Configuration Instruction for Process Automation

applications & TOOLS

Minimal Configurations PCS 7 V7.1



Application Note



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Preface

Purpose of this document

Typical PCS 7 systems have at least one ES (Engineering Station) on the PC side, one or more possibly redundant servers, as well as several OS clients (Operator Stations). Apart from the maximum availability of process control and data acquisition, the predominant option here is loading program changes or expansions quickly into the running process with out any interference.

In comparison, small systems or stand alone units tend to work with extremely little maintenance requirements after commissioning. To reaching a high efficiency requires being able to work with as few PC stations as possible. It therefore makes sense to use the rarely used ES as an OS in process mode, as it already contains all the necessary functionality and licenses.

This document is meant as a selection aid during research for the suitable PC configuration for small plants. Various minimal configurations (up to a maximum of three PCs) are compared regarding their functionality. Since the respective PCS 7 configuration is not a focus of the system documentation, the activities necessary for the setup are given in form of detailed step-by-step instructions.

Main contents

The main focus is on the following points:

- Configuration comparison regarding functionalitiy
- Activities for engineering of the various configurations

Reference to the Automation and Drives Service & Support

This article is from the Internet application portal of the Industry Automation and Drive Technologies Service & Support. The following link will take you directly to the download page of this document:

http://support.automation.siemens.com/WW/view/en/24023824

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1 Minimal Configurations - An Overview

Based upon using the Engineering Station as an Operator Station in process mode, or realizing several OS with as few PCs as possible, various constellations are possible. The following variants were selected according to feasibility and sensibility within the context of PCS 7.

In connection with the configurations shown here, possible solutions are described, where the configurations do not differ considerably.

Generally, when using the engineering computer as OS, certain functionality losses must be taken into account, as for certain activities the OS project must be closed. This will also be discussed below in more detail.

1.1 ES/OS Stand-alone Systems

The smallest of all possible configurations requires only one PC station.

Figure 1-1

ES/OS	

Process mode / functionality

Since version 6.1 of PCS 7, the OS project can also be compiled while Runtime is activated (delta compilation). This provides the operator function and archiving functions permanently.

NOTE The description and configuration instruction for this configuration is available in chapter 3 ES/OS Stand-alone Systems.

Alternatives / variations

Alternatively, the complete SIMATIC PCS 7 BOX package is also an option. It combines the AS, the OS and the ES in a compact PC system. A PROFIBUS interface for connecting the decentralized process periphery is also integrated.

NOTE The stand-alone system ES/OS can also be expanded by the PCS 7 OS Web Server functionality. The respective instruction can be found in chapter 7 "Expansion by PCS 7 Web Option"



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1.2 ES/OS Client and OS Server

With an additional PC station as the OS server, there is the option of using the ES as the OS client. It accesses the data of the OS server in process mode and visualizes the data.

Figure 1-2



Process mode / functionality

For PCS 7, the OS server can be used for operator functions if a maximum of four OS clients are connected. During server failure, however, the complete OS functionality fails in this example. Furthermore, the OS client must be closed for later OS project changes. However, the OS server continues working during compiling/loading of changes.

Note The description and configuration instruction for this configuration is available in chapter 4 "ES/OS Client and OS Server".

Alternatives / variations

Another advantage of this configuration is the option of connecting further clients to the OS server in a relative simple and cost-effective way.



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1.3 ES/OS-Master and OS-Standby

As a further constellation option with two PC stations, the ES is used as OS stand-alone station again, similar to the first variant, with only one PC. However, it uses the same OS project, which was previously loaded to a further OS stand-alone station. Before the OS project is activated on both stations, the mutual redundancy parameterization is performed.





Process mode / functionality

In this example, both PC stations work as redundant stand-alone OS stations in process mode, which mutually synchronize each other during operation as well as after failure of one of the partners. This also becomes relevant during later OS project changes for which the master OS needs to be terminated. In this case, the standby OS takes on the master role. It continues working during compiling/downloading of the changes and updates the redundancy partner after its return.

The COM-Cabel (RS 232 Connection) is used for optimization of internal communication between both OS Single Stations.

From PCS 7 V7.0 it is also possible to implement the redundancy connection via an Industrial Ethernet connection (BCE or CP1613) instead of the COM connection.

For a complete download, the OS project must be deactivated and closed on both stations. During this time, no OS functionalities are available.

Note This architecture does not provide the full PCS 7 functionality because the redundancy is setup based on WinCC tools.

The respective restrictions during process operation and differences in system behavior can be found together with description and configuration instruction in chapter 5 "ES/OS-Master and OS-Standby".



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Alternatives / variations

As an alternative, the redundancy could be omitted here. Regarding costs, however, you only cut down on the redundancy license. Furthermore, it must be noted, that during process mode, the parallel usage of the OS project of another station is not PCS 7 conform.

Note The stand-alone system ES/OS can also be expanded by the PCS 7 OS Web Server functionality. The respective instruction can be found in chapter 7 "Expansion by PCS 7 Web Option".



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1.4 ES, OS-Master and OS- Standby

The PCS 7-conform realization of the OS redundancy requires three PC stations. The ES then only fulfills engineering tasks and is only used for testing OS functions during that time.

Figure 1-4



Process mode / functionality

Since the ES is not involved in the process mode, the operator functions of both OS stand-alone stations are permanently available. Even during a complete download of project changes, one OS always remains active. The redundancy provides for mutual synchronization. Online as well as after failure of one of the partners.

The COM-Cabel (RS 232 Connection) is used for optimization of internal communication between both OS Single Stations.

From PCS 7 V7.0 it is also possible to implement the redundancy connection via an Industrial Ethernet connection (BCE or CP1613) instead of the COM connection.

Alternatives / variations

The low-maintenance systems focused on in this documentation often do not require a permanent ES. If a temporary ES is hired for configuration, commissioning and project changes.

The theoretical expansion with additional OS clients is not possible without problems in this example, as the two OS have not been installed server operating systems.

Note The description and configuration instruction for this configuration is available in chapter 6 "ES, OS-Master and OS-Standby".

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2 General/Optional System Settings

The relevant cross-configuration system settings are suggested below.

2.1 Bus Connection of the PC Stations

Plantbus (system bus)

In the ES as well as in each server, a network card in "Configured Mode" is employed for the plantbus. On this network card, only the ISO protocol is activated for Windows. If a CP 1613 exists, it is used as access to the plantbus. The configuration occurs in SIMATIC NetPro and HW Config.

Terminal bus

Apart from the configuration with only one ES/OS single station, all other PC stations are also linked with the terminal bus. The required second network card of ES and the server is set to "PG operation". In SIMATIC NetPro and HW Config this card is not configured. PCS 7 finds this network access via the computer names or the paths for the target computer, which must be entered at the Object Properties of the PC station. For this network card, only the TCP/IP protocol (no ISO) is activated for Windows.

Client-PC stations are generally only equipped with a network card that connects them to the terminal bus. For this network card, only the TCP/IP protocol (no ISO) is activated for Windows.

2.2 WinCC Autostart

This document contains the step-by-step instructions, that the OS project in the WinCC Explorer is opened on the OS servers and clients for the purpose of activating Runtime.

In the system this should be avoided, as normally no configuration licenses (RC licenses) exist on the OS. If the WinCC Explorer is hereby opened for more than an hour, WinCC goes into demo mode and must be closed entirely for further configuration steps (incl. Runtime) and be opened again.

In order to activate Runtime automatically with the computer start-up without opening the WinCC Explorer, an autostart for the project can be configured.

In conjunction with SIMATIC NET Edition 2005 (as from WinCC V6.0 SP3) the WinCC tool "AutoStartRT" should be configured in "Set SIMATIC NET Configuration Console PC station" in order to configure the WinCC Autostart:

http://support.automation.siemens.com/WW/view/en/23061262

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3 ES/OS Stand-alone Systems

3.1 Configuration Description

The stand-alone system is the smallest possible configuration. The same PC is used for ES and OS functionalities.

Hardware configuration

Figure 3-1



PCS 7 configuration

Figure 3-2



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3.2 Required Hardware and Software Licenses

Hardware

The following hardware is recommended for this configuration and can be ordered via the Siemens mall. Your selected operating system and the system software SIMATIC PCS 7 are then preinstalled accordingly.

Table 3-1

Component	Product information	Operating system	Plantbus transition
1 x ES	SIMATIC PCS 7 ES/OS IL 547B BCE WXP	Windows XP SP3	RJ45 network card
	SIMATIC PCS 7 ES/OS IL 547B IE WXP	Windows XP SP3	CP1613 A2

Software licenses

In the following please find the software/license package necessary for this configuration selection.

In the selected configuration as a stand-alone system, the number of the POs is restricted to no more than 2000.

Т	al	bl	е	3-	2
	u	U	0	0	-

Software	Name
1 x Engineering Software for combined stations	SIMATIC PCS 7 Engineering Software V7.1 AS/OS Runtime license • 250 PO • 1000 PO • 2000 PO

Note The "Rental License", which is restricted to 30 operating days or 50 hours, provides additional licenses for engineering of short-term projects.

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3.3 Step-by-step Configuration

Note The following instruction was generated on the basis of Windows XP SP3 and PCS 7 V7.1.

For the plantbus transition a CP1613 is used as an example.

3.3.1 ES Configuration

Generating the multiproject

As a basis for the following instruction, all PC stations must be physically networked according to Figure 4-1 (S.12). Furthermore, a multiproject must have been created on the ES in which the AS has already been configured regarding hardware and software.

Generating a PC station

In the PCS 7 project, the PC station is generated, which represents the ES as well as the OS.

Table 3	3-3
---------	-----

Step	Activity	Screenshot
1.	In the "Component view", open the context menu of the project and insert a new PC station via "Insert New Object > SIMATIC PC Station". Change the name of the PC station so that it corresponds to the name of the local computer in the network.	SIMATIC Manager - color_gs_MP File Edit Insett FLC Vew Options Window Help Image: State of the state





Step	Activity	Screenshot
2.	Open the HW Config of the PC station of the OS server.	IMATIC Manager - color_gs_MP File Edit Insert PLC View Options Window Help Image: State of the state
3.	From the object catalog ("View > Catalog"), add a "WinCC Application" and a network card of the type "CP1613".	(MPC 1 (MpCC Application 2 (SPC 1)))))))))))))))))))))))))))
4.	Under "Subnet", select the plantbus or create it with the button "New" Assign the respective MAC address to the CP 1613. Deactivate the option "IP protocol is being used". Confirm the settings with "OK".	Properties - Ethernet Interface: CP 1613 (R0/52) X General Parameters If: Set MAC address / use ISD protocol MAC address: 08:00:06:01:00:25 I IP protocol is being used IP address: 192:158:0.1 Subnet mask: 255:255:255:0 C: Use router C: Use router Plantbus Properties Delete DK Cancel
5.	Save and compile via menu item "Station > Save and Compile". Close the HW Config.	



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Configuring the PC station

The function "**Configure PC station**" transfers the project configuration to one or more target stations.

Table 3-4

Step	Activity	Screenshot
1.	Configure the component configurator of the ES. Select the PC station of the ES and choose "PLC > Configure" from the context menu.	Status Color_gs_MP Unice transe Type Image: Status Object transe Symbolic name Type Image: Status Object transe Symbolic name Type Image: Status Object transe Symbolic name Type Image: Status Open Object Cortifue and Download Cortifue and Download Open Object Image: Status Open Object Cortifue and Download Cortifue and Download
2.	Under "Accessible computers", choose choose the PC which is provided for configuration.	Configure Image: Configure interview Local network connection: Image: Configure interview Terminalbus Image: Configure interview Accessible computers: Image: Configure interview
	If you chose the option "Computer name identical to the PC station name" in the component view "Object Properties" for the PC station, the component configurator directly displays the target computer to be configured.	ES13 ES21 ES24 ES25 ES7ASBAS
	With "Display", you can have the current configuration of the PC station displayed. Hit the "Configure" button.	ES25 Configure Display Messages:
		<u>C</u> lose <u>H</u> elp



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Step	Activity	Screenshot
3.	In the displayed window you see how the PC station is configured. Confirm this with "OK".	Configure: E525 X Station: E525 Index Name Type Statue Cause 1 WinCC Appli 2 CP 1613 3 4 5 6 7 8 9 10 10 11 12 13 • •
4.	Acknowledge the information with "OK".	Information X If the component configuration is charged, the artise PC station will be reconfigured and the existing distabase is lost. This can take series a market. Make pare that no communication or diagnostics is achie over a component in the current configuration. OK Cancel
5.	Finally, you receive the following message in the bottom window: "Transfer completed successfully." Close the configuration dialog box.	Configure ▼ Local network connection: ▼ Terminalbus ▼ Accessible computers: □pdate ES13 ES21 ES24 ES25 ES7ASBAS □ ✓ Use configured computer name Target computer: □ ES25 □ Configure □ Messages: □ ES25: Transfer completed successfully. □ □ □ □ □ □ □ □ □ □

Configuration and download of the AS/OS communication

The connection with NetPro is configured below and loaded into the stations.



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Note For station granular configuration, the subnets of the individual subprojects must be joined beforehand.

T	ab	le	3-5	
I	an	ie	3-5	

Step	Activity	Screenshot
1.	Open NetPro. Select the WinCC application of the ES and open the context menu. Choose "Insert New Connection".	NetPro-[color_gs_Pri] (Network) D:\Projects\color_gs\colo_Pri] Network Edit Insert PLC View Options Window Help Image: Second Secon
2.	In the "Connection Partner" window, select CPU of the AS. Make sure that in the "Connection" field, "S7 connection" has been selected. Confirm the setting with "OK".	Insert New Connection Connection Partner Image: Color_gs_Pri Compacting AS25 Image: Color_gs_Pri Station: AS25 Module: CPU 417-4 Connection Image: S7 connection



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Step	Activity	Screenshot
3.	In the "General" tab, in "Connection identification", change the "Local ID" into a meaningful name, like AS25. Confirm the entry with "OK".	Properties - 57 connection X General Status Information Local Connection End Point Connection identification End conjuged dynamic connection Local D: [A525 Presenting and operating mode messages VFD Name: Send operating mode messages WmCC Application Connection Path Local Local Operating mode messages WmCC Application Connection Path Connection Path Local Connection Path
4.	Save and compile "Network" > "Save and Compile…". Select "Compile and check everything". Confirm the setting with "OK".	Save and Compile Image: Save and Compile Compile Image: Compile and check everything Compile changes only Image: Compile changes only
5.	Mark the ES and then, over the menu item load "PLC > Download to Current Project > Selected Stations". Download the AS in the same way. Then close NetPro.	Spectrya - [colar_det_P] Period Spectrya - [colar_det_P] Spectrya - [colar_det_P] Spectrya - [colar_det_P] Spectrya - [colar_det_P] Spectrya - [colar_det_P] Spectrya - [colar_det_P] Spectrya - [colar_det_P] Spectrya - [colar_det_P] Spectrya - [colar_det_P] Spectrya - [colar_det_P] Spectrya - [colar_det_P] Spectrya - [colar_det_P] Spectrya - [colar_det_P] Spectrya - [colar_det_P] Spectrya - [colar_det_P] Spectrya - [colar_det_P] Spectrya - [colar_det_P] Spectrya - [colar_det_P] Spectrya - [colar_det_P] Spectrya - [colar_det_P] Spectrya - [colar_det_P] Spectrya - [colar_det_P] Spectrya - [colar_det_P] Spectrya - [colar_det_P] Spectrya - [colar_det_P] Spectrya - [colar_det_P] Spectrya - [colar_det_P] Spectrya - [colar_det_P] Spectrya - [colar_det_P] Spectrya - [colar_det_P] Spectrya - [colar_det_P] Spectrya - [colar_det_P] Spectrya - [colar_det_P] Spectrya - [colar_det_P] Spectrya - [colar_det_P] Spectrya - [colar_det_P] Spectrya - [colar_det_P] Plant bus Spectrya - [colar_det_P] Spectrya - [colar_det_P] Industrial Ethorego Spectrya - [colar_det_P] Spectrya - [colar_det_P]

Compile and download the user program

Compile the S7 program and download it into the AS.

Compiling the OS project

Prior to that compile the OS project in the SIMATIC Manager.



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3.3.2 OS configuration

Table 3-6

Step	Activity	Screenshot
1.	Open the OS project. In the opened WinCC Explorer, open the OS project and select "Properties" in the context menu.	WinCCExplorer - Dr\Projects\color_gs\colo_Pr\\wincpro\US(1)\US(1).us(1).mcp Ele_Edt_yew
2.	In the "General" tab under "type:" select "Single-User Project". Confirm the selection and the message that appears with the "OK" button.	Project properties Image: State of the current Project Image: State of the current Project Image: State of the current Project Image: State of the current Project Image: State of the current Project Image: State of the current Project Image: State of the current Project Image: State of the current Project Image: State of the current Project Image: State of the current Project Image: State of the current Project Image: State of the current Project Manager Image: State of the current Project Manager Image: State of the current Project Manager Image: State of the current Project Manager Image: State of the current Project Manager Image: State of the current Project Manager Image: State of the current Project Manager Image: State of the current Project Manager Image: State of the current Project Manager Image: State of the current Project Manager Image: State of the current Manager Image: State of the current Manager Image: State of the current Manager Image: State of the current Manager Image: State of the current Manager Image: State of the current Manager Image: State of the current mathematic user to a single-user or WinCC clein project Image: State of the current his change, or on <cancel> to keep the multi-user project. Image: Current Manager</cancel>
3.	Prevent deleting the startup list by pressing the "No" button.	Change project type Image: Second s



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Step	Activity	Screenshot
4.	Close the WinCC Explorer. NOTE The changes will only become offective when the WinCC Explorer	
	has been closed and opened again.	

3.3.3 Activating Runtime

After the OS project has been closed, you can open it again and activate Runtime.

3.3.4 Particularities at downloading of OS Project Modifications

If OS and ES are operated in a computer, no load process must be performed as all of the required data already exists. Here, executing the "Compile OS" function is sufficient.

Analog to the "Download changes" function, the "Compile changes" function can be executed at stand-alone systems without terminating the process mode of the OS.

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4 ES/OS Client and OS Server

4.1 Configuration Description

For a server-client structure with only two computers, the ES serves as the OS client at the same time. In the configuration, three PC stations are provided for.

Figure 4-1



PCS 7 configuration

Figure 4-2





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4.2 Required Hardware and Software Licenses

Hardware

The following hardware is recommended for this configuration and can be ordered via the Siemens mall. Your selected operating system and the system software SIMATIC PCS 7 is then preinstalled accordingly.

Table 4-1

Component	Product information	Operating system	Plantbus transition
1 x ES	SIMATIC PCS 7 ES/OS IL 547B BCE WXP	Windows XP SP3	RJ45 network card
	SIMATIC PCS 7 ES/OS IL 547B IE WXP	Windows XP SP3	CP 1613 A2
1 x OS server	SIMATIC PCS 7 OS server IL 547B BCE SRV03	Windows server 2003 (R2)	RJ45 network card
	SIMATIC PCS 7 OS server IL 547B IE SRV03	Windows server 2003 (R2)	CP 1613 A2



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Software licenses

In the following the different software/license packages required for this configuration selection have been listed.

An OS server can provide up to 8500 POs with the respective software package - depending on the scope of the project. In addition to the Engineering Software, an OS client software must be installed on the ES.

|--|

Software	Name
1 x OS software server	SIMATIC PCS 7 OS Software Server V7.1
	• 250 PO
	• 1000 PO
	• 2000 PO
	• 3000 PO
	• 5000 PO
	• 8500 PO
1 x engineering software	SIMATIC PCS 7 Engineering Software V7.1
	AS/OS
	PO "unlimited"
1 x OS software client	SIMATIC PCS 7 OS Software Client V7.1

Note The "Rental License", which is restricted to 30 operating days or 50 hours, provides additional licenses for engineering of short-term projects.



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4.3 Step-by-step Configuration

Note The following instruction was generated on the basis of Windows XP SP3 and PCS 7 V7.1.

For the plantbus transitions, CP1613 is used as an example. A clock synchronization is activated.

The PC stations in the test setup are called:

- ES/OS client ("ES25"): ES25
- OS server ("Server"): ES21

4.3.1 Preparatory Steps

Create a project folder in the OS server and release it. You can then transmit OS data configured on the Engineering Station to the OS.

4.3.2 ES Configuration

Generating the multiproject

As a basis for the following instruction, all PC stations must be physically networked according to Figure 4-1 (S.22). Furthermore, a multiproject must have been generated on the ES in which the AS has already been configured regarding hardware and software.

Then you can start with the following CPU and CP settings.

AS settings

This example describes a path where the OS server defines the master time.

Note Further options of clock synchronization are described in detail in the Manual "PCS 7 – Configuration Manual Operator Station, clock synchronization and life signal monitoring".



Step	Activity	Screenshot
1.	Open the HW Config of the AS. Select the CPU and choose "Object Properties" from the context menu.	Image: Instruction of the color_gs_Prij Image: Station Edit Insert PLC View Options Image:
		4 S CPU 417-4 Paste Ctrl+C X2 DP Paste Ctrl+V X7 DP Paste Ctrl+V X8 DP Add Master System Disconnet Master System 5 ECP 4431 Disconnet PROFINET IO System Disconnet PROFINET IO System 9 PROFINET IO Domain Management PROFINET IO Domain Management 9 PROFINET IO Domain Management PROFINET IO System 10 Isochronous Mode Isochronous Mode 11 Edit Symbols Att-Return 00 UR1 Object thosprites Att-Return 00 UR1 Open Object With Ctrl+F2 FAQs Ctrl+F4 Stof UP 417-4 Stof UP 417-4 % DP Start Device Tool Start Device Tool F1 PS 407 20A Start Device Tool Start Device Tool
2.	Go to the "Diagnostics/clock" tab. In the section under "Clock", set "As slave" for the AS under "Synchronization Type". Confirm the setting with "OK".	Properties - CPU 417-4 - (R0/S4) General Statup Synchronous Cycle Interrupts Cycle/Clock Memory Memory Interrupts System Diagnostics Extended functions Report cause of STOP Acknowledgment triggered reporting of SFB33-35 Number of messages in the diagnostic buffer: On MPI: None On MPI: None Carcelin factor: 0



Step	Activity	Screenshot
3.	Open the context menu of the CP and select "Object Properties".	Image: Provide the second
		IF2 6 CP 4431 Copy Ctrl+C 9 Replace Object Add Master System Interference 10 Add Master System Disconnect Master System Interference 11 Disconnect Master System Disconnect PROFINET IO System 12 Insert PROFINET IO System PROFINET IO Topology 13 Disconnect PROFINET IO System PROFINET IO Topology Isochronous Mode Specify Module Delete Image: Image and the system Image and the system Image: Image and the system Image and the system Image and the system Disconnect PROFINET IO System PROFINET IO Topology Isochronous Mode Specify Module Delete Del Image and the symbols Monitor/Modify Edit.Symbols Open Object With Ctrl+Return Open Object With Ctrl+F2 Image and the symbols Aksign Asset ID If in the symbols Ctrl+F7 Image and the symbols Ctrl+F7 Image and the symbols Ctrl+F7 Image and the symbols Ctrl+F7 </th
4.	Go to the "Time-of-Day Synchronization" tab. Activate the option "Activate SIMATIC time-of-day synchronization". Confirm the setting with "OK".	Properties - CP 413-1 - (R0/S6) X General Addresses Options The of-Day Synchronization IP Access Protection Diagnostics SIMATIC Mode Y Y Forward inter of day Octive B IPF time of day synchronization Addresses (IP addresses): IF addresses (IP addresses):
5.	Save and compile the configuration with "Station > Save and Compile". Close the HW Config.	



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Generating the ES PC station

In order to be able to test the OS project on the ES, generate a PC station for the ES with WinCC Application.

Table 4-4

Step	Activity	Screenshot
1.	In the "Component view", open the context menu of the project and insert a new PC station via "Insert New Object > SIMATIC PC Station". Change the name of the PC station so that it corresponds to the name of the local computer in the	✓ SIMATIC Manager - color_gs_MP Fle Edit Insert FLC View Options Window Help ● ② ② ③ ③ ③ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○
	network.	Access Protection → SIMATIC PC Station PCS 7 license information PCS 7 license information PShared Declarations → Plank Hierarchy → SIMATIC So Program SIMATIC BATCH SIMATIC BATCH SIMATIC BATCH SIMATIC BATCH SIMATIC BATCH Remane F2 Object Properties Alk+Return © color_gs_NP (Plant View) — DX(Projects\color_gs\color © color_gs_NP (Plant View) — DX(Projects\color_gs\color © ficibid Declarations © ficibid Declara
2.	Open the HW Config of the PC station of the OS server.	Image: color_gs_MP File Edit Insert PLC View Options Window Help Image: color_gs_MP Image: colo
3.	From the object catalog ("View > Catalog"), add a "WinCC Application" and a network card of the type "CP1613".	Image: Constraint of the second se





Step	Activity	Screenshot
4.	Under "Subnet", select the Plant Bus or create it with the button "New". Assign the respective MAC address to the CP 1613. Deactivate the option "IP protocol is being used". Confirm the settings with "OK".	Properties - Ethernet interface (P 1613 (R0/52)) X General Parameters General Parameters Set MAC address / use ISD protocol MAC address / use ISD protocol MAC address: 050005010028 IP protocol is being used Gateway JP address: 192168.0.1 Subnet Gateway Quenet mask: 255.255.255.0 Subnet: Yes router Address: 192.168.0.1 Subnet: Properties Plant bus Person OK Cancel
5.	Open the context menu of the CP and select "Object Properties".	Image: Constraint of the second se
6.	Select the "Options" tab and checkmark the "Time of day" box. Confirm the setting with "OK".	Properties - CP 1613 X General Assignment Options Diagnostics
7.	Save and compile via menu item "Station > Save and Compile". Close the HW Config.	
8. optional	In the SIMATIC Manager, delete the OS application of the PC station of the ES as it is not required in our example.	



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Generating the OS server PC station

Table 4-5

Step	Activity	Screenshot
1.	In the "Component view", open the context menu of the project and insert a new PC station via "Insert New Object > SIMATIC PC Station". You can choose its name freely.	Image: Color_gs_MP File Edit Insert PLC View Options Window Help Image: Color_gs_MP (Component view) - D:\Projects\color_gs\color_gs\color_gs_MP Image: Color_gs_MP (Component view) - D:\Projects\color_gs\color_gs\color_gs\color_gs_MP Image: Color_gs_MP (Component view) - D:\Projects\color_gs\co
2.	Open the HW Config of the PC station with the context menu.	Scolar_gs_MP Diject name Type Social context Social context Social context Social context
3.	From the object catalog ("View > Catalog"), add a "WinCC Application" and a network card of the type "CP1613".	Image: Constraint of the second se
4.	Under "Subnet", select the Plant Bus or create it with the button "New". Assign the respective MAC address to the CP 1613. Deactivate the option "IP protocol is being used". Confirm the settings with "OK".	Properties-Ethernet interface: CP 1613 (R0/52) X General Parameters If: Set MAC address / use ISD protocol MAC address: 08:00:06:01:00:21] If: a subnet is selected, the next available address is suggested. If: IP protocol is being used IP address: 192:168:0.1 Subnet mask: 255:255:255:0 C: Use router Address: 192:168:0.1 Subnet: Properties Properties Delete DK Cancel





Step	Activity	Screenshot
5.	Open the context menu of the CP1613 and select "Object Properties…".	Image: Constraint of the second se
6.	Switch to the "Options" tab and checkmark the "Time of day" box. Confirm the setting with "OK".	Properties - CP 1613 X General Assignment Options
7.	Save and compile via menu item "Station > Save and Compile". Close the HW Config.	
8.	In the SIMATIC Manager, open the properties dialog of the OS project of the OS server. Switch to the "Target OS and Standby OS Computer" tab. Under "Standby-OS", select " <none>". Then hit the "Search" button.</none>	Properties - 05: 05(20) General Target 0S and Standby 0S Computer Path to the Target 0S Computer Symbolic computer name color_gz_Pri_0S(20) Standby-0S < none > ✓ Create/update archive tags Transfer to central archive served OK Apply OK Apply



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Step	Activity	Screenshot
9.	Navigate by the drop down menu to the enable project folder of the OS server (see 4.3.1 Preparatory Steps). Hit the "Save" button.	Select Larget 05 Projects Load in Projects Image: Construction of the constr
10.	Check the selected path and confirm with the "OK" button.	Properties - 05: 05(20) X General Target 0S and Standby 0S Computer Path to the Target 0S Computer Search Symbolic computer name Search color_gs_PiL0S(20) Standby-0S < none > C iceate/update archive tags Transfer to central archive server 0K Apply
11.	Acknowledge the information dialog with "Yes".	Termine After changing the target path or effer anyong a standar-Cd the unive modification capability gets link. Additionally the Cd server target in the dense server to be capability of all assigned Cd-Server target by the model. Dry no web to ensemble the thanges? The No

Generating the client PC station

Table 4-6

Step	Activity	Screenshot
1.	In the "Component view", open the context menu of the project and insert a new PC station via "Insert New Object > SIMATIC PC Station". You can choose its name freely.	SCREETISTIC
		Samit C. DALOH S7 Program Rename F2 Object Properties Alk+Return Preconfigured Station O5



Step	Activity	Screenshot
2.	Open the HW Config of the PC station of the OS client.	SIMATIC Manager - color_gs_MP File Edit Insett PLC View Options Window Help Image: State of the stat
3.	From the object catalog ("View > Catalog"), add a "WinCC Application Client".	•••••••••••••••••••••••••••••
4.	Save and compile via menu item "Station > Save and Compile". Close the HW Config.	
5.	Open the context menu of the PC station of the client in the SIMATIC Manager and select "Object Properties".	SIMATIC Manager - color_gs_MP File Edit Insert PLC View Options Window Help



Step	Activity	Screenshot
6.	Under "Computer name", enter the name of the PC, where the operating of the client shall be carried out. In the configuration on hand, this is the ES computer Confirm the entry with "OK".	Properties - SIMATIC PC Station Image: Configuration General Settings Configuration Name: Client Image: Client Project path: color_gs_P(NClient Image: Client Storage location Di-VProjects\color_gs\colo_Prij Image: Client Author: Image: Client Image: Client Date created: 03/25/2009 04:04:19 PM Image: Client Last modified: 03/25/2009 04:07:25 PM Image: Computer name Computer name Image: Client Image: Client Computer name: ES25 Image: Client OK Cancel Help



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Configuring all relevant PC stations

The function "Configure PC station" transfers the project configuration to one or more PLCs. First configure the local components configurator of the ES and then the OS connected to the plantbus.

Та	ble	4-7

Step	Activity	Screenshot
1.	Configure the component configurator of the ES. Open the ES context menu and select "PLC > Configure".	Image: - color_gs_MP Pie Edit Inset P.C. View Options Window Help Image: Color_gs_MP Image: Color_gs_MP
2.	Under "Accessible computers", choose the PC which is provided for configuration. NOTE If you chose the option "Computer name identical to the PC station name" in the component view "Object Properties" for the PC station, the component configurator directly displays the target computer to be configured. With "Display", you can have the current configuration of the PC station displayed. Hit the "Configure" button.	Configure × Local network connection: Terminalbus Terminalbus ✓ Accessible computers: Update ES13 ES21 ES21 ES24 ES25 ES7ASBAS ✓ Use configured computer name Target computer: ES25 ES25 ES7ASBAS ✓ Use configured computer name Target computer: ES25 Configure Display Messages:



Step	Activity	Screenshot
3.	In the displayed window you see how the PC station is configured. Confirm this setting with "OK".	Configure: ES26 X Station: ES26 Index Name Type Status Cause 1 WinCC Appli VinCC Appli Image: Cause Image: Cause
4.	Acknowledge the information dialog with "OK".	Information If the component configuration is changed, the entire PC dataon will be reconfigured and the existing database is loat. This can bide served invalue. Make sure that no communication or diagnosities is active over a component in the current configuration. OK Concel
5.	Finally, you receive the following message in the bottom window: "Transfer completed successfully." Close the configuration dialog box.	Configure ▼ Local network connection: ▼ Terminalbus ▼ Accessible computers: Update ES13 ES21 ES24 ES25 ES7ASBAS ■ ✓ Use configured computer name Larget computer: ■ ES25 ■ Configure ■ Messages: ■ ES25: Transfer completed successfully. □ ■ □ ■ □ ■ □ ■ □ ■
6.	Please configure the component configurator of the OS server analog to step 1 to 5.	


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Configuration and download of the AS/OS communication

In the following, the connections between the PC stations and the AS in NetPro are configured and downloaded into the individual stations.

Note For station granular configuration, the subnets of the individual subprojects must be joined beforehand.

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Open NetPro. Select the WinCC application of the ES and open the context menu. Choose "Insert New Connection".	Plant but Herband: Echemet RC Ven Options Window Help ES25 Industrial Ethemet Plant but Plant	
In the "Connection Partner" window, select the CPU of the AS. Make sure that in the "Connection" field a "S7 connection" has been selected. Confirm the setting with "OK".	Insert New Connection Connection Partner Connection Partner Image: color_gs_Prij	
	Open NetPro. Select the WinCC application of the ES and open the context menu. Choose "Insert New Connection". In the "Connection Partner" window, select the CPU of the AS. Make sure that in the "Connection" field a "S7 connection" has been selected. Confirm the setting with "OK".	



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Step	Activity	Screenshot
3.	In the "General" tab, in "Connection identification" change the "Local ID" into a meaningful name, like AS25. Confirm the entries with "OK".	Properties - 57 connection X Geneal Status Intomation Local Connection End Point Connection identification December 2010 Local Connection Identification December 2010 Local Connection Status Internation Local Connection Identification December 2010 Local Connection Status Internation Local Connection December 2010 Local Connection Status Internation Local Connection December 2010 Local Connection December 2010 Local Connection December 2010 Local Connection December 2010 Local Connection DK Cancel Help Local Connection
4.	Repeat steps 1 to 3 for connecting the OS server to the AS. It is important here, that the connections of the ES and the OS server with the AS have identical names . Then, save and compile the configuration with the menu item "Network > Save and compile". Choose the option "Compile and check everything" and confirm with "OK".	Save and Compile Compile Compile and check everything Compile changes only
5.	Select the ES and then download the connections with the menu item "PLC > Download to Current Project > Selected Stations". Download the OS server and the AS in the same way. Then close NetPro.	Statebool: Ext Floated Difference Point State Contract Project Statebool: Ext Floated Difference Statebool: Ext Floated Difference Statebool: Ext Floated Difference Down Ext Floated Difference Statebool: Ext Floated Difference Statebool: Ext Floated Difference Statebool: Ext Floated Difference Down Ext Floated Difference Original Ext Floated Difference Statebool: Ext Floated Difference Statebool: Ext Floated Difference Difference Original Ext Floated Difference Original Ext Floated Difference Plant Elus Ext Floated Difference Difference Original Ext Floated Difference Original Ext Floated Difference Plant Elus Ext Floated Difference Difference Difference Original Ext Floated Difference Roc TBMS Aster Difference Difference Difference Difference Roc TBMS Aster Difference Difference Difference Difference Roc TBMS Aster Difference Difference Difference Difference Roc TBMS Difference Difference Difference Difference Roc TBMS Difference Difference Difference Difference Roc TBMS Difference Difference

Compile and download the user program

Compile the S7 program and download it into the AS.

Compiling the OS server project

Compile the OS server project in the SIMATIC Manager. Look out for the correct OS assignment to the server in Plant View.



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Assigning the server package

Та	ble	24-	9
ıa	DIE	; 4-	.9

Step	Activity	Screenshot	
1.	Select the OS application of the OS client and select "Assign OS server" in the context menu.	SIMATIC Manager - color_gs_MP File Edit Insert PLC View Options Window Help	
2.	Then select the respective OS project and acknowledge with "OK".	OS server assignment for OSC(21) Image: Color_gs_Pri > OS(1) OS Information Symbolic computer name color_gs_Pri > OS(1) color_gs_Pri_OS(20) Image: Color_gs_Pri > OS(20) color_gs_Pri_OS(20) Image: OK Cancel Help The WinCC project was opened	
3.	Confirm the successful download of the package with "OK".	assigning 05-Server to 0SC(21) The procedure was completed without error The procedure was completed without error Error OK Cancel	



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4.3.3 OS Configuration

Activating the clock synchronization

Still on the ES, the necessary settings are activated in the OS projects by OS server and OS client.

Table 4-10

Step	Activity	Screenshot
1.	Open the OS server project.	SIMATIC Manager - color_gs_MP File Edit Insert PLC View Options Window Help Image: State of the stat
2.	Open the editor "Time synchronization" with the context menu. Activate the checkbox "Synchronization via System Bus (Master, Slave)". In "Access point 1", select "CP1613(ISO)" and activate the option "Master". Confirm the setting with "OK". NOTE If the ES server, as opposed to the OS server, does not have a CP 1613, the settings for the clock synchronization cannot be executed here. The clock synchronization settings must, in this case, be executed on the OS server itself after the download of the OS project.	Imme Synchronization - [05(20).mcp] ? General Settings OK Use time receive utility Cancel Synchronization via Terminal Bus (Slave) Cancel Use the time from a connected WinCC server Use the time from a specific computer: Computer 1: Computer 2: C Let time be set by external (3rd - party) components Access point 1 CP1613(ISO) Access point 2 Naster Slave Access point 2 Image: Slave Access point 2 Slave Slave Access point 2 Slave Process controlling messages Project documentation Send every Setup



Step	Activity	Screenshot
3.	Close the OS server project.	
4.	Open the OS client project. Open the editor "Time synchronization" with the context menu. Activate the checkbox "Synchronization via Terminal Bus (Slave)" and select "Use the time from a connected WinCC server". Confirm the setting with "OK".	Image: color_gs_MP File Edit Insert PLC View Options Window Help Image: color_gs_MP Image: color_gs_MP
Ь.	Close the OS client project.	



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Download the OS project to the OS server

After the clock synchronization has been configured on the ES side, the OS project can be downloaded to the OS server.

Table 4-11

Step	Activity	Screenshot
1.	In the SIMATIC Manager, select the OS project of the OS server and select "PLC > Download" from the context menu.	Image: - color_gs_MP File Edit Insert PLC View Options Window Help Image: - color_gs_MP Image: - color_gs_Prij Image: - color_g
2.	Downloading the OS project for the first time requires a complete download. Start the download with "OK".	Download 05 Image: Conduction of the control of the
3.	After the successful download, the OS project is located on the OS server in the intended folder. Confirm this with "OK".	Downloading to target system Download to target system was completed successfully. Error OK Cencel



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OS configuration on the OS server

After the first download, the following step-by-step instructions for time synchronization must be checked and corrected if necessary.

Step	Activity	Screenshot
1.	Open the OS project on the OS server.	
2.	Open the editor "Time synchronization" with the context menu.	Image: Synchronization - [05(20).mcp] Image: Synchronization General Settings Image: Synchronization Image: Deactivate time synchronization Image: Cancel Image: Synchronization with Tarminal Puer (Slave) Image: Cancel
	Activate the checkbox "Synchronization via System Bus (Master, Slave)". In "Access point 1", check or select "CP1613(ISO)" and press the "Master" radio button. Confirm the settings always with "OK".	Synchronization via Terminal Bus (Slave) Use the time from a specific computer: Computer 1: Computer 2: C Let time be set by external (3rd - party) components Synchronization via System Bus (Master, Slave) Access point 1 CP1613(ISO) Access point 2 (None) Display symbolic name of the access point Process controlling messages Project documentation Print Proview Send every

4.3.4 Activating Runtime

Open the OS project on the OS server and activate Runtime.

Then change to the ES computer and open the OS client project. Here, activate Runtime, too.

4.3.5 Particularities at downloading of OS Project Modifications

Delta-download

Before OS compilation and download are possible on the ES, the OS client Runtime must be deactivated and the WinCC project must be closed.



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Entire download

Before OS compilation and download are possible from the ES, the OS client Runtime as well as the OS server Runtime must be deactivated and the WinCC projects must be closed.



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5 ES/OS-Master and OS-Standby

CAUTION The configuration described here only works with WinCC V7.0 SP2 HF5 or higher.

5.1 Configuration Description

The configuration refers to the use of the ES as an additional OS (see chapter 3 ES/OS Stand-alone Systems). Moreover, another OS standalone system is configured and operated in redundancy with the ES/OS combination. After the download the redundancy settings in the WinCC Explorer must be set.

Note In our example, the redundancy settings in WinCC are made in such a way that the ES is defined as the master OS and the OS as a standby OS.

Hardware configuration

Figure 5-1





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PCS 7 configuration



Particularities / restrictions

Due to the nontypical PCS 7 configuration with only one OS there are differences in the system behavior which must be considered:

- The first activated OS takes on the master role.
- For the complete download, Runtime must be deactivated for both computers, and the WinCC Explorer must be closed. During this time, neither operator actions nor archiving is possible.
- For a delta-download, Runtime on the ES must be closed again for compiling the OS. It can then be re-activated for testing the modified OS functions. For the downloading, Runtime must be terminated and the WinCC project must be closed. The following restrictions result:
 - No operator actions can take place at the ES computer at that time.

NOTICE If Runtime remains active on the ES during the OS compilation, it might happen - depending on the changes made - that a subsequent delta-download is carried out incompletely and results in errors. Afterwards, only a complete download will be possible.

• Runtime being active on the ES computer results in the runtime archive being stored under the multiproject path. Therefore, they are also



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included into the ZIP file during archiving and cause increased storage space as well as archiving times. Workaround:

- Deactivate Runtime on the ES computer.
- Reset archive in the OS project on the ES computer and close the entire PCS 7 project.

After archiving and reactivating Runtime, the archives are updated again. Please note that more time will be needed for checking.

5.2 Required Hardware and Software Licenses

Hardware

Table 5-1

The following hardware is recommended for this configuration and can be ordered via the Siemens mall. Your selected operating system and the system software SIMATIC PCS 7 is then preinstalled accordingly.

Components	Product information	Operating system	Plantbus transition
1 x ES	SIMATIC PCS 7 ES/OS IL 547B BCE WXP	Windows XP SP3	RJ45 network card
	SIMATIC PCS 7 ES/OS IL 547B IE WXP	Windows XP SP3	CP 1613 A2
1 x OS single station	SIMATIC PCS 7 ES/OS IL 547B BCE WXP	Windows XP SP3	RJ45 network card
	SIMATIC PCS 7 ES/OS IL 547B IE WXP	Windows XP SP3	CP 1613 A2
1 x redundancy	RS 232 connecting cable, 10 m		



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Software licenses

In the following, the different software/license packages required for this configuration selection have been listed.

In the selected configuration, the number of the POs is restricted to no more than 2000.

Software	Name
1 x engineering software for the combined station	SIMATIC PCS 7 Engineering Software V7.1 AS/OS Runtime license
	• 250 PO
	• 1000 PO
	• 2000 PO
1 x OS software single station	SIMATIC PCS 7 OS Software Single Station V7.1
	• 250 PO
	• 1000 PO
	• 2000 PO
	• 3000 PO
	• 5000 PO
1 x redundancy upgrade	WinCC/Redundancy V7.0

Note The "Rental License", which is restricted to 30 operating days or 50 hours, provides additional licenses for engineering of short-term projects.

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5.3 Step-by-step Configuration

Note The following instruction was generated on the basis of Windows XP SP3 and PCS 7 V7.1.

For the plantbus transitions, CP1613 is used as an example. Additionally, the clock synchronization is activated.

The PC stations in the test setup are called:

- ES/OS-Master ("ES25"): ES25
- OS-Stanby ("ServerStby"): ES21

5.3.1 ES Configuration

Generating the multiproject

As a basis for the following instruction, all PC stations must be physically networked according to Figure 5-1. Furthermore, a multiproject must have been created on the ES in which the AS has already been configured regarding hardware and software.

Then you can start with the following CPU and CP settings.

AS settings for the clock synchronization

Evaluation of the process data requires all components of the process control system to work with an identical clock, so that messages can be allocated in the correct temporal sequence.

Below, a path is described where the redundant OS single stations define the master time.

Note Further options of clock synchronization are described in detail in the Manual "PCS 7 – Configuration Manual Operator Station, clock synchronization and life signal monitoring".



Step	Activity	Screenshot
1.	Open the HW Config of the AS. Select the CPU and choose "Object Properties" from the context menu.	0) UP1 1 PS 407 20A 4 CPU 417-4 X2 DP X3 DP X4 DP X7 MP/DP F1 Add Master System Disconnect Master System Disconnect Master System 0 Disconnect Master System 0 Trset PROFINET 10 System 9 PROFINET 10 Domain Management 9 PROFINET 10 Topology 10 Tsoct Property 11 Speafy Module 12 Speafy Module 13 Delete Del Go To Filter Assigned Modules Monitor/Modify Edit Symbols Alt #Return
2.	Go to the "Diagnostics/Clock" tab. In the section under "Clock", set "As slave" for the AS under "Synchronization Mode". Confirm this setting with "OK".	Properties - CPU 417-4 - (R0/S4) General Statup Synchronous Cycle Interrupts Cycle/Clock Memory Retentive Memory Memory Interrupts Time of Day Interrupts Cycle Interrupts Diagnonics/Clock Protection System Diagnostics System Diagnostics System Diagnostics System Diagnostics System Diagnostics System Diagnostics Extended functions Report cause of STDF Acknowledgment higgered reporting of SFB33-36 Number of messages in the diagnostic buffer: 3000 Clock Synchronization Synchronization Synchronization None On MP1: None On MP1: None Carcel DK
3.	Open the context menu of the CP and select "Object Properties".	Image: Disconsect Web Image: Disconsect Provide Web Image: Disconsect Provide Web Image: Disconsect Provide Web Image: Disconsect Provide Provi





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Step	Activity	Screenshot
4.	Go to the "Time-of-Day Synchronization" tab. Activate the option "Activate SIMATIC time-of-day synchronization". Confirm the setting with "OK".	Properties - CP 443-1 - (80/56) Imediabation General Addresses Option: Time-of-Day Synchronization IP Access Protection Diagnostics SIMATIC Mode Imediabation If Granad time of day If active b LTP time of day synchronization Update interval (second) Dide interval (second) (hange of values 10 - 68400) OK Cancel
5.	Save and compile via menu item "Station > Save and Compile". Close the HW Config.	

Generating the ES PC station

In order to take the OS project on the ES into operation, we generate a PC station for the ES with WinCC application.

Table 5-4

Step	Activity	Screenshot
1.	In the "Component view", open the context menu of the project and insert a new PC station via "Insert New Object > SIMATIC PC Station". Change the name of the PC station so that it corresponds to the name of the local computer in the network.	INATI: Manager - color_gs_MP Pie Edit Insert PLC View Options Window Help Image: State PLC View Options Window Help



Step	Activity	Screenshot
2.	Open the HW Config of the PC station of the ES with the context menu.	✓ SIMATIC Manager - color_gs_MP File Edit Inset FLC View Options Window Help ● 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
3.	From the object catalog ("View > Catalog"), add a "WinCC Application" and a network card of the type "CP1613".	Image: Constraint of the second sec
4.	Under "Subnet", select the Plant Bus or create it with the button "New…". Assign the respective MAC address to the CP 1613. Deactivate the option "IP protocol is being used". Confirm the settings with "OK".	Properties - Ethernet Interface: CP 1613 (R0/52) X General Parameters If a subnet is selected, the next available address is suggested. If P grotocol is being used IP address: 192:158:0.1 Subnet: 192:55:255:255:0 Subnet: 192:158:0.1 Subnet: 192:158:0.1 Properties Properties Plant bas Properties Delete UK
5.	Open the context menu of the CP and select "Object Properties…".	Image: Constraint of the second se





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Step	Activity	Screenshot
6.	Select the "Options" tab and checkmark the "Time of day" box. Confirm the setting with "OK".	Properties - CP 1613 X General Assignment Options
7.	Save and compile via the menu item "Station > Save and Compile". Close the HW Config.	
8. optional	In the SIMATIC Manager, delete the OS project of the PC station of the ES as it is not required in our example.	

Generating the standby OS PC station

Table 5-5

Step	Activity	Screenshot
Step 1.	Activity In the "Component view", open the context menu of the project and insert a new PC station via "Insert New Object > SIMATIC PC Station". You can choose its name freely.	Screenshot
		SIMATIC BATCH Rename F2 Object Properties All+Return Preconfigured Station



Step	Activity	Screenshot
2.	Open the HW Config of the PC station of the standby OS with the context menu.	✓ SIMATIC Manager - color_gs_MP File Edit Inset FLC View Options Window Help ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ●
3.	From the object catalog ("View > Catalog"), add a "WinCC Application" (no WinCC Application Stby!) and a network card of the type "CP1613".	Image: Constraint of the second sec
4.	Under "Subnet", select the Plant Bus or create it with the button "New…". Assign the respective MAC address to the CP 1613. Deactivate the option "IP protocol is being used". Confirm the settings with "OK".	Properties - Ethernet interface: CP 1613 (R0/S2) X General Patamèters IF Set MAC address / use ISQ protocol MAC address: 1820006:01:00:21 IP protocol is being used IP address: JP address: 192:158:0.1 Subnet: 192:158:0.1 Properties Properties Properties Delete
5.	Open the context menu of the CP and select "Object Properties…".	Image: Constraint of the second se



Step	Activity	Screenshot
6.	Select the "Options" tab and checkmark the "Time of day" box. Confirm the setting with "OK" .	Properties - CP 1613 X General Assignment Options
7.	Save and compile via menu item "Station > Save and Compile". Close the HW Config.	
8.	In the SIMATIC Manager, open the properties dialog of the OS project. Switch to the "Target OS and Standby OS Computer" tab. Checkmark the "Create/update archive tags" box and deselected "Transfer to central archive server". Press the "Search" button.	Properties - US: OS_stby Image: Constant Standby US Computer Path to the Target OS Computer
9.	Navigate by the drop down menu to the enable project folder of the OS server (see 5.3.1 Preparatory Steps). Hit the "Save" button.	Select Larget 05



Step	Activity	Screenshot
10.	Check the path in the box "Path to the Target OS Computerr". Confirm this with "OK".	Properties - 05: 05_stby X General Target 0S and Standby 0S Computer Path to the Target 0S Computer Search Symbolic computer name Search color_gs_PiLOS_stby Standby-0S < none > Create/update achive tags Transfer to central archive server 0K Apply
11.	Acknowledge the information dialog with the "Yes" button.	termine Additionally the target path or their analysing a standay-OS the unkne modification capability gets land. Additionally the Correct basis and complete, the packages for the clients are to be packed and an wrate loading of all analysis OS server meets to be manufact. Do you write the execute the changes? <u>36</u>



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Configuring the PC stations

The function "Configure PC station" transfers the project configuration to one or more PLCs. First configure the local components configurator of the ES and then the all the other PC Stations connected with the plantbus.

Table 5-6		
Step	Activity	Screenshot
1.	Configure the component configurator of the ES. Select the PC station of the ES and choose "PLC > Configure" from the context menu.	Image: Construction Image: Construction Image: Conston Image: Construction
2.	Under "Accessible computers", choose the PC which is provided for configuration.	Configure
	NOTE If you chose the option "Computer name identical to the PC station name" in the component view "Object Properties" for the PC station, the component configurator directly displays the target computer to be configured. With "Display", you can have the current configuration of the PC station displayed. Hit the "Configure" button.	Accessible computers:
		<u>C</u> lose <u>H</u> elp



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Step	Activity	Screenshot
3.	In the displayed window you see how the PC station is configured. Confirm this setting with "OK".	Configure: ES25 Station: ES25 Index Name Type Status Cause 1 WinCC Appli WinCC Appli 2 C P1613 CP1613 3 4 - 5 - - 6 - - 7 - - 8 - - 9 - - 10 - - 11 - - 12 - - 13 - - • - - Image: Configuration is possible. The configuration can be seen in the list above. - OK Cancel Help
4.	Acknowledge the information dialog with "OK".	Information If the component configuration is charged, the entries PC dation will be reconfigured and the existing database is lost. The can take served instates. Make sure that no communication or diagnositics is active over a component in the current configuration. OK Cancel
5.	Finally, you receive the following message in the bottom window: "Transfer completed successfully." Close the configuration dialog box.	Configure ▼ Local network connection: Terminalbus Terminalbus ▼ Accessible computers: Update ES13 ES21 ES24 ES25 ES7ASBAS ✓ Use configured computer name Jarget computer: ES25 Configure Display Messages: ES25: Transfer completed successfully. Help
6.	Please configure the component configurator of the OS server analog to steps 1 to 5.	

Configuration and download of the AS/OS communication



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In the following, the connections between the PC stations and the AS in NetPro are configured and downloaded into the individual stations.

Note For station granular configuration, the subnets of the individual subprojects must be joined beforehand.

Table 5-7	

Step	Activity	Screenshot
1.	Open NetPro. Select the WinCC application of the ES and open the context menu. Choose "Insert New Connection".	Plant bus AS25 Plant bus AS25 PROFIBUS(1) 2
2.	In the "Connection Partner" window, select the CPU of the AS. Make sure that in the "Connection" field a "S7 connection" has been selected. Confirm the setting with "OK".	Insert New Connection Connection Partner In the current project Image: ServerStby Image: ServerStby </td
		UK <u>Apply</u> Cancel Help



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Step	Activity	Screenshot
3.	In the "General" tab, in "Connection identification" change the "Local ID" into a meaningful name, like AS25. Confirm the settings with "OK".	Properties - 57 connection X Geneal Status Infomation
4.	Create the connection between the standby OS and the AS in the same way, by repeating steps 1 to 3. It is important that the connection has the same name as the connection of the ES to the AS. Then, save and compile the configuration with the menu item "Network > Save and compile". Choose the option "Compile and check everything" and confirm with "OK".	Save and Compile Compile Compile and check everything Compile changes only DK Cancel
5.	Mark the ES and then download the connections with the menu item "PLC > Download to Current Project > Selected Stations". Download the standby OS and the AS in the same way. Then close NetPro.	Image: Second

Compile and download the user program

Compile the S7 program and download it into the AS.

Compiling the OS project

Compile the OS project in the SIMATIC Manager.

Look out for the correct OS assignment to the server in Plant View.



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5.3.2 OS Configuration

OS configuration on the Engineering Station

Conversion from multi-place to single-place systems is made on the ES, as well as settings for redundancy and clock synchronization.

Note For this particular configuration, it is necessary to complete the redundancy setting in the WinCC Explorer of the standby OS after the entire download.

Table 5-8

Step	Activity	Screenshot
1.	Open the OS-Standby project on the ES computer. In the opened WinCC Explorer, open the OS project and select "Properties" in the context menu.	WinCCExplorer - D:\Projects\color_gs\colo_Prj\wincp File Edit Yiew Lools Help Cor Find Edit Yiew Yiew Yiew Cor Find Find Yiew Yiew Yiew Yiew Cor Find Find Yiew Yiew Yiew Yiew Yiew Cor Find Yiew Yiew Yiew Yiew Yiew Yiew Cor Find Yiew <



Step	Activity	Screenshot
2.	In the "General" tab, under "type:", select "Single-user project".	Project properties Image: Comparison mode User Interface and Design General Update Cycles HotKeys Options Image: Comparison mode User Interface and Design Image: Comparison mode Image: Comparison mode Image: Comparison mode Image: Comparison mode Image: Comparison mode Image: Comparison mode Image: Comparison mode Image: Comparison mode Image: Comparison mode Image: Comparison mode Image: Comparison mode Image: Comparison mode Image: Comparison mode Image: Comparison mode Image: Comparison mode Image: Comparison mode Image: Comparison mode Image: Comparison mode Image: Comparison mode Image: Comparison mode Image: Comparison mode Image: Comparison mode Image: Comparison mode
	Confirm the selection and the message that appears with the "OK" button.	OK Cancel Project properties X A change from a multi-user to a single-user or WinCC client project will delete all configured client computers from the computer list. Click on <ok> to perform this change, or on <cancel> to keep the multi-user project. OK Cancel</cancel></ok>
3.	Via the "Options" tab, checkmark the OS project option "Allow activation on ES". With this setting Runtime can be simulated on the ES.	Project properties X Operation mode User Interface and Design General Update Cycles HotKeys Options Additional project options Image: Comparison on ES Image: Help available during runtime Setting this flag bypasses the project activation interlock on the ES. Image: DK Cancel
4.	Prevent deleting the startup list by pressing the "No" button. Confirm the message that appears with the "OK" button.	Change project type Image: Second s



Step	Activity	Screenshot
5.	Open the editor "Redundancy" with the context menu. Activate the option box "Activate Redundancy". Activate the option box "Default Master". If necessary, adjust the redundancy properties in "Optional Settings" to your requirements. If you do not wish to operate the RS 232 redundancy cable at the COM1 interface, then these settings must later be performed on the OS itself (see section "OS configuration on the OS").	Redundancy Image: Comparison of the pather server comes back online Server:
6.	To complete the redundancy	OK Cencel Help Select redundancy partner
	settings for the ES, the partner server must be selected. Select the standby OS as redundant partner via the "Browse" button out of the PC network. Confirm the settings with "OK".	My Network Places Finite Network Microsoft Windows Network Fww-sh Srcs2 Es7asbas Es22 Es23 Es24 Es25 Kh1e139d OK Cancel
	Control the redundancy settings before you confirm via "OK" button.	Image: Server: ES26 Image: Server: ES26 Image: Server: ES26 Image: Server: ES27 Image: Server: ES27 Image: Server: ES27 Image: Server: ES27 Image: Server: Es28 Image: Server: Es28 Image: Server: Es29 Image: Server: Es10 Image: Server: Es10 Image: Server: Es10 Image: Server: Server: Image: Server: Server: Image: Server: Server: Image: Server: Server: Image: Server: Image: Server: Image: Serv



Step	Activity	Screenshot
7.	Open the "Time Synchronization" editor. Here, activate the checkbox "Synchronization via System Bus (Master, Slave)". In "Access point 1", select "CP1613(ISO)" and activate the "Master" radio button. Confirm the settings with "OK". NOTE If the ES server does not have a CP 1613, the settings for the clock synchronization cannot be executed here. The clock synchronization settings must, in this case, be executed on the standby OS itself after downloading the OS project.	Ime Synchronization - [OS_stby.mcp] General Settings Use time receive utility Deactivate time synchronization Synchronization via Terminal Bus (Slave) Use the time from a connected WtnCC server Use the time from a specific computer: Computer 1: Computer 2: Chacess point 1 Access point 1 CP1613(ISO) Slave Access point 2 (None> None> Display symbolic name of the access point Project documentation Print Project documentation
8.	Close the OS project.	



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Loading OS project to the standby OS

After the redundancy and clock synchronization have been configured on the ES side, and the OS project has been closed, download the OS project onto the standby OS.

Table 5-9

Step	Activity	Screenshot
1.	In the SIMATIC Manager, select the standby OS and select "PLC > Download" from the context menu.	SIMATIC Manager - color_gs_MP File Edit Insert FLC View Options Window Help Image: State of the stat
2.	Downloading the OS project for the first time requires a complete download. Start the download with "OK".	Download OS Image: Start completion before downloading Changes Details The entire WinCC project will be transferred to the runtime OS.
3.	After the successful download, the OS project is located on the standby OS in the intended folder. Confirm this with "OK".	Downloading to target system Download to target system was completed successfully. Error OK Cancel



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OS configuration on the standby OS

For this special configuration, it is necessary to make the redundancy settings before the download.

If the engineering station has no CP 1613 as opposed to the OS, or the RS 232 redundancy cable is not connected at COM1 there, the following step-by-step instructions must be performed. Otherwise, we generally advise you to check those after the project download onto the target system.

Note Normally, all configuration works are executed on the ES for the purpose of consistent data management, so that no WinCC engineering licenses are required on the OS. Nevertheless, a license free time window of one hour is available after each opening of the WinCC Explorer for WinCC configuration works.

Table 5-10

Step	Activity	Screenshot
1.	Open the WinCC Explorer on the standby OS.	
2.	Open the editor "Redundancy" with the context menu. Select the standby OS as redundant partner via the "Browse" button out of the PC network. Confirm the settings with "OK".	Select redundancy partner



Step	Activity	Screenshot
	Here, uncheck the "Default Master" checkbox. Select the ES computer as redundant partner via the "Browse" button. Check whether your desired checkboxes are activated at "Optional Settings". Confirm the settings with "OK".	✓ Redundancy ✓ Gereral User Archive Server: E521 E521 ■ Beduilt Master Redundant patters rever: E525 ■ Connection with redundant patters via setial interface (optional): COMI Connection to redundant patters via setial interface (optional): COMI ✓ Synchronize all data of the outage period ✓ ✓ Synchronize failures of last 2 days only. Optional Settings: ✓ Synchronization of Tag Logging after the patters server comes back online ✓ Synchronization of Alam Logging ✓ Synchronization of Tag Logging after the patters server comes back online ✓ Infine synchronization of Tag Logging after the patters server comes back online ✓ ✓ Synchronization of Tag Logging after the patters server comes back online ✓ ✓ Synchronization of Tag Logging after the patters server comes back online ✓ ✓ UnifC Clent witch in case of a process firk (Tag Logging + Alam Logging) ✓ ✓ WinCC Clent witch in case of a process connection error Enables the synchronization for all specified options and user archives: ✓ Activate Redundancy
	Confirm the information dialog with the "OK" button.	Important Information Importantin Important
3.	Open the editor "Time synchronization" with the context menu.	General Settings OK Use time receive utility Cancel
	Here, activate the checkbox "Synchronization via System Bus (Master, Slave)". In "Access point 1", check or select "CP1613(ISO)" and press the "Master" radio button. Confirm the settings always wih "OK".	Synchronization via Terminal Bus (Slave) Ise the time from a connected WinCC server Use the time from a specific computer: Computer 1: Computer 1: Computer 2: Image: Co



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Step	Activity	Screenshot
4.	If you made any changes in the WinCC Explorer project, close the OS project and open it again to activate the settings.	

5.3.3 Activating Runtime

Successively start the OS project on the ES as well as on the standby OS. It is recommended to wait with activating the second Runtime until the start process of the first one is completed entirely.

Regarding the redundancy, the online synchronization is active immediately. The mutual archive update, on the other hand, takes approx. 10-15 min.

5.3.4 Particularities at downloading of OS Project Modifications

Delta-download

For a delta-download, Runtime on the ES must be closed again for compiling the OS. It can then be re-activated for testing the modified OS functions.

NOTICE If Runtime remains active on the ES during the OS compilation, it might happen - depending on the changes made - that a subsequent delta-download is carried out incompletely and results in errors. Afterwards, only a complete download will be possible.

For the downloading, Runtime must be terminated and the WinCC project must be closed.

The following restrictions result:

- No operator actions can take place at the ES computer at that time.

Complete download

For downloading the complete program, please note:

- 1. Runtime must be deactivated on both PC stations and the WinCC project must be closed.
- Before Runtime is activated again on the standby OS, the redundancy settings must be made. Repeat the steps from Table 5-10

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6 ES, OS-Master and OS-Standby

6.1 Configuration Description

During process operation the server pair runs completely in parallel and absolutely independent. If a server fails, there is always an equivalent redundant OS server. The servers supervise each other during the runtime and synchronize the project archives if necessary.

The configuration is carried out via the ES.

Hardware configuration







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PCS 7 configuration



6.2 Required Hardware and Software Licenses

Hardware

The following hardware is recommended for this configuration and can be ordered via the Siemens mall. Your selected operating system and the system software SIMATIC PCS 7 is then preinstalled accordingly.

Table 6-1

Component	Product information	Operating system	Plantbus transition
1 x ES	SIMATIC PCS 7 ES/OS IL 547B BCE WXP	Windows XP SP3	RJ45 network card
	SIMATIC PCS 7 ES/OS IL 547B IE WXP	Windows XP SP3	CP 1613 A2
2 x OS single stations	SIMATIC PCS 7 ES/OS IL 547B BCE WXP	Windows XP SP3	RJ45 network card
	SIMATIC PCS 7 ES/OS IL 547B IE WXP	Windows XP SP3	CP 1613 A2



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Software licenses

In the following, the different software/license packagess required for this configuration selection have been listed.

In the selected configuration as a redundant stand-alone system, the number of the POs is restricted to no more than 5000.

Т	ab	le	6-	2
	av		0-	~

Software	Name
1 x OS software redundant single station	SIMATIC PCS 7 OS Single Station Redundancy V7.1
	 250 PO 1000 PO 2000 PO
	 2000 PO 5000 PO
1 x engineering software	PCS 7 Engineering Software V7.1 AS/OS – PO "unlimited"

Note The "Rental License", which is restricted to 30 operating days or 50 hours, provides additional licenses for engineering of short-term projects.



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6.3 Step-by-step Configuration

Note The following instruction was generated on the basis of Windows XP SP3 and PCS 7 V7.1.

For the plantbus transitions, CP1613 is used as an example. A clock synchronization is activated.

The PC stations in the test setup are called:

ES ("ES25"):	ES25
OS-Master ("Server"):	ES21
OS-Standby ("ServerStby"	'): ES23

6.3.1 ES Configuration

Generating the multiproject

As a basis for the following instruction, all PC stations must be physically networked according to Figure 6-1 (S.75). Furthermore, a multiproject must have been created on the ES in which the AS has already been configured regarding hardware and software.

Then you can start with the following CPU and CP settings.

AS settings

Evaluation of the process data requires all components of the process control system to work with an identical clock, so that messages can be allocated in the correct temporal sequence.

Below, a path is described where the redundant OS single stations define the master time.

Note Further options of clock synchronization are described in detail in the Manual "PCS 7 – Configuration Manual Operator Station, clock synchronization and life signal monitoring".


able 6-3		
Step	Activity	Screenshot
1.	Open the HW Config of the AS. Select the CPU and choose "Object Properties" from the context menu.	1 PS 407 20A 1 PS 407 20A 4 CPU 417-4 Copy Ctrl+C Paste Ctrl+V X7 MPP/DP Replace Object Paste CP 443-1 Disconnect Master System 0 Disconnect Master System 11 ProFINET IO System 9 PROFINET IO Topday 10 Isochronous Mode 11 Specify Module 13 Delete Delete Del Go To Filter Assigned Modules Monitar/Modify Edit Symbols Object Properties Alk+Return Opert Opert.With Ctrl+Alk+O
2.	Go to the "Diagnostics/Clock" tab. In the section under "Clock" set "As slave" for the AS under "Synchronization Type". Confirm the setting with "OK".	Properties - CPU 417-4 - (R0/S4) X General Statup Synchronous Cycle Interrupts Cycle/Clock Memory Memory Interrupts Time of Day Interrupts Cycle / Clock System Diagnostics Extended functions Y Report cause of \$TOF
3.	Open the context menu of the CP and select "Object Properties".	00/UR1 1 PS 407 20A 4 CPU 417-4 2 DP 3 MPUDP IF1 F2 6 CP 443-1 7 Copy 9 Add Master System 10 Dector 11 Disconnet: Master System 12 Disconnet: PROFINET IO System 13 Disconnet: To Domain Management PROFINET IO Topology Isochronous Mode Specify Module Delete Delete Del Go To Filter Assigned Modules Monitor/Modify Edit Symbols Object Properties Alt+Return Open Object. With Ctrl+Alt+O



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Step	Activity	Screenshot
4.	Go to the "Time-of-Day Synchronization" tab. Activate the option "Activate SIMATIC time-of-day synchronization". Confirm the setting with "OK".	Properties - CP 443-1 - (K0/56) Image: Comparison of the of-Day Synchronization of the Access Protection Diagnostics SIMATIC Mode Image: Comparison of the of-Day Synchronization of the of-Day Synchronization of the full grinute NIP Mode Addresses (IP didesses) Addresses (IP addresses) Add Image: Comparison of the full grinute Delete Time size: Comparison of Values 10: E89400 E00 OK Cancel Help
5.	Save and compile the configuration with "Station > Save and Compile". Close the HW Config.	

Generating the ES PC station

In order to take the OS project on the ES into operation, we generate a PC station for the ES with WinCC application.

Table 6-4

Step	Activity	Screenshot
1.	In the "Component view", open the context menu of the project and insert a new PC station via "Insert New Object > SIMATIC PC Station". Change the name of the PC station so that it corresponds to the name of the local computer in the network.	Image: solution of the solution
		OS OS Solor_gs_MP (Plant View) - D:\Projects\color_gs\color OS (Clerk) OS (Clerk) Solor dor_gs_Pri Object name Global Declarations Batch process cell B fill fill fill fill fill fill fill fil





Step	Activity	Screenshot
2.	Open the HW Config of the PC station of the ES with the context menu.	Image: Project State Image: Project State Image: Proje
3.	From the object catalog ("View > Catalog"), add a "WinCC Application" and a network card of the type "CP1613".	Image: Constraint of the second sec
4.	Under "Subnet", select the Plant Bus or create it with the button "New". Assign the respective MAC address to the CP 1613. Deactivate the option "IP protocol is being used". Confirm the settings with "OK".	Properties - Ethernet interface: CP 1613 (R0/52) X General Parameters IF Set MAC address / use (SQ protocol MAC address: 06 00 06 01 00 25 IF a subret is selected. the next available address is suggested. IF Protocol is being used IP address: IP address: 192 168 0.1 Subnet: Casces: Plant bits Piopetties Dejete DK



Step	Activity	Screenshot
5.	Open the context menu of the CP and select "Object Properties".	Image: Specify Module Image: Specify Module Image: Specify Module Image: Specify Module
		Delete Del 16 Go To Filter Assigned Modules Monitor/Modify Edit Symbols Object Properties Alt+Return Open Object With Ctrl+Alt+O Assign Asset ID Product Support Information Ctrl+F2 FAQs Ctrl+F7 Find Manual Ctrl+F6
6.	Select the "Options" tab and checkmark the "Time of day" box. Confirm the setting with "OK".	Properties - CP 1613 X General Assignment Options Diagnostics
7.	Save and compile via menu item "Station > Save and Compile". Close the HW Config.	
8. optional	In the SIMATIC Manager, delete the OS project of the PC station of the ES as it is not required in our example.	



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Generating the master OS PC station

Table 6-5

Step	Activity	Screenshot
1.	In the "Component view", open the context menu of the project and insert a new PC station via "Insert New Object > SIMATIC PC Station". You can choose its name freely.	✓ STMATIC Manager - color_gs_MP File Edk Inset: PLC View Optons Window Help
2.	Open the HW Config of the PC station of the standby OS with the context menu.	Color_gs_MP Diject name Type Color_gs_MP Diject name Symbolic name Type Color_gs_Phi S25 Color_gs_Chi Color_gs_Chi Color_gs_DP Color_gs_Chi Color_gs_Chi Color_gs_Chi Color_gs_DP Color_gs_Chi Color_gs_Chi Color_gs_Chi Color_gs_Chi Color_gs_Chi Color_gs_Chi Color_gs_Chi Color_gs_Chi Color_gs_Chi Color_gs_Chi SIMATIC Route Control SIMATIC Route Control SIMATIC BATCH Rename F2
3.	From the object catalog ("View > Catalog"), add a "WinCC Application" and a network card of the type "CP1613".	(0) PC (1) VinCC Appl. (2) CP 1613 (3) (4) (5) (6) (7) (8) (9) (1
4.	Under "Subnet", select the Plant Bus or create it with the button "New". Assign the respective MAC address to the CP 1613. Deactivate the option "IP protocol is being used". Confirm the settings with "OK".	Properties Ethernet Interface: CP 1613 (R0/52) General Parameters If Set MAC address / use ISD protocol MAC address: 08200060100021 IP protocol is being used IP address: IP address: 192:158:0.1 Subnet: C Use router Address: 152:158:0.1 Subnet: Pronetworked Plant bus Properties Dejete OK Cancel



Step	Activity	Screenshot
5.	Open the context menu of the CP and select "Object Properties".	Image: Construct of the system Image: Constem Image: Construct
6.	Select the "Options" tab and checkmark the "Time of day" box. Confirm the setting with "OK".	Open Object With Ctrl+Atero Open Object With Ctrl+Atero
7.	Save and compile via menu item "Station > Save and Compile". Close the HW Config.	



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Generating the standby OS PC station

Table 6-6

Step	Activity	Screenshot
1.	In the "Component view", open the context menu of the project and insert a new PC station via "Insert New Object > SIMATIC PC Station". You can choose its name freely.	Pile Edit Insert PLC View Options Window Help Pile Edit Insert PLC Omponent View) - DX/ProjectS(color_gs_VIe/Insert Pile Edit Insert New Object Pile Edit Insert New Object Pile Global Insert New Object Pile Color Insert New Object
2.	Open the HW Config of the PC station of the standby OS with the context menu.	Pie Edit Insett PLC View Options Window Help Pie Edit Insett PLC View Options Window Help Pie Edit Insett PLC View Options View) - DS:ProjectS\color_g5\colo_MP Pie Color_g5_MP (Component view) - DS:ProjectS\color_g5\color_g5\color_MP Pie Color_g5_MP (Component view) - DS:ProjectS\color_g5\colo
3.	From the object catalog ("View > Catalog"), add a "WinCC Application (stby)" and a network card of the type "CP1613".	



Step	Activity	Screenshot
4.	Under "Subnet", select the Plant Bus or create it with the button "New". Assign the respective MAC address to the CP 1613. Deactivate the option "IP protocol is being used". Confirm the settings with "OK".	Properties - Ethernet interface: CP 1613 (R0/52) Image: CP 1613 (R0/52) General Parameters Image: CP 1613 (R0/52) Image: CP 1613 (R0/52) Image: CP 1613 (R0/52)
5.	Open the context menu of the CP and select "Object Properties".	Image: Construct of the second sec
6.	Select the "Options" tab and checkmark the "Time of day" box. Confirm the setting with "OK".	Properties - CP 1613 X General Assignment Options Diagnostics
	"Station > Save and Compile". Close the HW Config.	



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Configuring all PC stations

The function "Configure PC station" transfers the project configuration to one or more PLCs. First configure the local components configurator of the ES and then the OS connected to the plantbus.

Step	Activity	Screenshot
1.	Configure the component configurator of the ES. Select the PC station of the ES and choose "PLC > Configure" from the context menu.	Storage. MP (Component view) - D/Projects's color_gs/colo_MP Storage.prime Access Protection Corrigue - Corr
2.	Under "Accessible computers", choose the PC which is provided for configuration.	Configure
	NOTE If you chose the option "Computer name identical to the PC station name" in the component view "Object Properties" for the PC station, the component configurator directly displays the target computer to be configured. With the button "Display", you can have the current configuration of the PC station displayed. Hit the "Configure" button.	▲ccessible computers: Update ES21 ES22 ES23 ES24 ES25 ES7ASBAS SIMATIC Image: Image: Image:

Table 6-7





Step	Activity	Screenshot
3.	In the displayed window you see how the PC station is configured. Confirm this setting with "OK".	Configure: ES25 Index Name Type Status Cause Index Name Type Status Cause 1 WinCC Appli 2 CP 1613 3 4 4 5 6 7 8 9 10 10 11 12 12 13 • •
4.	Acknowledge the information dialog with "OK".	Information If the component configuration is charged, the entre PC station will be reconfigured and the existing distabase is lost. Male pare that no communication or diagnostics is achie over a component in the current configuration. OK Cancel
5.	Finally, you receive the following message in the bottom window: "Transfer completed successfully." Close the configuration dialog box.	Configure ▼ Local network connection: ▼ Terminalbus ▼ Accessible computers: Update ES21 ES22 ES23 ES24 ES24 ES25 ES7ASBAS SIMATIC ✓ Use configured computer name Target computer: ES25 ES25 Cgnfigure Display Messages: ES25: Transfer completed successfully. □ □ □ □ □ □ □ □ □ □
6.	Please configure the component configurator of the master and the standby OS analog to steps 1 to 5.	



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Configuration and download of the AS/OS communication

In the following, the connections between the PC stations and the AS in NetPro are configured and downloaded into the individual stations.

Note For station granular configuration, the subnets of the individual subprojects must be joined beforehand.

	Γa	ab	le	6-8	
--	----	----	----	-----	--

Step	Activity	Screenshot
1.	Open NetPro. Select the WinCC application of the ES and open the context menu. Choose "Insert New Connection".	Coder_gg_Pr(Vetwerk)CP(Projects):coder_gg1cdb_proj Records: Edit: Intert: PLC: Vew: Option: Vindow Help: Image: Plant bus ES25 Records: Edit: Intert: PLC: Vew: Option: Vindow Help: Image: Plant bus Plant bus Plant bus Profile: Ethernet: Option: Plant bus Profile: Ethernet: Ethernet:
2.	In the "Connection Partner" window, select the CPU of the AS. Ensure that in the "Connection" field a "S7 connection" has been selected. Confirm the setting with "OK".	Insert New Connection Connection Pather Connection Pather Connection Pather Connection Pather Connection Pather Connection Server Server_Stby Curspecified) All broadcast stations All multicast stations All multicast stations All multicast stations In unknown project Project: color_gs_Prij Station: AS25 Module: CPU 417-4 Connection I/ppe: Iype: S7 connection Iype: S7 connection Ivpe: S7 connection Ivpe: S7 connection Ivpe: S7 connection



Step	Activity	Screenshot
3.	In the "General" tab, in "Connection identification" change the "Local ID" into a meaningful name, like AS1. Confirm the settings with "OK".	Properties - 57 connection X General Status Information Connection Identification Exect confusion End Point Connection identification Exect confusion End Point Local Connection Identification If Exploits an active connection Local Connection Identification If Exploits an active connection Max 25 Connection Path Local Local Patger End Point KerC Appl. MetC Appl. (Pit 417-4. Interface: [OP 403-160/25]) Subort Flant bus (Industrial Ethernet) Address: 08:00:06:01:00:25 0K Cancel
4.	Repeat steps 1 to 3 for connecting the master OS and the standby OS to the AS. It is important that the connection of master OS, standby OS and ES to the AS have identical names. Then, save and compile the configuration with the menu item "Network > Save and compile". Choose the option "Compile and check everything" and confirm with "OK".	Save and Compile Compile Compile and check everything Compile changes only OK Cancel
5.	Mark the ES and then, over the menu item load "PLC > Download to Current Project > Selected Stations". Download the AS, master OS, and standby OS in the same way. Then close NetPro.	Plant bus Plant bus Plant bus Correction and Days Plant bus Ethernet Correction and Days Correction and Correction Status Plant bus Sine direct rates to Minory Card Correction and Days Correction and Correction Status Plant bus Sine direct rates to Minory Card Correction and Correction Status Correction and Correction Status Plant bus Sine direct rates to Minory Card Correction and Correction Status Correction and Correction Status Plant bus Sine direct rates to Minory Card Correction and Correction Status Correction and Correction Status Plant bus Sine direct rates to Minory Card Correction and Correction Status Correction and Correction Status PROFIBUS(1) 2 2 Correction and Correction Status Correction and Correction Status PROFIBUS(1) 2 2 Correction and Correction Status Correction and Correction Status



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Master/standby settings on the ES

Here you make the master/standby assignment and select the download paths.

Table 6-9

Step	Activity	Screenshot
1.	In the SIMATIC Manager, open the properties dialog of the master OS. Switch to the "Target OS and Standby OS Computer" tab. In the "Standby-OS" drop-down menu, select "OS_(StBy)(21)". Checkmark the "Create/update archive tags" box and deselected "Transfer to central archive server". Press the "Search" button.	Properties - 05: 05 X General Target OS and Standby OS Computer Path to the Target OS Computer
2.	Navigate by the drop down menu to the enable project folder of the OS server (see 6.3.1 Preparatory Steps). Hit the "Save" button.	Select target 05 Image: Constraint of the selection of the sel
3.	Check the path in the box "Path to the Target OS Computer". Confirm this with "OK". Also confirm the message box that appears with the "OK" button.	Properties - 05: 05 X General Target 0S and Standby 0S Computer Path to the Target 0S Computer VLEs21_d/Projects/US/US.mcp Symbolic computer name color_gs_Pri_0S Standby/OS OS(tbb)?21 Image: Transfer to central archive tags Transfer to central archive server OK Apply Cancel



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Step	Activity	Screenshot
4.	Open the Properties dialog of the standby OS. Switch to the "Target OS and Master OS Computers" tab. Verify that the master OS has also been entered in "Master OS". Hit the "Search" button to choose the storage path of the OS data.	Standby OS properties: 05_StBy General Target OS and Master OS Computers Path to the Target OS Computer
5.	Navigate by the drop down menu to the enable project folder of the OS standby server (see 6.3.1 Preparatory Steps). Hit the "Save" button.	Select Larget 05 ? X Loadin Project With Recent Documents Desktop My Rocent S S525 Desktop At Plopoy (At) With Documents S525 Desktop Sci2, damin on Kit ki 138 ff (K) With Documents Sci2, damin on Kit ki 138 ff (K) Sci2, damin on Kit ki 138 ff (K) Sci2, damin on Kit ki 138 ff (K) Without State Documents Without State S
6.	Check the path in the box "Path to the Target OS Computer". Confirm this with "OK".	Standby OS properties: OS_S1By General Target OS and Master OS Computers Path to the Target OS Computer

Compile and download the user program

Compile the S7 program and download it into the AS.

Compiling the OS project

Compile the OS project of the master OS in the SIMATIC Manager. Look out for the correct OS assignment to the server in Plant View.



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6.3.2 OS Configuration

OS configuration on the Engineering Station

Conversion from multi to single place systems is made on the ES, as well as settings for redundancy and clock synchronization.

|--|

Step	Activity	Screenshot
1.	Open the OS project of the master OS on the ES computer. In the opened WinCC Explorer, open the OS project and select "Properties" in the context menu.	WinCCExplorer - D:\Projects\color_gs\colo_Prj\wincp Ele Edit View Tools Help Image: Structure tag Image: Structure tag Image: Structure tag Image: Structure tag Image: Structure tag Image: Structure tag Image: Structure tag Image: Structure tag Image: Structure tag Image: Structure tag Image: Structure tag Image: Structure tag Image: Structure tag Image: Structure tag Image: Structure tag Image: Structure tag Image: Structure tag Image: Structure tag Image: Structure tag Image: Structure tag Image: Structure tag Image: Structure tag Image: Structure tag Image: Structure tag Image: Structure tree Manager Image: Structure tag Image: Structure tag Image: Structure tag Image: Structure tag Image: Structure tag Image: Structure tag Image: Structure tag Image: Structure tag Image: Structure tag Image: Structure tag Image: Structure tag Image: Structure tag Image: Structure tag Image: Structure tag Image: Structure tag Image: Structure tag Image: Structure tag Image: Structure tag Image: Structure tag Image: Structure tag



Step	Activity	Screenshot
2.	In the "General" tab under "type:", select "Single-user project". Confirm the selection and the message that appears with the "OK" button.	Project properties X Operation mode User Interface and Design General Update Cycles HotKeys Options Seneral Data of the Current Project. Image: Change Comparison of the Current Project Image: Change Comparison of the Current Project Ippe: Multi-User Project Image: Change Comparison of the Current Project Image: Change Comparison of the Current Project Creation Date: Options Image: Comparison of the Current Project Image: Comparison of the Current Project Changed By: WinCC-Project-Manager Image: Comparison of the Current Project Image: Comparison of the Current Project Catch Change: 3/30/2009 4/29:16 PM Image: Comparison of the Current Project Image: Comparison of the Current Project GUID: CC_OS_35_09_03_30_14_29_10 Image: Comparison of the Current Project Image: Comparison of the Current Project OK Cancel Image: Comparison of the Current Project Image: Comparison of the Current Project OK Cancel Image: Comparison of the Current Project Image: Comparison of the Current Project OK Cancel Image: Comparison of the Current Project Image: Current Project Image: Current Project OK Cancel <td< th=""></td<>
3.	Prevent deleting the startup list by	Will delete all computer client computers from the computer list. Click on <cancel> to keep the multi-user project. OK Cancel Change project type</cancel>
-	pressing the "No" button.	The project type was changed. Do you want to delete the startup list? Yes No
4.	Open the editor "Redundancy" with the context menu. Activate the option box "Default Master". Under "Redundanter Partner Sever:" the standby OS must be entered. Check whether your desired checkboxes are activated at "Optional Settings". If you do not wish to operate the RS 232 redundancy cable at the COM1 interface, then these settings must later be performed on the OS itself (see section "OS configuration on the Operator Station").	
	Confirm the settings with "OK".	



Step	Activity	Screenshot
5.	Open the editor "Time synchronization" with the context menu.	Image: Time Synchronization - [05.mcp] ? × General Settings OK Use time receive utility OK Deactivate time synchronization Cancel
	Here, activate the checkbox "Synchronization via System Bus (Master, Slave)". In "Access point 1", select "CP1613(ISO)" and activate the "Master" radio button. Activate the option box "Display symbolic name of the access point". Confirm the settings with "OK".	Synchronization via Terminal Bus (Slave) Use the time from a connected WinCC server Use the time from a specific computer: Computer 1: Computer 2: Co
	NOTE If the ES server does not have a CP 1613, the settings for the clock synchronization cannot be executed here. The clock synchronization settings must, in this case, be executed on both single stations itself after downloading the OS project.	Display symbolic name of the access point Process controlling messages Project documentation Project documentation Print Preview Send every mminutes Setup
6.	Close the OS project.	



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Downloading OS project to the OS computers

After the redundancy and clock synchronization have been configured on the ES side, the OS project can be downloaded to the master and standby OS.

Table 6-11

Step	Activity	Screenshot
1.	In the SIMATIC Manager, select the master OS and select "PLC > Download" from the context menu.	IMATIC Manager - color_gs_MP File Edit Insert PLC View Options Window Help Image: Stress of the second sec
2.	Downloading the OS project for the first time requires a complete download. Start the download with "OK".	Download 05 Image: Scope Image: The entire WinCC project Image: Completion before downloading The entire WinCC project will be transferred to the runtime 0S.
3.	After the successful download, the OS project is located on the master OS in the intended folder. Confirm this with "OK".	Downloading to target system Download to target system was completed successfully. Error OK Cancel



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Step	Activity	Screenshot
4.	Repeat steps 1 to 3 to download the OS project to the standby OS.	

Configuration of the Operator Station

If the engineering station has no CP 1613 as opposed to the OS, or the RS 232 redundancy cable is not connected at COM1 there, the following step-by-step instructions must be performed. Otherwise, we generally advise you to check the project settings after the project download onto the target systems.

Note Normally, all configuration works are executed on the ES for the purpose of consistent data management, so that no WinCC engineering licenses are required on the OS. Nevertheless, a license free time window of one hour is available after each opening of the WinCC Explorer for WinCC configuration works.



ES, OS-Master and OS-Standby

Table 6-12		
Step	Activity	Screenshot
1.	Open the OS project on the master OS.	
2.	Open the editor "Redundancy" with the context menu. Check the name of the master OS in the field "Server". The "Default Master" checkbox must be activated. Also check whether, under "Redundant Partner Server:" the name of the standby OS has been entered correctly. Check whether your desired checkboxes are activated at "Optional Settings". If you are operating the RS 232 redundancy cable at a location different to the COM1 interface, you have to set the appropriate interface at "Serial connection to redundant partner:". Confirm the settings with "OK".	Redundancy Image: Constant of the server: Image: Constant of the server: Image: Constant of the server: Image: Constant of the server: Image: Constant of the server: Image: Constant of the server: Image: Constant of the server: Image: Constant of the server: Image: Constant of the server: Image: Constant of the server: Image: Constant of the server: Image: Constant of the server: Image: Constant of the server is server ser
3.	Open the editor "Time synchronization" with the context menu. Here, activate the checkbox "Synchronization via System Bus (Master, Slave)". In "Access point 1", check or select "CP1613(ISO)" and press the	Time Synchronization - [05.mcp] General Settings Use time receive utility Deactivate time synchronization Synchronization via Terminal Bus (Slave) Use the time from a connected WinCC server Use the time from a specific computer: Computer 1: Computer 2:
	"Master" radio button. Confirm the settings always wih "OK".	C Let time be set by external (3rd - party) components Synchronization via System Bus (Master, Slave) Access point 1 CP1613(ISO) C Master C Slave Access point 2 C Master C Master C Slave Display symbolic name of the access point Process controlling messages V Send once Send every Provide the access point Project documentation Print Send every



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Step	Activity	Screenshot
4.	If you made any changes in the WinCC Explorer project, close the OS project and open it again to activate the settings.	
5.	Repeat steps 1 to 6 on the standby OS with the following modifications for step 3 (redundancy): The "Default Master" checkbox must be deactivated. Also check, whether under "Redundant Partner Server:" the name of the master OS has been entered correctly.	Image: Server: Image: Server: Image: Server: Server: Server: Server: Corres: Server:

6.3.3 Activating Runtime

Successively activate the OS project on the master OS as well as on the standby OS. It is recommended to wait with activating the second Runtime until the start process of the first one is completed entirely.

Regarding the redundancy, the online synchronization is active immediately. The mutual archive update, on the other hand, takes approx. 10-15 min.



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7 Expansion by PCS 7 Web Option

NOTE The Configuration OS Web Option has been tested with PCS 7 Version V7.1 and V7.0 SP2.

Positioning

To control automated processes via the Internet/Intranet, SIMATIC PCS 7 offers control and monitoring options, the so called web options.

This chapter describes the configuration of the web option on an ES/OS stand-alone system. The instruction can therefore be used as expansion for the following minimal configurations:

- ES/OS stand-alone system (chapter 3)
- Master ES/OS and Standby OS (chapter 5)
- **Note** In the following we configured exemplified the ES/OS stand-alone system as web server for stand alone systems with web options. Analog is it possible to configure the partner-OS as web server, without reservation of functionality for the web clients.

If one of the redundant operator stations acts as web server, the redundancy is not available for the web clients. If this OS is in STOP mode, then web clients have no connection to the process either.

The maximum number of Web clients is limited. For further information, please refer to chapter 7.1 "Web Configurations" in the "Attention" field.

Function

All relevant pictures and scripts are stored on the web server, so that they can be displayed and run via a web client.

At the same time the web client accesses the stored process cell data on the web server via a TCP/IP connection. The user interface looks like an OS standard client with overview, work and key area.

Among others, the following functions are available via the Web:

- Control and monitoring functions that are also used on an OS Client
- Message lists which can be called user-dependent just like on an OS Client. Messages can be acknowledged user-dependent.
- Display of picture hierarchy according to plant hierarchy
- Group display function including "Loop-in-Alarm" function.
- Advanced status display



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Note You can find further information regarding PCS 7 web options in the manual:

"SIMATIC Process Control System PCS 7 OS Web Option > Overview of PCS 7 OS Web Option"

7.1 Web Configurations

In our example, the configuration of the web option represents an extension of the hard- and software configurations of chapter 3 "ES/OS Stand-alone Systems" and chapter 5 "ES/OS-Master and OS-Standby".

Windows XP is installed on the ES/OS stand-alone systems that are expanded to web server. Thereupon the following restrictions result:

WARNINGS	As a rule, a stand-alone system with web server can be accessed by a maximum of three web clients simultaneously.	
The connection resources of Windows XP are limited to ten. He web client alone can claim up to four TCP/IP connections for ce actions.		
	This is why collisions may occur under Windows XP in the case of three web clients operating at the same time. This is why we recommend linking a maximum of two web clients.	



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ES/OS stand-alone system as OS web server

To control and monitor the system process, the OS web clients retrieve their project data using the Internet Explorer of the OS web server via the Intranet/Internet.

Figure 7-1: Web Options Configuration in stand-alone system





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ES/OS Master as OS Web server

To control and monitor the system process, the OS web clients retrieve their project data using the Internet Explorer of the OS web server via the Intranet/Internet.

Furthermore, the system process has a redundant design to offer the plant operation the greatest possible failure protection (this is not the case for the web option!)

Figure 7-2: Web Options Configuration in redundant stand-alone system



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7.2 Web-Specific Hardware and Software Requirements

Hardware components

Table 7-1 OS Web Server

Component	Requirement
Minimum hardware (PC) requirement	Intel Pentium IV, 2.8 GHz, 1 GB work memory
Recommended hardware (PC) requirement	Intel Pentium IV, 3.4 GHz, 1 GB work memory
Miscellaneous	Fast access (>= 64 kbit/s) to web client via Internet/Intranet or TCP/IP connection

Table 7-2 OS Web Client

Component	Requirement
Minimum hardware (PC) requirement	No PDAs, tablet PCs etc.
Miscellaneous	Fast access (>= 64 kbit/s) via TCP/IP connection

Software components

Table 7-3 OS Web Server

Component	Requirement
Operating system	Windows XP Professional
	(or also Windows Server 2003)
Software	Internet Explorer
	Internet Information Services (IIS)
License	SIMATIC PCS 7, Software Web Server V (3 Clients) Single License

Table 7-4 OS Web Client

Component	Requirement
Operating system	Windows XP Professional
	(or also Windows Server 2003)
Software	Internet Explorer



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Note The Internet Explorer version is adequate to choose for the PCS 7 version, after the following FAQ:

http://support.automation.siemens.com/WW/view/en/2334224

Further information regarding hardware and software requirements can be found in document:

"Process Control System PCS 7 > PCS 7 Readme"

7.3 Installation of OS Web Server

Content

Below you find a description, how to install a web server on an ES/OS stand-alone system.

Requirements

- The hardware and software requirements mentioned in chapter 7.2 are fulfilled.
- The Internet Information Services (IIS) has to be enabled before you can start installing the "PCS 7 Web Server" software. "Start > Settings > Control Panel > Add or Remove Programs > Add/Remove Windows Components > Internet Information Services"

Installation of Software

Table 7-5

Step	Action	Note
1.	Select the "Setup.exe" file from the PCS 7 tool set DVD and open it by	▲ DVD Drive (c) File Cdf. View Favorites Tools Help @ ③ Ruck - ② - ⑦ ⑦ Search Polders @ ? ¥ ? ? Address ③ GA ▼ ● Ø
	Setup will start.	Name Scie Type Date ModRed Welcome 4983 88 Europ Tange 1017/2005 1:49 PM Welcome 4983 88 Europ Tange 1017/2005 1:49 PM Top 66 KB Europ Tange 1017/2005 1:49 PM Steps 158 56 Compareton Settings 319 PM Steps 158 56 Compareton Settings 357000 101:20 PM Steps 158 56 Compareton Settings 1017/2005 1:40 PM Steps 158 56 Compareton Settings 102/2000 1:40 PM Steps 100 FM Apploation 111/2/2000 1:10 FM Steps 100 FM 100 FM 100 FM Steps Steps Steps 100 FM Steps Steps Steps Steps Steps Steps Steps Steps Steps Steps Steps Steps Steps Steps Steps
		Barton Create Shortox Interaction Create Shortox Barton Create Shortox 1,344.8 Printing Doublink 2/9/2009 9/35.44 Barton Debre 1,344.8 Printing Doublink 2/9/2009 9/35.44 Barton Debre 1,788.7 Printing Doublink 2/9/2009 9/35.44 Barton 2/88.7 Printing Doublink 2/9/2009 9/35.44 Barton 1/88.7 Printing Doublink 2/9/2009 9/35.26 Barton 1/88.7 Printing Doublink 2/9/2009 1/25.19 Barton 1/88.7 Print Doublink 1/9/11/9/87.706 PM



Step	Action	Note
2.	Follow the setup instructions. Select the option "Install" when selecting the "Setup type". Subsequently click "Next".	Setup Setup type Setup type Setup type Setup type Setup type that suits your requirements best. Image: setup type that suits your requirements best. Setup type that suits your requirements best. Image: setup type that suits your requirements best. Setup type that suits your requirements best. Image: setup type that suits your requirements best. Setup type that suits your requirements best. Image: setup type that suits your requirements best. Setup type that suits your requirements best. Image: setup type that suits your requirements best. Setup type that suits your requirements best. Image: setup type that suits your requirements best. Setup type that suits your requirements best. Image: setup type that suits your requirements best. Setup type that suits your requirements best. Image: setup type type that suits your requirements best. Setup type type that suits your requirements best. Image: setup type type that suits your requirements best. Setup type type that suits your requirements best. Image: setup type type that suits your requirements best. Setup type type type type type type type typ
		Cancel Cancel
3.	Enable the option "Package installation". Click the "Next" button.	Setup Installation type Setect the installation type which corresponds best to your experience Image: Setect the installation Install program package Image: Correspond installation Install program package Image: Correspond installation Installation Install program package Image: Correspond installation Installation Installed Installation Installatinstallation Installation Installation Instal
4.	The "Program packages" dialog field is opened. From the options select "PCS 7 Web Server". Click the "Next" button.	Setup Ptogram packages Select the package that best suits your needs. BATCH Clemt PopenPCS 7 Station OpenPCS 7 Station Os Dient with OpenPCS 7 Web Components PCS 7 Web Server O'S Clent DataMonitor Clent DataMonitor Clent DataMonitor Clent DataMonitor Clent DataMonitor Clent DataMonitor Clent Bate Determine Control Clent Bate Determine Control Clent Bate Determine Control Clent Bate Determine Control Clent Control Cleat Cleat <tr< td=""></tr<>
5.	In the subsequent dialog field, the PCS 7 options already installed and the newly selected "Program packages" are displayed. Click the "Next" button.	Setup Programs Programs Programs Programs Programs Programs Setect a product to obtain Important to be installed Important to be installed <tr< td=""></tr<>



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Step	Action	Note
6.	Before installation starts the "Program packages" you want to install new, are listed separately. Check your selection and click the "Install" button when the desired PCS 7 options are displayed.	Setup Ready to install the selection The wizard is ready to begin the installation. OS WebNavigator Server V7.0 SP1 40 MB
		Hequired: 62 Mbytes Estimated installation time: UU:UT (nh:mm)
		K Back Install Cancel

7.4 Configuration of OS Web Server

Configuration steps on the ES

- Publishing of pictures by means of Web View Publisher
- Configuring user rights, start screen and language of website in user administrator
- Loading and compiling of Web Server

Publishing of OS data

Pictures and scripts which are supposed to run on the web clients later are published on the OS Web Server using the Web Publisher. Doing this, the following actions are carried out:

- · Project data is compressed and stored
- Screen windows are transferred into web-enabled ActiveX components
- Scripts are converted so that they can be run on the Web

Requirements

To be able to publish the Web server data the following prerequisites have to be fulfilled:

- PCS 7 project is readily configured
- OS has already been compiled
- Scripts which the Web clients access are available
- Process pictures do not have a double underscore (e.g. yy__x.pdl)
- Variable name in plain text (inverted commas) in C scripts contain no spaces



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Note For a stand-alone system only one publishing process for the publishing of local data on the Web server is necessary.

Information regarding the issue of "Supported script normal functions" can be found in the manual:

"SIMATIC Process Control System PCS 7 OS Web Option > Configuration of the OS Web server on an ES > Changes to project data > Web-Executable Functions for PCS 7 OS Web Option"

7.4.1 Publishing of Project Data

Table 7-6

Step	Action	Note
1.	Open the OS project of the OS Web Server in WinCC Explorer. Select the command "Web View Publisher" via the context menu of the "Web Navigator" editor. The "WinCC Web Publishing Wizard – Introduction" dialog field opens up. Click the "Next" button.	WinCC Web Publishing Wizard - Introduction Welcome to the Web Publishing Wizard will help you publish your WinCC Pictures to alveb Server by reparing and copying the selected files (con your WinCC Pictures to Alveb Server by Dublishing Fider of your WinCC Web Server.) Image: The WinCC Web Publishing Wizard will help you publish your WinCC Pictures to Alveb Server by Dublishing Fider of your WinCC Web Server. Image: The WinCC Web Publishing Fider of your WinCC Web Server. Image: The WinCC Web Publishing Wizard will help you publish your WinCC Pictures to Alveb Server. Image: The WinCC Web Publishing Wizard will help you publish your WinCC Web Server. Image: The WinCC Web Publishing Wizard will help you publish your WinCC Web Server. Image: The WinCC Web Server. Image: The WinCC Web Publishing Wizard will help you publish your WinCC Web Server. Image: The WinCC Web Server.
2.	The "WinCC Web Publishing Wizard – Select directories" dialog field opens up. Disable the option "Server Prefix" since you want to publish local data. Accept the preset target and source path. If you would like to change the respective path, click the button behind the shaded input fields. Navigate to the desired target or source file. Click the "Next" button.	VinCC Web Publishing Wizard - Select directories Select the folder containing your WinCC pictures and the folder of the WinCC web Server to which you will publish your pictures. Server Prefix Path to your WinCC project. Dr:WebDpton/code_git/code_Pt[\wincprq\\05119]\ Dr:WebDpton/code_git/code_Pt[\wincprq\\05119]\Webnavigator\ Locate < Back



Step	Action	Note
3.	The "WinCC Web Publishing Wizard – Select pictures" dialog field opens up. Select all pictures you want to publish. We generally recommend to publish all standard pictures. Via the ">>", "<<", ">" and "<" buttons you can select the pictures. Click the "Next" button.	WinCC Web Publishing Wizard - Select pictures Selected Flex: Config Typicels: PDL (e) (101 PDL)
		Winff Web Publishing Wizard - Select functions
4.	 The "WinCC Web Publishing Wizard – Select functions" dialog field opens up. Select all functions you want to publish. Only the scripts which were selected in the last publishing process are available in the pictures. This is why you select all necessary function for each publishing process. Via the ">>", "<<", ">" and "<" buttons you can select the functions. Click the "Next" button. 	Concel Cancel Cancel English
5.	The "WinCC Web Publishing Wizard – Referenced Graphics" dialog field opens up. Select all graphics you want to publish. We generally recommend to publish all graphics. Via the ">>", "<<", ">" and "<" buttons you can select the graphics. Click the "Next" button.	WinCC Web Publishing Wizard - Referenced Graphics WinCC Web Publishing Wizard - Referenced Graphics Selected File: @Anor_1_0 bring @Anor_2_0 bring @Anor_2_1 bring @Back_1 bring @Back_2 bring @Back_2 bring @Cholon_20 bring
6.	The "WinCC Web Publishing Wizard – Finish" dialog field opens up. Click the "Finish" button.	WinCC Web Publishing Wizard - Finish The WinCC Web Publishing Wizard is finished collecting information. To publish your pictures, press Finish. // Display the provide the provided of the provided of the picture of the



Step	Action	Note
		WinCC Web Publishing Wizard - Finish The WinCC Web Publishing Wizard is finished collecting information. To publish your pictures, press Finish. Opg_apl_pade_pictures, press Finish.
7.	Pictures and functions which contain faulty scripts are marked with a red cross. Double-click each faulty picture to open and correct the picture in the "PdIPad" editor. Confirm the message after each publishing process by clicking the "OK" button.	WinCC Web Publishing Wizard = Finished The WinCC Web Publishing Wizard is finished collecting information. To publish your pictures, press Finish. Form Not all pictures and functions have been published successfully. common%57F_OperationLogBool.tet
8.	The transferred pictures are listed in the "WinCC Web Publishing Wizard – Finish" dialog field. Click the "Finish" button.	WinCC Web Publishing Wizard - Finish The WinCC Web Publishing Wizard is finished collecting information. To publish your pictures, press Finish. Image: State of the state
9.	The published pictures are displayed in the data window of the Web Navigator.	Mark Complexe: Bit Mark Processing (SAL15) (SAL15):seg Image:



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7.4.2 Setting of User Rights, Website Start Screen and Language

Access restriction

Accesses of the Web Clients on the OS Web Server are controlled via user rights. User rights are assigned in the "User Administrator" editor. The user rights correspond to those of the standard clients.

Settings in the "User Administrator" Editor

Table	7-7
Iable	1-1

Step	Action	Note
1.	Open the "User administration" in the opened OS project of the WinCC Explorer. Create new users and/or new user groups and assign them respective authorizations. In addition, enable the option "WebNavigator" for the user/user group and enter the "Start Picture" and "Language" in the respective input fields.	State Control Contro Control Control
2.	Select the start picture from the published graphics via the "" button. "\OS Web Server\ <wincc project release name>\Web Navigator\pictures" Select the "@screen.pd_" graphic as start picture. Confirm your selection with the "Open" button. This is also how you determine a language for the control and monitor interface of the Web clients. To do this, click the respective "" button. Confirm your selection with the "OK"</wincc 	Open Image: Second
3.	Close the User Administration editor.	



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7.4.3 Configuring with the Web Configurator

Tasks of the Web Configurator

The Web configurator sets up and manages the Internet Information Service (IIS) and therefore the website of the OS web server. This setup is carried out on the web server after you have loaded the project on the web server. This setup and configuration is necessary to set up an operator station (OS) as OS web server and to make it accessible for web clients via the Intranet/Internet.

With the Web Configurator you can make the necessary firewall settings for the network card, if the firewall is enabled.

Requirements of the stand-alone system

- PCS 7 Web Server software is installed on the stand-alone system
- the OS project is loaded on the stand-alone system
- settings in the OS are completed
- pictures, functions and graphics have been published
- user rights have been assigned/created
- **Note** Further information regarding the setup of a standard website can be found in the manual:

"SIMATIC Process Control System PCS 7 OS Web Option > Completing configuration on the OS Web server"

Settings in the "Web Navigator" editor

Table 7-8

Step	Action	Note
1.	Open the OS project on the OS Web Server in the WinCC Explorer. Select the command "Web Configurator" via the context menu of the "Web Navigator" editor. The "WinCC Web Configurator" dialog field opens up. Click the "Next" button.	WinCC Web Configurator Welcome to the Internet Information Server Configuration The Web Configurator allows you to create a new Web Navigator the or change the settings of an existing one. The Web Configurator allows you to create a new Web Navigator Cancel Cancel Cancel Frish



Step	Action	Note
2.	In the next window select the option "Create a new standard Web site (stand-alone)". Click the "Next" button.	WinCC Web Configurator Here, you can create a new standard Web site or add a vitual folder to an existing activated Web site. • Create a new standard Web site (stand-alone) • Add to an existing Web site (vitual folder) • Create a new standard Web site (stand-alone) • Add to an existing Web site (vitual folder) • Create a new standard Web site (stand-alone) • Add to an existing Web site (vitual folder) • Create a new standard Web site (stand-alone) • Add to an existing Web site (vitual folder) • Create a new standard Web site (stand-alone) • Add to an existing Web site (vitual folder)
3.	Specify a name for your Web site in the "Name of Web site" input field. Also assign the IP address and the connection port of the computer via the "Port" and "IP Address" input fields. Select "MainControl" from the drop- down list of the "Default Web-Page" input field. Also enter a time in the "Reconnect Interval" input field Enable the option "Start the web-site after being configured". Click the "Next" button.	WinCC Web Configurator Here, you can specify a name, IP address and TCP connection (default: 80 [lor you Web ate: Name of the Web ate: VebN avigator Pet: IP Address: 80 In 20336 Default Web Page: MainControl as part Reconnect Interval 10 * Veb State after being configured.
4.	If the Windows-Firewall is not enabled, continue with step 8. Otherwise click the "Windows- Firewall" button (the button is only visible when the Firewall is enabled).	WinCC Web Configurator Configuring the Windows-Firewall Configuring the Windows-Firewall Please select in the register 'Advanced' of Windows-Firewall the network connection for which user from the Internet should be permitted access. Activate the services Webserver (HTTP) or 'Secure WebServer (HTTPS). Windows-Firewall Cancel < Back Next> Fireith



Step	Action	Note
5.	In the "Windows-Firewall" dialog field select the "Advanced" tab.	Windows Firewall General Exceptions Advanced Image: Second Sec
6.	Enable the optional box for the desired network connection. Click the "Settings" button. The "Advanced Settings" dialog field is opened.	OK Calcel Windows Firewall X General Exceptions Advanced Network Connection Settings Windows Firewall is enabled for the gonnections selected below. To add exceptions for an individual connection, select it, and then click Settings: X Anlagenbus Settings Settings Terminalbus Settings You can create a log file for troubleshooting purposes. Settings ICMP With Internet Control Message Protocol (ICMP), the computers on a network can share error and status Settings Default Settings To restore all Windows Firewall settings to a default state. Bestore Defaults UK Cancel Cancel
7.	This is where you enable the optional box "Secure Web Server" and/or "Web Server". Click the respective "OK" button.	Advanced Settings Y XI Services [CMP] Services [CMP] Services [CMP] Services [CMP] Interview


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Step	Action	Note
8.	Click the "Finish" button.	Configurator Confi
9.	Click the "OK" button. Afterwards close the WinCC Explorer and restart your computer to accept all settings.	WinCC Web Configurator X Image: Configuration of the Institution of the Institeration of the Institeration of the Institution of the Institera

7.4.4 Loading and Compiling of Web Server

Loading of Web Server

Since the OS Web Server is a stand-alone system (ES/OS/Web Server), a loading and/or delta download of project data is not necessary because local data is already present through "Compile OS".

Compiling

The "Compile changes" function can be carried out for stand-alone systems without having to interrupt the process operation of the Web server.

Note Further information regarding the configuration of the OS Web Server can be found in the manual:

"SIMATIC Process Control System PCS 7 OS Web Option > Configuration of the OS Web server on an ES"



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7.5 Settings on Web Client

Settings of web content zone "Internet" or "Local Intranet"

You have to make or check the settings for the web content page in the Internet Explorer to be able to install the plug-ins for the Web Client of the OS Web Server later.

Table 7-9

Step	Action	Note
1.	Open the Internet Explorer. Select the command "Tools > Internet Options"	Internet Explorer cannot display the webpage - Windows Internet Explorer Image: Additional and the provides of the provides
2.	Click the "Security" tab. Select the web content zone in which the Web server is located ("Internet" or "Local intranet"). Click the "Custom level" button.	Internet Options ? × General Security Privacy Content Connections Programs Advanced Select a zone to view or change security settings. Image: Security settings. Image: Security settings. Image: Security settings. Internet Image: Security settings. Image: Security settings. Image: Security settings. Internet Image: Security settings. Image: Security settings. Image: Security settings. Internet Image: Security settings. Image: Security settings. Image: Security settings. Security level for this zone Image: Security settings. Image: Security settings. Image: Security settings. Custom Custom settings. Image: Security settings. Image: Security settings. Image: Security settings. Image: Custom Custom settings. Image: Security settings. Image: Security settings. Image: Security settings. Image: Custom settings. Image: Security settings. Image: Security settings. Image: Security settings. Image: Custom settings. Image: Security settings. Image: Security settings. Image: Security settings. Image: Custom settings. Image: Security settings. Image: Security settings.



Step	Action	Note
3.	Enable the option under "Execute ActiveX controls safe for scripting" and "Download signed ActiveX controls"	Security Settings - Local Intranet Zone Settings © Enable Display video and animation on a webpage that does not use Display video and animation on a webpage that does not use Display video and animation on a webpage that does not use Display video and animation on a webpage that does not use Display video and animation on a webpage that does not use Display video and animation on a webpage that does not use Display video and animation on a webpage that does not use Display video and animation on a webpage that does not use Display video and animation on a webpage that does not use Display video and animation on a webpage that does not use Display video and animation on a webpage that does not use Display video and animation on a webpage that does not use Display video and animation on a webpage that does not use Display video and animation on a webpage that does not use Display video and animation on a webpage that does not use Display video and animation on a webpage that does not use Display video and animation on a webpage that does not use Display video and animation on a webpage that does not use Display video and animation on a webpage that does not use Display video and animation on a webpage that does not use Display video and animation on a webpage that does not use Display video and animation on a webpage that does not use Display video and animating the does not use Display video and animati
4.	Click the respective "OK" buttons for the dialog fields "Security Settings" and "Internet Options" to close them.	



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Settings of web content zone "Trusted sites"

Table 7-10

Step	Action	Note
1.	Open the Internet Explorer. Select the command "Tools > Internet Options".	Internet Explorer cannot display the webpage - Windows Internet Explorer
2.	Click the "Security" tab. Select the web content zone "Trusted sites". Click "Sites" to open the dialog field.	Internet Options ? × General Security Privacy Content Connections Programs Advanced Select a zone to view or change security settings. Select a zone to view or change security settings. Select a zone to view or change security settings. Internet Local intranet Trusted sites Restricted sites Trusted sites Sites Sites Vor This zone contains websites that you trust not to damage your computer or your files. Sites You have websites in this zone. Security level for this zone Allowed levels for this zone: Allowed levels for this zone: Allowed levels for this zone: Allowed levels for this zone: - - Medium - - - - Medium - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
3.	Enter the address of the OS Web Server in the "Add this website to the zone" input field e.g. *://172.33.3.7 or http://*.microsoft.com Additionally, disable the option "Require server verification (https:) for all sites in zone". Click the "Add" and "Close" buttons.	Trusted sites Image: Constraint of the second s



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Step	Action	Note
4.	Select the web content zone "Trusted sites". Click the "Default level" and afterwards the "Custom level" button.	Internet Options ? X General Security Privacy Content Connections Programs Advanced Select a zone to view or change security settings. Image: Content Connections Programs Advanced Internet Local intranet Image: Content Connections Programs Advanced Internet Local intranet Image: Content Connections Programs Advanced Internet Local intranet Image: Content Connections Sites Sites This zone contains websites that you trust not to damage your computer or your files. You have websites in this zone. Security level for this zone Allowed levels for this zone Allowed levels for this zone: All Image: Content Image: Content Image: Content Image: Content Image: Content Image: Content Image: Content Image: Custom level Default level Reset all zones to default level Reset all zones to default level
5.	Enable the option "Initialize and script ActiveX controls not marked as safe for scripting" in the dialog field "Security Settings".	Security Settings - Trusted Sites Zone Settings Download signed ActiveX controls Disable Enable Prompt Download unsigned ActiveX controls Disable Prompt Initialize and script ActiveX controls not marked as safe for sc Disable Prompt Initialize and script ActiveX controls not marked as safe for sc Disable Prompt Run ActiveX controls and plug-ins Administrator approved Disable Fnable Prompt Reset custom settings Reset to: Medium (default) Reset to:
6.	Click the respective "OK" buttons for the dialog fields "Security Settings" and "Internet Options" to close them.	

Therefore the requirements for a connection of Web client to Web server have been created.

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Minimal Configurations PCS 7 V7.1

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7.6 Installation of Web Client Plugins

Installation paths

When installing the plugins for the Internet Explorer you can choose between two installation paths:

- Remote installation installation via the Intranet/Internet of the Web server
- Local installation installation via the Windows Installer Package of the Web Client

In application example we look at the "Remote installation".

Requirements

- the OS Web Server is in runtime.
- the web client has access to the web server
- you know the web server address
- you know the domain, user name and password
- the user authorizations are valid for PCS 7 Web Options
- the login on the PC has the rights of a main user.

Installation

Table 7-11

Step	Action	Note
1.	Open the Internet Explorer. Enter the Web Server address (http:// <server ip="" name="" or="">) in the "Address" input field.</server>	Internet Explorer cannot display the webpage - Windows Internet Explorer Image: Solution of the second se



Step	Action	Note
2.	Enter the access data in the "Connect to <severname>" dialog field which was determined on the Web server in the "User Administrator" editor.</severname>	Connect to 172.33.3.7 ? X The server 172.33.3.7 at 172.33.3.7 requires a username and password. Warning: This server is requesting that your username and password be sent in an insecure manner (basic authentication without a secure connection). User name: ? Password: . OK Cancel
3.	During the first connection the "Security Warning" dialog field will open up. Continue by clicking the "Install" button.	Internet Explorer - Security Warning Image: Security Warning Do you want to install this software? Name: WebClentInstall.dll Publisher: SIEMENS AG Image: WebClentInstall.dll Publisher: SIEMENS AG Image: WebClentInstall.dll Publisher: SIEMENS AG Image: WebClentInstall I
4.	A note will appear in the main window, saying that the "Web Navigator Client" software has to be installed first. Click on the bottom link "Click here to install" to start installation.	SIMATIC WinCC/ WebNavigator Client You first need to install the Web Navigator Client software The installation will download approximatel Click here to install
5.	The InstallShield Wizard is started. Click the "Next" button to install the "WebNavigator Client" software Follow the instructions of the wizard.	Image: Similar Control of the install Shield Wizard Image: Similar Control of the install Shield Wizard for SIMATIC WinCC/WebNavigator Client V7.0 SP1 Image: Similar Control of the install Shield Wizard will install Similar Client V7.0 SP1 Image: Similar Client V7.0 SP1 on your computer. To continue, dick Next. Image: Similar Client V7.0 SP1 Image: Similar Client V7.0 SP1 on your computer. To continue, dick Next. Image: Similar Client V7.0 SP1 on your computer. To continue, dick Next. Image: Similar Client V7.0 SP1 on your computer. To continue, dick Next. Image: Similar Client V7.0 SP1 on your computer. Image: Similar Client V7.0 SP1 on your computer. To continue, dick Next. Image: Similar Client V7.0 SP1 on your computer. Image: Similar Client V7.0 SP1 on your computer. To continue, dick Next. Image: Similar Client V7.0 SP1 on your computer. Image: Similar Client V7.0 SP1 on your computer. To continue, dick Next. Image: Similar Client V7.0 SP1 on your computer. Image: Similar Client V7.0 SP1 on your computer. To continue, dick Next. Image: Similar Client V7.0 SP1 on your computer. Image: Similar Client V7.0 SP1 on your computer. To continue, dick Next. Image: Similar Client V7.0 SP1 on your computer. Image: Similar Client V7.0 SP1 on your computer. To continue, dick Next. Image: Similar Client V7.0 SP1 on your computer. Image: Similar Client V7.0 SP1 on your computer. To continue, dick Next. Image: Similar Client V7.0 SP1 on your computer.



Step	Action	Note
6.	Select the option "Complete" in the dialog field "Setup Type". Click the "Next" button.	Setup Type Choose the setup type that best suits your needs. Please select a setup type. Complete Approprint features will be installed. (Requires the most disk space.) Custom Choose which program features you want installed and where they will be installed. Recommended for advanced users. InstallShield (Back Next > Cancel
7.	Click the "Install" button to trigger the installation process of the "WebNavigator Client" software.	Install Shield Wizard Ready to Install the Program The wizard is ready to begin installation. Click Install to begin the installation. If you want to review or change any of your installation settings, click Back. Click Cancel to exit the wizard. InstallShield
8.	To complete the installation, click the "Finish" button in the last step of the wizard.	SIEMENS SIMATIC WinCC/WebNavigator Client V7.0 SP1 - InstallShield Wizard InstallShield Wizard Completed InstallShield Wizard Completed The InstallShield Wizard has successfully installed SIMATIC WinCC/WebNavigator Client V7.0 SP1. Click Finish to exit the wizard. Cancel Cancel
9.	In the main window you can now see which components have been successfully installed on the web client. Before you click on the reference "Process pictures", install the necessary plugins first, to be able to operate and monitor the process accordingly.	ETST - Web Novigator - Windows foteward Explorer Image: Status Image: Status Image: Image: Status Image: Status Image: Image: Image: Status Image: Status Image:



Step	Action	Note
10.	Move the cursor to the left edge of the screen of the Internet Explorer window to make the navigation bar visible there. Click on the "double arrow" icon in the navigation menu next to the name or the IP address of the web server. Click the sub-menu "Download Area". This is where you select "Download plugins".	Child and Name and Control of Control Child and Control
11.	Now all available plugins for the web client will be displayed in the Internet Explorer window. In the "Install" column, click the arrow before the version number to install the plugin.	Cliss? Version Strature Version Strature Version Strature Version Strature Strature
12.	The plugins: WinCC Basic Process Control WinCC Basic Process Control PCS 7 Faceplates PCS 7 Advanced Faceplates should be installed to guarantee minimum process control. During installation the displayed sequence is to be observed.	Image: State Stat



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Step	Action	Note
13.	Installation of the web client is complete. Close the Internet Explorer and reopen it to register for process control. As soon as the web client has established a connection with the web server, the process pictures can be called.	

Note Further information regarding the installation of the web client, process control on the web client and settings can be found in the manual:

"SIMATIC Process Control System PCS 7 OS Web Option > Installation and Settings for the Web Client"