Maintenance RT (Z)	Yes		(Z)	(Z)	(Z)	
Maintenance Station Engineering		Maintenance ES	Yes	X	X			

				SIMATIC PCS 7 BOX 416		SIMATIC PCS 7 BOX RTX		Comment
Product name	**Version**	**License keys**	**System setup**	**With AS OS ES**	**With AS OS**	**With AS OS ES**	**With AS OS**	**X = installation required** **(X) = installation optional** **(Z) Level of license keys - Section** "Selecting the correct license keys/authorizations (Page 126)"
SIMATIC PCS 7 BOX								
WinAC for SIMATIC S7 Slot CPU 416-2 PCI		WinAC for SIMATIC S7 Slot CPU 416-2 PCI	No	X	X			
WinAC RTX		WinLC RTX	No			X	X	
Software on the PCS 7 Toolset DVD (ES installation)			Yes	(Z)		(Z)		
Software on the PCS 7 Toolset DVD		WinCC RC PO (Z)	Yes	(Z)	(Z)	(Z)	(Z)	

				SIMATIC PCS 7 BOX 416		SIMATIC PCS 7 BOX RTX		Comment
Product name	**Version**	**License keys**	**System setup**	**With AS OS ES**	**With AS OS**	**With AS OS ES**	**With AS OS**	**X = installation required (X) = installation optional (Z) Level of license keys - Section** "Selecting the correct license keys/authorizations (Page 126)"
(OS installation)		/WinCC RT PO (Z) WinCC Archive (Z)						
Software on the PCS 7 Toolset DVD (SIMATIC PDM)			Yes	(Z)		(Z)		
Software on the PCS 7 Toolset DVD (SIMATIC BATCH)		BATCH (Z) UNITs	Yes	(Z)	(Z)			
Maintenance Station		Maintenance RT (Z)	Yes	(Z)	(Z)	(Z)	(Z)	

5.2.2 Operating system for the PCS 7 PC

Complete systems (product bundles)

Note

In the case of complete systems, i.e. product bundles, the operating system is preinstalled and available on the Recovery DVD.

Required operating system

The operating system is not included in the PCS 7 scope of delivery.

Note

Information on the software version of the latest PCS 7 version is available in the *Process Control System PCS 7; PCS 7 Readme* file.

PC station	Operating system	Service pack	License
Single station system or **client** for: • OS • SIMATIC BATCH • SIMATIC Route Control	MS Windows XP Professional (32-bit version)	Required	Microsoft license
Engineering station		Required	Microsoft license
Engineering station for multiproject engineering Please note the following:	MS Windows Server 2003 (32-bit version)	Required	Microsoft license **Note on installing a server:** We recommend licensing **per workplace**. With licensing per server, you need to ensure a sufficient number of licenses.
Server (redundant and non-redundant) for: • OS • Archive servers • Maintenance server • Web • SIMATIC BATCH • SIMATIC Route Control		Required	
File server for multiproject engineering		Required	

Note

Note on engineering station for multiproject engineering:

For working on a multiproject in a network, an operating system must be installed on the central engineering station in accordance with the information in the file *Process Control System PCS 7; PCS 7 Readme* in the section "Operating system selection". Appropriate information applies to the decentralized engineering station.

Note

Note on server installation:

Ensure that a sufficient number of licenses is available.

5.2.3 Additional programs for the PCS 7 PC

The required software is not part of the PCS 7 Toolset DVD.

The software listed in the table is not included on the PCS 7 Toolset DVD.

Complete systems (product bundles) are delivered with preinstalled software that is also available on the Recovery DVD.

Software	Engineering station	Single station system or client for: - PCS 7 OS - SIMATIC BATCH - SIMATIC Route Control	Server (redundant and non-redundant) for: - PCS 7 OS - Web - SIMATIC BATCH - SIMATIC Route Control	Comment X = installation required (X) = installation optional
Internet Explorer	X	X	X	Additional service packs on the "Microsoft_ServicePacks_u_Tools" DVD in the "IE7" directory.

Programs available on the PCS 7 Toolset DVD

These programs are available on the PCS 7 Toolset DVD and can be installed by the PCS 7 setup.

Software	System setup	Engineering station	Single station system or client for: - PCS 7 OS - SIMATIC BATCH - SIMATIC Route Control	Server (redundant and non-redundant) for: - PCS 7 OS - Web - SIMATIC BATCH - SIMATIC Route Control	Comment X = installation required (X) = installation optional
Automation License Manager	Yes	X	X	X	Installed by PCS 7 Setup.
MS SQL Server 2005	Yes	X	X	X	Microsoft license
PKZIP for Windows	Yes	X	(X)	(X)	Installed with STEP 7.
Adobe Acrobat Reader	Yes	X	(X)	(X)	Installed by PCS 7 setup.

5.2.4 Software and license keys for configuration with PCS 7

Introduction

The following tables show the software packages and license keys needed for a PC station.

Note

In this section, we only use the term "license key", even if a product is still using the older "authorization".

Legend for the tables below

Column	Value	Meaning
PCS 7 Setup	Yes	Software is installed by PCS 7 Setup.
	No	Software is not installed by PCS 7 Setup.
	No entry	Software is automatically installed by PCS 7 Setup with the software named in the "Comment" column.
PC station (type of PC station)	X	Installation required
	(X)	Installation optional, see the Comment column
	(Z)	You can find information on license key levels in the section "Selecting the correct license keys/authorizations (Page 126)".

Software packages and required license keys

The table below shows which license keys you require for each software package.

You can find additional information on software packages for SIMATIC PCS 7 BOX in the section "Software and license keys for SIMATIC PCS 7 BOX (Page 215)"

Note

The versions for the current *Process Control System; PCS 7 Toolset* program package can be found in the *Process Control System PCS 7; PCS 7 Readme* document.

Product name	License	PCS 7 Setup	PC station ES	PC station single station system	Comment
PCS 7 ES					
Runtime License AS (only required for loading the AS)	AS RT PO	No	(Z)	(Z)	Scope: Limited to the number of process objects that can be loaded into the AS.
STEP 7	STEP 7	Yes	X	X	H systems are integrated.
H System (License)	SIK/SIMATIC H Systems Vx.y		(X)	(X)	For H systems (X) product is always installed if STEP 7 is installed.
CFC	CFC	Yes	X	X	
WinCC: Engineering only	WinCC ES PO	Yes	X		
WinCC: Engineering and runtime	WinCC RC PO (Z)	Yes		(Z)	For single station and small sytems.
SFC	SFC	Yes	X	X	
SCL	S7 SCL	Yes	X	X	
PH	PH PO	Yes	X	X	
IEAPO	IEA	Yes	X	X	License key only required to use

Product name	License	PCS 7 Setup	PC station ES	PC station single station system	Comment
					the IEA option.
AS-OS Engineering		Yes	(X)	(X)	(X) Product is always installed if STEP 7 and WinCC are installed.
PV InsInfo-Server		Yes	(X)	(X)	
SFC Visualization	SFC Visualization	Yes	(X)	(X)	(X) Product is always installed if WinCC is installed.
DOCPRO	SIK/SIMATIC DOCPRO	Yes	(X)	(X)	
Version Cross Manager	Version Cross Manager	Yes	(X)	(X)	
S7 PLC Simulation	PLCSIM	Yes	(X)	(X)	
PCS 7 Library		Yes	X	X	
PCS 7 Faceplates		Yes	X	X	
PCS 7 PID Tuner	SIK/SIMATIC PID Tuner	Yes	(X)	(X)	
Version Trail		Yes	X	X	
SIMATIC BATCH Engineering		Yes	(X)	(X)	(X) Product only required for SIMATIC BATCH.
Route Control Engineering	Route Control Engineering	Yes	(X)	(X)	(X) Product only required for SIMATIC Route Control.
Maintenance ES	Maintenance ES	Yes	(X)	(X)	(X) Product only required for the maintenance station.
SIMATIC NET	BCE	Yes	(X)	(X)	License only for a standard Ethernet interface module (not required for SIMATIC NET CP 1613 or CP 1623)
	Industrial Ethernet S7-1613 or S7-1623	Yes	(X)	(X)	For use of SIMATIC NET CP 1613 or CP 1623.
	S7 REDCONNECT		(X)	(X)	Only required for connecting to redundant network.

5.2.5 Software and license keys for Operator Stations

Introduction

Note

In this section, we only use the term "license key", even if a product is still using the older "authorization".

Legend for the tables below

Column	Value	Meaning
PCS 7 Setup	Yes	Software is installed by PCS 7 Setup.
	No	Software is not installed by PCS 7 Setup.
	No entry	Software is automatically installed by PCS 7 Setup with the software named in the "Comment" column.
PC station (type of PC station)	X	Installation required
	(X)	Installation optional, see the Comment column
	(Z)	You can find information on license key levels in the section "Selecting the correct license keys/authorizations (Page 126)".

Software packages and required license keys

The table below shows which license keys you require for each software package.

You can find additional information on software packages for SIMATIC PCS 7 BOX in the section "Software and license keys for SIMATIC PCS 7 BOX (Page 215)"

Note

The versions for the current *Process Control System PCS 7; PCS 7 Toolset* program package can be found in the *Process Control System; PCS 7 Readme* document.

Product name		License key	System setup	OS single station system	OS server	OS client	Comment
Operator station							
WinCC	Basic System	WinCC RC PO (Z) /WinCC RT PO (Z) WinCC Archive (Z)	Yes	(Z)	(Z)	(Z)	Only WinCC RT PO Client for OS client
		WinCC Server	Yes		X		
		WinCC Redundancy	Yes		(X)		Only required for redundancy
		WinCC User Archives	Yes	(X)	(X)	(X)	
	LTO	WinCC Advanced Process Ctrl	Yes	X	X	X	
		Chip card	Yes	(X)	(X)	(X)	WinCC chip-card reader required (only active in process mode)
Drivers (Multi VGA)			No	(X)	(X)	(X)	Suitable graphics card drivers for the version (see readme.wri)
PCS 7 faceplates			Yes	X	X	X	Automatically installed with WinCC.
OPC			Yes	X	X	X	Automatically installed with WinCC.

Product name	License key	System setup	OS single station system	OS server	OS client	Comment
SIMATIC NET	BCE	Yes	(X)	(X)		License only for a standard Ethernet interface module (not required for SIMATIC NET CP 1613 or CP 1623)
	Industrial Ethernet S7-1613 or S7-1623	Yes	(X)	(X)		For use of SIMATIC NET CP 1613 or CP 1623.
	S7 REDCONNECT		(X)	(X)		Only required for connecting to redundant network.
WinCC Connectivity Station	WinCC Connectivity Station					
Web Server	WinCC WebNavigator (Z)	Yes	(Z)		(Z)	**Note:** Server operating system required

Product name		License key	System setup	Central archive server	Redundant central archive server	Comment
Central archive server						
WinCC	Basic System	WinCC RT PO Client WinCC Archive (Z)	Yes	(Z)	(Z)	
		WinCC Server	Yes	X	X	
		WinCC Redundancy	Yes	(X)	X	
	LTO	-	Yes			
StoragePlus		StoragePlus	Yes	X	X	
BATCH Report		-	No	(X)	(X)	Installation is only necessary if batch data is to be output that was archived prior to PCS 7 V7.1. Installation from "Additional_Products \ BATCH_Report__V7.0+SP1+HF4" directory of PCS 7 Toolset DVD

Product name	License key	System setup	Single station system	MS Server	MS Server redundant	Comment
Maintenance Station						
Maintenance Station	Maintenance RT (Z)	Yes	(Z)	(Z)	(Z)	
Maintenance Station Engineering	Maintenance ES	Yes	X			

Product name		License key	System setup	OS server for BATCH	OS client for BATCH	Comment
Operator station for BATCH						
WinCC	Basic System	WinCC RC PO (Z) /WinCC RT PO (Z) WinCC Archive (Z)	Yes	(Z)	(Z)	Only WinCC RT PO Client for OS client
		WinCC Server	Yes		X	
		WinCC Redundancy	Yes		(X)	Only required for redundancy
		WinCC User Archives	Yes	(X)	(X)	
	LTO	WinCC Advanced Process Ctrl	Yes	X	X	
		Chip card	Yes	(X)	(X)	WinCC chip-card reader required (only active in process mode)
SFC Visualization			Yes	X	X	
PCS 7 Faceplates			Yes	X	X	Automatically installed with WinCC.
SIMATIC NET		BCE	Yes	(X)		License only for a standard Ethernet interface module (not required for SIMATIC NET CP 1613 or CP 1623)
		Industrial Ethernet S7-1613 or S7-1623	Yes	(X)		For use of SIMATIC NET CP 1613 or CP 1623.
		S7 REDCONNECT		(X)		Only required for connecting to redundant network.

Product name	License key	System setup	OS server for BATCH	OS client for BATCH	Comment
BATCH WinCC Client Options		Yes	X	X	
BATCH WinCC Server Options		Yes	X		

5.2.6 Software and license keys for BATCH Stations

Introduction

Note

In this section, we only use the term "license key", even if a product is still using the older "authorization".

Legend for the tables below

Column	Value	Meaning
PCS 7 Setup	Yes	Software is installed by PCS 7 setup.
	No	Software is not installed by PCS 7 Setup.
	No entry	Software is automatically installed by PCS 7 setup with the software named in the "Comment" column.
PC station (type of PC station)	X	Installation required
	(X)	Installation optional, see the Comment column
	(Z)	You can find information on license key levels in the section "Selecting the correct license keys/authorizations (Page 126)".

Software packages and required license keys

The table below shows which license keys you require for each software package.

You can find the software package for "Operator Station for BATCH" in the section "Software and license keys for Operator Stations (Page 202)".

You can find additional information on software packages for SIMATIC PCS 7 BOX in the section "Software and license keys for SIMATIC PCS 7 BOX (Page 215)"

Note

The versions for the current *Process Control System PCS 7; PCS 7 Toolset* program package can be found in the *Process Control System; PCS 7 Readme* document.

Product name	Version License key	System setup	BATCH single station system	BATCH server, BATCH Server redundant	BATCH Client	Comment
SIMATIC BATCH						
BATCH Base		Yes	X	X	X	Basic installation for all SIMATIC BATCH PCs
BATCH Server	BATCH (Z) UNITs	Yes	(Z)	(Z)		
BATCH API	BATCH API		X	X		
BATCH Fastobjects			X	X		License
BATCH Advanced Report			X	X		
BATCH Separation Procedures/Formulas	BATCH Formula		X	X		
BATCH Hierarchical Recipe	BATCH Hierarchical Recipe		X	X		
BATCH ROP Library	BATCH Library		X	X		
BATCH Client - BCC	BATCH BatchCC	Yes			X	And/or BATCH Recipe System
BATCH Client - RZE	BATCH Recipe System	Yes			X	And/or BATCH Control

Product name	Version License key	System setup	BATCH single station system	BATCH server, BATCH Server redundant	BATCH Client	Comment
BATCH Report		No				Installation is only necessary if batch data should be output that was archived prior to PCS 7 V7.1. Installation from "Additional_Products \ BATCH_Report__V7.0+SP1+HF4" directory of PCS 7 Toolset DVD
BATCH Planning	BATCH Planning				X	
Getting Started		Yes			X	

Product name	License key	System setup	BATCH single station system	BATCH server, redundant BATCH server	BATCH Client	Comment
PCS 7 communication						
SIMATIC NET PC SW	BCE	Yes	(X)	(X)		License only for a standard Ethernet interface module (not required for SIMATIC NET CP 1613 or CP 1623)
	Industrial Ethernet S7-1613 or S7-1623	Yes	(X)	(X)		For use of SIMATIC NET CP 1613 or CP 1623
	S7 REDCONNECT		(X)	(X)		Only required for connecting to redundant network.

5.2.7 Software and license keys for Route Control Stations

Introduction

Note

In this section, we only use the term "license key", even if a product is still using the older "authorization".

Legend for the tables below

Column	Value	Meaning
System setup	Yes	Software is installed by PCS 7 Setup.
	No	Software is not installed by PCS 7 Setup.
	No entry	Software is automatically installed by PCS 7 Setup with the software named in the "Comment" column.
PC station (type of PC station)	X	Installation required
	(X)	Installation optional, see the Comment column
	(Z)	You can find information on license key levels in the section "Selecting the correct license keys/authorizations (Page 126)".

Software packages and required license keys

The table below shows which license keys you require for each software package.

You can find additional information on software packages for SIMATIC PCS 7 BOX in the section "Software and license keys for SIMATIC PCS 7 BOX (Page 215)"

Note

The "Version" column is empty so that you can enter the correct data for your system documentation. The versions for the current *Process Control System PCS 7; PCS 7 Toolset* program package can be found in the *Process Control System; PCS 7 Readme* document.

Product name	Version	License key	System setup	Route Control single station system	Route Control server	Route Control client	Comment
SIMATIC Route Control							
Route Control Base			Yes	X	X	X	
Route Control Engineering		Route Control Engineering	Yes				Wizard in context of SIMATIC Manager, library blocks, engineering tool
Route Control Server		Route Control Server (z)	Yes	(Z)	(Z)		(also redundant*)*
Route Control Client		Route Control Center	Yes	X		X	
Route Control Library			Yes	X			
Route Control Faceplate			Yes	X		X	

Product name	License key	System setup	Route Control single station system	Route Control server	Route Control client	Comment
PCS 7 communication						
SIMATIC NET PC SW	BCE	Yes	X	X		License only for a standard Ethernet interface module (not required for SIMATIC NET CP 1613 or CP 1623)
	Industrial Ethernet S7-1613 or S7-1623					For use of SIMATIC NET CP 1613 or CP 1623.
	S7 REDCONNECT					Only required for connecting to redundant network.

5.2.8 Software and license keys for SIMATIC PCS 7 BOX

SIMATIC PCS 7 BOX is supplied with preinstalled software and DVDs for restoring the factory state.

NOTICE
The required license keys are on a separate license key USB stick in the factory state. Back up the license keys if possible before restoring the factory state.

Legend for the tables below

Column	Value	Meaning
PCS 7 Setup	Yes	Software is installed by PCS 7 Setup.
	No	Software is not installed by PCS 7 Setup.
	No entry	Software is automatically installed by PCS 7 Setup with the software named in the "Comment" column.
PC station (type of PC station)	X	Installation required
	(X)	Optional installation. See the Comment column.
	(Z)	You can find information on license key levels in the section "Selecting the correct license keys/authorizations (Page 126)".

Preinstalled software and required license keys

- You can find information about which license keys are needed for the ES installation or SIMATIC PDM in the section "Software and license keys for configuration with PCS 7 (Page 199)".
- You can find information about which license keys are needed for the OS installation in the section "Software and license keys for Operator Stations (Page 202)".
- You can find information about which license keys are needed for the SIMATIC BATCH in the section "Software and license keys for BATCH Stations (Page 208)".
- You can find information about which license keys are needed for the SIMATIC Route Control in the section "Software and license keys for Route Control Stations (Page 212)".

Product name	License key	System setup	SIMATIC PCS 7 BOX 416 (ES AS OS BATCH Route Control)	SIMATIC PCS 7 BOX 416 (only AS OS BATCH Route Control)	Comment
SIMATIC PCS 7 BOX 416					
WinAC for SIMATIC S7 Slot CPU 416-2 PCI	WinAC for SIMATIC S7 Slot CPU 416-2 PCI	No	X	X	
Software on the PCS 7 Toolset DVD (ES installation)		Yes	(Z)		
Software on the PCS 7 Toolset DVD (OS installation)	WinCC RC PO (Z) /WinCC RT PO (Z) WinCC Archive (Z)	Yes	(Z)	(Z)	
Software on the PCS 7 Toolset DVD (SIMATIC PDM)		Yes	(Z)		
Software on the PCS 7 Toolset DVD (SIMATIC BATCH)	BATCH (Z) UNITs	Yes	(Z)	(Z)	
Software on the PCS 7 Toolset DVD (SIMATIC Route Control)	Route Control (Z) routes	Yes	(Z)	(Z)	

Product name	License key	System setup	SIMATIC PCS 7 BOX 416 (ES AS OS BATCH Route Control)	SIMATIC PCS 7 BOX 416 (only AS OS BATCH Route Control)	Comment
Maintenance Station	Maintenance RT (Z)	Yes	(Z)	(Z)	
	Maintenance ES	Yes	(X)		License key required for single station system or ES.

Product name	License key	System setup	SIMATIC PCS 7 BOX RTX (ES AS OS BATCH Route Control)	SIMATIC PCS 7 BOX RTX (only AS OS BATCH Route Control)	Comment
SIMATIC PCS 7 BOX RTX					
SIMATIC PCS 7 AS RTX	RTX	No	X	X	
WinAC RTX	WinLC RTX	No			
Software on the PCS 7 Toolset DVD (ES installation)		Yes	(Z)		
Software on the PCS 7 Toolset DVD (OS installation)	WinCC RC PO (Z) /WinCC RT PO (Z) WinCC Archive (Z)	Yes	(Z)	(Z)	
Software on the PCS 7 Toolset DVD (SIMATIC PDM)		Yes	(Z)		
Maintenance Station	Maintenance RT (Z)	Yes	(Z)	(Z)	
	Maintenance ES	Yes	(X)		License key required for single station system or ES.

Product name	License key	System setup	SIMATIC PCS 7 AS RTX		
SIMATIC PCS 7 AS RTX					
SIMATIC PCS 7 AS RTX	RTX	No			
WinAC RTX	WinLC RTX	No			

5.3 Appendix C - Approved configurations on a PC station

5.3.1 Approved configurations

Introduction

You can use a PC station for PCS 7 not only in the standard configuration. By installing additional program packages or taking advantage of special properties, you can use a PC station for several purposes, for example:

- as an engineering station with BATCH client installation (Configurations with engineering station, clients and single station system (Page 224))
- as an OS server and operator station (client installation on server (Page 226))
- as an OS server and BATCH server (server on server (Page 225))

Standard configurations

The following program packages are offered in the PCS 7 system setup when a PC station is installed:

- Engineering
  - PCS 7 Engineering, BATCH Engineering, Route Control Engineering, PDM

or

- Runtime
  - For a single station system:
    OS single station system, BATCH single station system, Route Control single station system
  - For a server:
    OS Server, OS Server for BATCH, Maintenance Station, Central Archive Server, BATCH Server, Route Control Server
  - For a client:
    OS Client, OS Client for BATCH, BATCH Client, Route Control Client
  - For an OpenPCS 7 station:
    OpenPCS 7, OS Client with OpenPCS 7
  - For a Web server:
    PCS 7 Web server

Notes for the reader on this section

Note

In this section the activation of a standard configuration refers to the activation of an application, for example, activation of a BATCH client's process mode.

Optimum performance

To ensure that PCS 7 performs at its optimum level, we recommend that you use only standard configurations on a PC station. However, system-specific conditions may mean that you have to equip a PC station with several program packages for standard configurations. If this is the case, you must observe the rules described below.

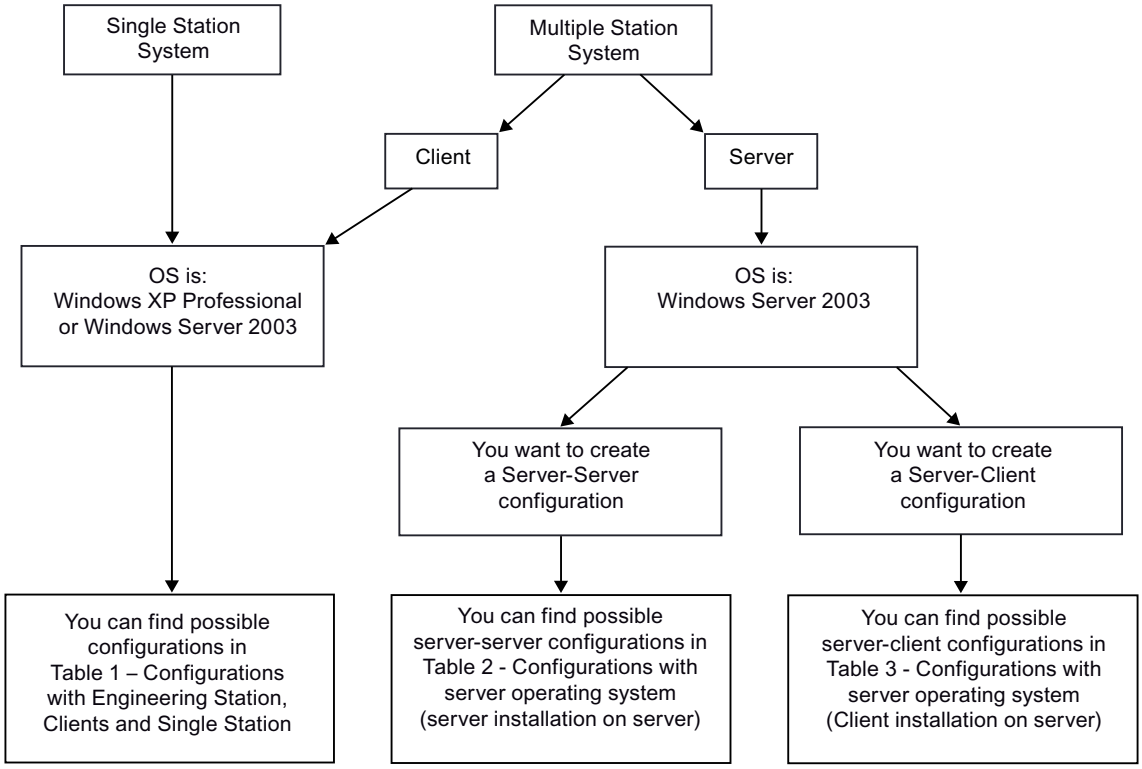
Rules

Concerns	Rules
PCS 7 project	Only use the PC configurations described here within a PCS 7 project.
Program packages	Several program packages may be installed on a PC station. However, these stations may only be used simultaneously in exceptional cases (see the configuration tables below).
Performance	Activating several PCS 7 program packages will impair the performance of the individual applications.
Configuring the PC station	More powerful equipment may be required for the PC configurations described here (for example, larger work memory, operating system). You can find information about the minimum performance requirements of the individual standard configurations in the catalog *ST PCS 7*.
Using the PC station (installation)	You can activate the properties of several standard configurations on a PC station if: • Other program packages have been installed in addition to the standard configuration (for example, BATCH client on engineering station) or • You activate special properties of the standard configuration (for example OS workstation on OS server).
Number of monitors on a PC station	If you use a server as a workstation also, you can connect a maximum of five workstations (monitors) to that server (workstation on server + workstations on assigned clients).
Central archive server	Only install the central archive server on a separate PC station. A central archive server can be configured redundantly.
Maintenance Station	The maintenance station can be configured as a single station or multiple station system. You can configure the MS server with PCS 7 servers on a PC station, in accordance with Table 2 below. An ES or OS client can be used as an MS client.

Concerns	Rules
Configurations with several servers	In the interests of maintaining performance levels, you must not use more than two server applications on a PC station.
Starting and stopping a PCS 7 server application on redundant servers with several PCS 7 server applications	If several PCS 7 server applications are active in process mode on one server of a pair (for example, BATCH server and Route Control server), we recommend the following: Make sure that you always start or stop all of a server's PCS 7 server applications. This will allow you to avoid faults should a redundant server fail. Note: Should a PCS 7 server application on a PC of a PCS 7 server pair fail, all PCS 7 applications for this PC's process mode will be terminated automatically.

Approved configurations - PC station for several PCS 7 applications

The tables below show the approved configurations of PC stations for several PCS 7 applications. The flow chart below displays how the configurations are assigned to the operating systems:



Example configuration:

Example configuration for a redundant small system with five workstations:

- 1 PC = 1 engineering station = 1 workstation
- + 2 PCs = 1 redundant OS server = 2 workstations
- + 2 PCs = 1 redundant BATCH server = 2 workstations

Note

Each workstation can be designed as an OS client and/or a BATCH client.

Notes for the reader on the tables below

Note

Read Tables 1 - 3 carefully from left to right. This means that a PC with a standard installation can also be used for an additional purpose (by using properties or an additional installation by means of the PCS 7 system setup).

Example:
If you use a PC station with the standard configuration "engineering station" as an "OS single station system" too, the notes and restrictions defined under "A" (configuration type "A") will apply.

Notes and restrictions:
You can find information on this in the following sections:

- Section "Information on configuration type "X" (Page 227)"
- Section "Information on configuration type "-" (Page 227)"
- Section "Information on configuration type "A" (Page 227)"
- Section "Information on configuration type "B" (Page 228)"

5.3.2 Configuration tables

5.3.2.1 Configurations with engineering station, clients and single station system

Table 1 – Configurations with Engineering Station, Clients and Single Station System

Use	Engineering station	OS single station system	OS client	BATCH single station system	BATCH client	Route Control single station system	Route Control Client
Standard configuration							
Engineering station		A (Page 227)	B (Page 228)	--- (Page 227)	X (Page 227)	--- (Page 227)	X (Page 227)
OS single station system	--- (Page 227)		--- (Page 227)	X (Page 227)	X (Page 227)	X (Page 227)	X (Page 227)
OS client	--- (Page 227)	--- (Page 227)		X (Page 227)	X (Page 227)	X (Page 227)	X (Page 227)
BATCH single station system	--- (Page 227)	X (Page 227)	X (Page 227)		--- (Page 227)	X (Page 227)	--- (Page 227)
BATCH Client	--- (Page 227)	--- (Page 227)	X (Page 227)	--- (Page 227)		--- (Page 227)	X (Page 227)
Route Control single station system	--- (Page 227)	X (Page 227)	X (Page 227)	X (Page 227)	--- (Page 227)		--- (Page 227)
Route Control Client	--- (Page 227)	--- (Page 227)	X (Page 227)	X (Page 227)	X (Page 227)	--- (Page 227)	

5.3.2.2 Configurations with server operating system (server to server)

Table 2 - Configurations with server operating system (server to server)

Use Standard configuration	OS server	OS server, redundant	Maintenance server	Maintenance server, redundant	BATCH server	BATCH server, redundant	Route control server	Route control server, redundant
OS server			X (Page 227)	--- (Page 227)	X (Page 227)	--- (Page 227)	X (Page 227)	--- (Page 227)
Redundant OS server			--- (Page 227)	X (Page 227)	--- (Page 227)	X (Page 227)	--- (Page 227)	X (Page 227)
Maintenance server	X (Page 227)	--- (Page 227)			X (Page 227)	--- (Page 227)	X (Page 227)	--- (Page 227)
Redundant maintenance server	--- (Page 227)	X (Page 227)			--- (Page 227)	X (Page 227)	--- (Page 227)	X (Page 227)
BATCH server	X (Page 227)	--- (Page 227)	X (Page 227)	--- (Page 227)			X (Page 227)	--- (Page 227)
Redundant BATCH server	--- (Page 227)	X (Page 227)	--- (Page 227)	X (Page 227)			--- (Page 227)	X (Page 227)
Route Control server	X (Page 227)	--- (Page 227)	X (Page 227)	--- (Page 227)	X (Page 227)	--- (Page 227)		
Redundant Route Control server	--- (Page 227)	X (Page 227)	--- (Page 227)	X (Page 227)	--- (Page 227)	X (Page 227)		

5.3.2.3 Configurations with server operating system (client installation on server)

Table 3 - Configurations with server operating system (client installation on server)

Purpose	Engineering station	OS single station system	OS client	BATCH single station system	BATCH client	Route Control single station system	Route Control Client
Standard configuration							
OS server	--- (Page 227)	--- (Page 227)	X (Page 227)	X (Page 227)	X (Page 227)	X (Page 227)	X (Page 227)
Redundant OS server	--- (Page 227)	--- (Page 227)	X (Page 227)	--- (Page 227)	X (Page 227)	--- (Page 227)	X (Page 227)
Maintenance server	--- (Page 227)	--- (Page 227)	X (Page 227)	X (Page 227)	X (Page 227)	X (Page 227)	X (Page 227)
Redundant maintenance server	--- (Page 227)	--- (Page 227)	X (Page 227)	--- (Page 227)	X (Page 227)	--- (Page 227)	X (Page 227)
BATCH Server	--- (Page 227)	X (Page 227)	X (Page 227)	--- (Page 227)	X (Page 227)	X (Page 227)	X (Page 227)
Redundant BATCH server	--- (Page 227)	--- (Page 227)	X (Page 227)	--- (Page 227)	X (Page 227)	--- (Page 227)	X (Page 227)
Route Control server	--- (Page 227)	X (Page 227)	X (Page 227)	X (Page 227)	X (Page 227)	--- (Page 227)	X (Page 227)
Redundant Route Control server	--- (Page 227)	--- (Page 227)	X (Page 227)	--- (Page 227)	X (Page 227)	--- (Page 227)	X (Page 227)

5.3.3 Information on configurations

5.3.3.1 Information on configuration type "X"

No restrictions

Read the configuration notes for the respective standard configurations.

5.3.3.2 Information on configuration type "-"

Restriction

This configuration is not approved.

5.3.3.3 Information on configuration type "A"

Restriction

If process mode is activated for an OS on the ES, simultaneous OS engineering can only be performed for this activated OS.

5.3.3.4 Information on configuration type "B"

Restrictions

- No additional installation of an OS client is necessary since the OS workstation is already included in the standard configuration "Engineering Station".
- A PC station cannot be concurrently used as an engineering station and an OS client. During configuration the process mode of the OS client must be terminated and vice versa.

Notes re configuration

- You need to configure a separate OS client in the SIMATIC manager for this OS workstation.
- You cannot and do not have to load the OS client project.

Notes re process mode

- The SIMATIC manager must be closed when the client project is opened. Otherwise the OS client takes its server data from the engineering station!
- Activate the OS client:

  1. Open WinCC Explorer.
  2. Select OS client project.
  3. Activate process mode.

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