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Decentralized Operation of WinCC with SIMATIC Industrial Thin Clients

WinCC Runtime Professional V13, Industrial Thin Client

https://support.industry.siemens.com/cs/wwde/28309119

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Table of Contents

Warranty and Liability 2

1 Task 4

1.1 Introduction 4
1.2 Requirements 4

2 Solution 5

2.1 Overview 5
2.2 Setup 5
2.3 Hardware and software components 7

3 Basics 9

3.1 Client and server 9
3.2 Industrial Thin Client 9
3.3 Remote desktop session host (terminal server) 10
3.4 Multi-instance capability of applications 11

4 Mode of Operation 12

4.1 General overview 12
4.2 WinCC Server functionality 13
4.3 Remote desktop session host functionality 13

5 Installation and Configuration 14

5.1 Hardware 14
5.2 Software 17
5.2.1 Assign IP address 17
5.2.2 Set server name 21
5.2.3 Installation Internet Information Services (IIS) 24
5.2.4 Installing WinCC Runtime Professional and WebNavigator 29
5.2.5 Installing remote desktop services 33
5.2.6 Installing Web Navigator Client 40
5.2.7 Programming device settings 43
5.2.8 Creating a Windows users 59
5.2.9 Setting the Industrial Thin Client 65

6 Operating the Application 72

6.1 Overview 72
6.2 Connecting to the remote desktop session host 72

7 Further Notes, Tips & Tricks, etc. 73

7.1 Expansion options 73
7.2 Alternative configurations 73
7.3 Performance data 75

8 Links & Literature 76

9 History 76

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1 Task

1.1 Introduction

Thin Clients have several advantages for the operation and monitoring of systems and production machines.

In combination with a SCADA system they can reduce costs and increase the system availability.

The present document describes the possibility of setting up an infrastructure by using the control panels type SIMATIC Industrial Thin Client and the SCADA system SIMATIC WinCC Runtime Professional V13.

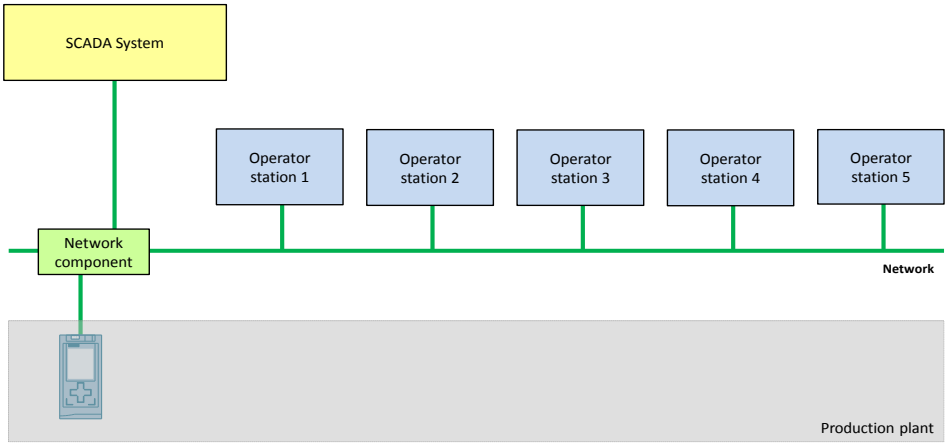
You will learn about the required hardware and software components and how to configure and set up these components. Afterwards, you will start a small example project.

You will be able to use the solutions presented here for the planning, configuration and commissioning of your own individual production plant, where you use SIMATIC Industrial Thin Clients and SIMATIC WinCC Runtime Professional V13.

1.2 Requirements

To ensure a simple introduction into the topic the following figures describe the essential elements of a general automation solution.

Figure 1-1



Requirements of the automation solution

- It must be possible to operate the production plant from various locations (operator stations).
- The operator stations are sometimes exposed to rough environmental conditions, therefore the devices need to be robust.
- The operator stations all access the same central data management.

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2 Solution

2.1 Overview

Main topics of this application

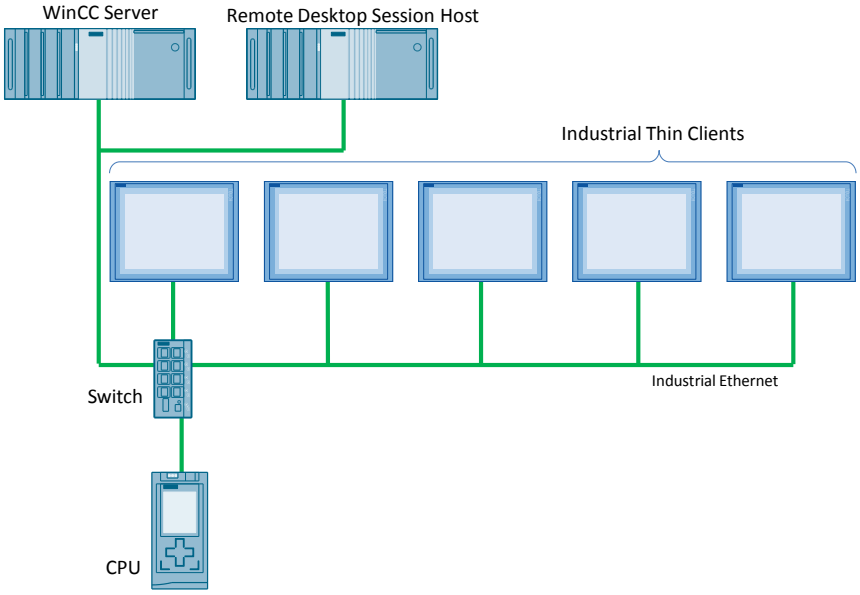
This document covers the following topics:

- Which hardware and software components are needed for a functioning solution?
- What licenses are needed?
- How do the various components work together?
- How must the individual components be configured and parameterized?

2.2 Setup

Schematic layout

Figure 2-1



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Function

- A WinCC server assumes the central data management of the production plant. The connection of the process values from the controller (CPU) and their graphic processing for displaying them at the operator station are done here.
- The data provided by the WinCC server is supplied by the remote desktop session host within the individual remote desktop sessions and is thus made accessible for several terminal clients.
- The Industrial Thin Clients have the task of visualization, and enable the operation of the production plant.
- A switch connects all the Ethernet nodes with each other.

Advantages

The structure of this layout offers the following advantages:

- Investment security through:
  - the use of standardized interfaces and components
- Saving costs when SIMATIC Industrial Thin Clients are used as WinCC clients instead of classical PCs, due to
  - the use of low-cost hardware
  - the fact that no additional software licenses for the clients are needed.
- Additional costs saved in engineering and maintenance, due to the fact that
  - no user software needs to be installed on the Thin Clients
  - no additional configuration of the clients is needed
  - simple expansion options for additional operator stations
  - devices can be easily replaced
- Machine-level operating and monitoring is possible because of
  - the use of robust components for industrial use.

Topics not covered in this application

The solution described here refers to WinCC Runtime Professional V13. For WinCC V7.3 a comparable application example does not exist.

On the internet page of this application example both alternatives are available.

https://support.industry.siemens.com/cs/ww/en/28309119 \2\

Assumed knowledge

For the implementation of the solution described in this document, basic knowledge in the following topics is assumed:

- Basics of automation hierarchy (field level → SCADA)
- Automation technology
- Microsoft Windows operating systems
- Ethernet network with TCP/IPv4

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2.3 Hardware and software components

Validity

This application is valid for

- SIMATIC Industrial Thin Clients
- SIMATIC S7-1500 CPUs
- Windows Server 2012 R2
- WinCC Runtime Professional V13

Components used

The application was created with the following components:

Software components

Table 2-1

Component	Qty	Article number	Note
Windows Server 2012 R2	1	Microsoft	
WinCC Runtime Professional V13	1	6AV2105-....3-0	
WinCC Engineering V13	1	6AV210-....3-0	
STEP 7 Professional V13	1	6ES7822-1..03	
WinCC WebNavigator for Runtime Professional 3 clients	1	6AV2107-0KD00-0BB0	License for 3 clients
Terminal Server CAL (user)	3	Microsoft	License for 3 clients
CAL	1	Microsoft	

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Hardware components

Table 2-2

Component	Qty	Article number	Note
Industrial PC SIMATIC IPC647D	2	6AG4112-2….-….	This IPC is used as an example, other IPCs can also be used when meeting the SW requirements.
POWER SUPPLY PS307 24 V/5 A	1	6ES7307-1EA01-0AA0	If more devices are connected, it can become necessary to connect a stronger power supply, e.g. with 10 A (order number: 6ES7307-1KA02-0AA0)
SCALANCE X208	1	6GK5208-0BA10-2AA3	Connects up to 8 Ethernet nodes.
SIMATIC ITC1200	1	6AV6646-1AA22-0AX0	
CPU 1516-3 PN/DP	1	6ES7516-3AN00-0AB0	
SIMATIC S7 MEMORY CARD, 24 MB	1	6ES7954-8LF01-0AA0	

Example files and projects

The following list includes all files and projects that are used in this example.

Table 2-2

Component	Note
28309119_Thin_Client_Doku_V13_de.pdf	This document.
28309119_Thin_Client_Code_V13.zip	This zip file contains the WinCC project.

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3 Basics

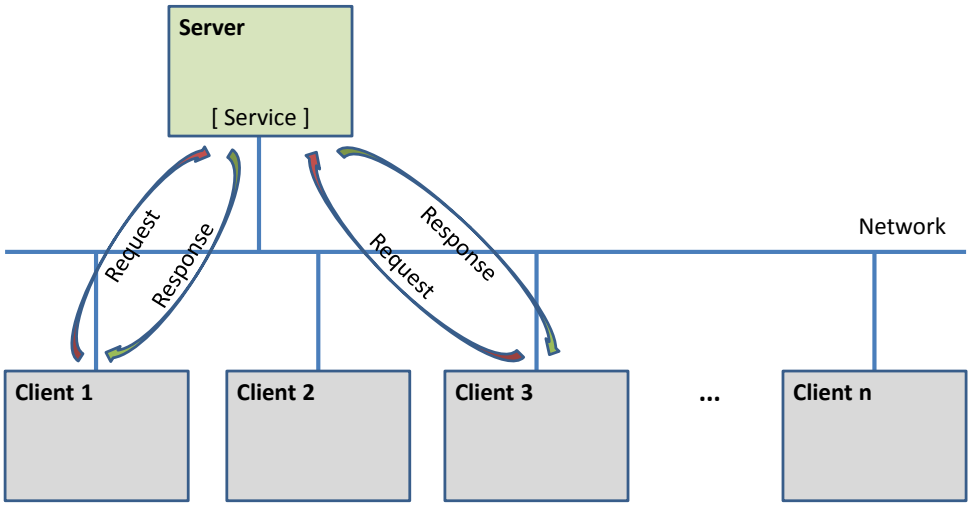
3.1 Client and server

In the client & server concept, a server provides information and service, which is requested by one or more clients.

The server passively waits for the requests, which are actively made by the client.

The client and the server communicate in a network.

Figure 3-1

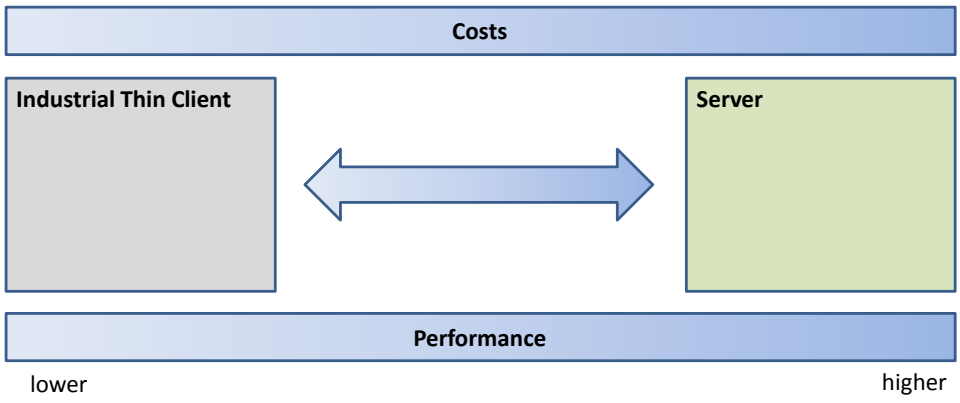


3.2 Industrial Thin Client

The idea of Thin Clients is that the clients only need little power from the data-processing hardware.

They are optimized for data input and output. Powerful and expensive hardware components for processing data are not necessary. The data is processed and the programs are run on a central server so that cost-optimized hardware can be used for the clients.

Figure 3-2



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The considerably lower requirements for the data-processing hardware as compared to the server are the reason for the name “Thin Client”.

Since the hardware is less complex, it is also less susceptible to errors as compared with the standard PC solutions. SIMATIC Industrial Thin Clients have been especially optimized for the use in a rough industrial environment and do not contain rotating parts, for example.

An additional advantage of Thin Clients is that installation, maintenance and software updates have to be performed only once on the server. No additional installations or updates of the software and licenses are necessary in the Thin Clients themselves.

3.3 Remote desktop session host (terminal server)

A remote desktop session host offers several remote desktop clients the possibility of joint access to applications provided by the remote desktop session host.

Each remote desktop client receives its own workspace on the remote desktop session host for executing the desired application. This workspace is referred to as remote desktop session.

In a remote desktop session, the available resources can be used by the applications executed there. This includes the main memory and the CPU of the remote desktop session host.

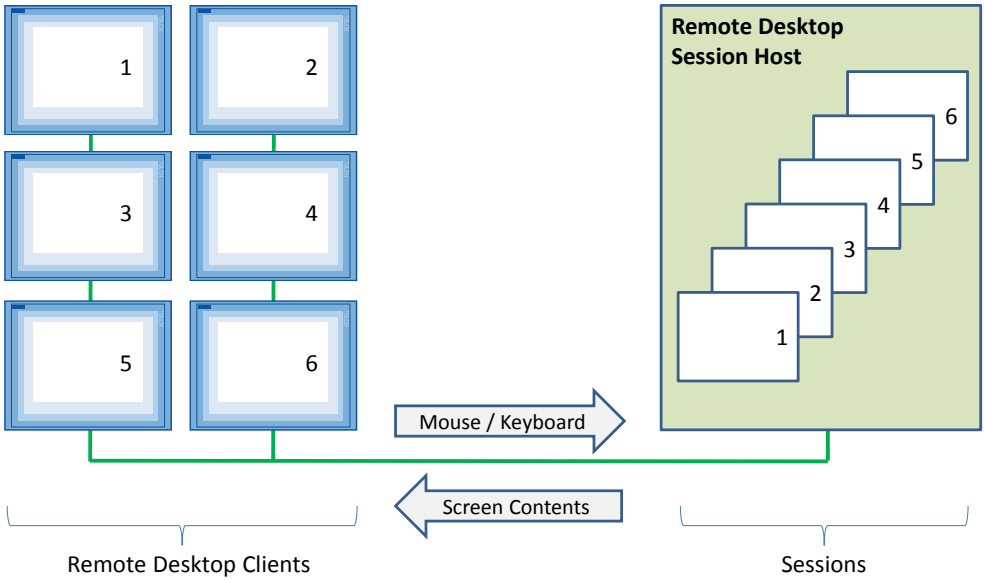
The operator entries by mouse, keyboard or touchscreen, etc. from the remote desktop client are transmitted to the remote desktop session host.

The application is run and the data processed completely on the remote desktop session host.

For the output of the visual data, the screen contents of the remote desktop session are transmitted back to the remote desktop client.

The remote desktop session host and the remote desktop client communicate via the TCP/IP and RDP protocols.

Figure 3-3



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3.4 Multi-instance capability of applications

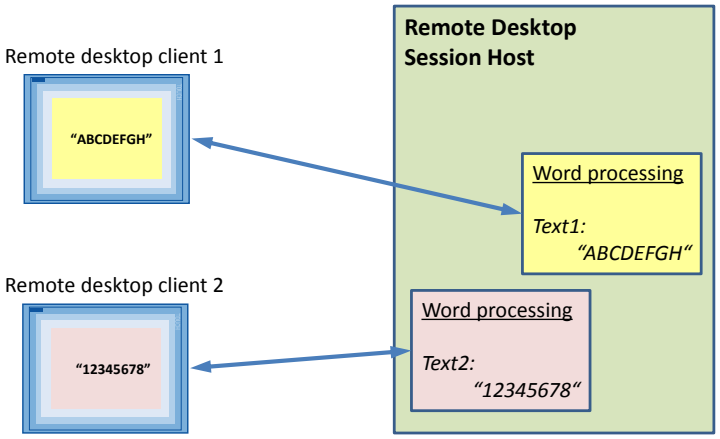
The capability of an application to be carried out several times simultaneously on a computer system is called multi-instance capability.

This feature of the application is a basic prerequisite for its use in the remote desktop session host.

Each client of the remote desktop session host uses its own instance of the application.

The following figure shows an application capable of multi-instances taking the example of a text processing program.

Figure 3-4



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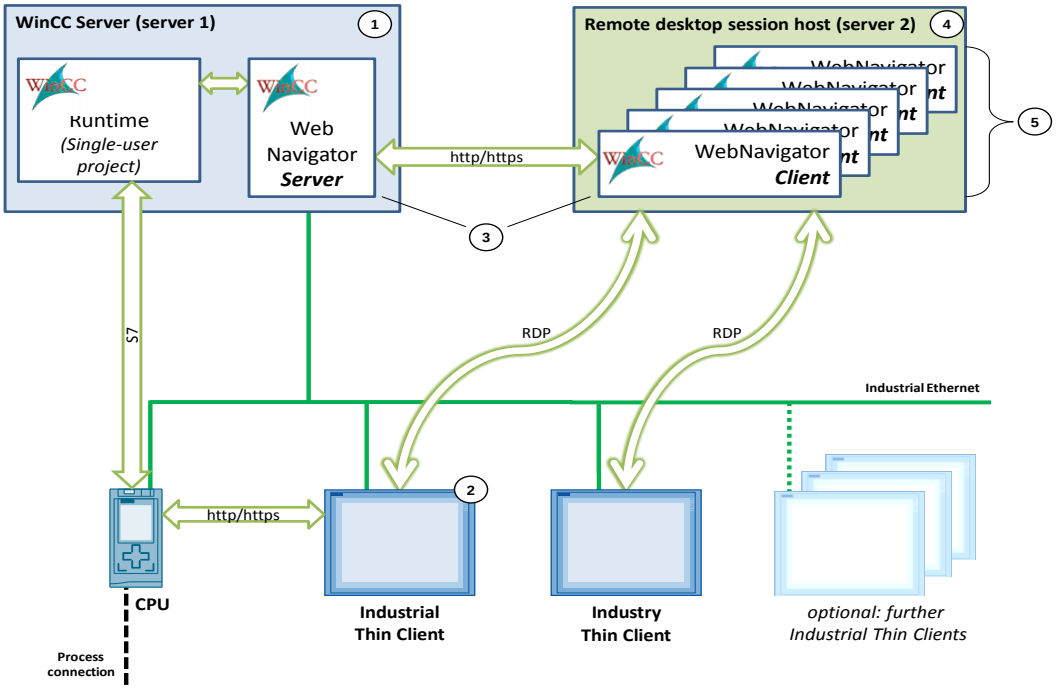
4 Mode of Operation

4.1 General overview

Figure 4-1



On the WinCC server (1), the operator control and monitoring system SIMATIC WinCC Runtime Professional runs.

Since no RDP connections are admitted for operating the WinCC project from the Industrial Thin Clients (2) to the WinCC server, the option package SIMATIC WinCC WebNavigator (3) is used in this place. It consists of a server and a client component.

The WebNavigator server provides the WinCC Runtime project as a website via the Internet Information Service (IIS). It can be called from the WebNavigator client via the http/https protocol.

The WebNavigator client is installed on a separate computer, the remote desktop session host (4). There, the program can be simultaneously executed in several remote desktop sessions (5) thus enabling multiple access to the WinCC project.

From each Industrial Thin Client, a Remote Desktop Protocol (RDP) connection to the remote desktop session host is created to initiate a session on the remote desktop session host. In each of these sessions, an instance of the WebNavigator Client is carried out.

Additional connections can be set up from the Industrial Thin Clients, for example for a direct diagnostics of the CPU.

Note Please find further information on the possibilities of a remote access to WinCC stations online at the following address:
https://support.industry.siemens.com/cs/ww/en/view/78463889

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4.2 WinCC Server functionality

On the WinCC server the WinCC Runtime project runs in the WinCC runtime environment.

The following table lists the users, which are used in the later configuration of the user management of the WinCC server in this application.

Table 4-1

User name	Password	Remark
web-user_de	web-user_de	ITC 1
web-user_en	web-user_en	ITC 2

The users you work with in the WinCC server during plant operation need to be maintained in the Windows user management and in parallel also in the user management of the WinCC Runtime project.

Please keep this in mind, especially when you change the password, as it must be changed in the user management of the operating system and also in the user management of the WinCC project.

4.3 Remote desktop session host functionality

A client receives its own remote desktop session by logging a remote desktop client on at the remote desktop session host via RDP.

The users used in this application example, for example for logging on to the remote desktop session host, are listed in the following table.

Table 4-2

User name	Password	Remark
remote1	remote1	ITC 1
remote2	remote2	ITC 2

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5 Installation and Configuration

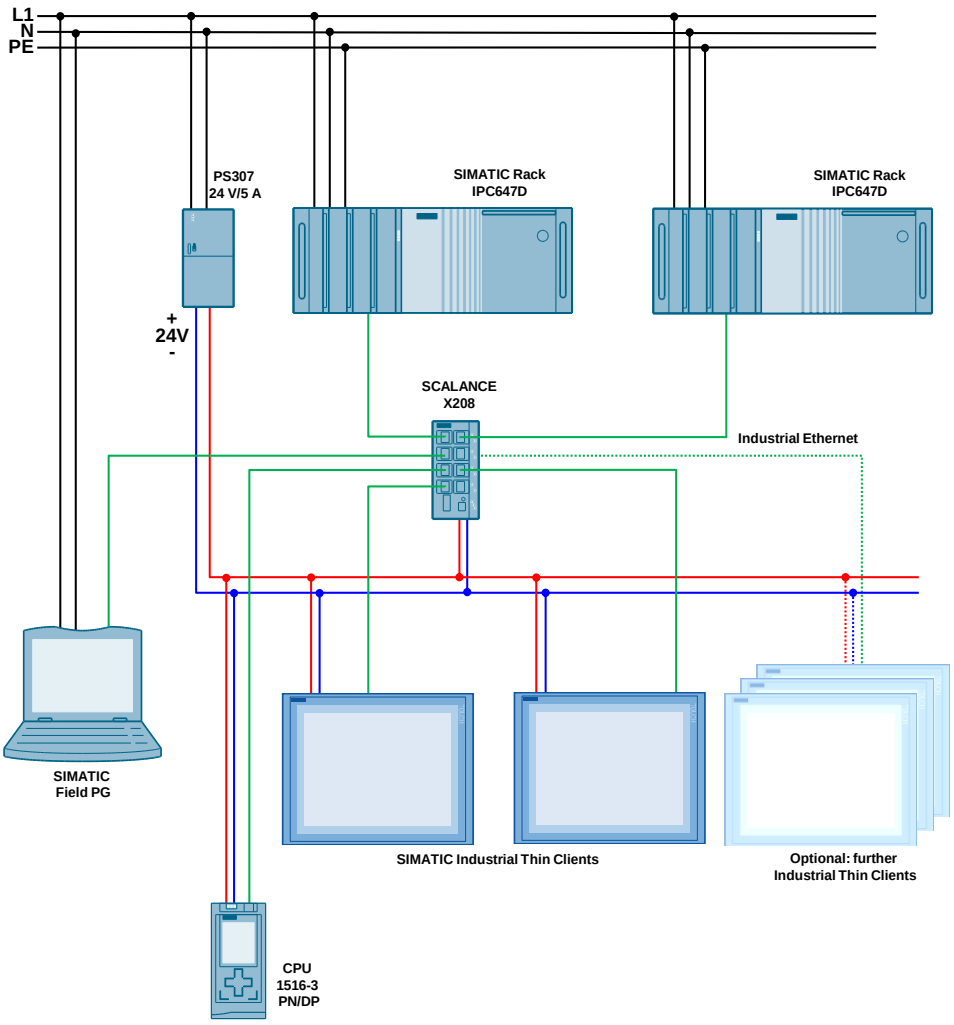
This chapter provides you with a step-by-step introduction into the installation of the hardware and software components

5.1 Hardware

Overview

The following picture gives an overview of the hardware structure of the application:

Figure 5-1



Note Please follow the setup instructions of the components used above.

Please refer to the introduction into the SIMATIC S7-1500 controller family at the following address:

https://support.industry.siemens.com/cs/ww/en/view/78027451

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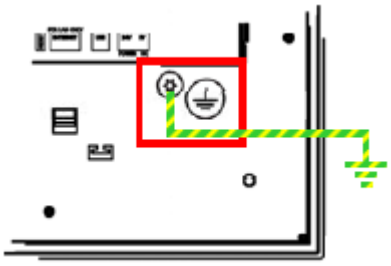
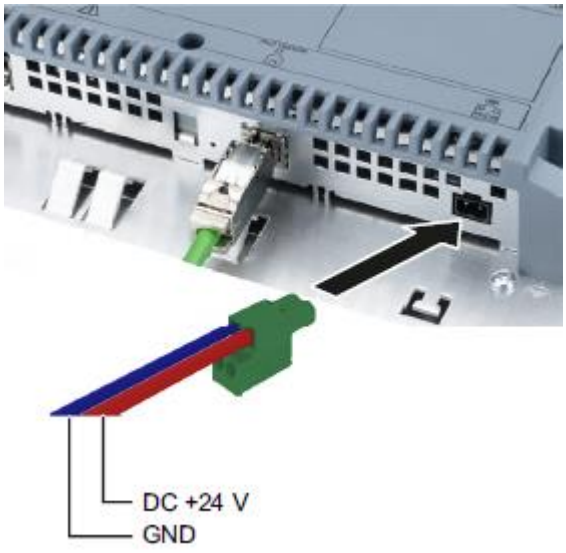
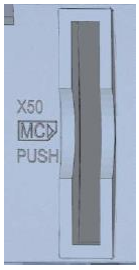
WARNING

The connection line of the power supply must not be connected to the mains during wiring.

Installation procedure

Table 5-1

No.	Action
1.	Install the hardware of both SIMATIC Rack PCs. Do not switch on the PCs yet.
2.	Connect the 24V of the power supply to the SCALANCE X208.
3.	Connect the SIMATIC Industrial Thin Client to the potential equalization. 
4.	Connect the 24V of the power supply to the SIMATIC Industrial Thin Client. 
5.	Open the front cover of the CPU and insert the SIMATIC memory card into the provided slot. 

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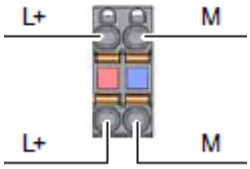
No.	Action
6.	Connect the 24V output voltage of the power supply PS307 24V/5 A to the 24V input voltage of the CPU 1516-3 PN/DP. 
7.	Connect the SCALANCE switch at one free Ethernet port to the following Ethernet nodes: • SIMATIC Industrial Thin Client • SIMATIC Industrial Thin Client • SIMATIC Rack PC • CPU 1516 • Programming unit
8.	Connect the plug of the power supply PS307 24V/5 A to the mains.
9.	Switch on the PS307 24V/5 A power supply.
10.	Switch on the PCs.

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5.2 Software

The following installation order must be followed for operating the Industrial Thin Client at the server.

1. Assigning IP address/server name
2. Installing Internet Information Service (IIS)
3. Installing WinCC Professional and WebNavigator
4. Installing remote desktop services
5. Installing WebNavigator Client
6. Transferring programs by means of programming device
7. Creating Windows user accounts
8. Configuring the Thin Client

The following steps describe the installation of additional software components in detail.

Starting points are two preinstalled operating systems Microsoft Windows Server 2012 R2 operating systems.

Note Please find a list of operating systems suitable for the use of WinCC with the WebNavigator Server option online in the system manual of WinCC Professional V13.0 in the chapter “Software and Hardware Requirements” at the following address:

https://support.industry.siemens.com/cs/ww/en/view/92323076/57373786507. \3\

Further information about WinCC Professional is available online in the system manual of WinCC Professional V13.0 at the following address:

https://support.industry.siemens.com/cs/ww/en/view/92323076/63974837515. \4\

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5.2.1 Assign IP address

The following chapter describes assigning the IP addresses in the network and explains how to assign the IP addresses of the servers.

Note The IP addresses are only examples and can be replaced by your own IP addresses.

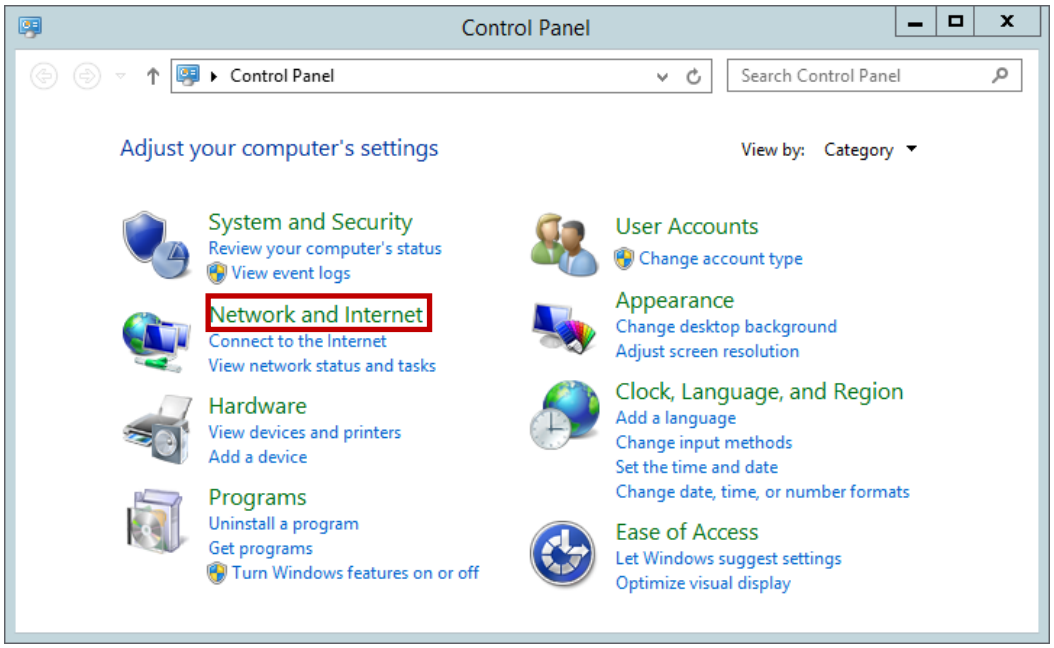
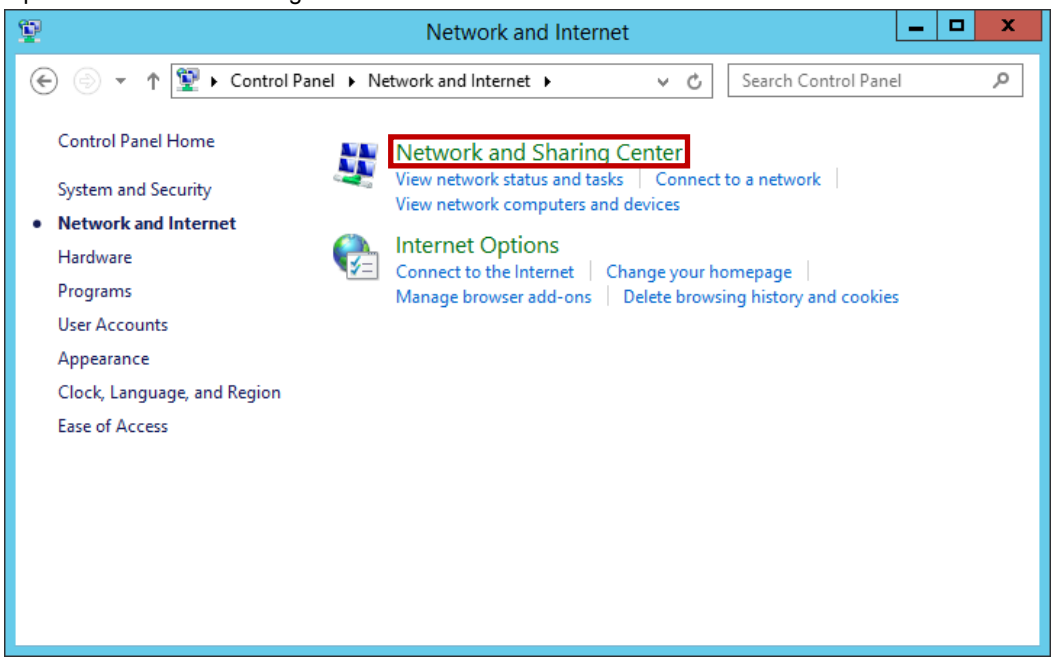
The following table contains an overview of the network devices and their respective IP addresses.

Table 5-1

No.	Device	IP address
1.	WinCC Server (server 1)	172.16.51.1
2.	Remote desktop session host (server 2)	172.16.51.2
3.	Industrial Thin Client 1	172.16.51.10
4.	Industrial Thin Client 2	172.16.51.11
5.	CPU	172.16.51.20
6.	SCALANCE	172.16.51.30
7.	Programming unit	172.16.51.40

Setting the IP address of the server

Table 5-2

No.	Action
1.	Open the “Control Panel” of the WinCC server (server 1).
2.	Open the “Network and Internet”. 
3.	Open “Network and Sharing Center”. 

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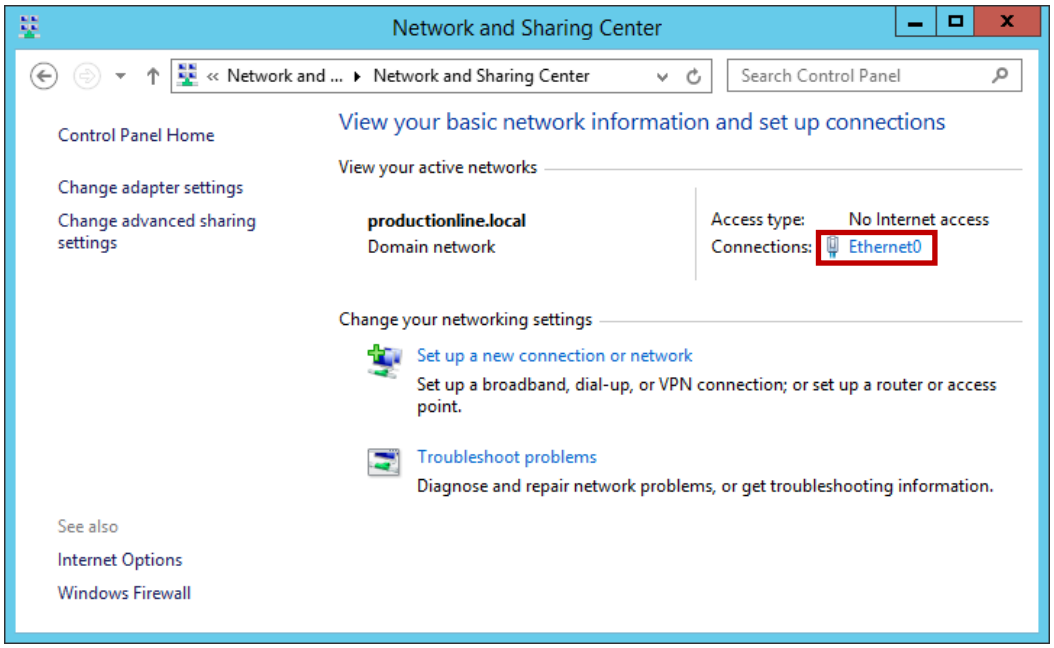
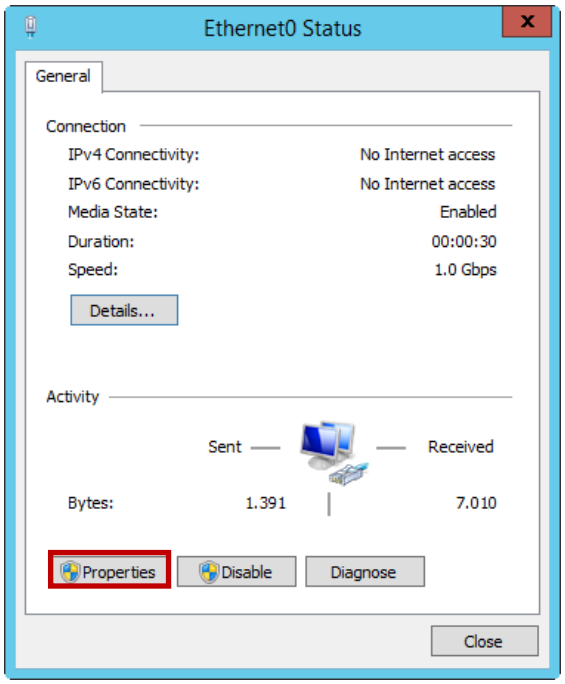
No.	Action
4.	Select the LAN connection. 
5.	Open the “Properties” of the LAN connection. 

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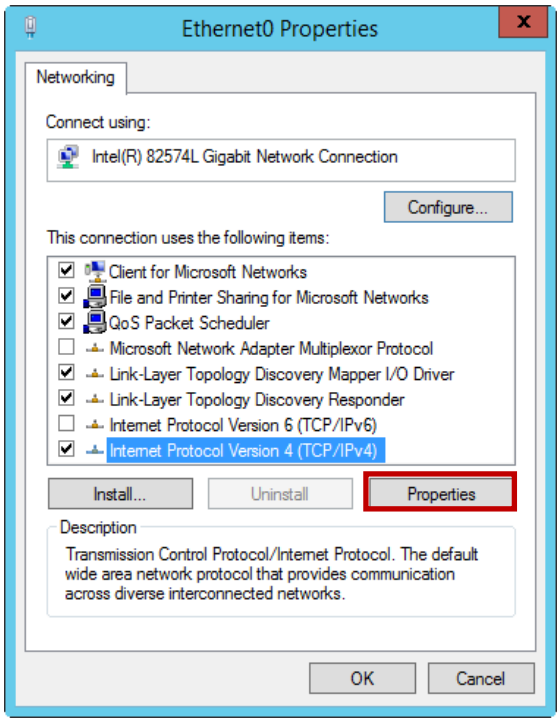
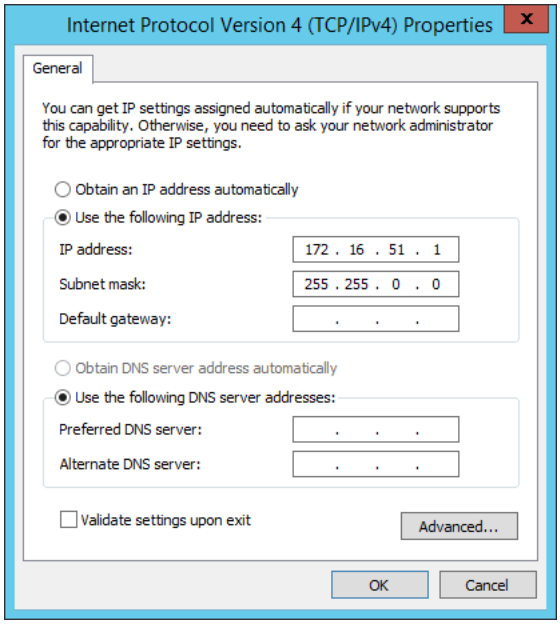
No.	Action
6.	Select “Internet Protocol Version 4 (TCP/IPv4)” and open the “Properties”. 
7.	Configure the IP address of the server. Use the IP address from Table 5-1.  If you are not communicating across network boundaries, the Standard Gateway field can be left empty. Otherwise, you enter the gateway of the network here. This is usually the router.
8.	Confirm the set IP address by clicking on the “OK” button and then close the dialog.
9.	Repeat steps 1-8 for the remote desktop session host (server 2). Configure the IP address of the server. Configure the IP address of the programming device. Use the IP address from Table 5-1.

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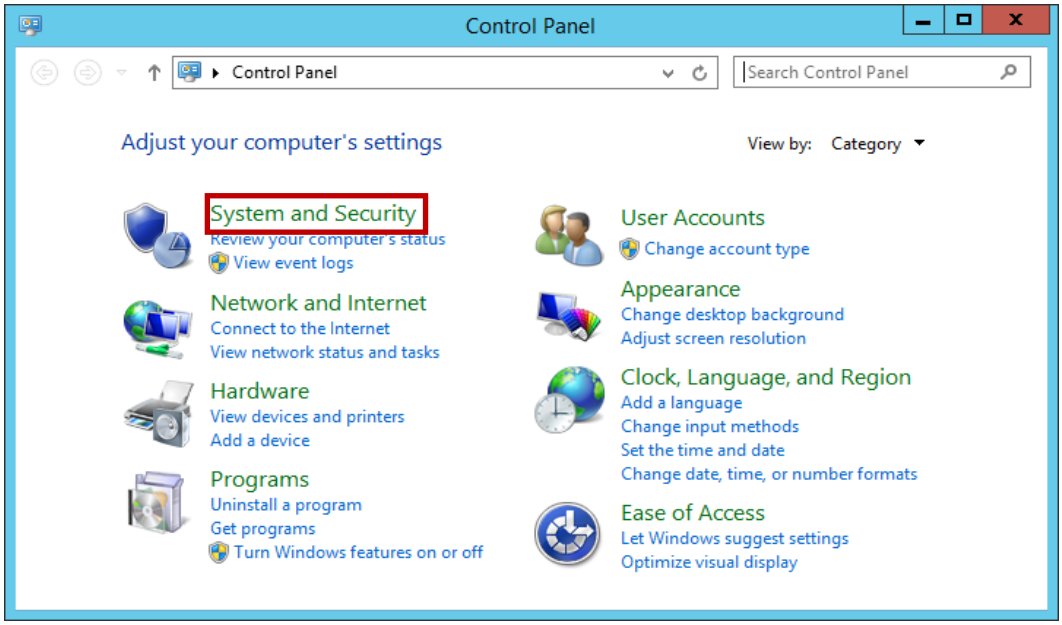
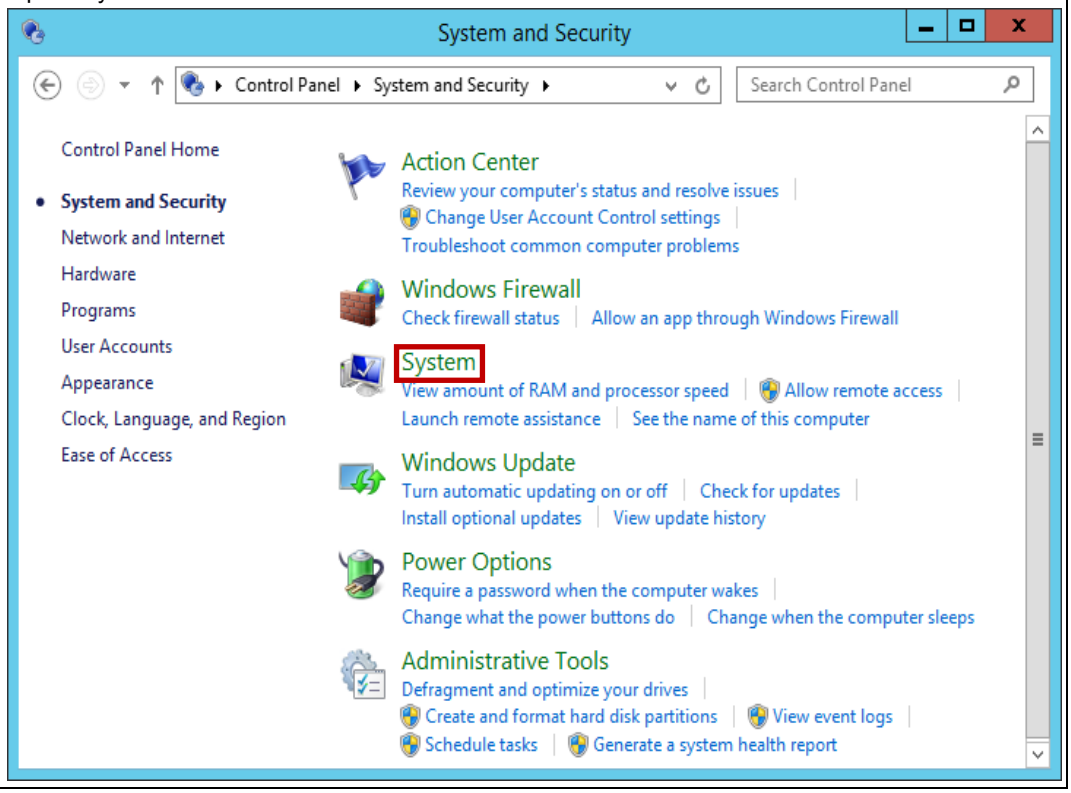
5.2.2 Set server name

The following steps show who to configure the server name.

Table 5-3

No.	Action
1.	Open the “Control Panel”.
2.	Open “System and Security”. 
3.	Open “System”. 

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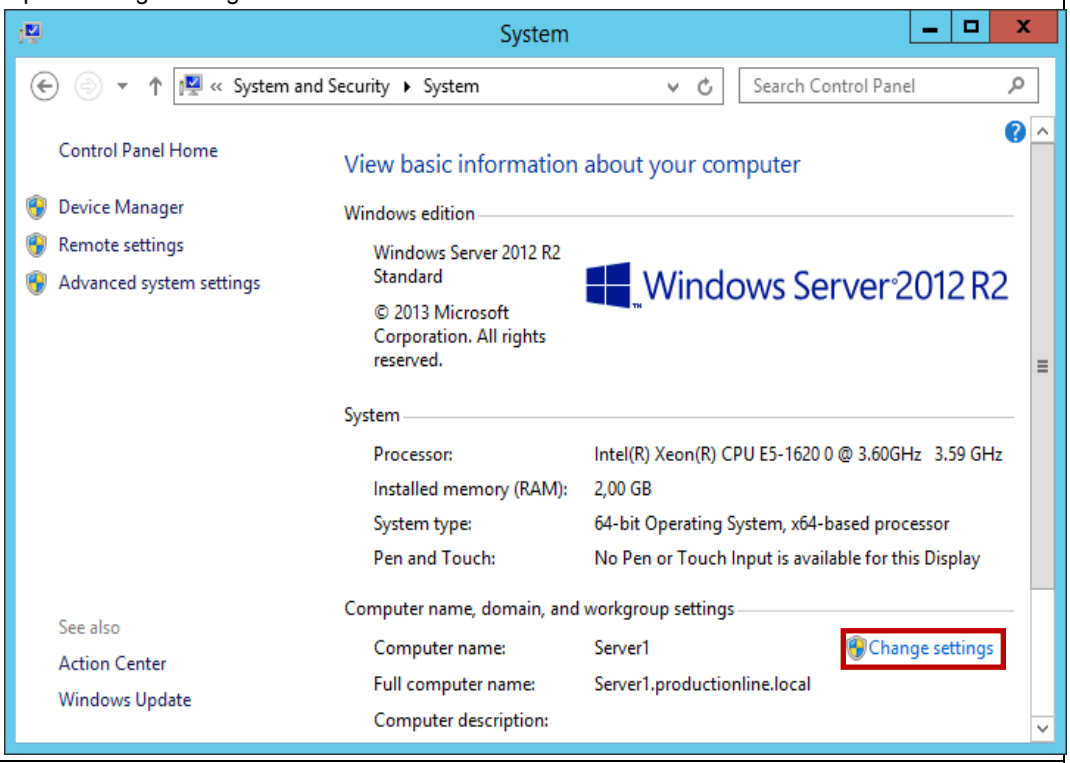
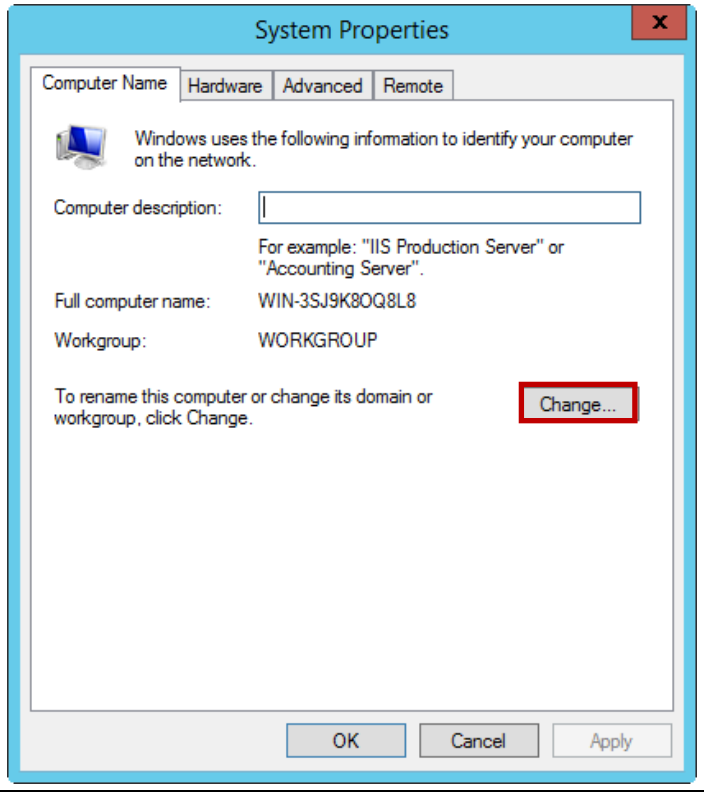
No.	Action
4.	Open “Change settings”. 
5.	Click on “Change...” to rename the computer. 

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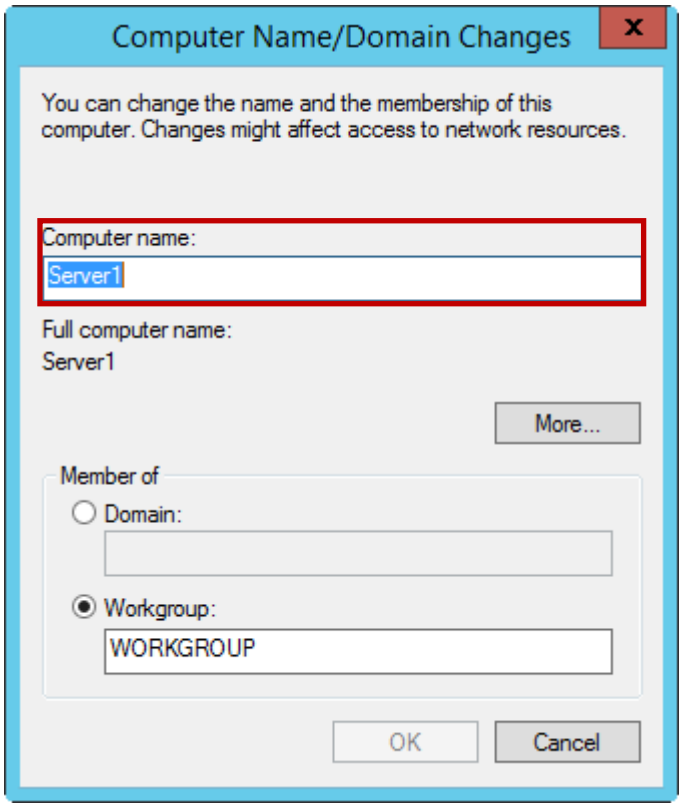
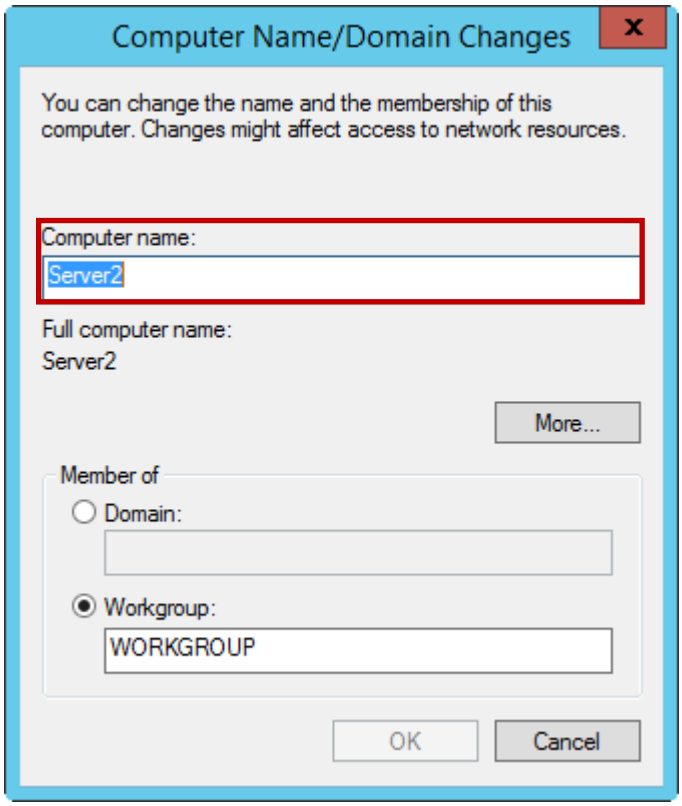
No.	Action
6.	Assign the computer name. 
7.	Repeat steps 1 to 6 for the remote desktop session host (server 2). 

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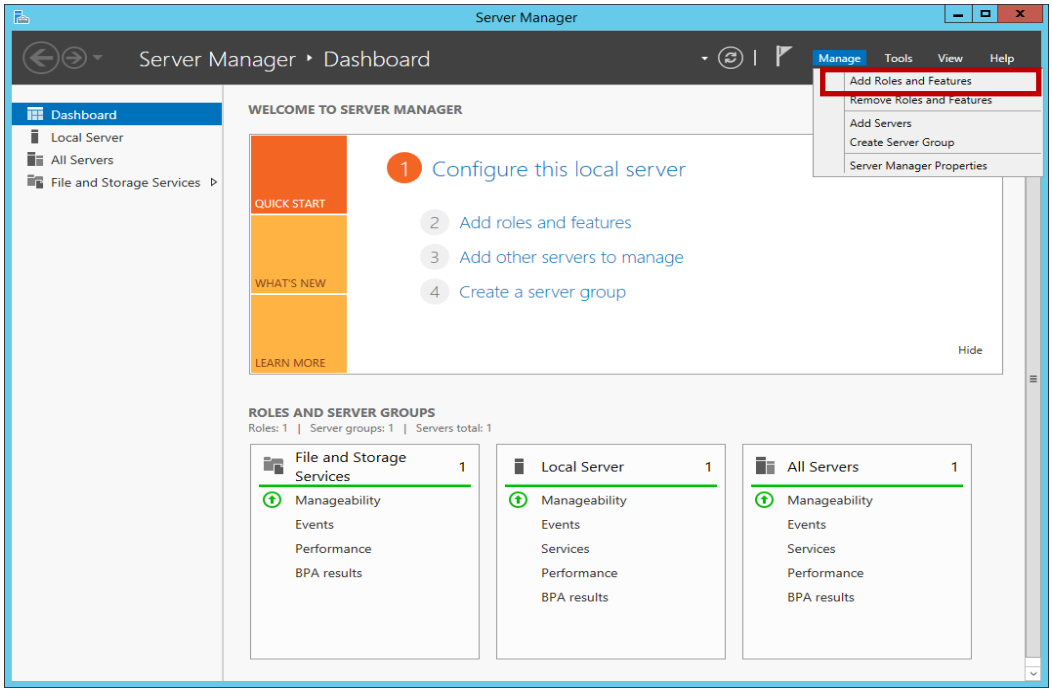
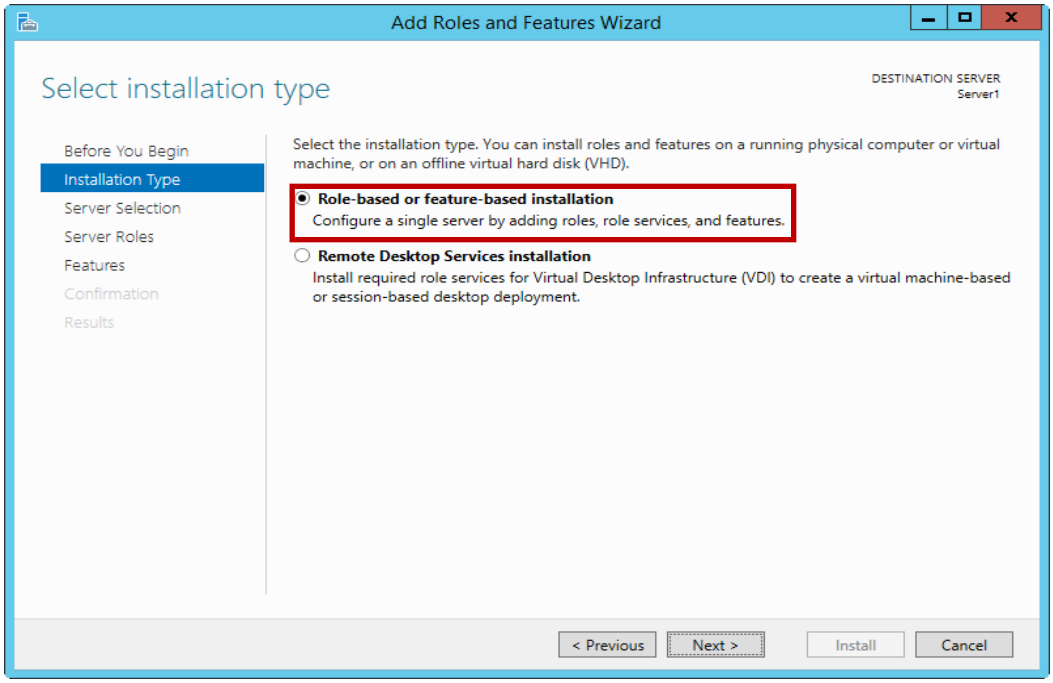
5.2.3 Installation Internet Information Services (IIS)

The following steps show how to install Internet Information Services (IIS) on the server.

Table 5-4

No.	Action
1.	Open the Server Manager of the WinCC server (server 1).
2.	In the “Server Manager” in “Manage” you click on “Add Roles and Features”.  Roles and Features (Services) must be started manually when you restart the computer .
3.	Select “Role-based or feature-based installation” as the installation type 

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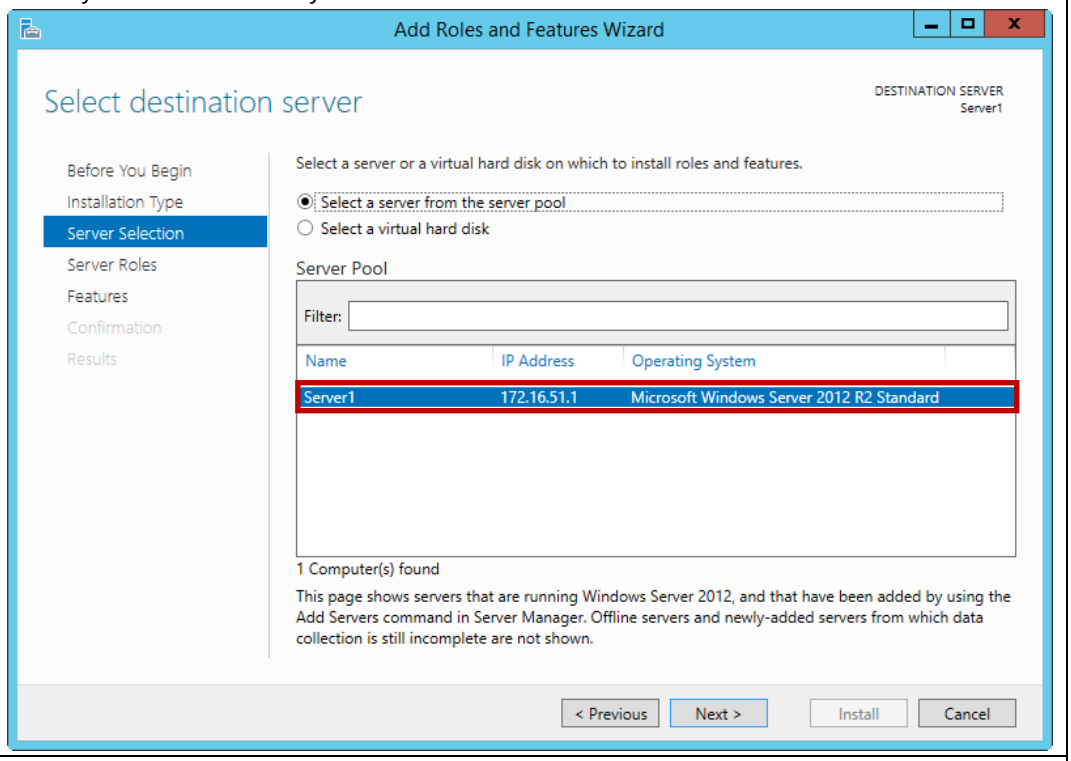
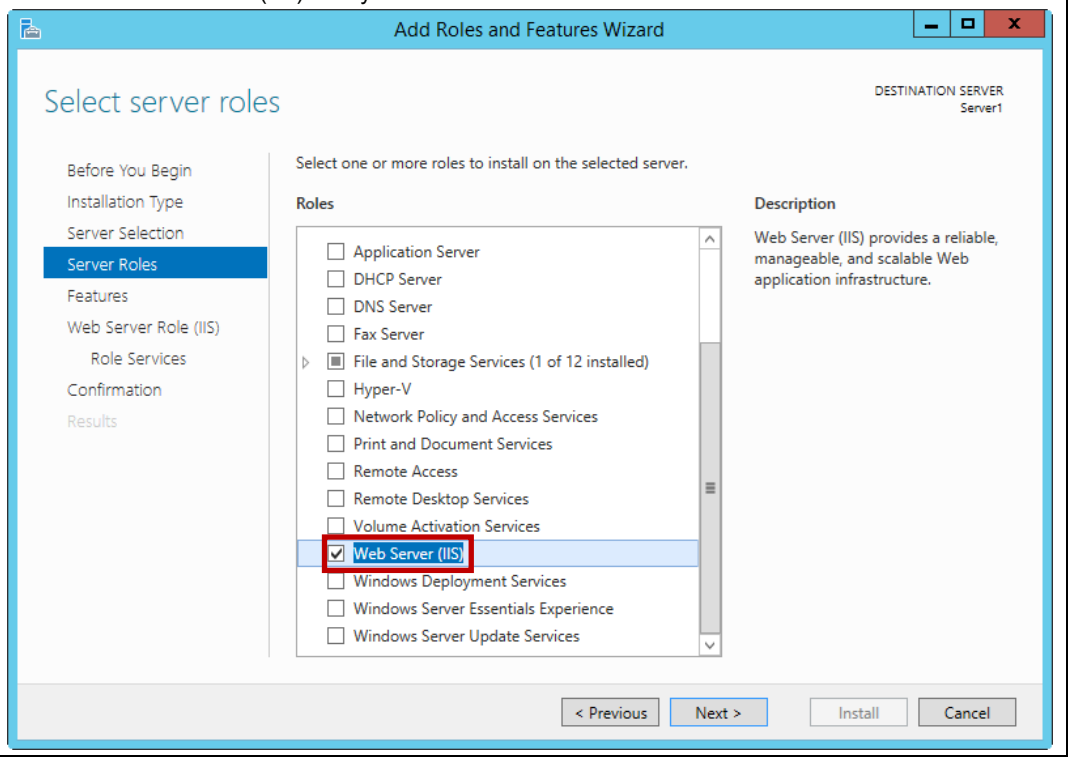
No.	Action
4.	Select your server on which you wish to install the Internet Information Services. 
5.	Select the “Web server (IIS)” entry under “Server Roles”. 

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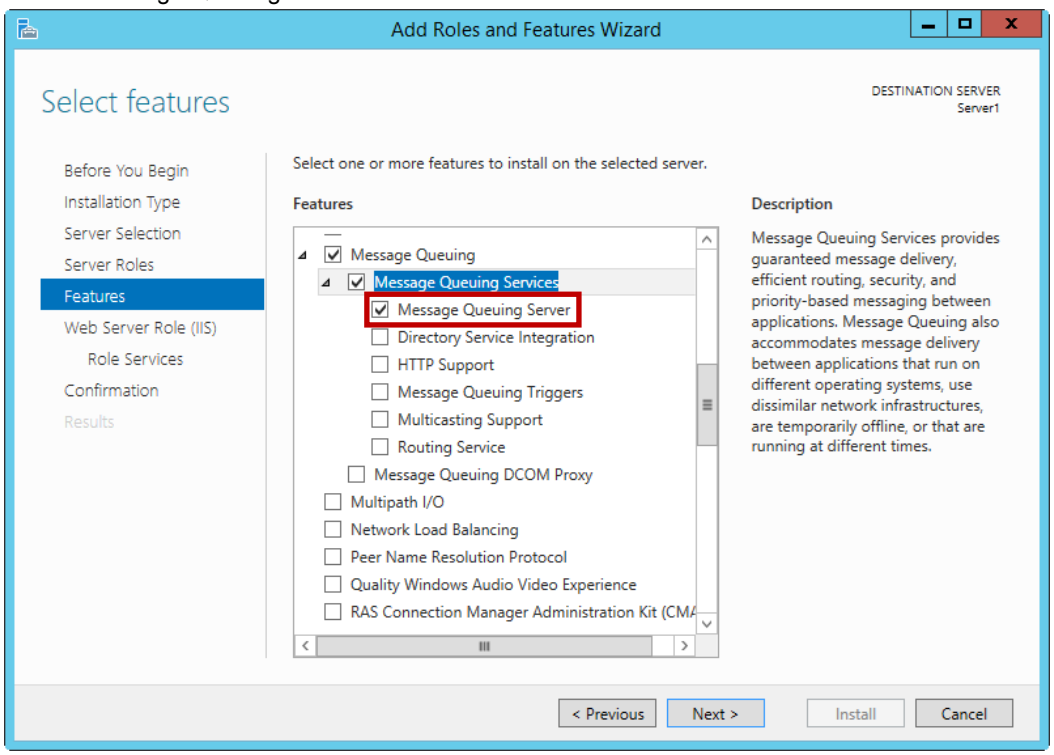
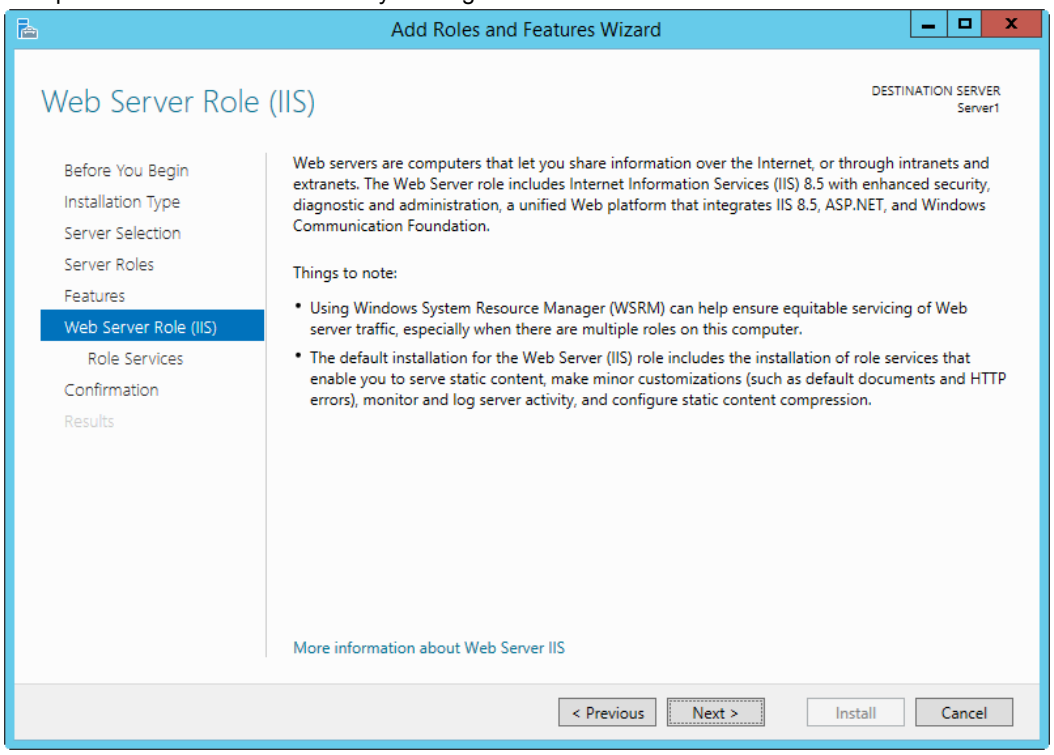
No.	Action
6.	Select “Message Queuing Server” in “Features”. 
7.	Complete and close the selection by clicking on the “Next” button. 

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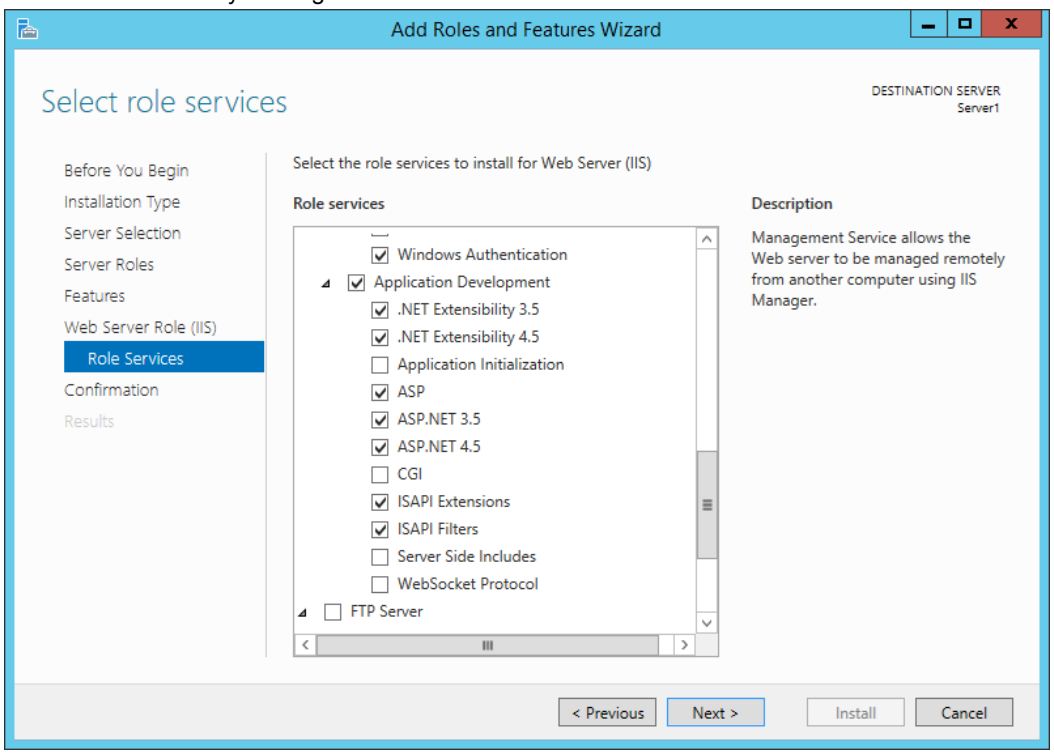
No.	Action
8.	In “Role Services” you select the following role services for installation. WWW services > Common HTTP features - standard document - static content World Wide Web Services > Security: - Request Filtering - Basic Authentication - Windows Authentication World Wide Web Services > Application Development Features: - .NET Extensibility 3.5 and 4.5 - ASP - ASP.NET 3.5 and 4.5 - ISAPI Extensions - ISAPI Filters Web Management Tools: - IIS Management Service - IIS Management Console - IIS Management Scripts and Tools - IIS Metabase and IIS 6 Configuration Compatibility - IIS 6 WMI Compatibility Close the selection by clicking on the “Next” button. 

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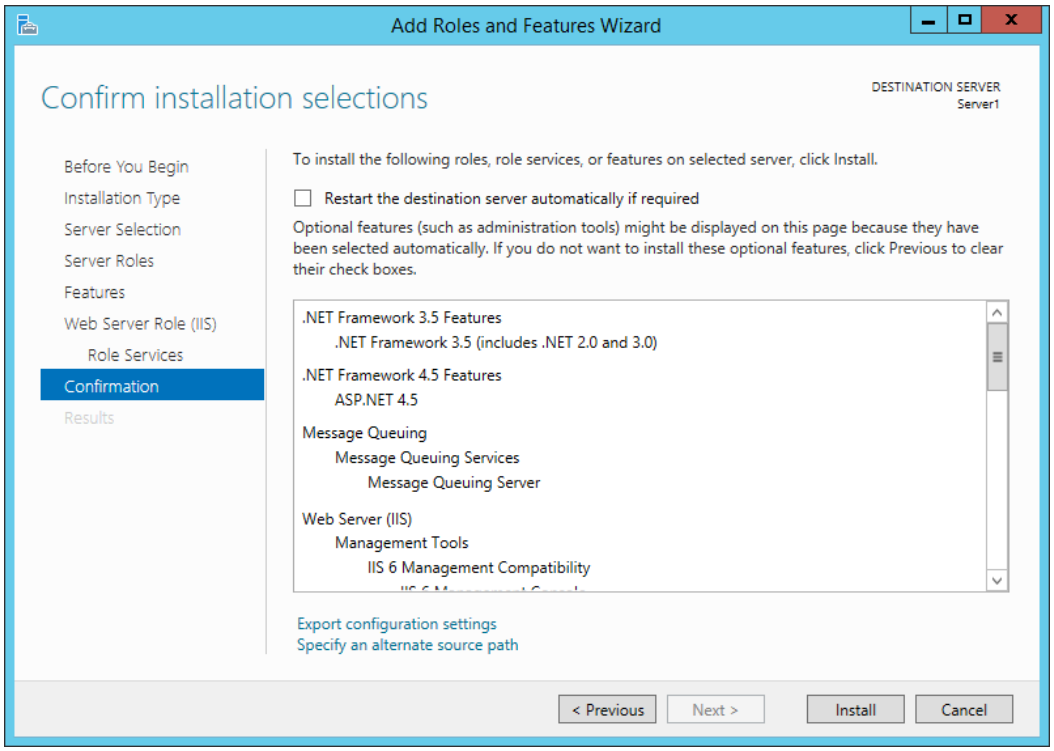
No.	Action
9.	Install the selected role services and close the wizard.  In case your computer can not download the necessary files from Windows , specify the alternate path to the installation CD of Windows Server 2012

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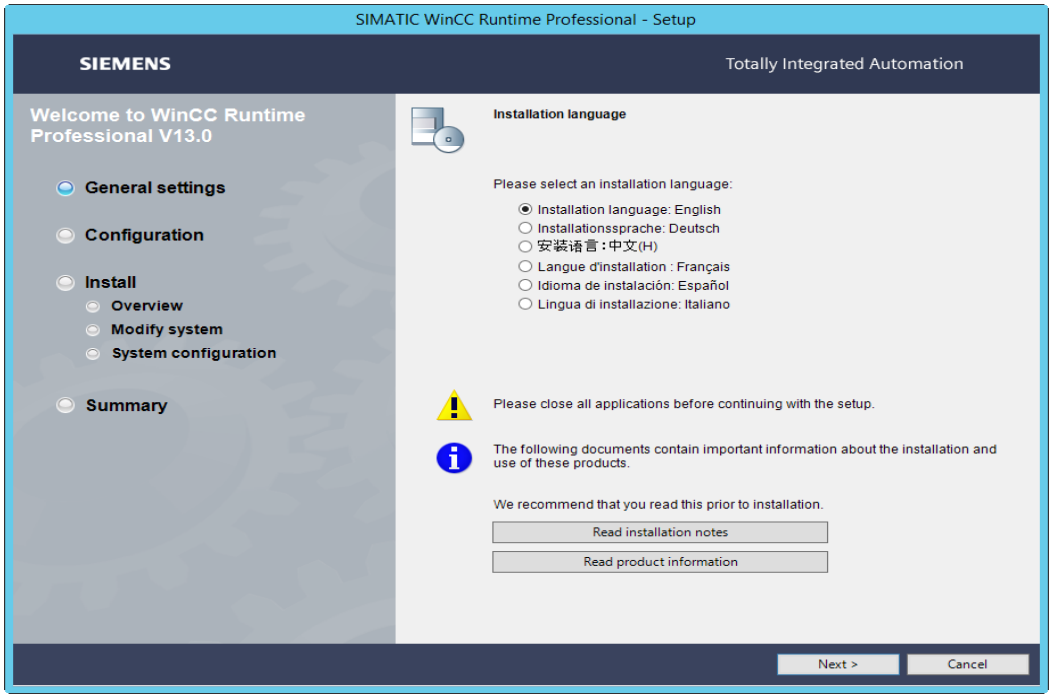
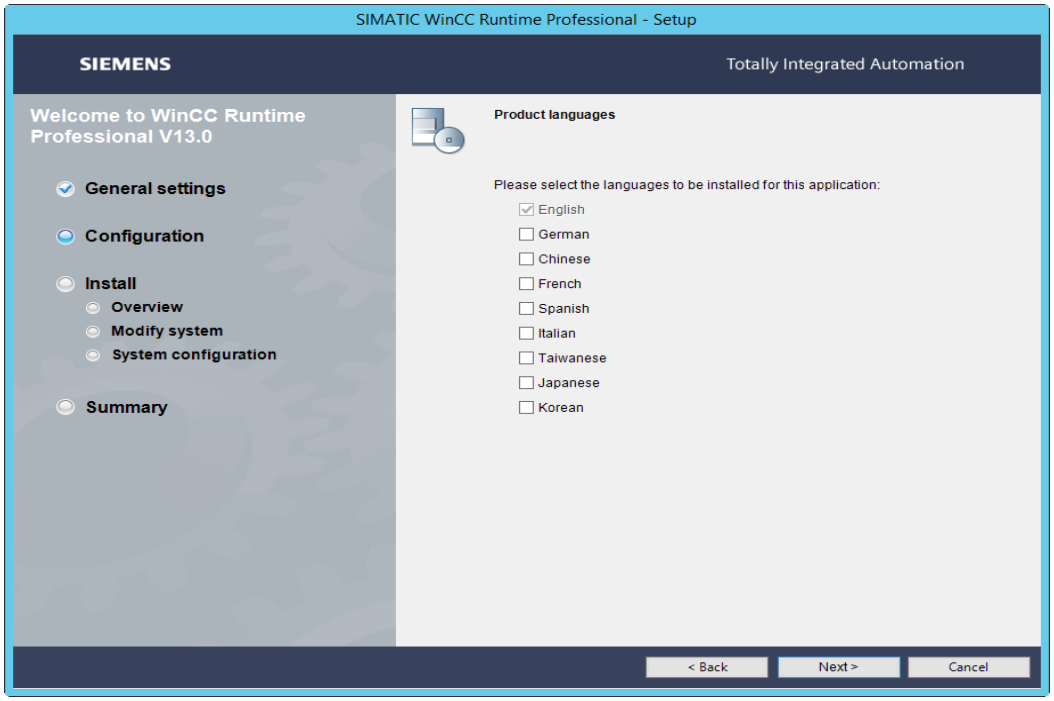
5.2.4 Installing WinCC Runtime Professional and WebNavigator

The following steps show how to install WinCC Professional and WebNavigator on the WinCC server (server 1).

Table 5-5

No.	Action
1.	Start the setup program of the SIMATIC WinCC Runtime Professional V13.0 software with a double click on the “Start” application of the installation medium.
2.	Choose your preferred installation language. 
3.	Select the languages you wish to install for WinCC. 

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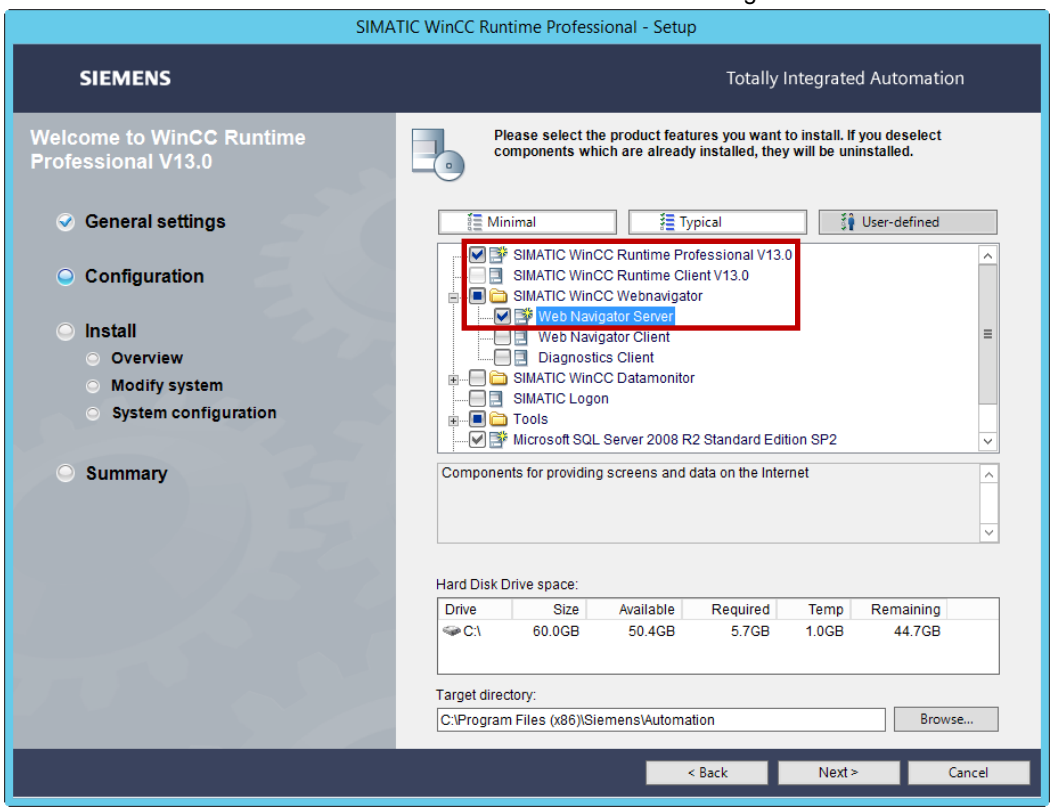
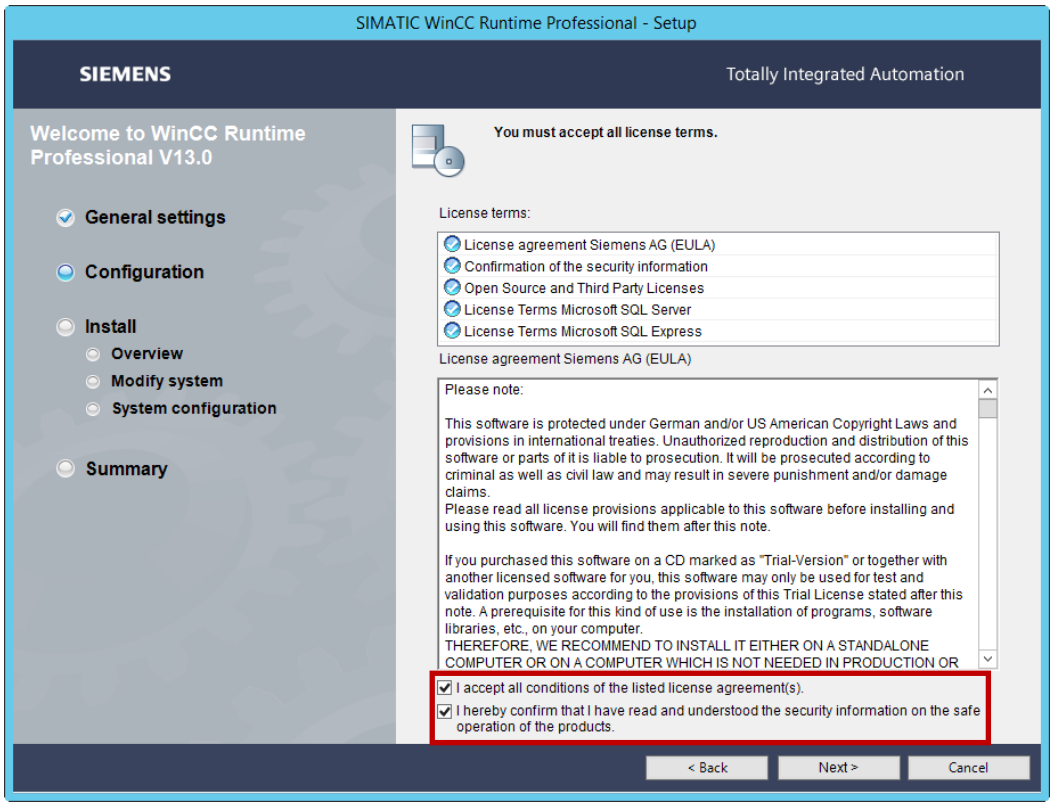
No.	Action
4.	Select “SIMATIC WinCC Runtime Professional V13.0” and “Web Navigator Server”. 
5.	Read the terms of the license agreements and the security information and confirm. 

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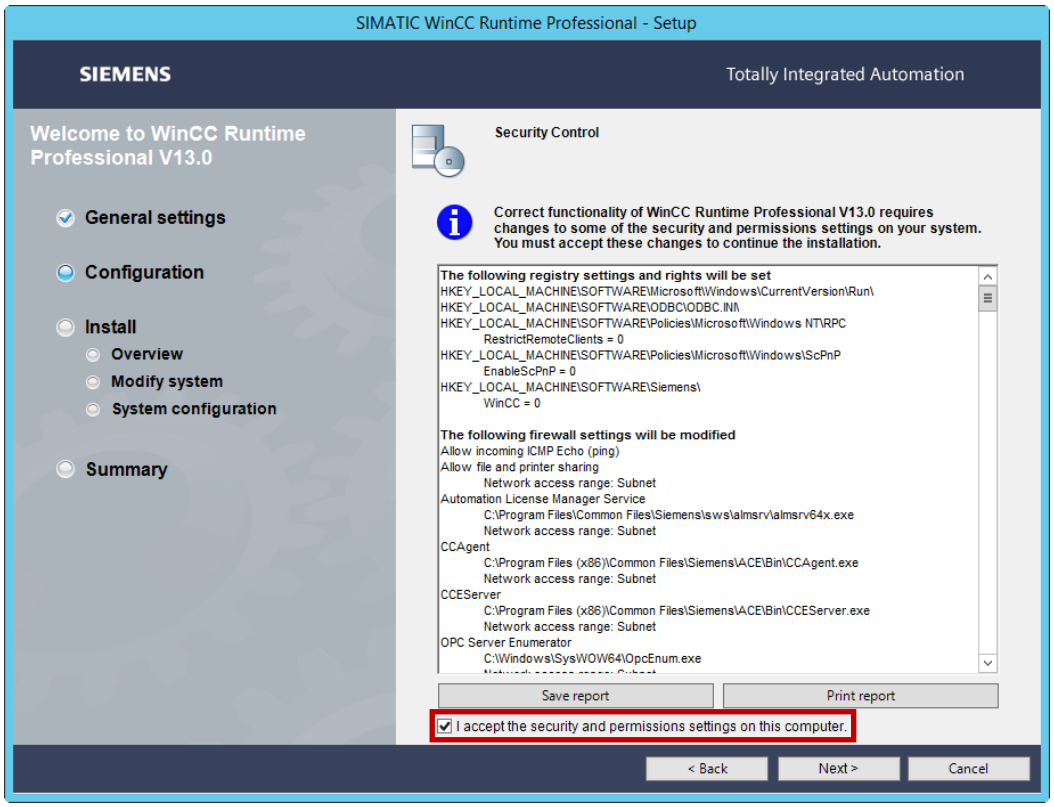
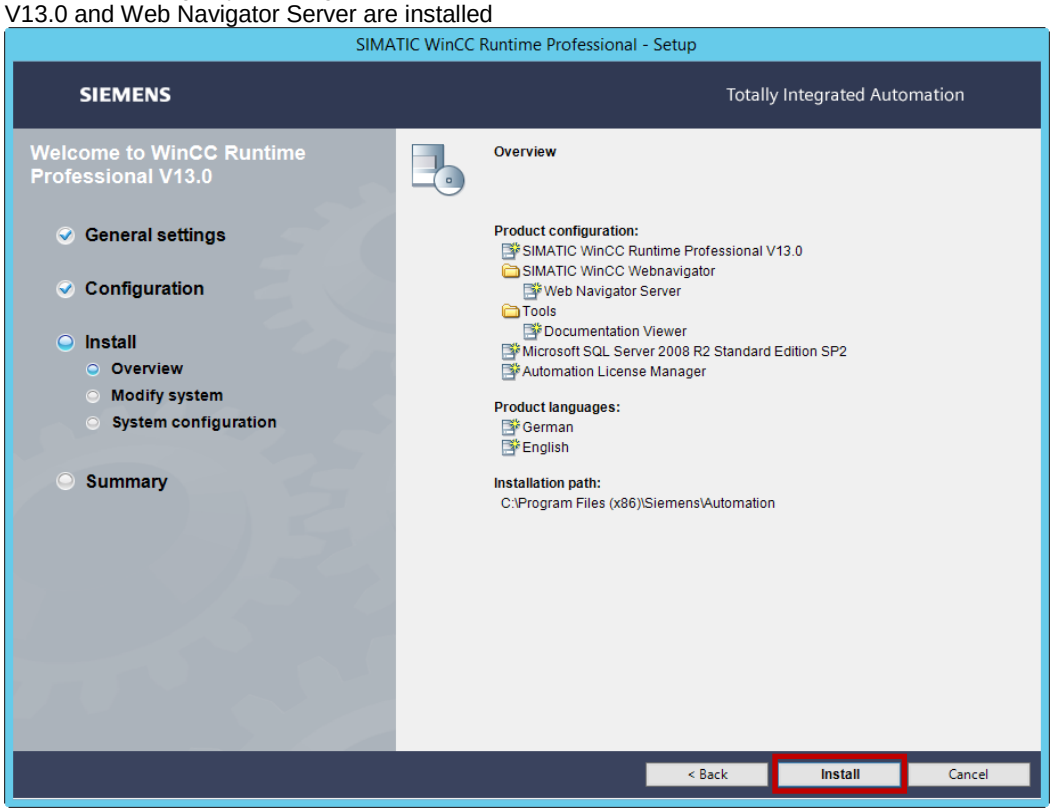
No.	Action
6.	Accept the security settings. 
7.	Then acknowledge by pressing the “Install” button. Then SIMATIC WinCC Runtime Professional V13.0 and Web Navigator Server are installed  .

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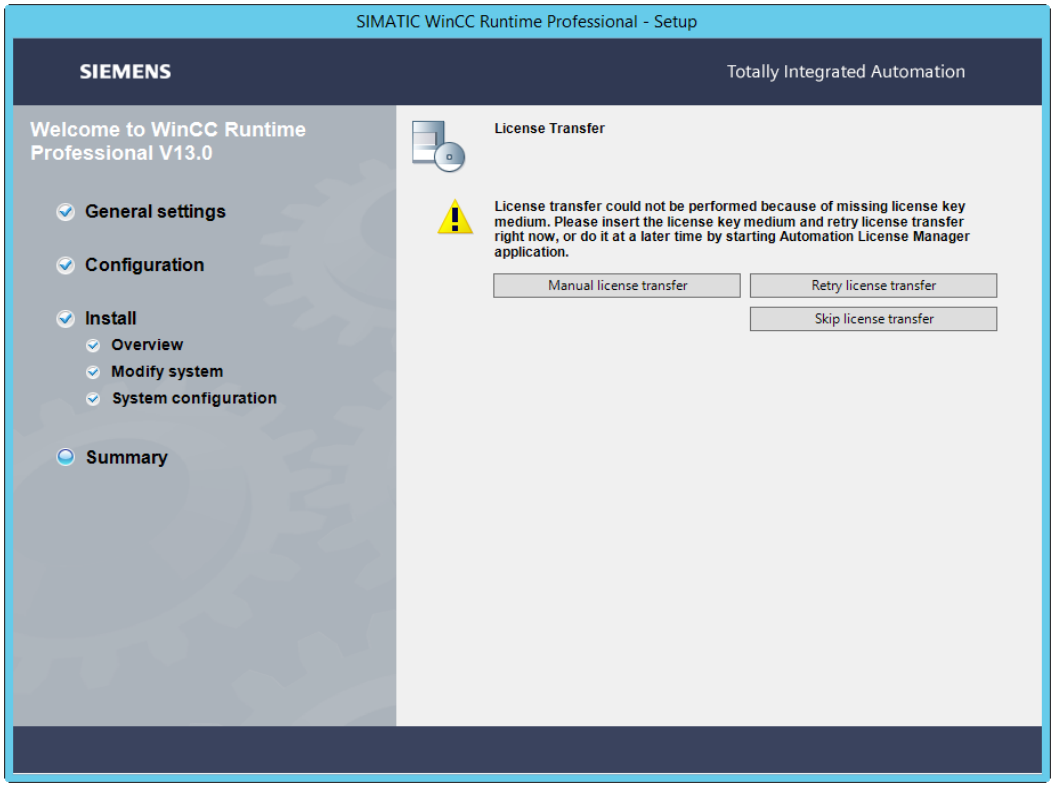
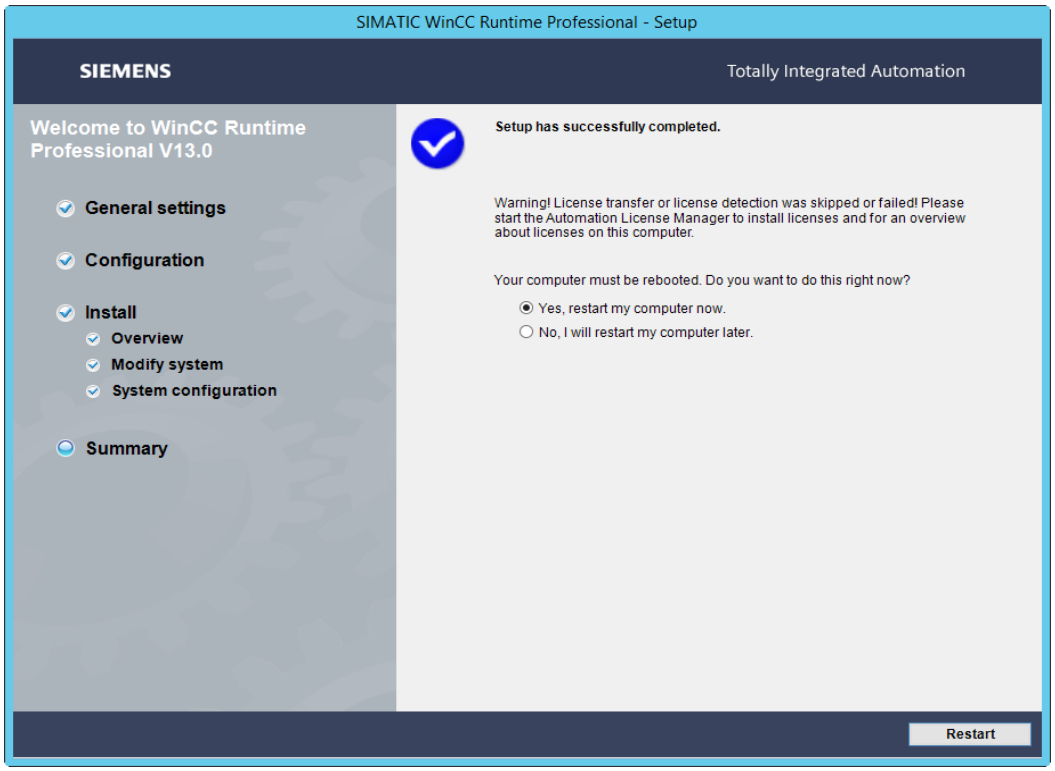
No.	Action
8.	Transfer the license for SIMATIC WinCC Runtime Professional V13.0 from the license data carrier. 
9.	Upon successful completion of the setup, you will be prompted to restart the PC. Follow this instruction and confirm with the “Restart” button. 

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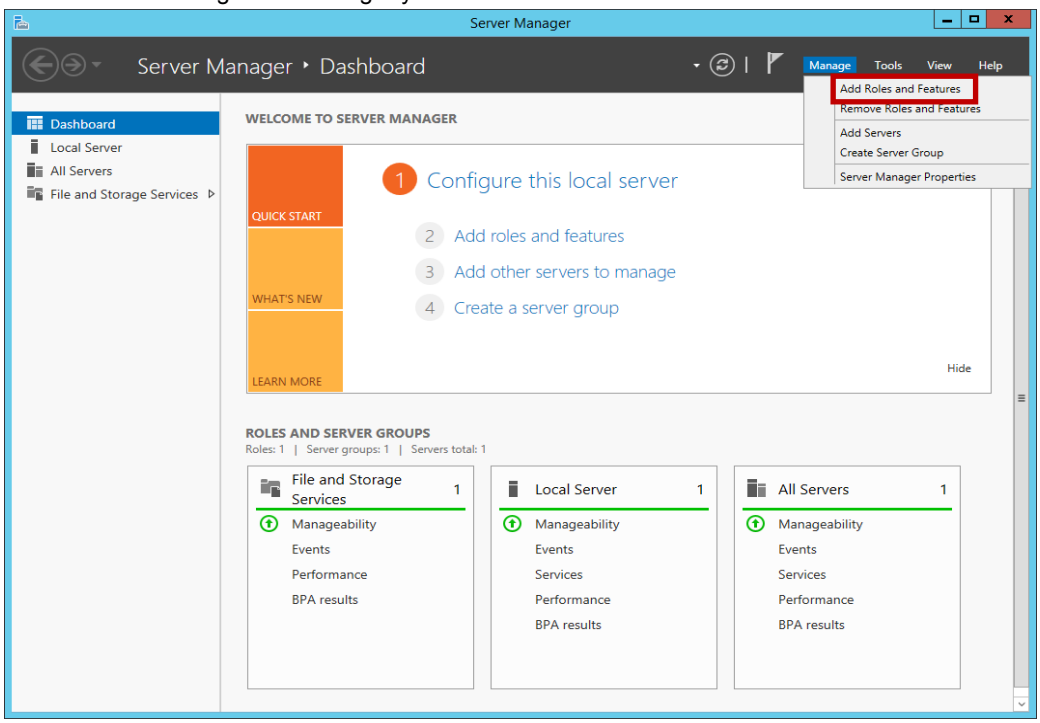
5.2.5 Installing remote desktop services

The following steps describe the installation of the remote desktop session host (Server 2).

Note Install the remote desktop services on your computer before installing WinCC WebNavigator Client. Otherwise, the WinCC WebNavigator Client may not run correctly in a multi-user environment.

Table 5-6

No.	Action
1.	Open the Server Manager.
2.	In the “Server Manager” in “Manage” you click on “Add Roles and Features”.  Roles and Features (Services) must be started manually when you restart the computer .

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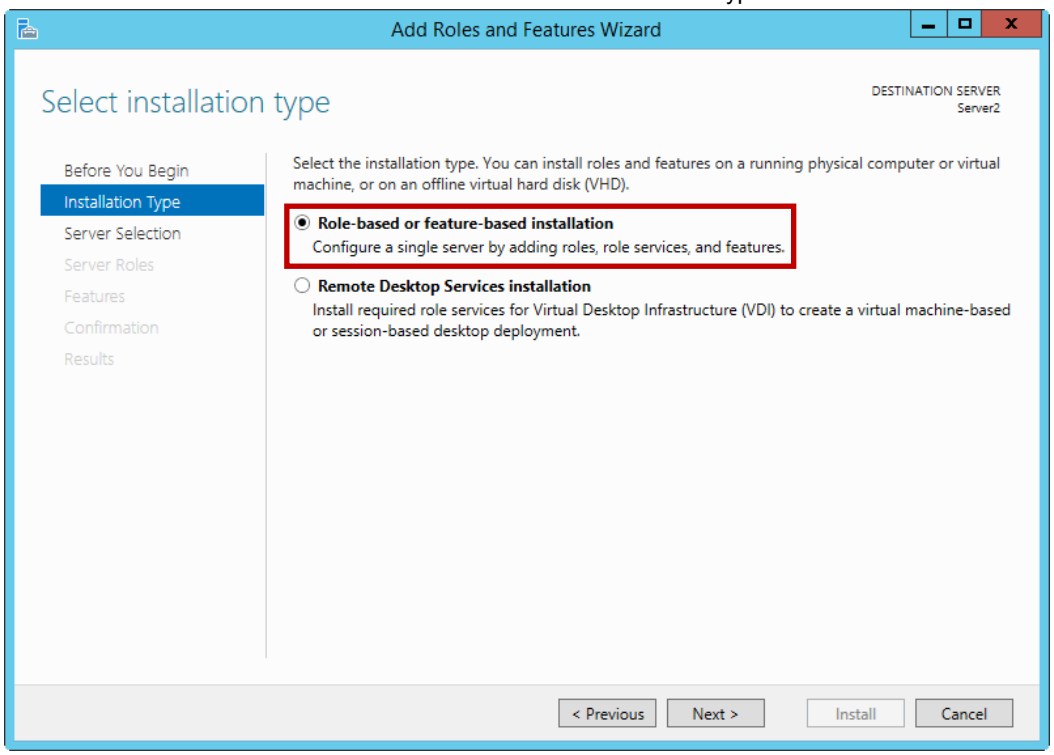
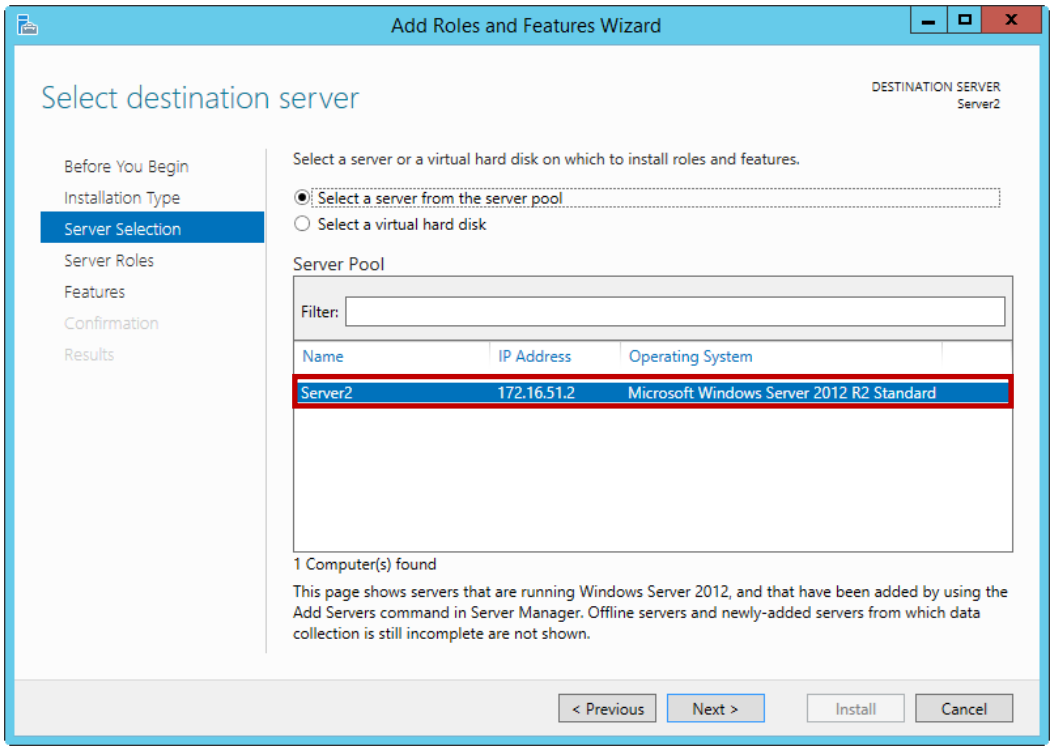
No.	Action
3.	Select “Role-based or feature-based installation” as the installation type 
4.	Select your server on which you wish to install the Remote desktop services. 

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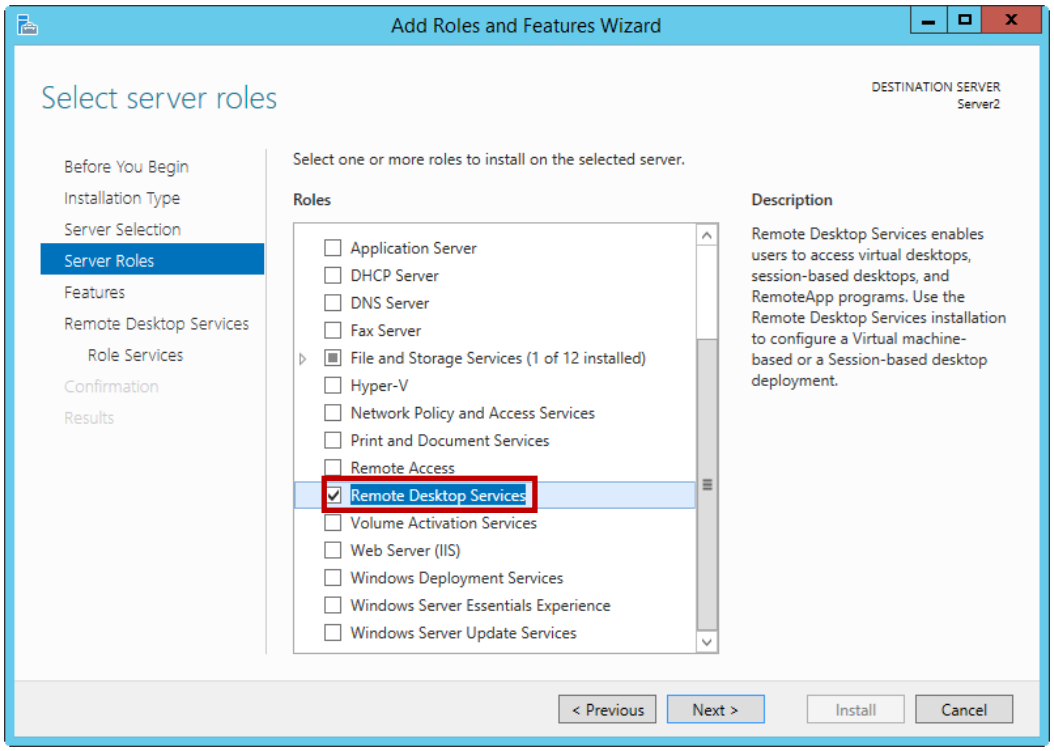
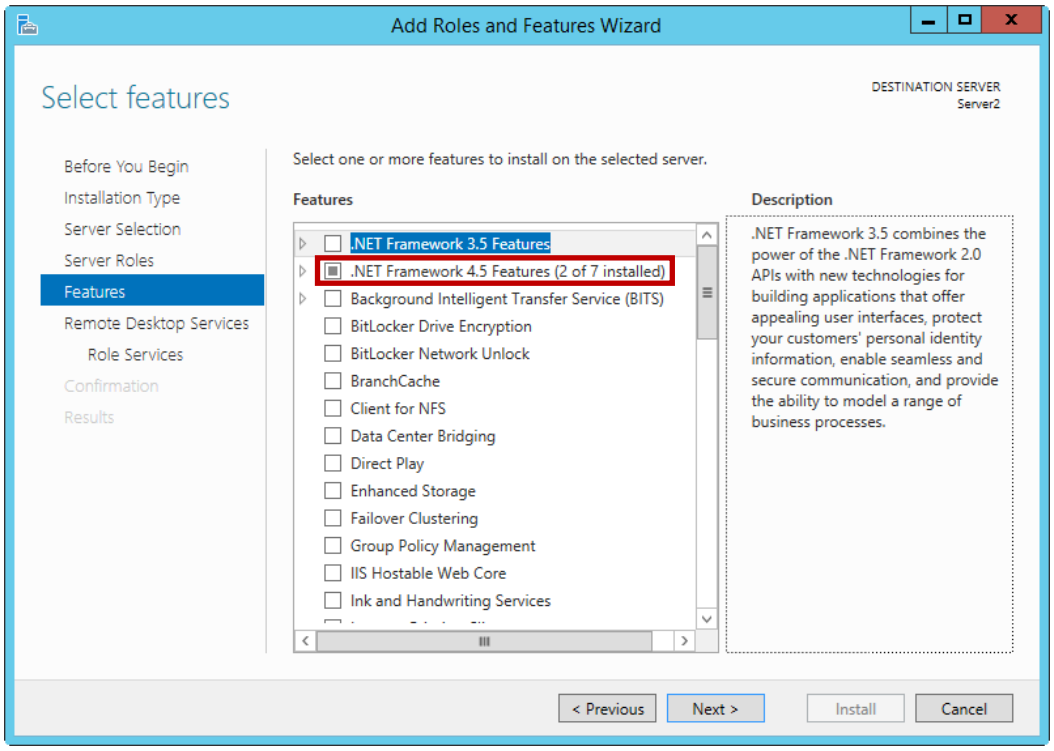
No.	Action
5.	Select the role “Remote Desktop Services”. 
6.	The NET Framework 4.5 is then installed as well. 

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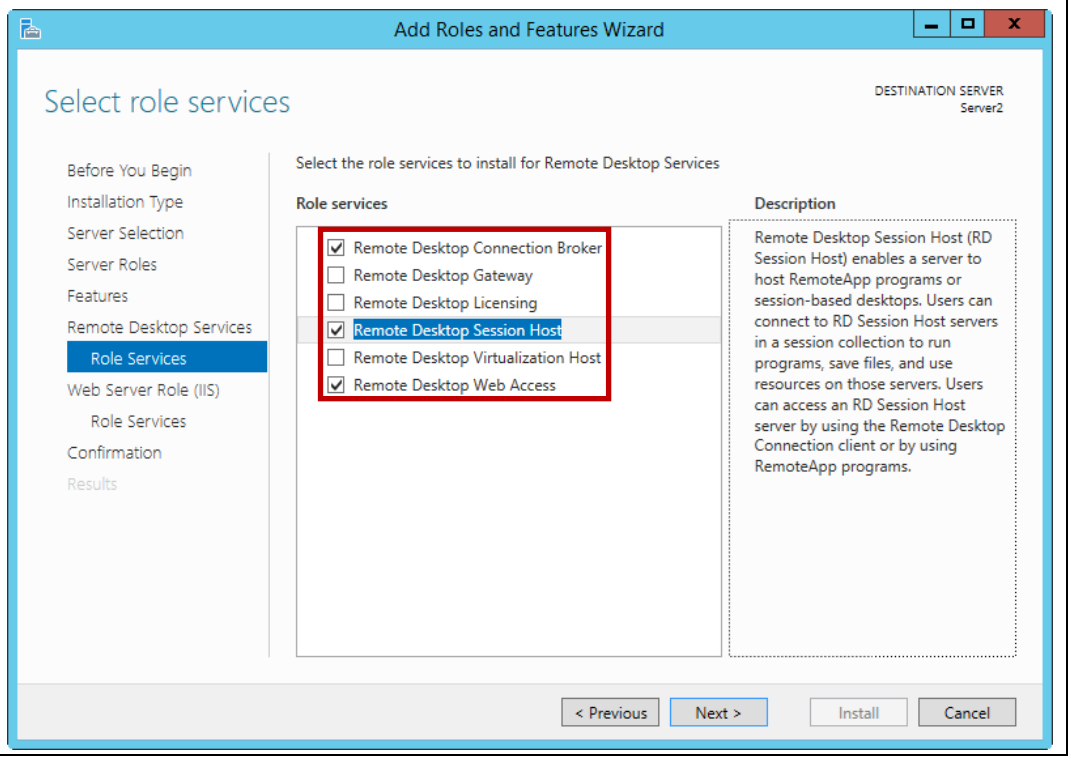
No.	Action
7.	Select the following role services: - Remote Desktop Connection Broker - Remote Desktop WebAccess - Remote Desktop Session Host 

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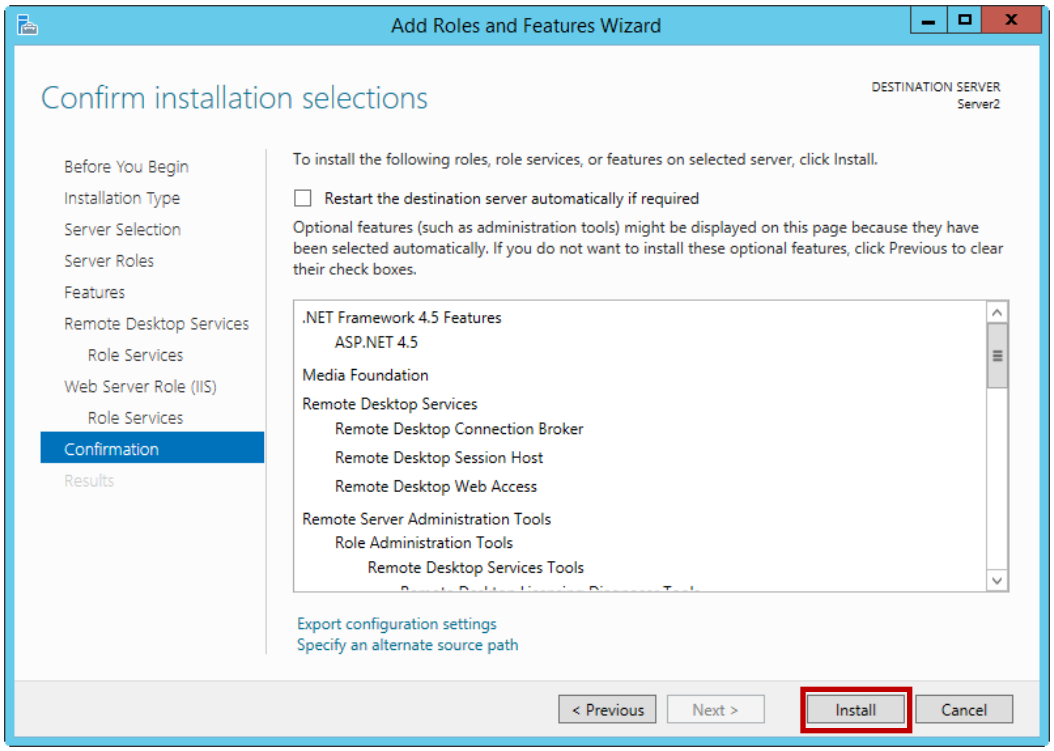
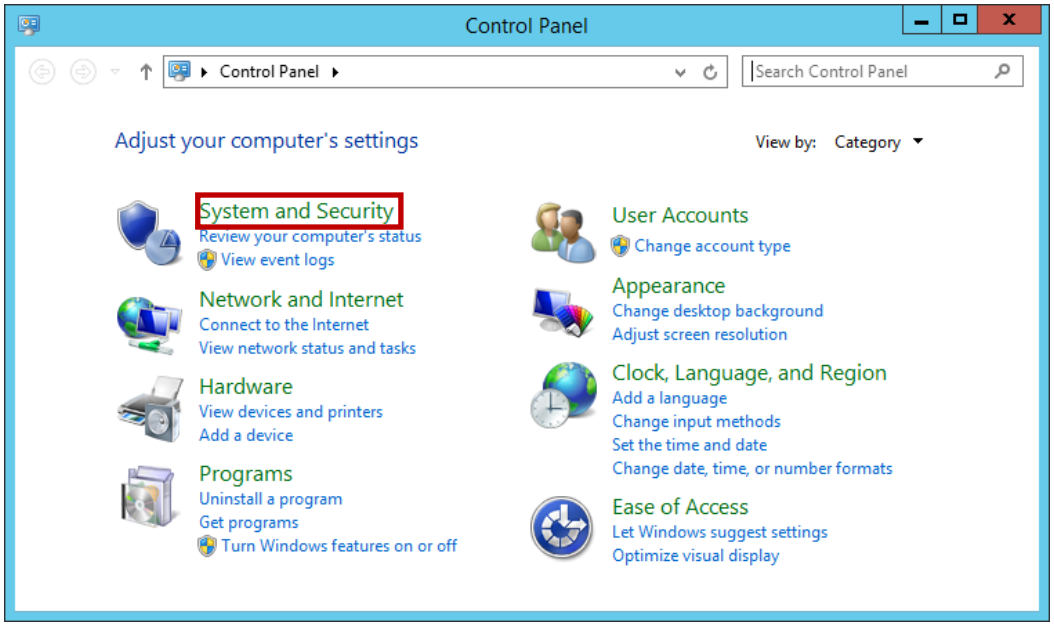
No.	Action
8.	Click the “Install” button.  In case your computer can not download the necessary files from Windows , specify the alternate path to the installation CD of Windows Server 2012
9	Open the “Control Panel”.
10	Open “System and Security”. 

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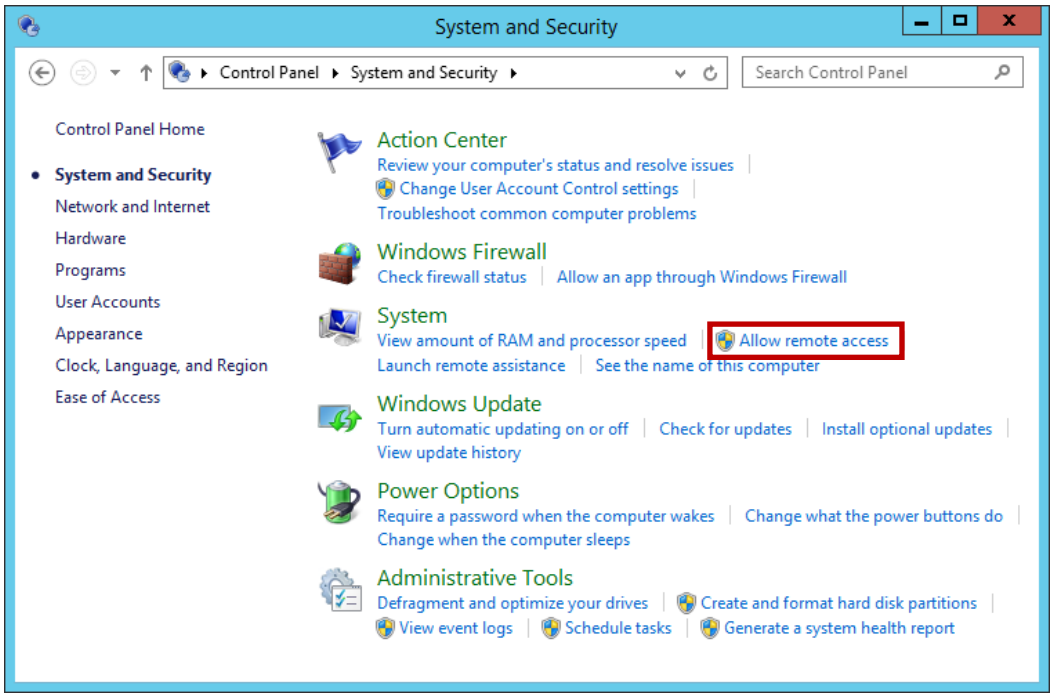
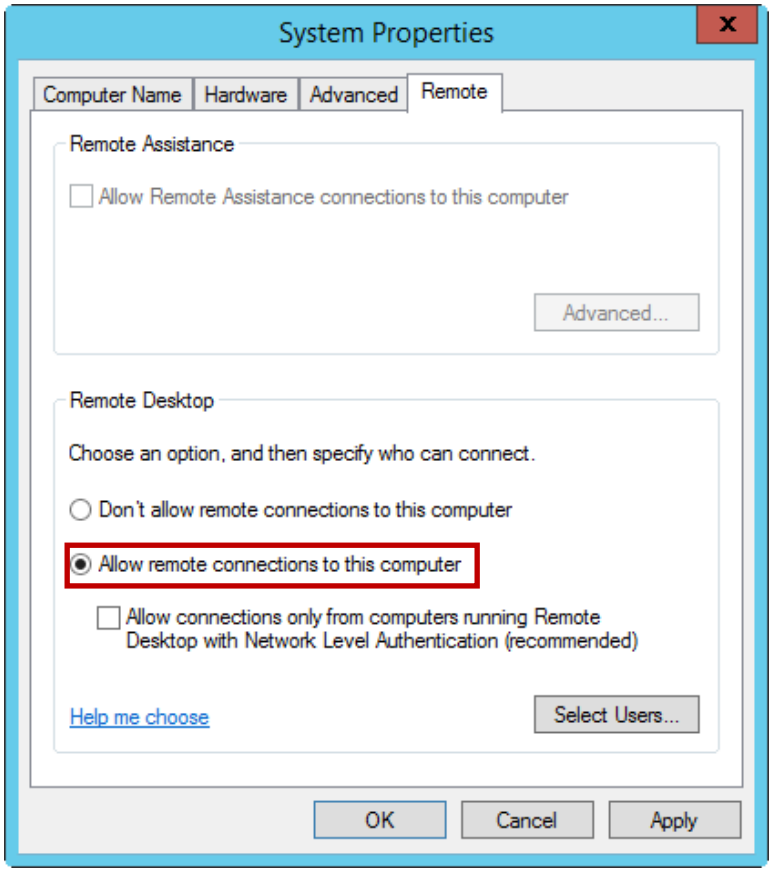
No.	Action
11	Open “Allow remote access”. 
13	Select “Allow remote connection to this computer” so clients can connect to the server. 

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Note

Microsoft permits the provisional setup of a remote desktop session host without installing a license server for the duration of 120 days. Then the installation of a license server is required, on which Client Access Licenses (CAL) are required.

https://www.microsoft.com/en-us/licensing/product-licensing/client-access-license.aspx

Windows Server 2012 CALs are available in two versions:

- User CAL: A user can access the server software from any device by means of a user CAL.
- Device CAL: Any user can access the server software from the licensed device by means of a device CAL.

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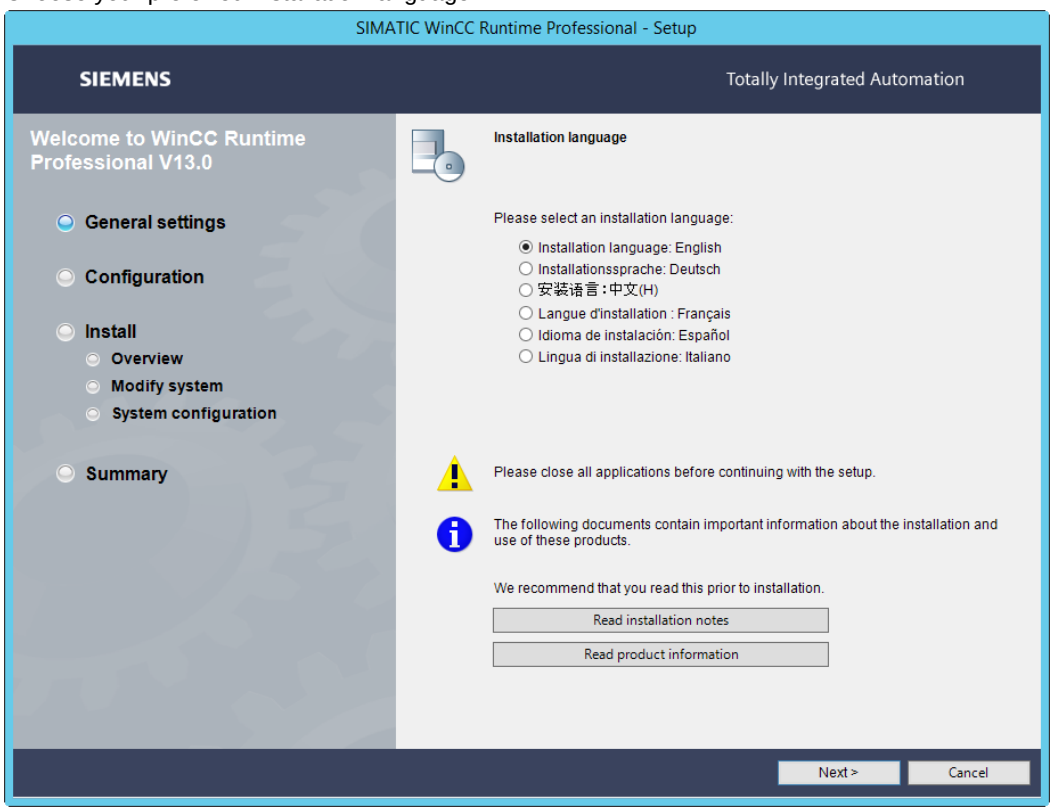
5.2.6 Installing Web Navigator Client

The following steps describe the installation of the Web Navigator Client on the remote desktop session host (server 2).

Table 5-7

No.	Action
1.	Start the setup program of the SIMATIC WinCC Runtime Professional V13.0 software with a double click on the “Start” application of the installation medium.
2.	Choose your preferred installation language. 

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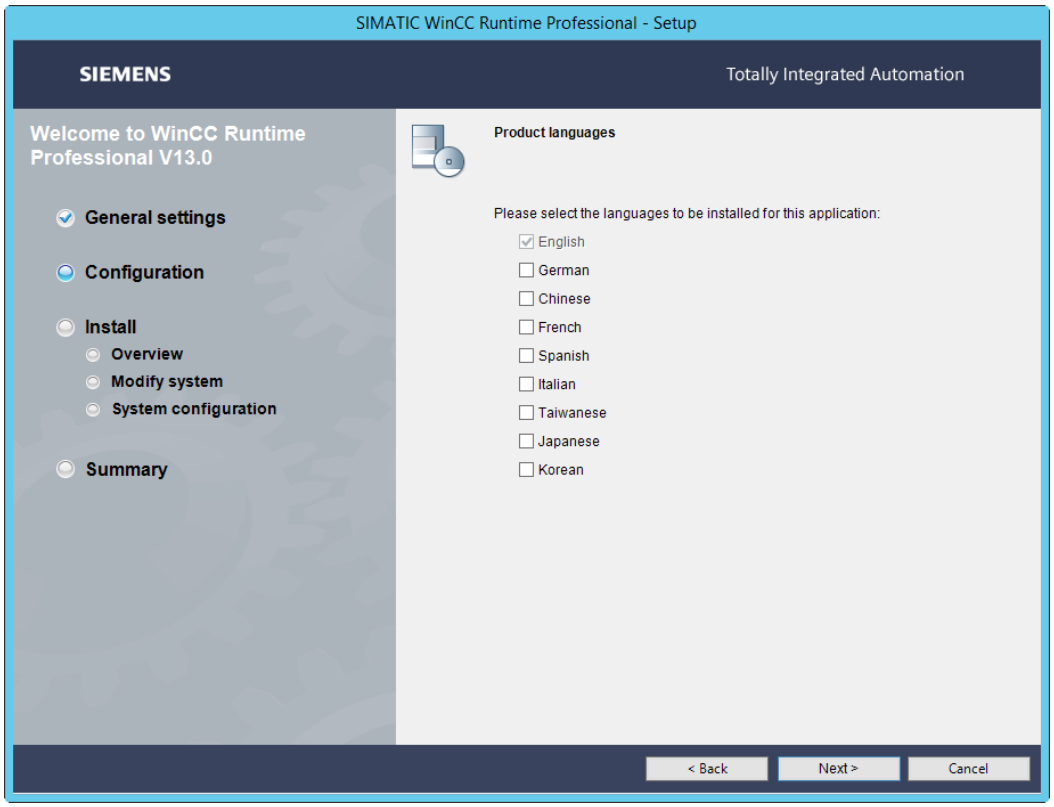
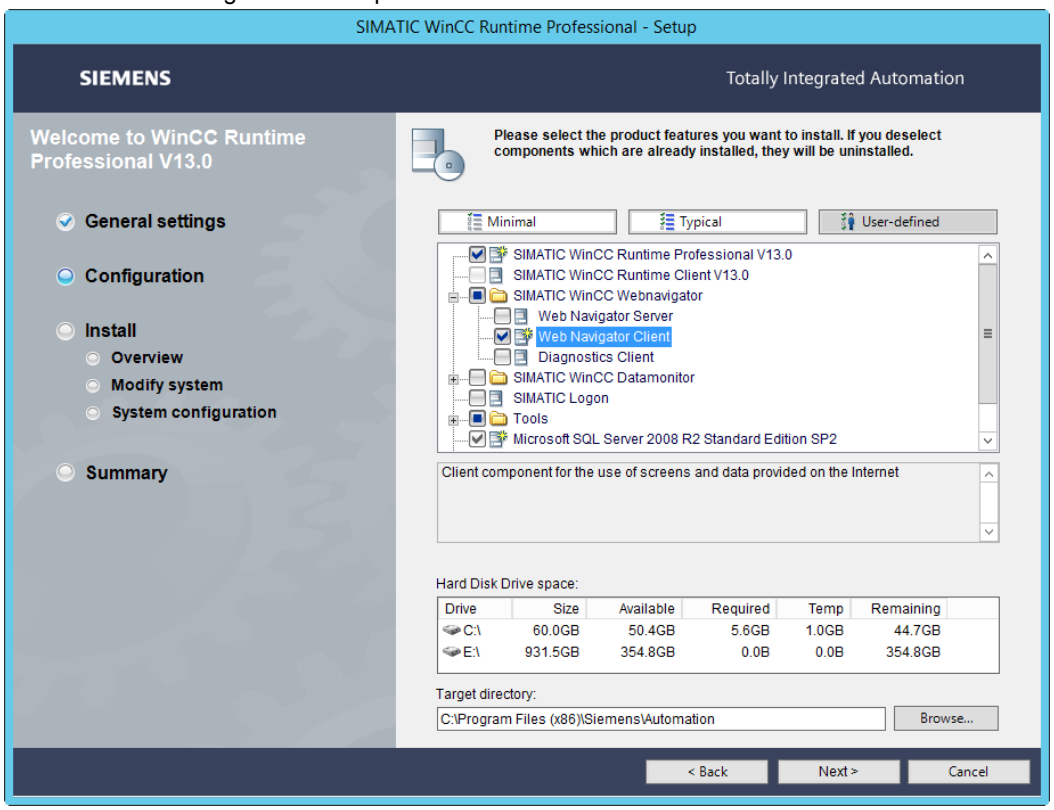
No.	Action
3.	Select the languages you wish to install for WinCC. 
4.	Select the “WebNavigator Client” option for the installation. 

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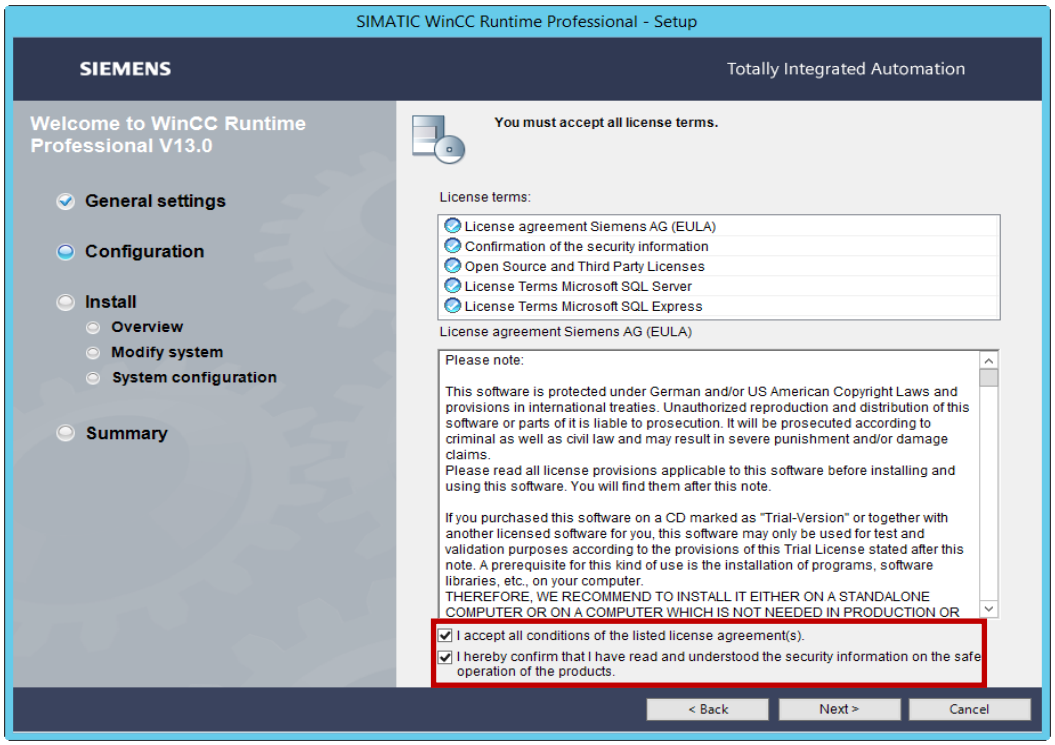
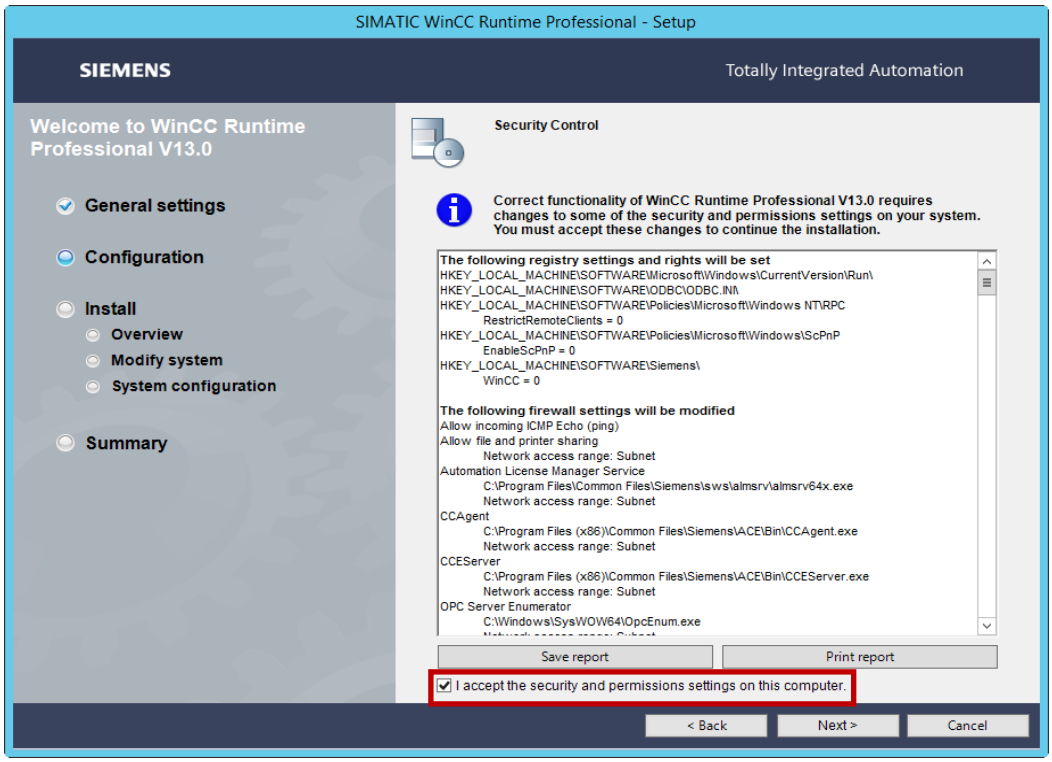
No.	Action
5.	Read the terms of the license agreements and the security information and confirm. 
6.	Accept the security settings. 
7	Then acknowledge by pressing the “Install” button. WebNavigatorClient will then be installed.

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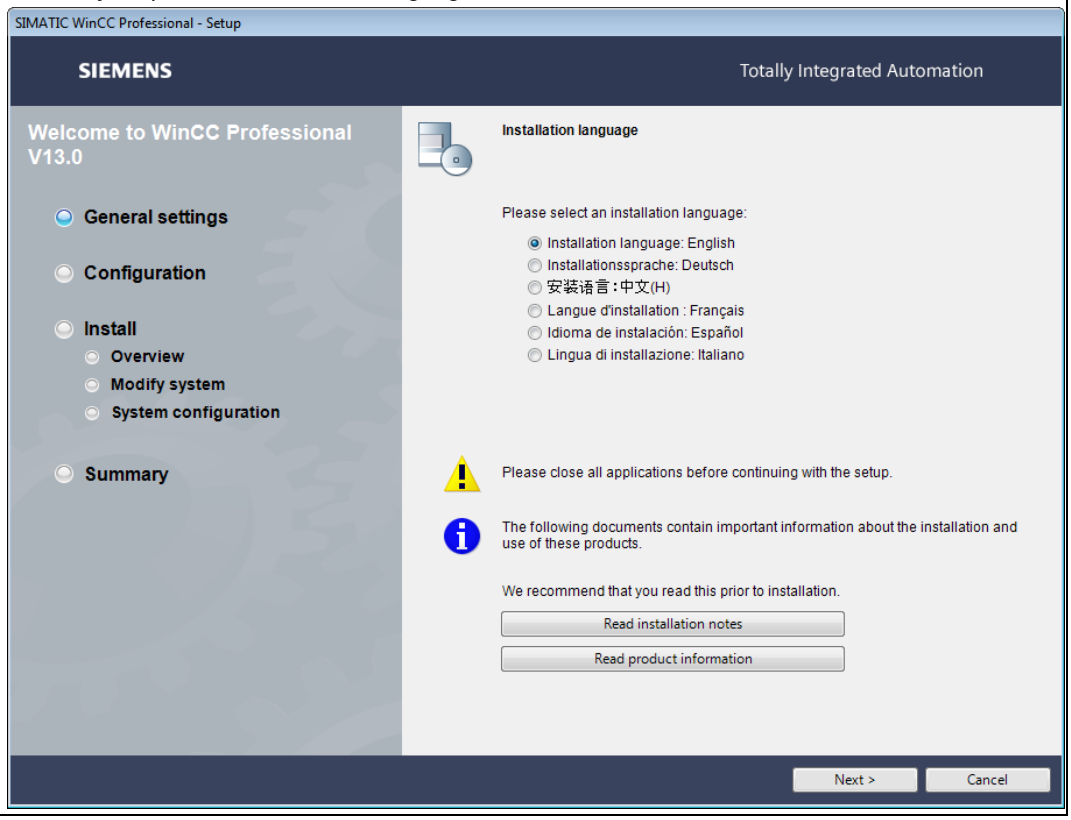
5.2.7 Programming device settings

To transmit the example project to the WinCC server, the following software packages are needed on the programming device:

- SIMATIC STEP 7 Professional V13 and
- SIMATIC WinCC Professional V13

Software SIMATIC WinCC Advanced V13 can be updated to SIMATIC WinCC Professional V13.

Table 5-8

No.	Action
1.	Start the setup program of the SIMATIC WinCC Runtime Professional V13.0 software with a double click on the file “SIMATIC_WinCC_Professional_V13.exe”.
2.	Choose your preferred installation language. 

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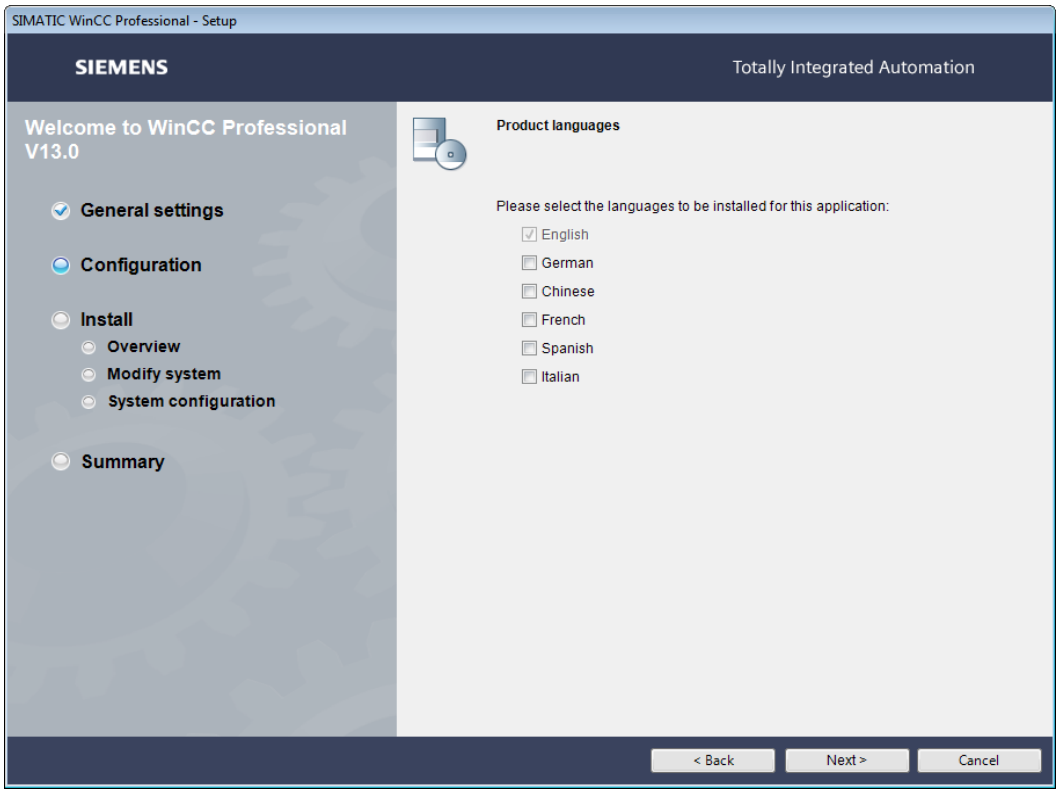
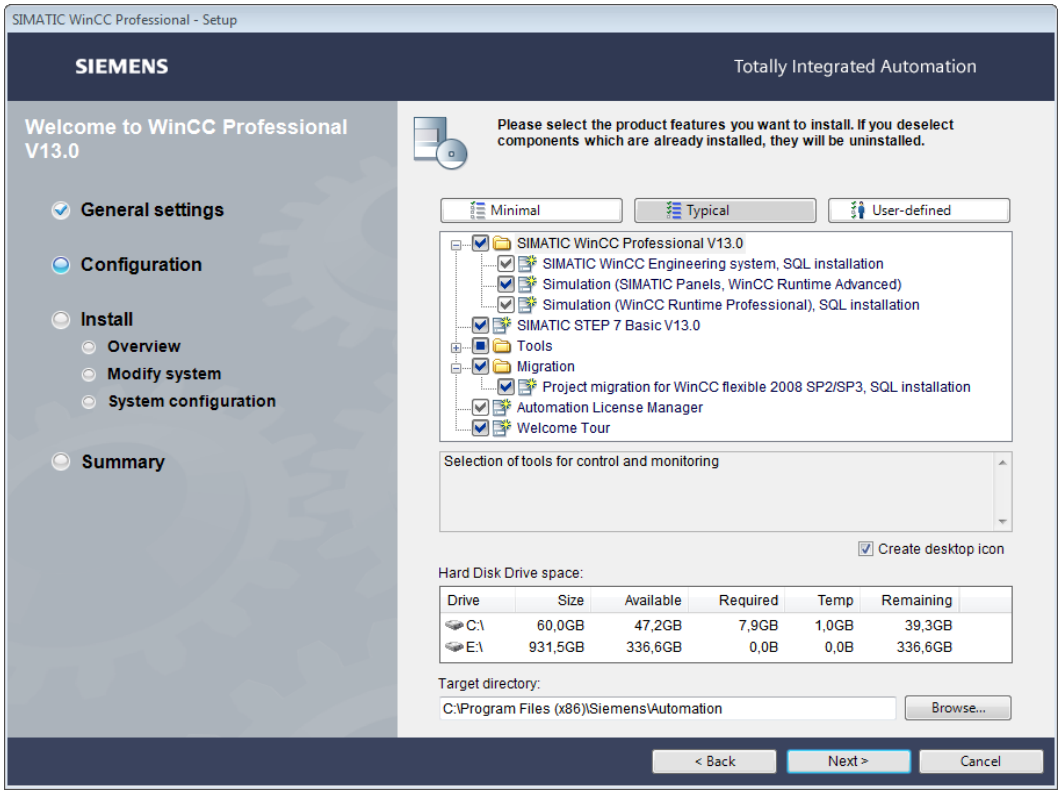
No.	Action
3.	Select the languages you wish to install for WinCC. 
4.	Select the product configuration you want or adopt the pre-selected settings. 

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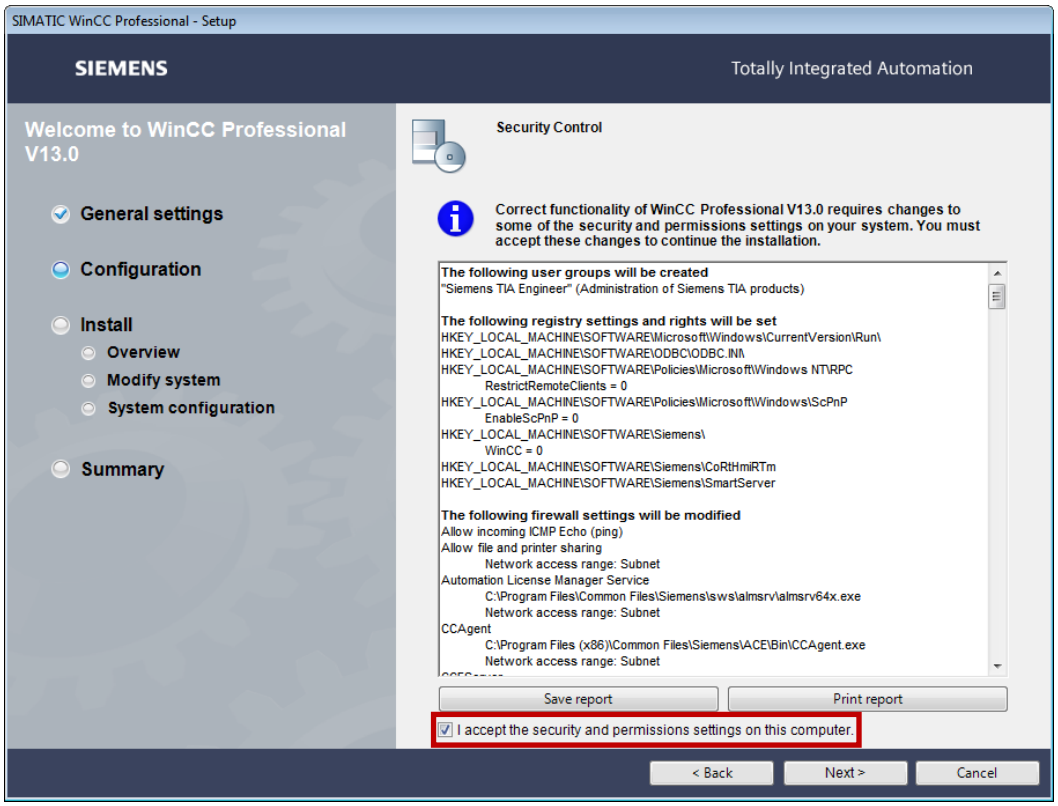
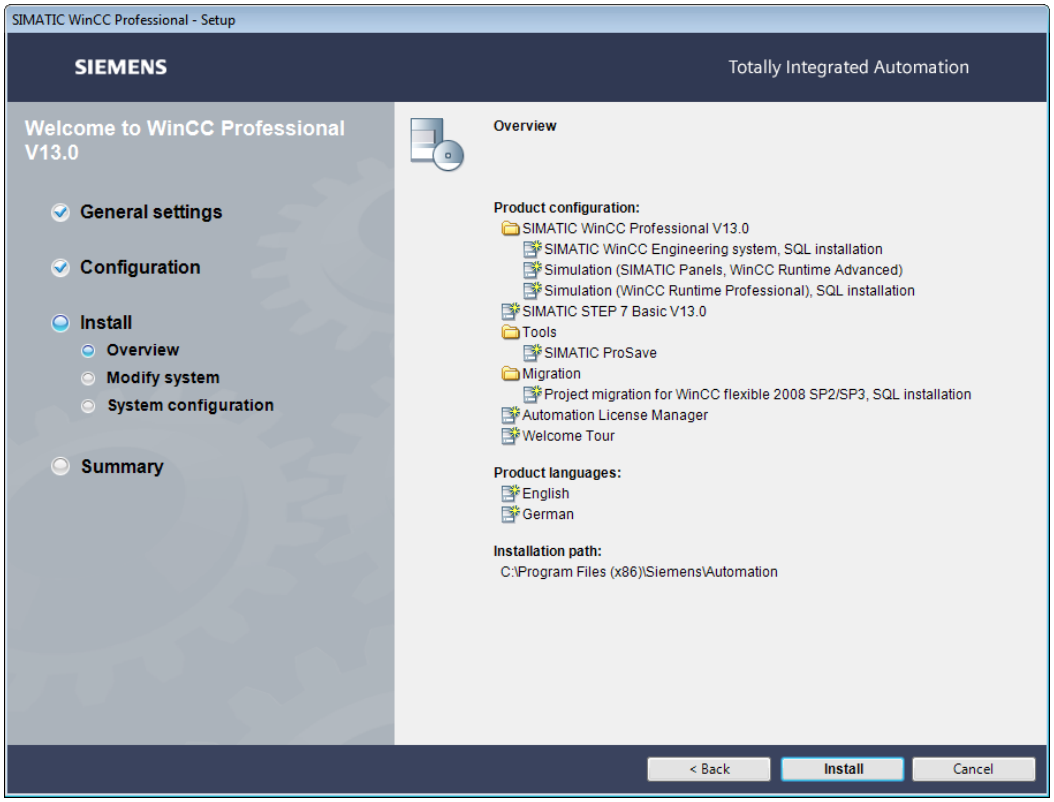
No.	Action
5.	Accept the security settings. 
6.	Then acknowledge by pressing the “Install” button. SIMATIC WinCC Professional V13 will then be installed. 

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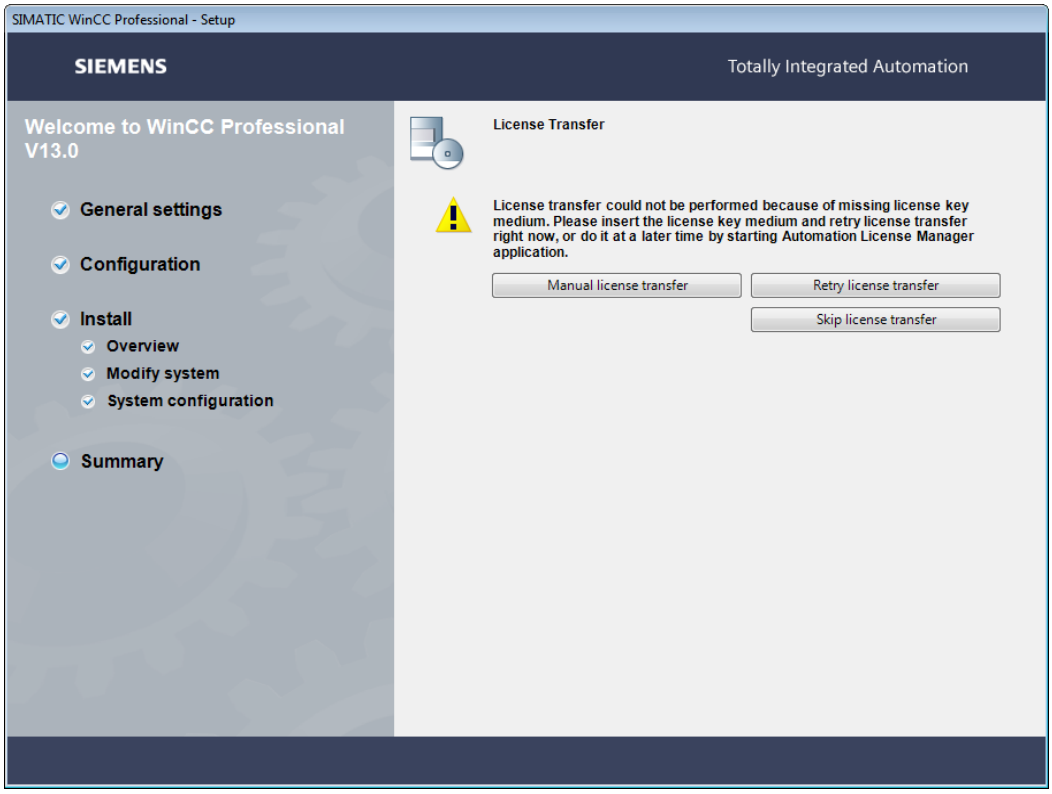
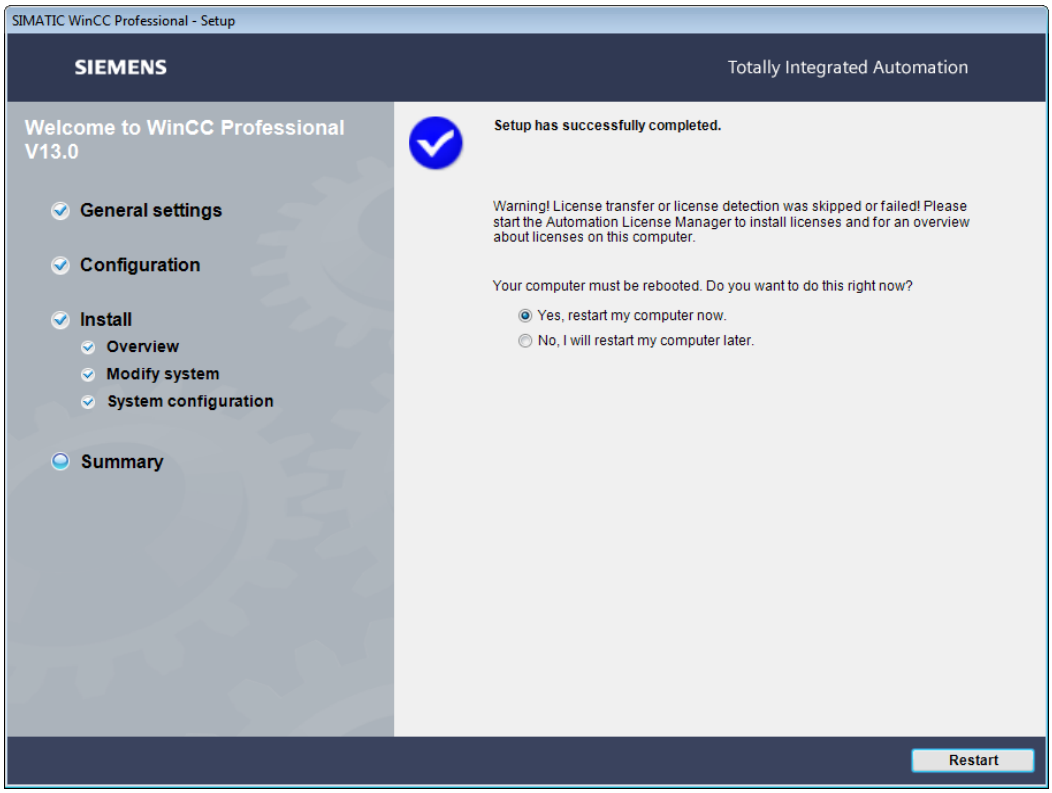
No.	Action
7.	In the next step you can transfer your license for SIMATIC WinCC Professional V13.0 from the license data carrier. 
8.	Upon successful completion of the setup, you will be prompted to restart the PC. Follow the instruction and restart the PC. 

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Adapting the Runtime project

The following steps describe the adaptation of the example project to the respective network environment. The adaptation is done on the programming device by means of the software SIMATIC WinCC Professional V13.0.

In the example project, various pre-settings have been made. They especially include:

- WinCC user management
- Web access settings of the CPU

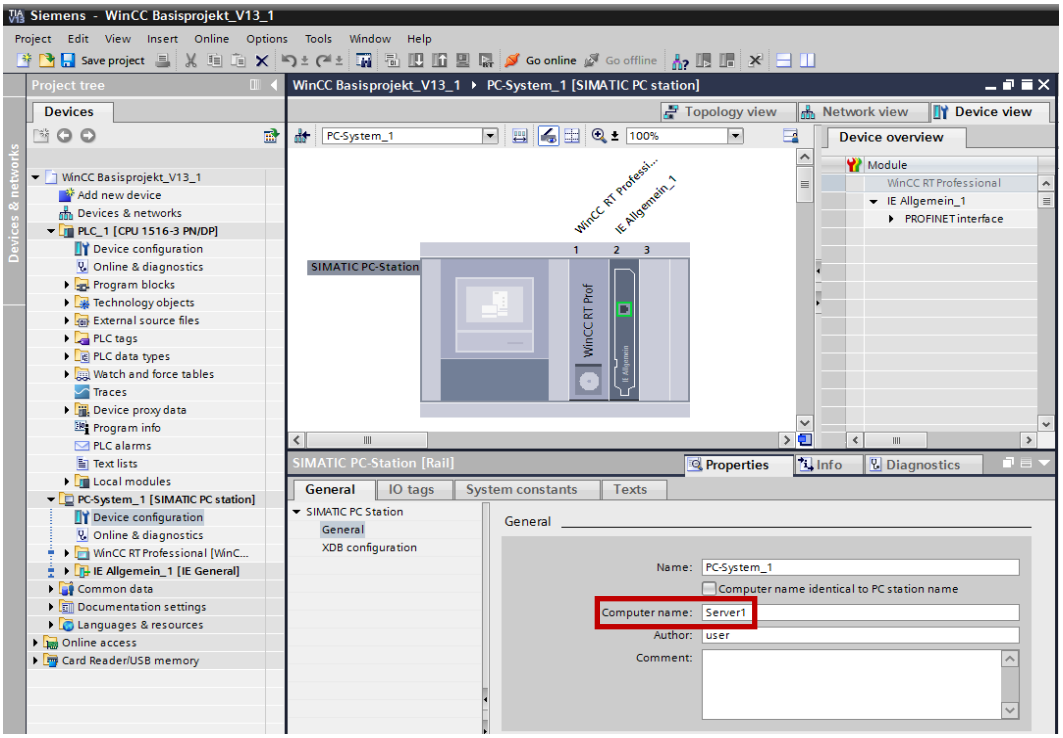
Note Please find additional information about the configuration of the web server of a SIMATIC CPU online at the following address:

http://support.automation.siemens.com/WW/view/en/59601288.

Depending on the individual situation in your IT environment, more adaptations to the example project might become necessary.

Please carry out the following actions for checking and adapting the sample object.

Table 5-9

No.	Action
1.	Unzip the file “28309119_Thin_Client_Code.zip”.
2.	Open the project in the TIA Portal with WinCC Professional in the Project View.
3.	In the project, there is a PC station “PC system_1”. This station represents the WinCC server. Check the name of the station in the device configuration. The name of the configured station must be the same as the NetBIOS name of the WinCC server. Adapt the name to the NetBIOS name of your WinCC server if necessary. 

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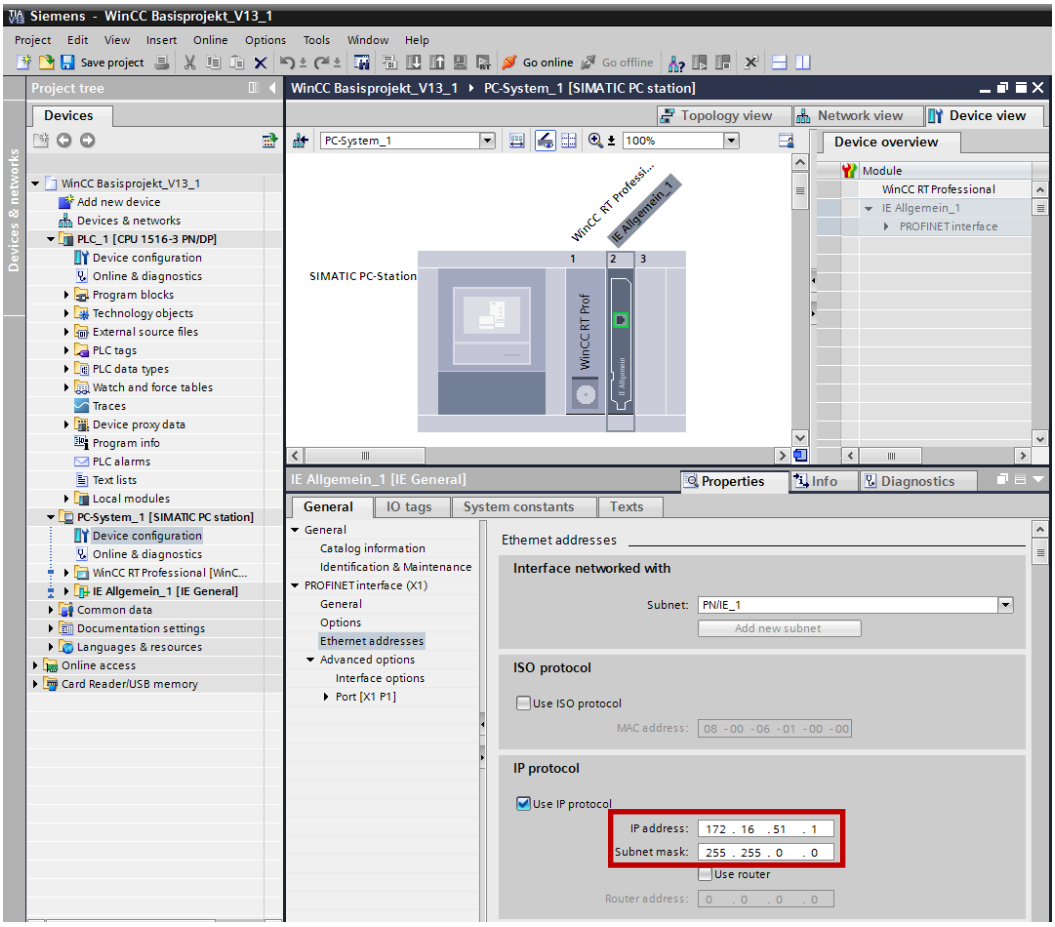
No.	Action
4.	Check the configured IP address and subnet mask of the WinCC server and enter the address from Table 5-1 in the device configuration of the “IE General_1” interface. 

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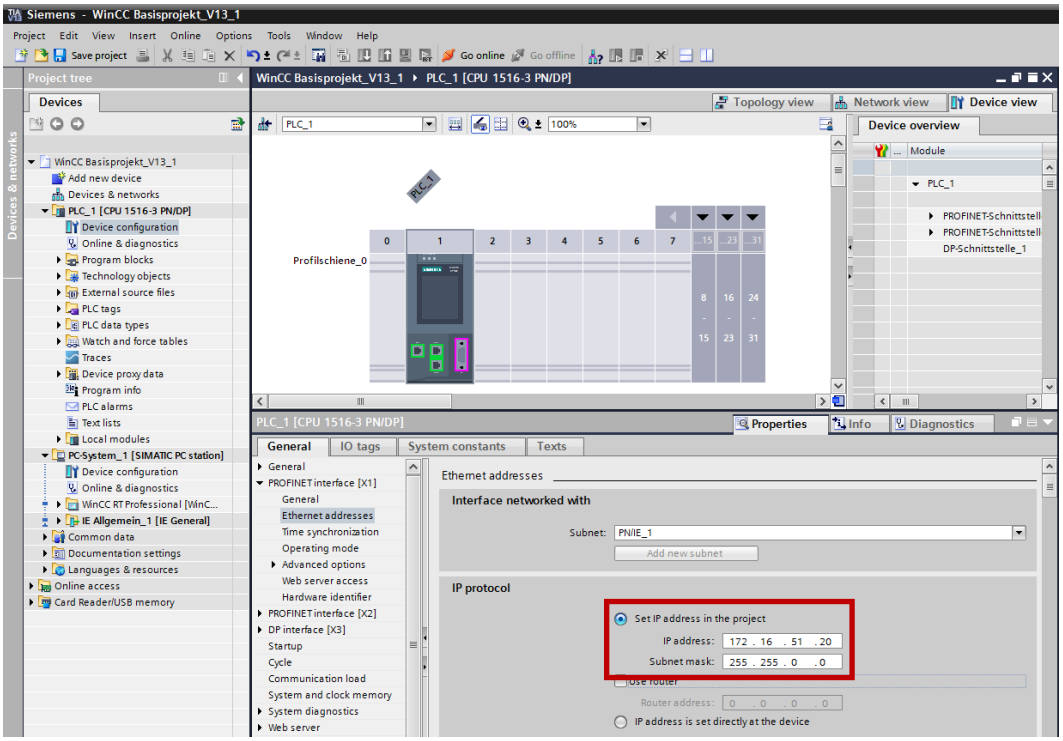
No.	Action
5.	Check the configured IP address and subnet mask of the CPU and enter the address from Table 5-1 in the device data of the PROFINET interface. 
6.	Save the project and compile the PC station and the CPU.

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Assign IP address CPU

Enter a unique IP address for the CPU. Use the address from Table 5-1.

Set the IP address in the front cover via the display and the keys as follows:

Table 5-12

No.	Action	Note
1.	Navigate to the main item “Settings” with the arrow buttons of the display. Open the menu with the “OK” button.	
2.	Navigate to the submenu “Addresses” with the “up / down” arrows. Open it with the “OK” button.	
3.	Navigate to the interface connected with the Ethernet with the “up / down” buttons. Open the interface with the “OK” button.	
4.	Navigate to the settings of the IP addresses with the “up / down” arrows. Open the IP address settings with the “OK” button.	
5.	Navigate to the IP address with the “up / down” arrows. Start the processing of the IP address with the “OK” button.	
6.	Set the IP address from Table 5-1 with the arrow keys. Complete the editing with the “OK” button.	
7.	Exit the menu by clicking the “ESC” button several times.	

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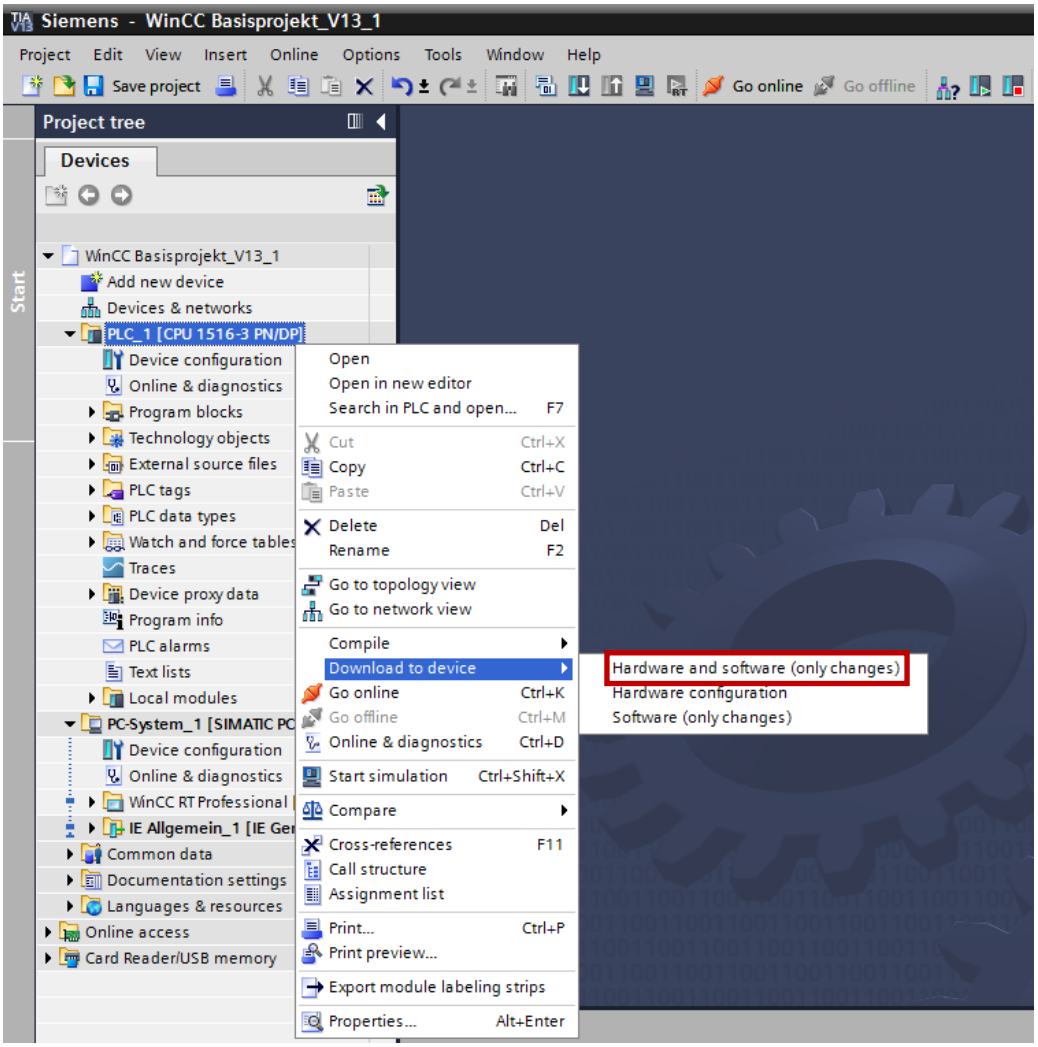
Downloading the example project into the CPU

The example project adapted in the above chapter contains a control program. Download it to the CPU with the programming device.

Table 5-13

No.	Action
1.	Open the example project on the programming device in the TIA portal.
2.	Download the hardware configuration and program blocks of the controller “PLC_1” from the sample program to the controller. 

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Downloading the example project to the WinCC server

The example project contains a PC station “PC_System_1” with WinCC Runtime software.

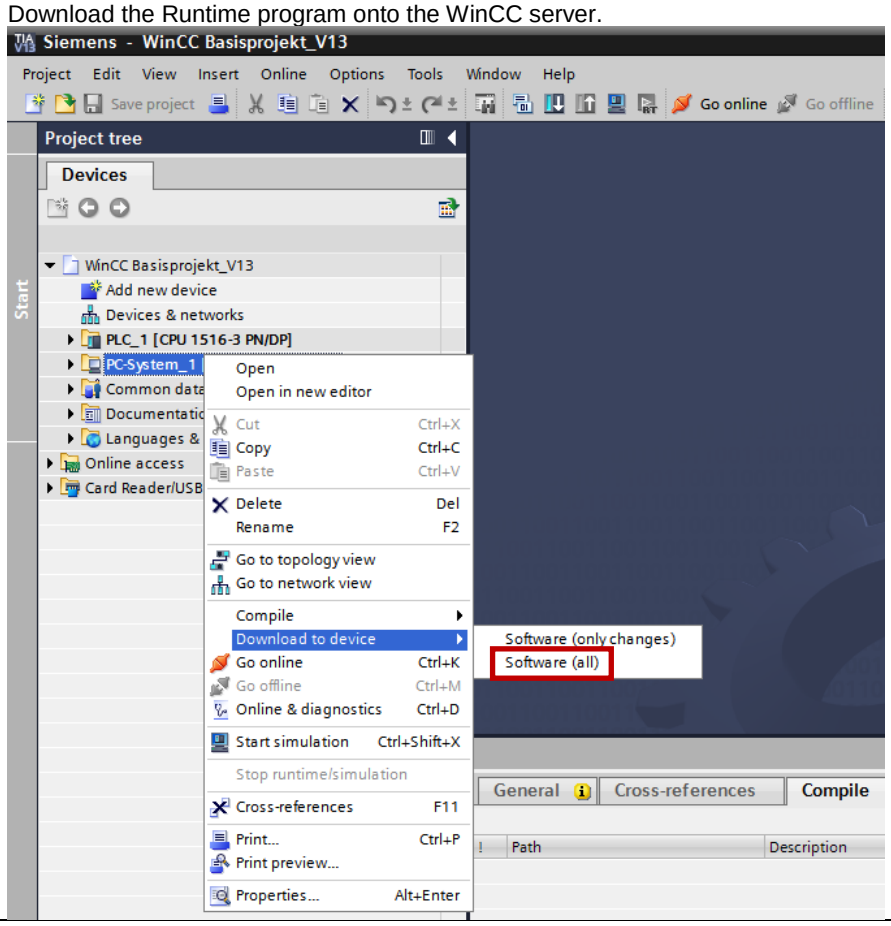
Load the Runtime software on your computer with the programming device on the WinCC server.

Requirements:

- The programming device and the WinCC server must reach each other in the network. For further information, please refer to the following address:

  https://support.industry.siemens.com/cs/ww/en/view/868014
- If you use Windows Vista or higher, the User Account Control (UAC) on the programming device must be deactivated.
- The user logged on at the programming device must be registered in the user management of the WinCC server with the same user name and password, and must be a member of the “SIMATIC_HMI” group.
- The SQL server service “WinCC” must have been started on the WinCC server.

Table 5-14

No.	Action
1.	Open the example project on the programming device in the TIA portal in the project view.
2.	Download the Runtime program onto the WinCC server. 

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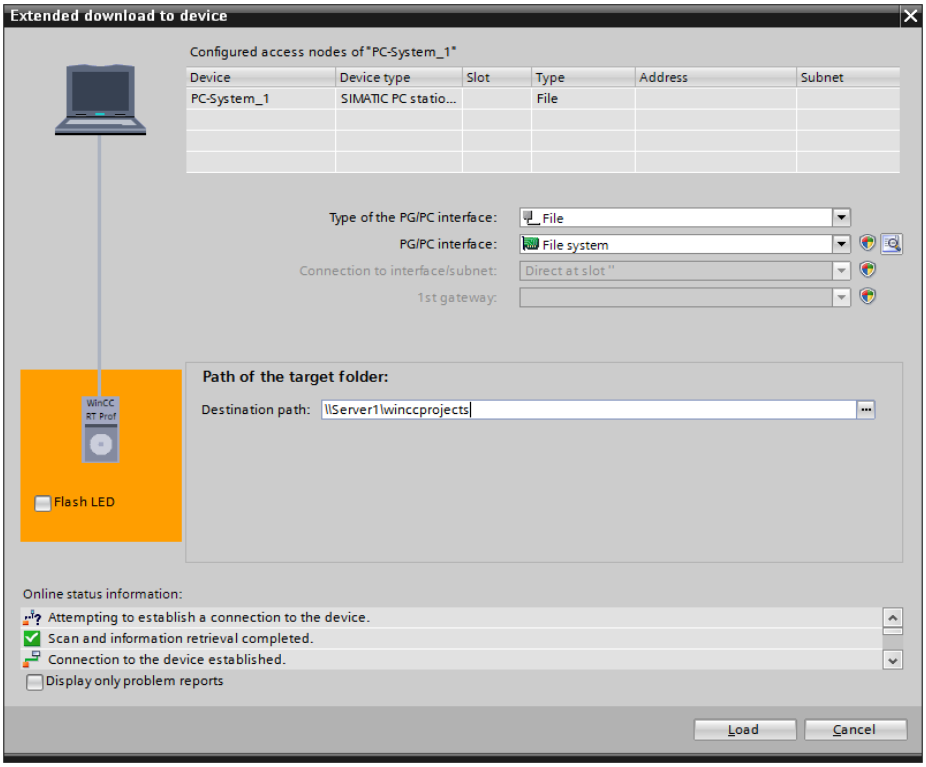
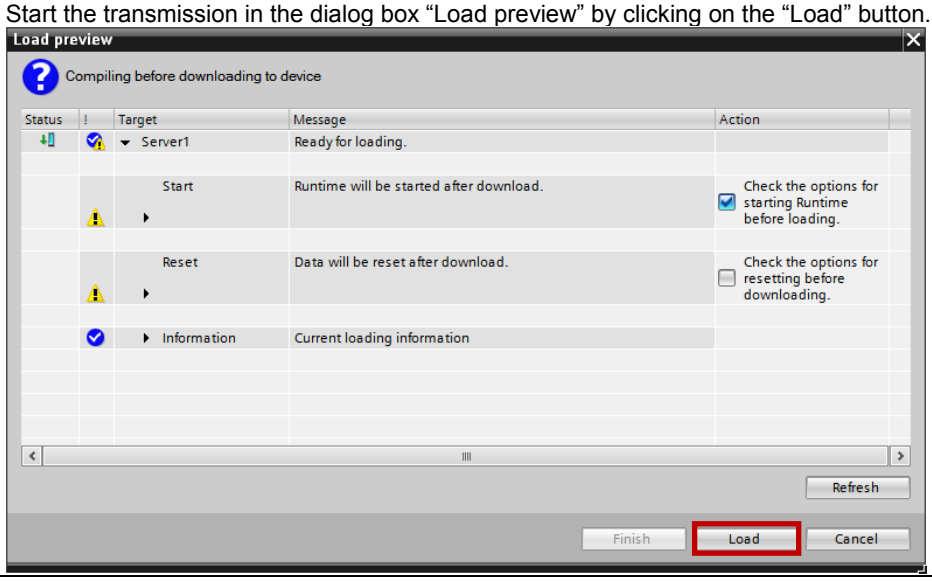
No.	Action
3.	Select the type of PG/PC interface “File” and the PG/PC interface “File system”. Then chose a destination path. Enter the target folder “WinCCprojects” of the WinCC server and click on the “Load” button. Note: If you are requested to enter a user name and password at this point, check your Windows user data with which you are logged on to the programming device. The user data (user name and password) on the programming device must be the same as the user created in the user management of the WinCC server. If necessary, correct the user data used on WinCC server as described in Table 6-7. 
4.	Start the transmission in the dialog box “Load preview” by clicking on the “Load” button. 

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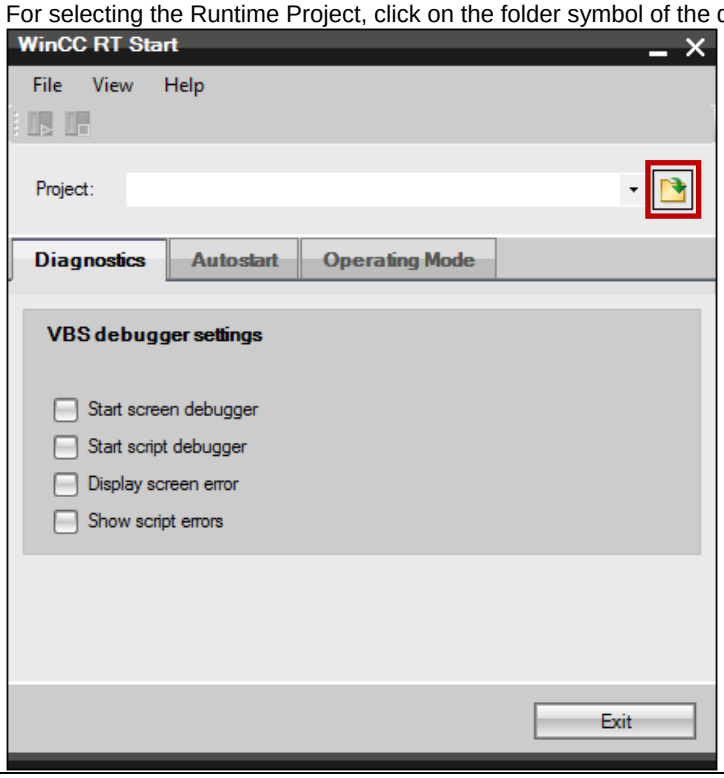
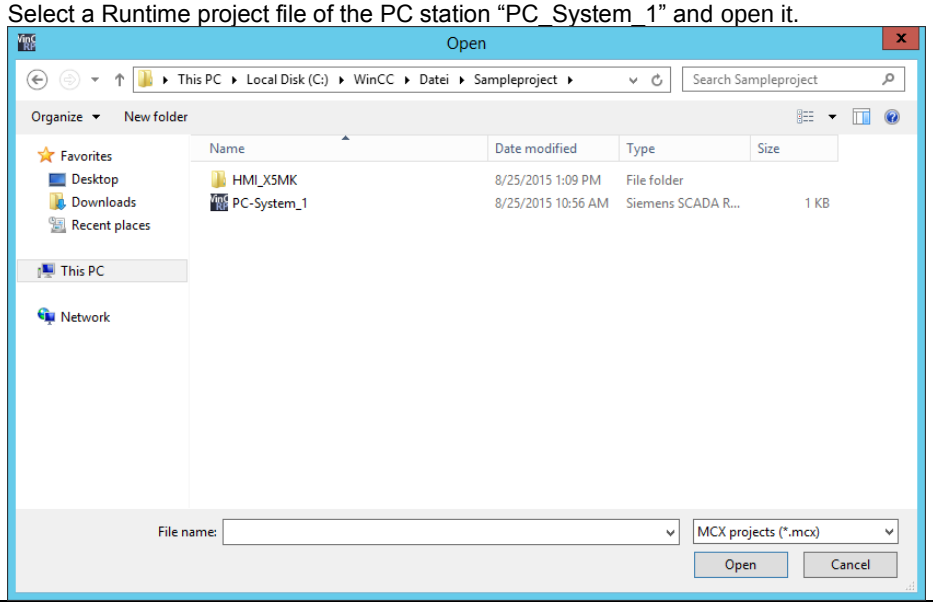
Starting the WinCC Runtime project

The WinCC Runtime project on the WinCC server is opened and started via WinCC RT Start.

Table 5-15

No.	Action
1.	Open the “WinCC RT Start” program on the WinCC server via “Start -> All Programs -> Siemens Automation -> Runtime Systems -> WinCC Runtime Professional -> WinCC RT Start.”
2.	For selecting the Runtime Project, click on the folder symbol of the dialog box WinCC RT Start. 
3.	Select a Runtime project file of the PC station “PC_System_1” and open it. 

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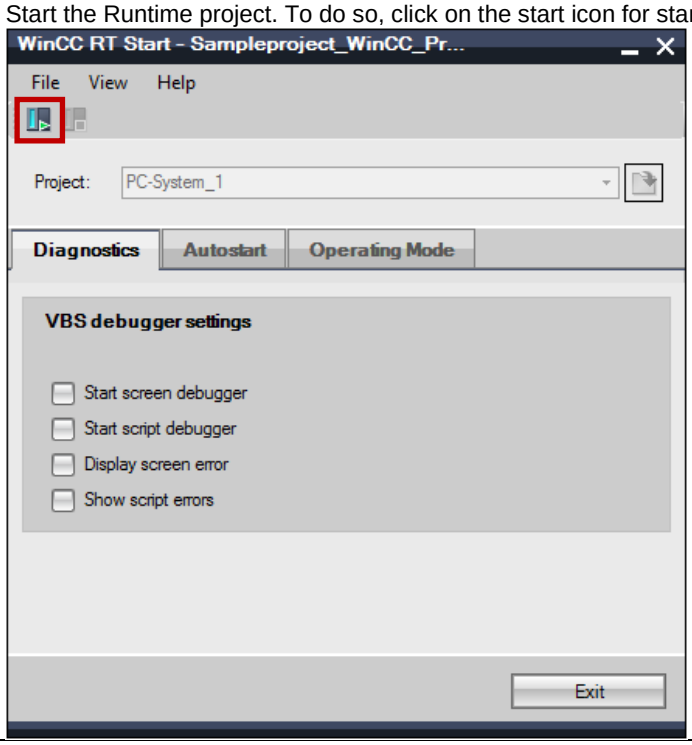
No.	Action
4.	Start the Runtime project. To do so, click on the start icon for starting Runtime. 

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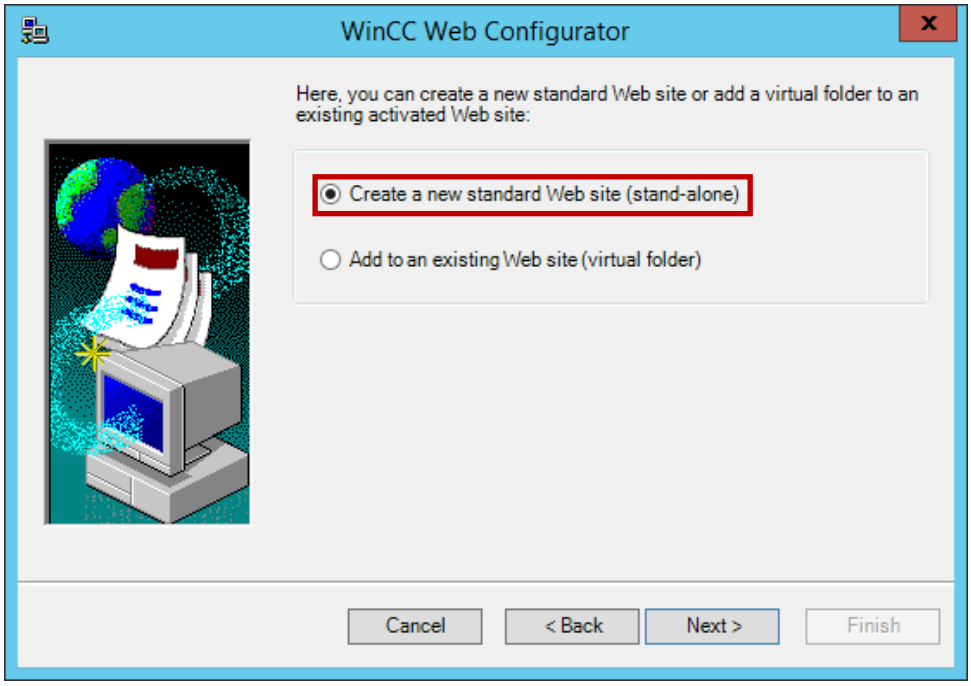
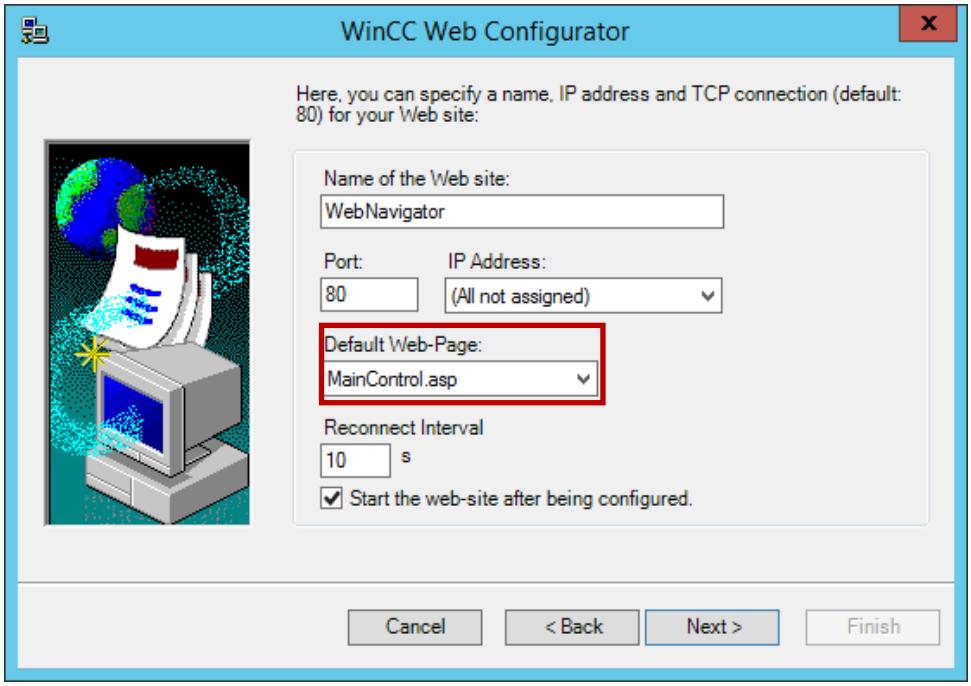
Setting the Web Configurator

The following steps describe how to set the Web Configurator at the WinCC server (server 1).

Table 5-16

No.	Action
1.	Start the WinCC WebConfigurator. In the start menu of the WinCC server, select “Start > All Programs > Siemens Automation > Options and Tools > HMI Tools > WinCC WebConfigurator”.
2.	Select the “Create a new standard Web site (stand-alone)” option. 
3.	Select “MainControl.asp” as the default web-page. 

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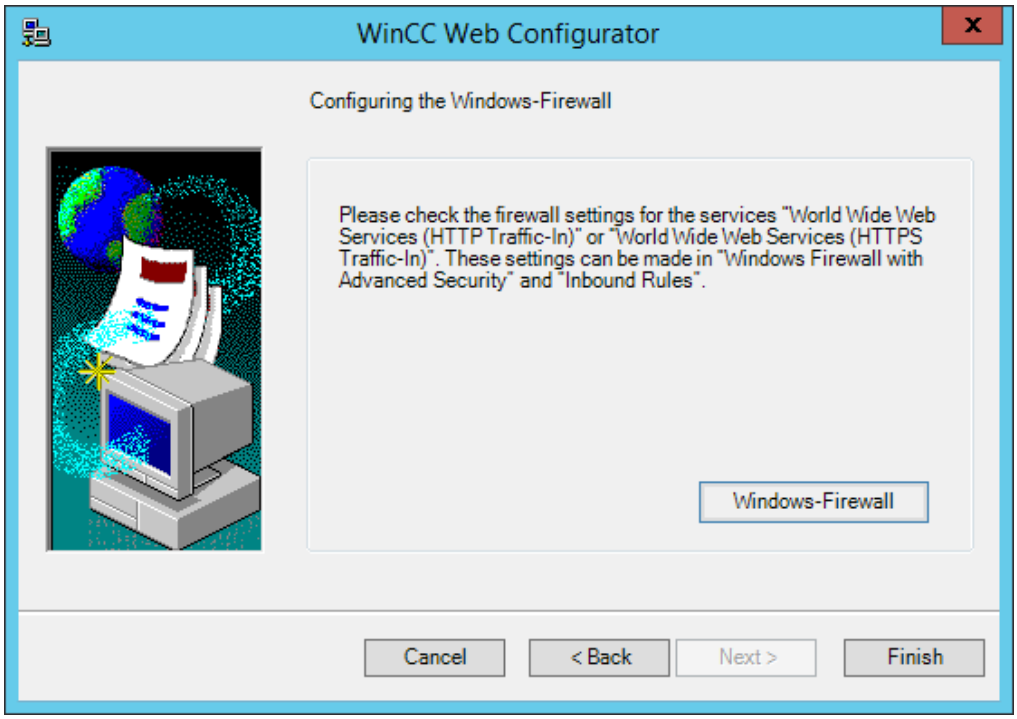
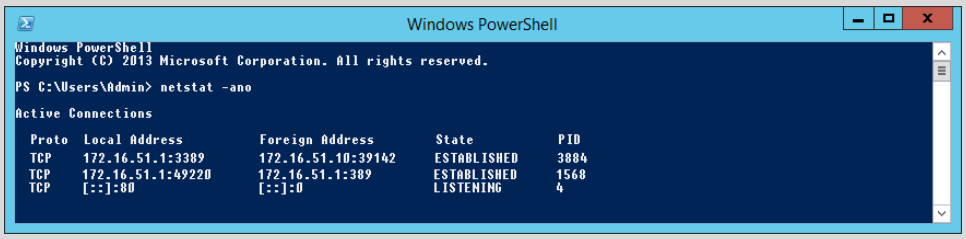
No.	Action
4.	Restart the computer after completing the WinCC Web Configurator. 

Note

Using the CMD command “netstat -ano” enables checking whether ports are assigned or connections exist with your server and a remote computer. For existing connections, the address of the peer can be read.



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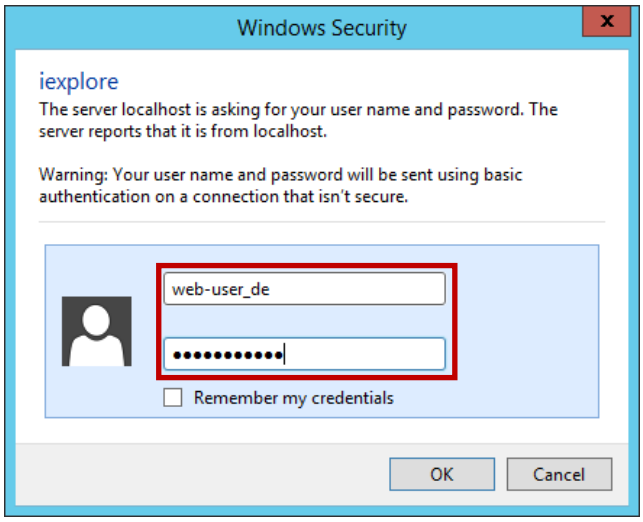
Testing WebNavigator locally at the server

Note

The following requirements must be met:

- WebNavigator is configured correctly.
- WinCC Runtime has been started.

Table 5-17

No.	Action
1.	Start the Microsoft “Internet Explorer” locally. Enter http://localhost/ in the address bar.
2.	Then a password prompt appears. Assign a user name and the respective password here (see Table 4-1). 
3.	If the user name and the password are correct, the WinCC operator displays are displayed in Microsoft Internet Explorer.

Note

In the Internet Explorer, the server must have been rated as trusted.

For further information, refer to the following entry ID: 16957049.

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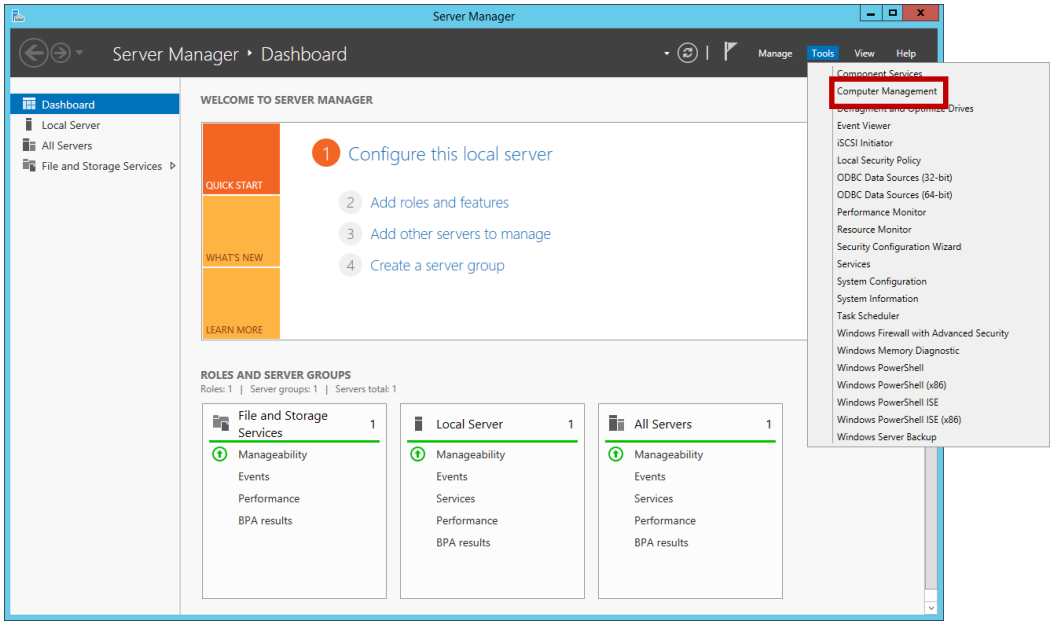
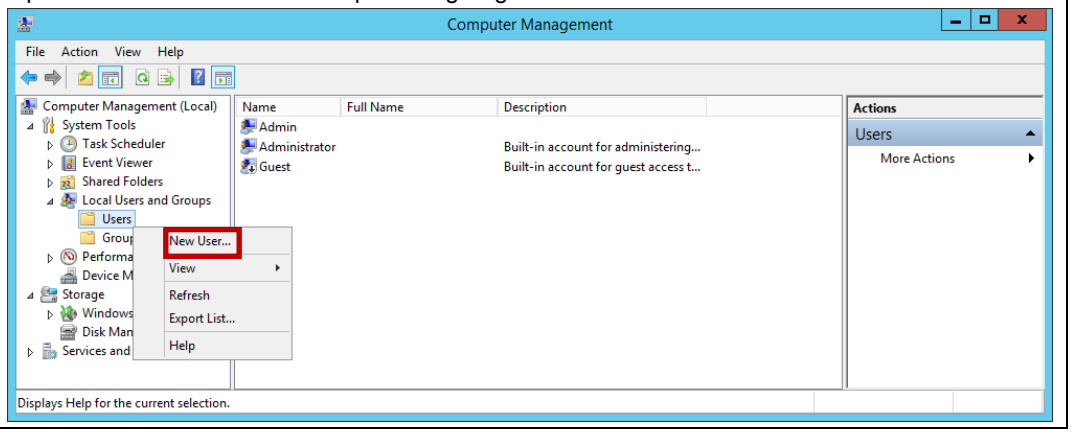
5.2.8 Creating a Windows users

The following steps describe how to create user accounts in the remote desktop session host (server 2).

Table 5-18

No.	Action
1.	Open the Server Manager.
2.	Open the “Computer Management” in Tools. 
3.	Open the “Local Users and Groups” dialog. Right-click on “Users” and select “New Users...”. 

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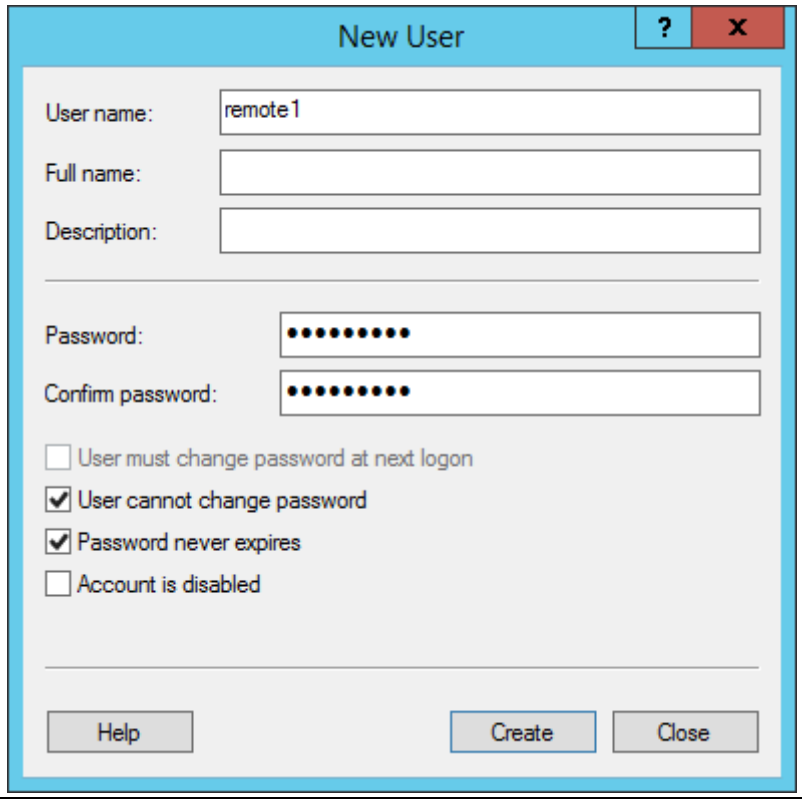
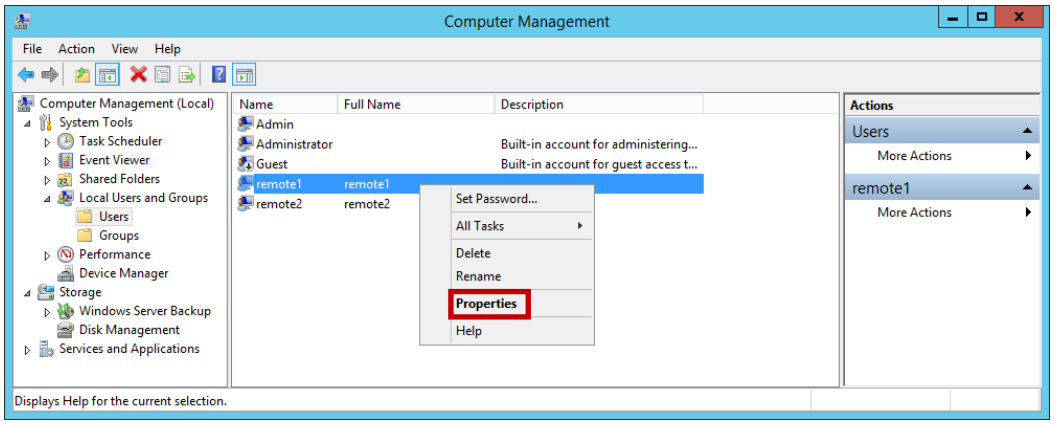
No.	Action
4.	Enter user name and password Table 4-2. 
5.	Open the Properties of the created user “remote1”. 

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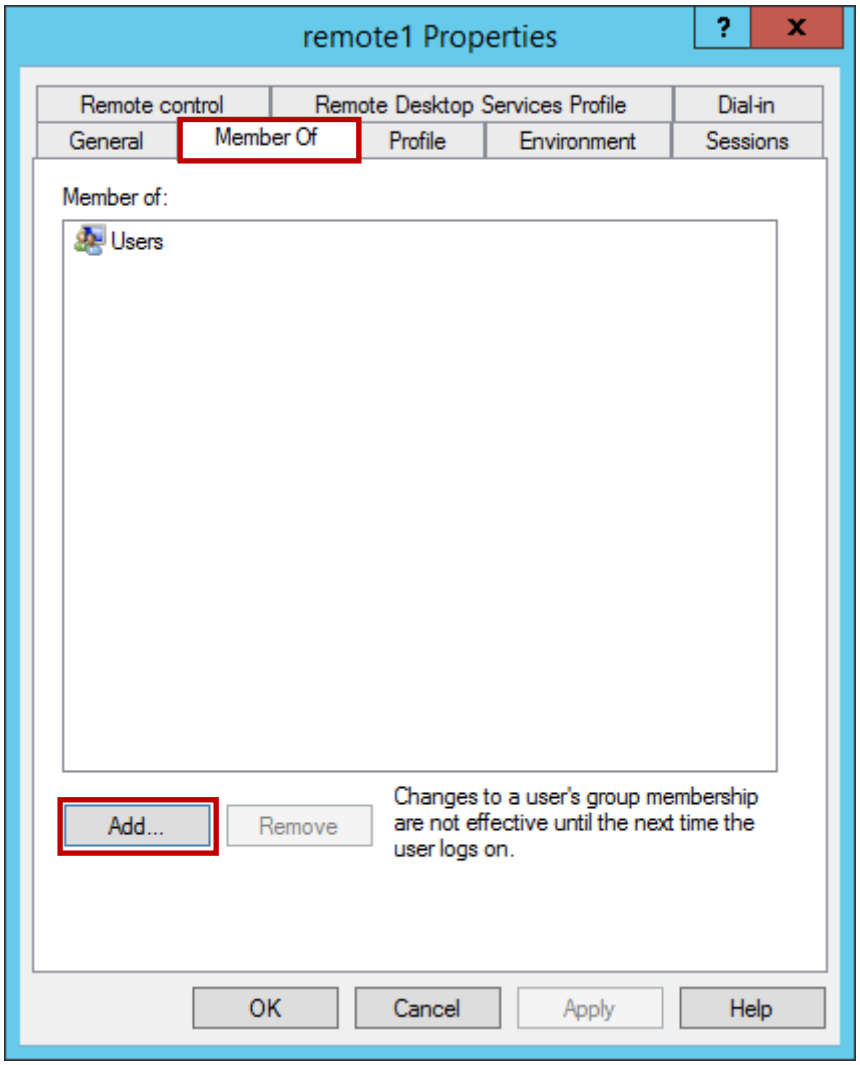
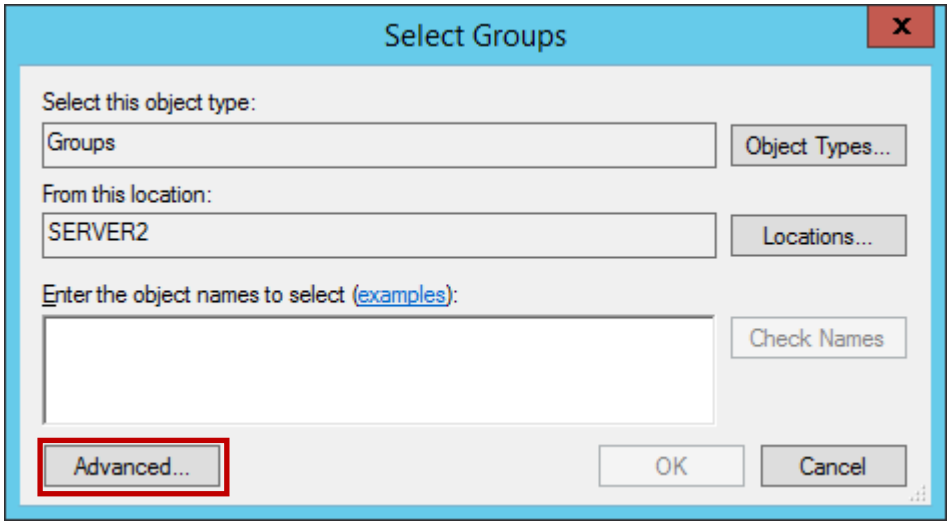
No.	Action
6.	Open the “Member Of” tab. Click on “Add”. 
7.	Then click the “Advanced” button. 

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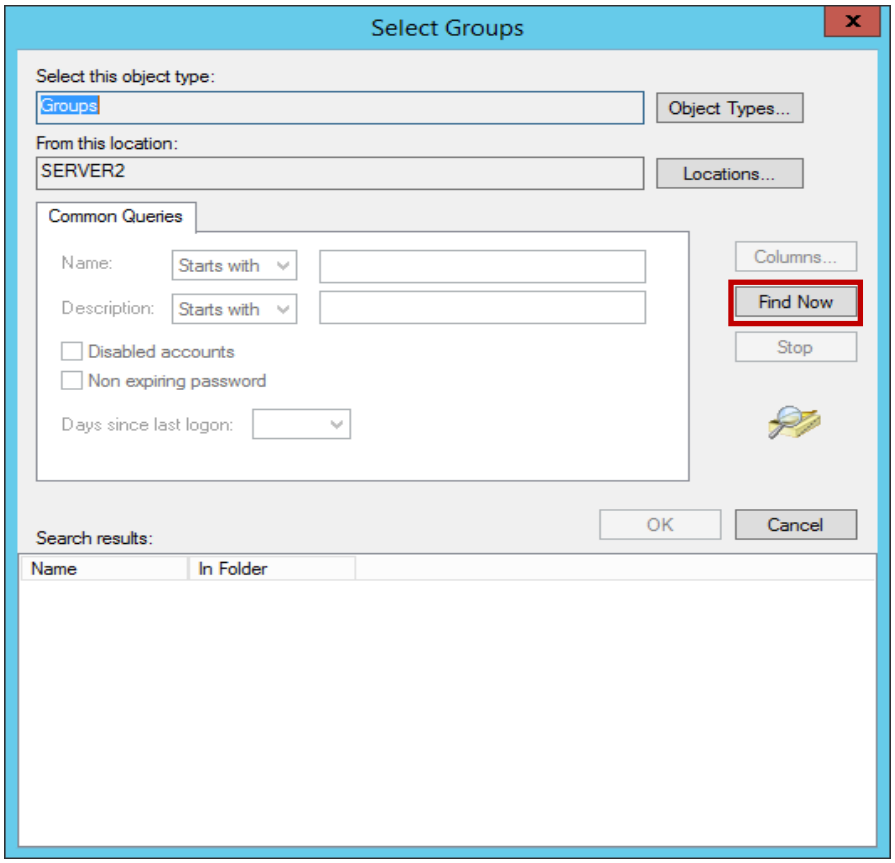
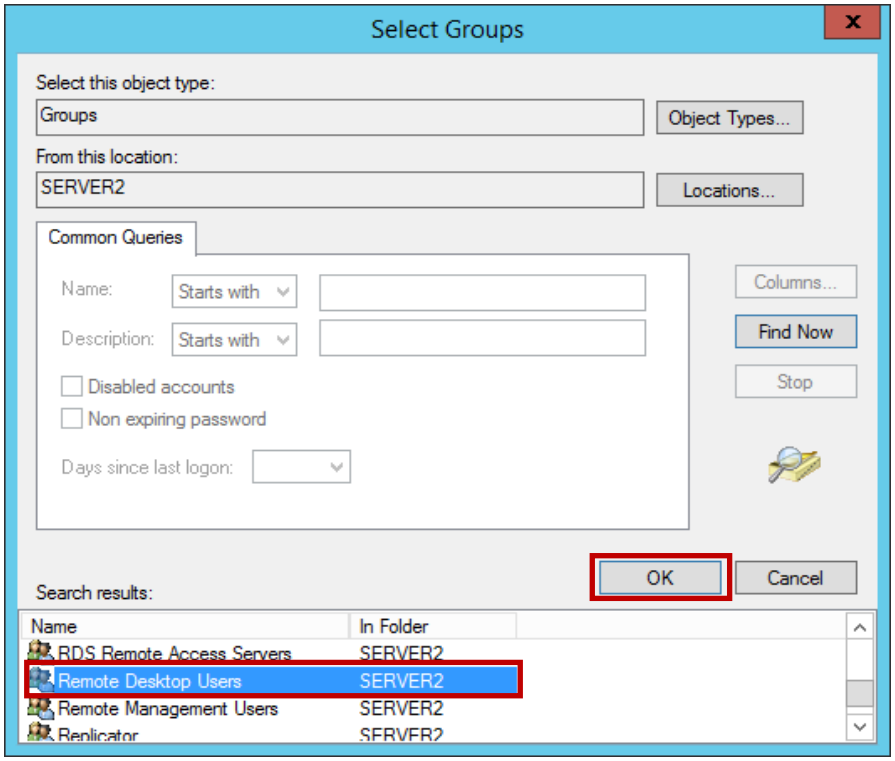
No.	Action
8.	Click the “Find Now” button. 
9.	Select the Remote Desktop Users group. Click on the “OK” button. 

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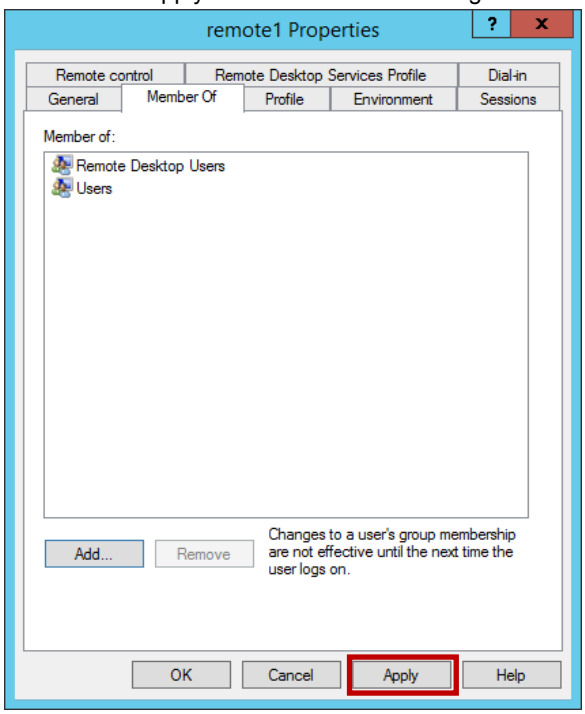
No.	Action
10.	Click on the “Apply” button to save the changes made. 

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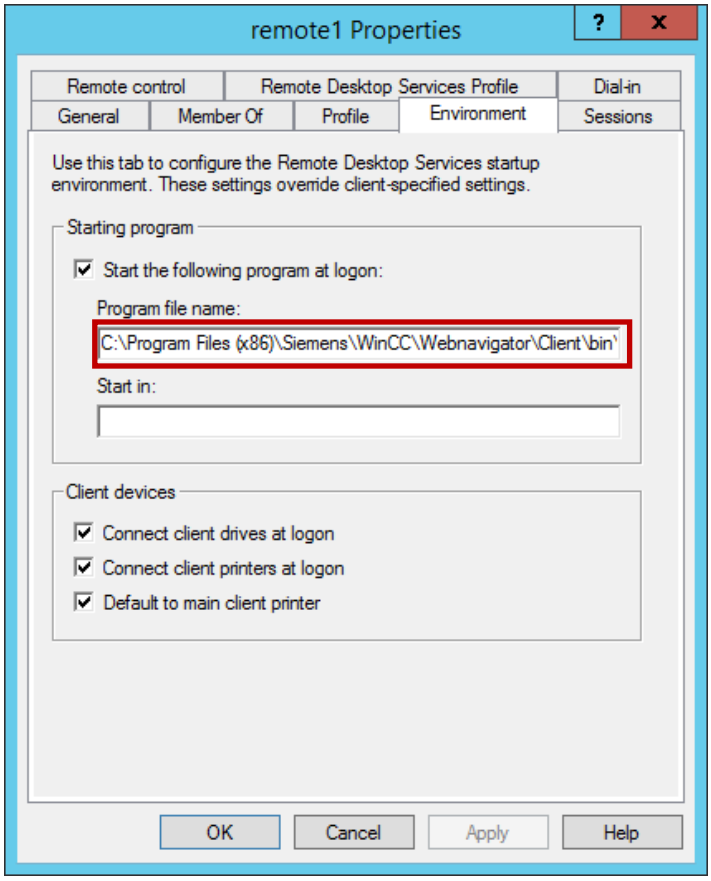
No.	Action
11.	Open the “Environment” tab. For starting the WebNavigator Client automatically when you log on, enter the path and the program file name of the WebNavigator Client. For example: C:\Program Files (x86)\Siemens\Automation\SCADA-RT_V13\WinCC\Webnavigator\Client\bin\WinCCViewerRT.exe 
12.	Confirm the changes by clicking on the “OK” button.
13.	Repeat steps 3 to 12 with different users for the respective number of Industrial Thin Clients which connect to the terminal server via the RDP.

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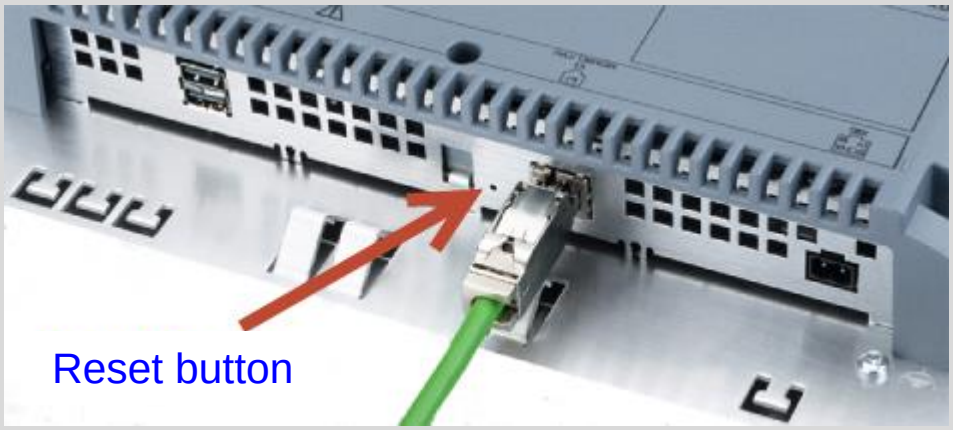
5.2.9 Setting the Industrial Thin Client

Note

To delete the set IP address of the device and to **restore the default settings**, keep the reset button pressed for at least 3 seconds after switching on the power supply.

The button is at the back of the device, next to the Ethernet interface. Please use a pointed object such as a paper clip to press the button.



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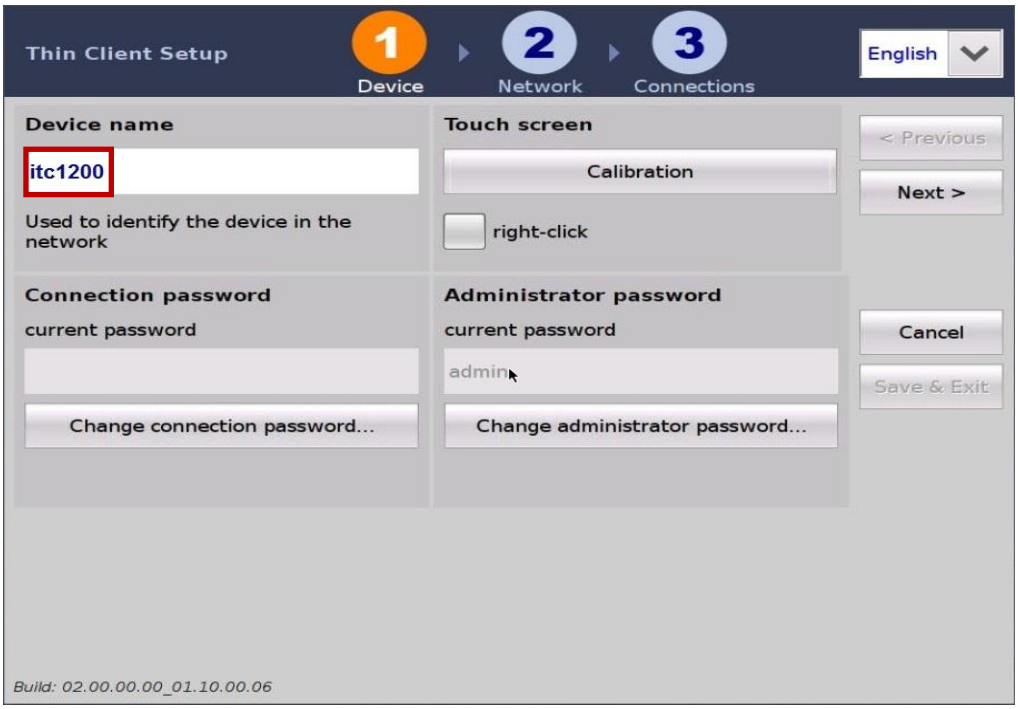
Setting up the Industrial Thin Client for the first time

The following steps describe how to set up a RDP connection from the Industrial Thin Client to the remote desktop session host.

Table 5-19

No.	Action
1.	When you switch on the Industrial Thin Client for the very first time or when you have reset the factory settings at the back of the device, the setup menu will open up. In the first step you enter a unique name for the device such as “itc-1200” and confirm by pressing the “Next >” button. 
2.	In the second step, enter the network configuration of the device. Click on the “Static” button and then enter the IP address from Table 5-1.

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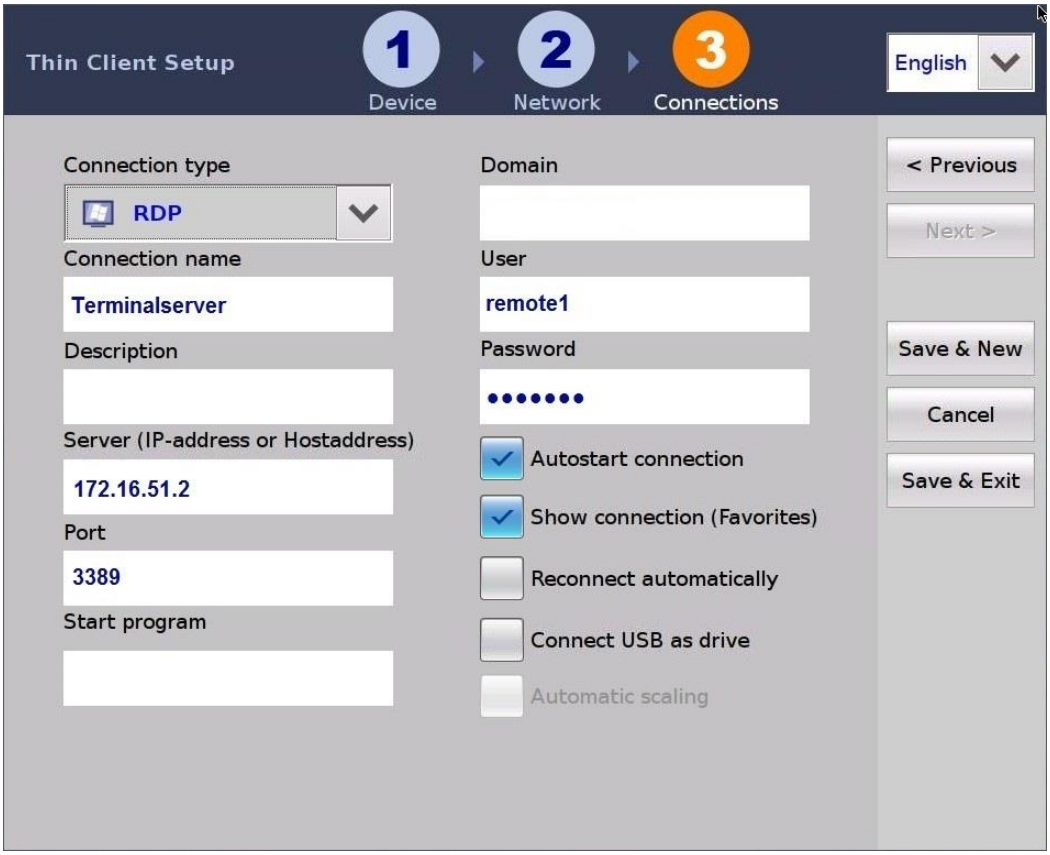
No.	Action
3.	In the third step, create a Remote Desktop Protocol connection. Use the following settings: Connection type: RDP Connection name: Terminalserver Server (IP address or Hostname): (→ see IP Terminal server from Table 5-1) Port: 3389 User: (→ see user from Table 4-2) Password: (→ see password from Table 4-2) Show connection (favorites): *(activated)* Then click on the “Save & Exit” button. 
4.	Open the connection you created from the favorites bar in the Industrial Thin Client. Press on the “Favorites” button and select the connection “Terminalserver”.

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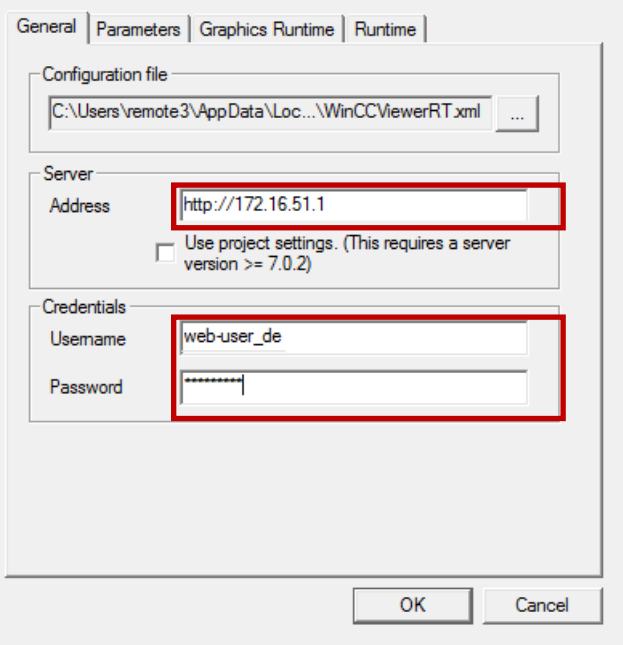
No.	Action
5.	When the RDP connection to the remote desktop session host has been built up for the first time, the application “WinCCViewerRT” is started according to the user configuration. A dialog box for the configuration of the connection from the WinCC WebNavigator client to the WinCC WebNavigator server appears. Enter the address of the WebNavigator server in this dialog box. Use the host name or the IP address of the WinCC server from Table 5-1. In the example project, the users from Table 4-1 have already been created with their respective passwords. Take a user from the plant operation phase from Table 4-1 for the identification of the WinCC WebNavigator client at the WinCC WebNavigator server. 

Note For further information on setting up WinCCViewerRT, please refer to the following entry ID: 102768445.

Create a connection with the CPU

In the previous chapter, you created a connection to the terminal server in order to operate the plant on the WinCC Runtime project.

In the following, another connection to the Industrial Thin Client is to be created to display the website of the CPU on the Industrial Thin Client for diagnostics.

To do so, the web server was activated on the CPU in the example project, and a user was created.

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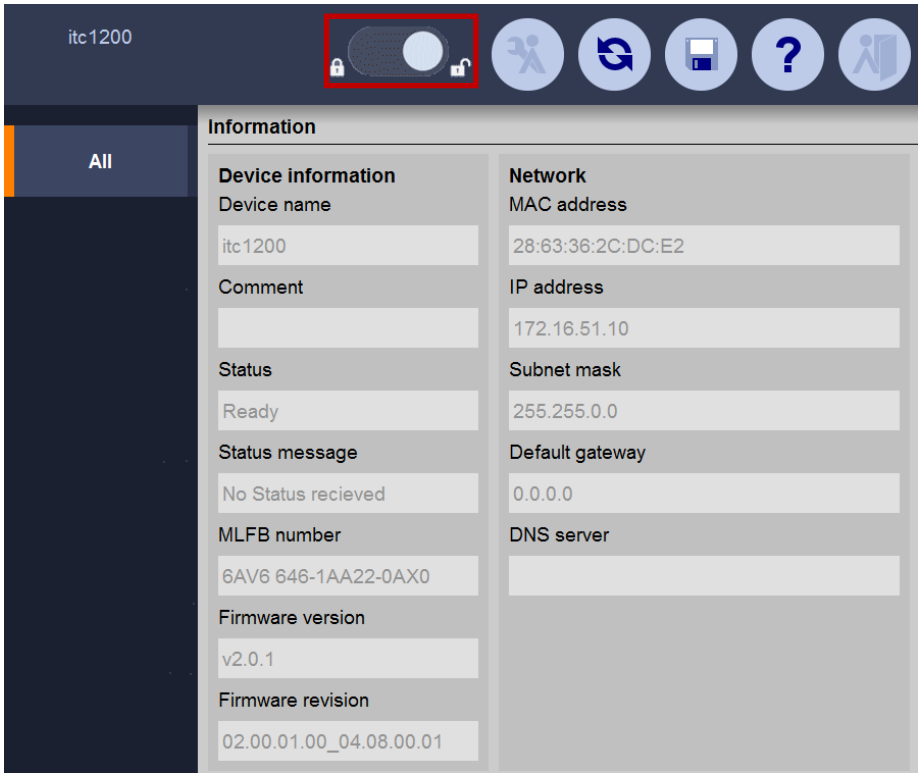
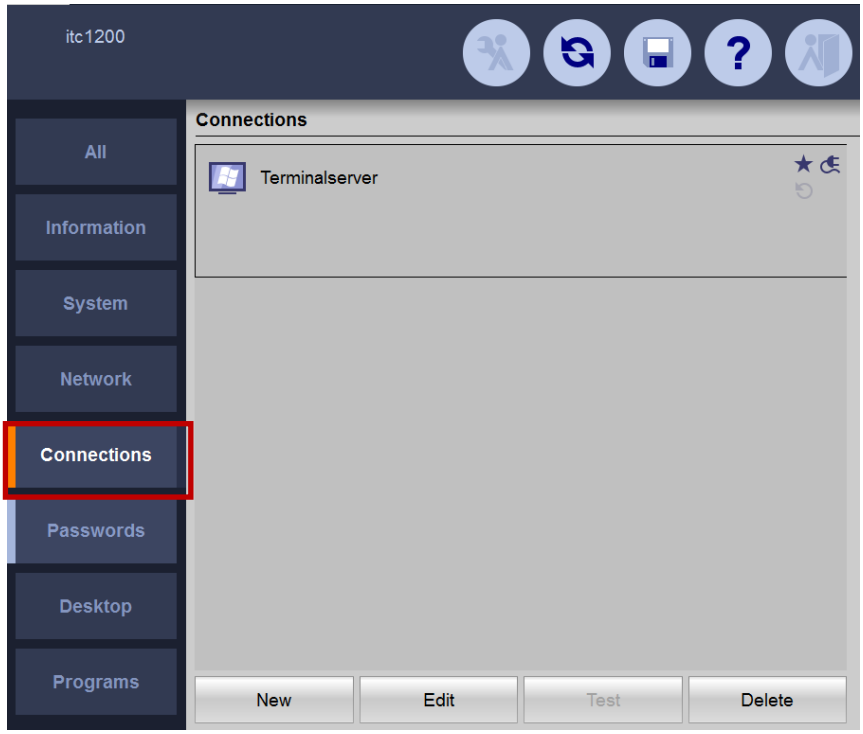
Table 5-20

No.	Action
1.	Open the start menu of your Industrial Thin Client and select “Configuration” from the menu.
2.	Log in to the device configuration overview page as the administrator. 
3.	Select “Connections” from the menu. 

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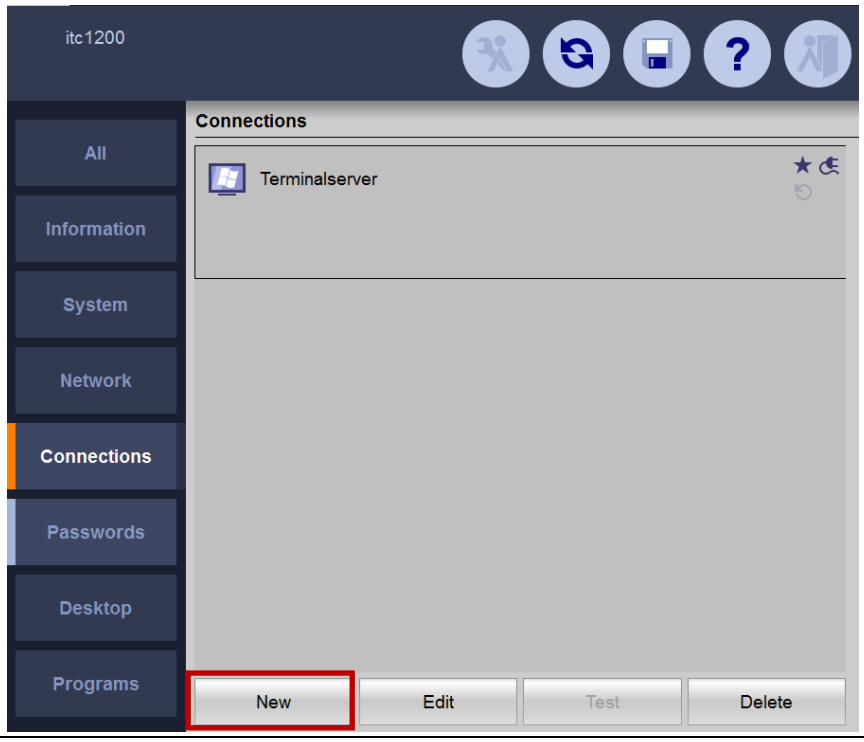
No.	Action
4.	Click on the “New” button to create a new connection. 

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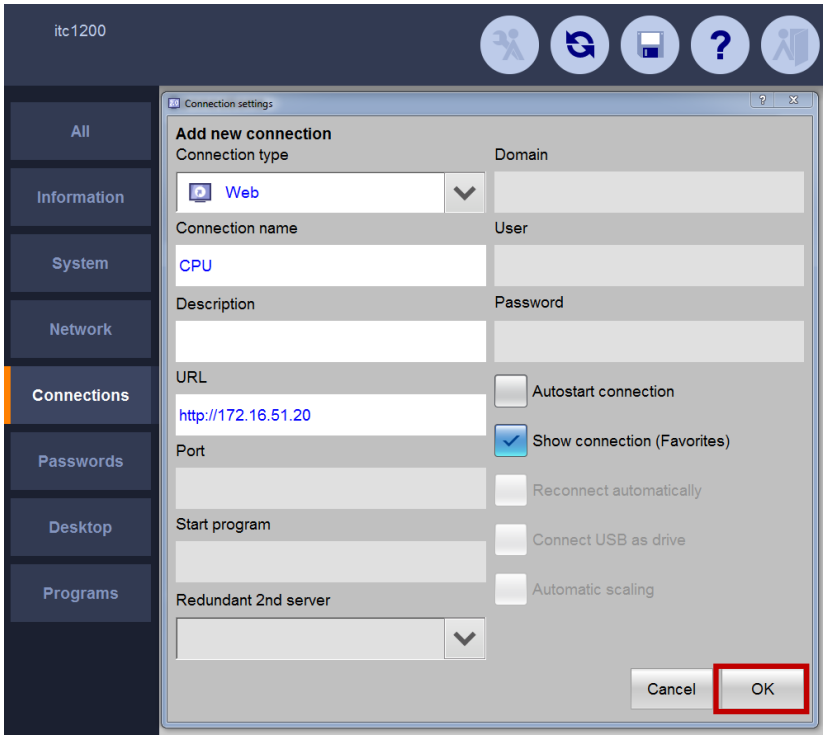
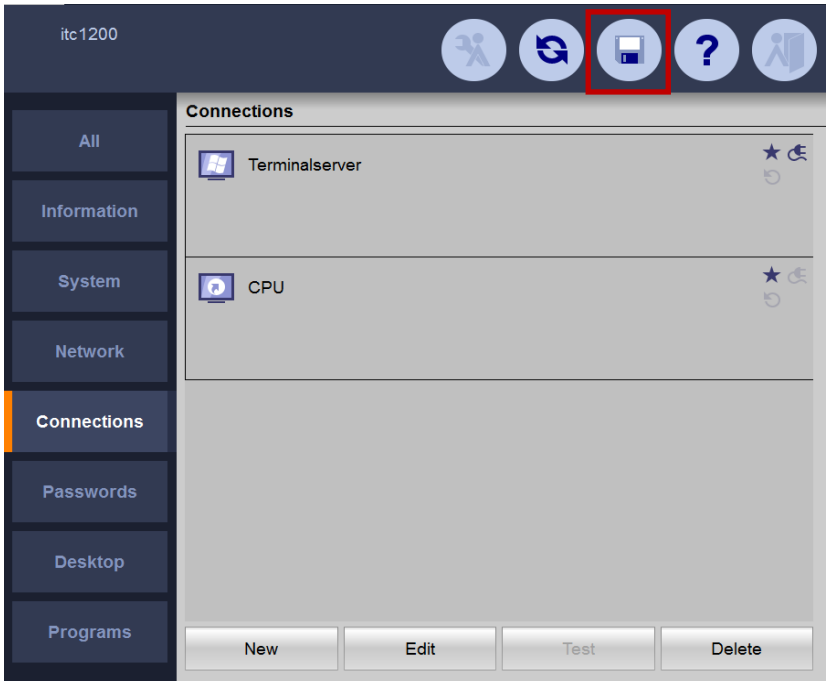
No.	Action
5.	In the new window, enter the connection properties of the new connection as follows: Connection type: Web Connection name: CPU URL: (→ IP of the CPU from Table 5-1) Show connection (favorites): *(activated)*  Confirm your entry by clicking the “OK” button.
6.	Save the set parameters by clicking the “Save” button. 

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6 Operating the Application

6.1 Overview

It is now possible to access the WinCC server and the WinCC Runtime project running on the server via the Industrial Thin Clients.

For diagnostics, the web server of the CPU can also be displayed on the Industrial Thin Clients.

The created “Industrial Thin Client” connections are used to access the respective device.

For opening a connection, you simply have to select it in the favorites bar in the Industrial Thin Client.

Note Please find the operating instructions for Industrial Thin Client at the following address:

https://support.industry.siemens.com/cs/ww/en/view/61187980/79267000203. \5\

6.2 Connecting to the remote desktop session host

When the connection to the remote desktop session host is built up, an instance of the WebNavigator client is started for the logged in user.

This instance connects to the WebNavigator server automatically, enabling the operation of the WinCC Runtime project on the WinCC server of the Industrial Thin Client.

Please find a detailed description of the functionality of the example project online at the following link:

https://support.industry.siemens.com/cs/ww/en/view/36435784

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7 Further Notes, Tips & Tricks, etc.

7.1 Expansion options

Remote access to the WinCC server

The remote access on the WinCC server via the RDP is not allowed for active server services such as the WebNavigator server.

As an alternative, the Remote Framebuffer Protocol (RFB) with VNC software is suitable for remote maintenance of the WinCC server.

This protocol is supported by the Industrial Thin Clients and can be used for the access on the WinCC server via the connection created accordingly.

For this purpose, an additional VNC server is installed on the WinCC server. Via the VNC connection it is then possible to operate the WinCC server from the Industrial Thin Clients, for example to carry out maintenance such as starting and stopping runtime.

A video on how to create a VNC connection is available online at the following address: https://support.industry.siemens.com/cs/ww/en/view/63348591.

Sm@rtServer

Another possibility of operating remote devices with Industrial Thin Clients is the Sm@rtServer. Remote access to Comfort Panels is then possible, for example.

For this, the function Sm@rtServer is to be activated on the Comfort Panel. In this way the connection to the Comfort Panel can be created from the Industrial Thin Client.

A video on how to create a Sm@rtServer connection is available online at the following address: https://support.industry.siemens.com/cs/ww/en/view/63445531.

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7.2 Alternative configurations

SIMATIC WinCC Runtime Professional V13

In addition to WinCC Runtime Professional V13, the solution presented in this application can also be implemented with SIMATIC WinCC Runtime V7.3.

For SIMATIC WinCC Runtime V7.3, the WebNavigator option is also available and can be set in the same way as described here.

The necessary steps can be generally transferred.

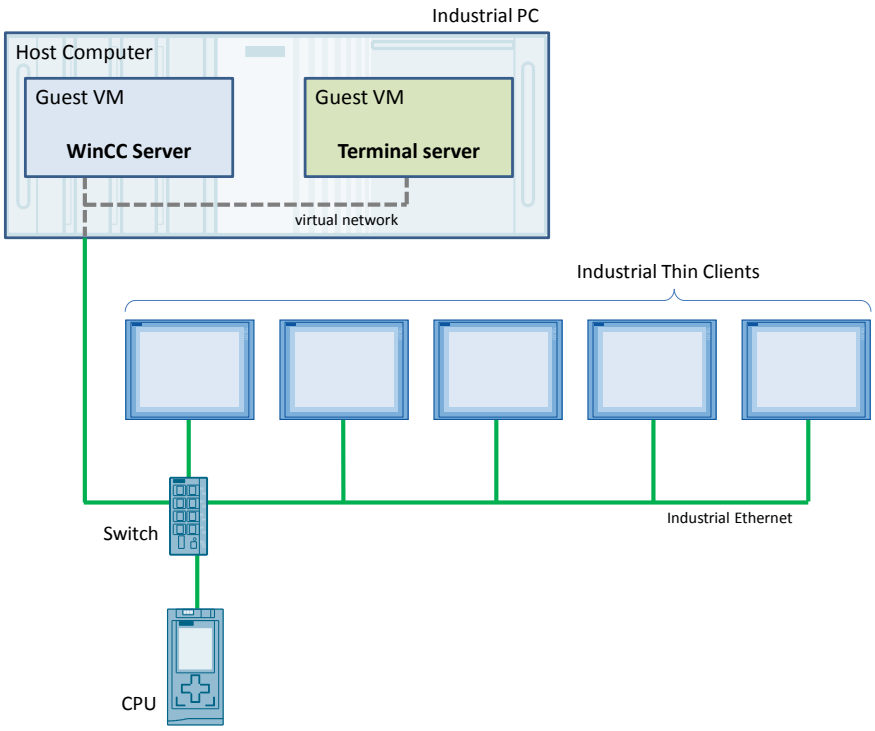
Virtualization of the server systems

Virtualization techniques available today allow for the parallel operation of several virtual computer systems on a single hardware platform. Sufficiently powerful computer configurations are needed.

Several virtual machines (VM), called guests, are connected to one host device. They use the same resources of the real hardware, i.e. those of the host.

In the present solution, two server systems, a WinCC server, and a remote desktop session host are used. All those could be run as guests on a virtual machine on the host computer.

Figure 7-7



Note Please find more information on virtualization of servers online at the following address:

https://support.industry.siemens.com/cs/ww/en/view/49368181

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7.3 Performance data

For a remote access to the WinCC server, the speed of the image build-up and the reaction speed of the Runtime project are very important.

This depends on the server hardware used and also on the speed of the network connection and the number of Industrial Thin Clients used at the same time.

For estimating the power to be expected, measured data with various connection types for various numbers of clients are available online.

Please find the respective mesured data at the following address:

https://support.industry.siemens.com/cs/ww/en/view/25576569.

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8 Links & Literature

Table 8-1

	Topic	Title
\1\	Siemens Industry Online Support	https://support.industry.siemens.com
\2\	Download page of the entry	https://support.industry.siemens.com/cs/wwde/28309119
\3\	WinCC Professional V13 manual	https://support.industry.siemens.com/cs/ww/en/view/92323076/57373786507
\4\	WinCC Professional V13 manual	https://support.industry.siemens.com/cs/ww/en/view/92323076/63974837515
\5\	Industrial Thin Client manual	https://support.industry.siemens.com/cs/ww/en/view/61187980/79267000203

9 History

Table 9-1

Version	Date	Modifications
V3.0	11/2015	Complete revision: WinCC Professional V12 → WinCC Professional V13 Windows Server 2008 → Windows Server 2012 R2
V2.0	09/2013	Complete revision: WinCC 6.2 → WinCC Professional V12 Thin Client → Industrial Thin Clients Windows Server 2003 → Windows Server 2008
V1.1	05/2008	Installation sequence optimized and notes supplemented
V1.0	02/2008	First version

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