

SIMATIC NET

PC software SIMATIC NET PC Software V16

Installation Manual

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Legal information

Warning notice system

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

DANGER

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

WARNING

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

CAUTION

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

NOTICE

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

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

Qualified Personnel

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

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WARNING

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

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

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Introduction

Purpose of this document

This document describes how to install the SIMATIC NET PC software products on your PG/PC.

Validity of this installation manual

This installation manual relates to the products on the DVD "SIMATIC NET PC Software V16".

The installation of STEP 7 Professional (TIA Portal) is described on the STEP 7 data medium.

The instructions in this manual for calling applications using the Start menu apply to Windows 7 SP1, Windows 10, Windows 2016 and Windows Server 2019.

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SIMATIC NET, HARDNET, SOFTNET, CP 1612, CP 1613, CP 5612, CP 5613, CP 5614, CP 5622

Industry Online Support

In addition to the product documentation, the comprehensive online information platform of Siemens Industry Online Support at the following Internet address:

Link: (<https://support.industry.siemens.com/cs/de/en/>)

Apart from news, there you will also find:

- Project information: Manuals, FAQs, downloads, application examples etc.
- Contacts, Technical Forum
- The option submitting a support query:
Link: (<https://support.industry.siemens.com/My/ww/en/requests>)
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Right across our products and systems, we provide numerous services that support you in every phase of the life of your machine or system - from planning and implementation to commissioning, through to maintenance and modernization.

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To stay informed about product updates, subscribe to the Siemens Industrial Security RSS Feed under

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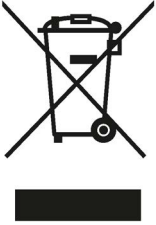
SIMATIC NET glossary

Explanations of many of the specialist terms used in this documentation can be found in the SIMATIC NET glossary.

You will find the SIMATIC NET glossary on the Internet at the following address:

(<http://support.automation.siemens.com/WW/view/en/50305045>)

Recycling and disposal



The products are low in harmful substances, can be recycled and meet the requirements of the Directive 2012/19/EU for disposal of waste electrical and electronic equipment (WEEE).

Do not dispose of the products at public disposal sites.

For environmentally compliant recycling and disposal of your electronic waste, please contact a company certified for the disposal of electronic waste or your Siemens representative.

Note the different national regulations.

Installation of the SIMATIC NET PC software products

2

2.1 Requirements and notes on installation

User experience

To install the SIMATIC NET PC software products, you need to have experience of installing software on the operating system you are using.

To configure the communications modules, you should have experience and knowledge of the following:

- Structure of the plant involved.
- Configuration of the plant.

You should only undertake the installation and configuration described below if you have this knowledge.

Privileges required for installation

You need administrator privileges for the installation.

2.1.1 Requirements and notes relating to the software

Operating systems

The SIMATIC NET PC software products are intended for operation with Microsoft Windows operating systems; for details, refer to the section "Released operating systems (Page 13)".

Upgrade DVD for which versions?

"SIMATIC NET PC Software V16" is an upgrade DVD for the following software version:

- "SIMATIC NET PC Software" V15 SP1

The list of products on the back of the DVD case or the delivery release in our product support gives you an overview of the products available.

2.1 Requirements and notes on installation

Software licenses

To run the SIMATIC NET products, you require one software license per PC or virtual machine and product.

Example 1: If you have installed the product "HARDNET IE S7" on a PC and operate three CP 1623 modules with it, you require only one software license.

Example 2: If you use SOFTNET PB S7 on a PC in three virtual machines, you require three licenses.

Screen savers

Using a screen saver during operation can cause system overload.

Some screen savers do not release parts of memory again. This leads to a continuous reduction in usable memory.

Virus scanners

The use of a virus scanner during runtime can impair or severely slow down communication. For this reason, dynamic virus protection in particular using gatekeeper mechanisms is not advisable.

Note

If you use a virus scanner, make sure that the PC has enough system resources.

The following virus scanners have been tested in conjunction with the SIMATIC NET PC software products (the default settings of the virus scanners were not changed for the test):

Virus scanner name	Tested with operating system
McAfee AntiVirus Plus 2019	<ul style="list-style-type: none">Windows 7 SP1 (64-bit)Windows 10 Pro (64-bit) V1809 and higherWindows 10 Enterprise (64-bit) V1809 and higher
Norton Security 2019	<ul style="list-style-type: none">Windows 7 SP1 (64-bit)Windows 10 Pro (64-bit) V1809 and higherWindows 10 Enterprise (64-bit) V1809 and higher
Kaspersky AntiVirus 2019	<ul style="list-style-type: none">Windows 7 SP1 (64-bit)Windows 10 Pro (64-bit) V1809 and higherWindows 10 Enterprise (64-bit) V1809 and higher

Virus scanner name	Tested with operating system
TrendMicro OfficeScan	<ul style="list-style-type: none"> • Windows 7 SP1 (64-bit) • Windows 10 Pro (64-bit) V1809 and higher • Windows 10 Enterprise (64-bit) V1809 and higher • Windows Server 2012 R2 • Windows Server 2016 • Windows Server 2019
Microsoft Defender	<ul style="list-style-type: none"> • Windows 10 Pro (64-bit) V1809 and higher • Windows 10 Enterprise (64-bit) V1809 and higher • Windows Server 2016 • Windows Server 2019

Restore points

A system restore point is not created automatically and needs to be set as a manual restore point prior to the installation.

2.1.2 Requirements and notes relating to the hardware

Note

We recommend that you first install the software and license as described in this documentation and install the communications processors afterwards.

Bus collisions after reinstallation

With a new installation all PROFIBUS communications processors receive the bus address 0. If there are several communications processors connected to the same bus, this inevitably leads to address conflicts.

Solution

With such a constellation, set different bus addresses for the communications processors before attaching the communications processors to the bus. This can be done using the "Communication Settings" application.

Plug and play

If the plug-and-play mechanism does not find the driver after installing the communications processor and then rebooting the computer, you will need to start the search for drivers manually. Follow the steps outlined below:

1. Open the Device Manager.
2. Select the top expression in the list box (the local PC) and then the menu command "Action" > "Scan for hardware changes".
3. Confirm all the following dialogs with "Next".

Note

If a question appears in this dialog box asking whether or not you want to search for suitable drivers on the Internet, select "No, not this time" and then click "Next".

2.1.3 Notes on installation

Follow the instructions below step by step to install the SIMATIC NET PC software products and observe the following notes:

- During the installation, the PC is restarted several times depending on its configuration and the software you are installing. These restarts are unavoidable parts of the installation process.
- Following a restart of the PC, the installation will continue automatically with the next step. You only need to follow the installation instructions in this description. No further measures are necessary.
- Make sure that the same user is logged on following a restart.
- The installation dialog of the "SIMATIC NET PC Software" offers you the choice of "German" or "English". If you want to install on an Asiatic Windows platform (Chinese Korean or Japanese), select the "English" language version.

2.2 Released operating systems

The "SIMATIC NET PC Software V16" DVD can be installed with the following operating systems:

Operating system	Minimum requirements
Windows 7 SP1 Professional 64-bit Windows 7 SP1 Ultimate 64-bit Windows 7 SP1 Enterprise 64-bit	2.4 GHz PCs with 4 GB RAM, 2 cores
Windows 10 Pro, Version 1809 (OS Build 17763) Windows 10 Pro, Version 1903 (OS Build 18362) Windows 10 Enterprise, Version 1809 (OS Build 17763) Windows 10 Enterprise, Version 1903 (OS Build 18362) Windows 10 (IoT) Enterprise 2016 LTSB (OS Build 14393) Windows 10 (IoT) Enterprise 2019 LTSC (OS Build 17763)	2.4 GHz PCs with 4 GB RAM, 2 cores
Windows Server 2012 R2 (Standard and Enterprise Edition) Windows Server 2016 (Standard and Datacenter Edition) Windows Server 2019 (Standard and Enterprise Edition)	2.4 GHz PCs with 4 GB RAM, 2 cores

You will find further information on multi-language versions for the supported operating systems in the readme file on the "SIMATIC NET PC Software" DVD.

For more detailed information on the minimum requirements for the PC, also refer to the readme file on the "SIMATIC NET PC Software" DVD.

2.3 Procedure

Installation of the "SIMATIC NET PC Software"

Proceed as follows to install the "SIMATIC NET PC Software":

1. Log in with the operating system using an account belonging to the group of administrators.
2. Close all active programs. This also includes all virus scanners.
3. If necessary, read additional SIMATIC NET documentation for product-specific information. The SIMATIC NET Manual Collection contains all SIMATIC NET documentation and is included in the scope of delivery of the "SIMATIC NET PC Software" product.
4. Insert the "SIMATIC NET PC Software" DVD and wait until installation is started automatically. If installation does not start after some time (about 30 seconds), the autostart function of your PC is not activated. In this case, start the "setup.exe" program in the main folder on the "SIMATIC NET PC Software" DVD.
5. Click the "Display Readme" button and read the information displayed. The readme file contains the latest information on the SIMATIC NET PC products.
6. Click the "Install Software" button and follow the instructions in the dialog boxes to select the language you require and to accept the license conditions. Depending on the

2.3 Procedure

operating system, there will be one or two dialog boxes relating to security settings and the energy saving mode that you can confirm with the "Install Software" button if you want the installation to be performed.

7. Select the programs to be installed by selecting the check box. The following programs can be selected:

Programs to be installed	Description and procedure
Automation License Manager	You can install or uninstall license keys with the "Automation License Manager".
SIMATIC NET PC Software	If the check box is selected, the SIMATIC NET PC software products are all installed at once.
SIMATIC NET PC Software Doc	Select this check box if you want to install the documents for installation and commissioning on your PC.
SOFTNET-IE RNA	The "SOFTNET-IE RNA" software allows the integration of PCs in redundant, parallel Ethernet structures based on the Parallel Redundancy Protocol (PRP) functionality. Select this check box if you want to install "SOFTNET-IE RNA".

Note

SIMATIC NET PC software products from an already installed SIMATIC NET PC software will be uninstalled automatically before the software products on this DVD are installed. The configuration data is retained.

You will see a further warning on the screen immediately before the previous software products are uninstalled.

8. Click the "Next" button. Installation starts and can take some time.
9. Click the "Transfer License Key" button if you want to transfer license keys. Alternatively, you can also transfer license keys after the installation using the "Automation License Manager" program. Current license keys are required for the products of the "SIMATIC NET PC Software" DVD. These ship with the product on a USB stick and must be transferred to your PC.
10. Once installation is complete, restart the PC and log in with the same account.

Transferring license keys

You can manage the license keys for running SIMATIC NET programs with the "Automation License Manager".

Follow the steps outlined below:

1. Start the "Automation License Manager" program.
2. Select the data medium containing the required license key in the left-hand list (navigation area).
3. In the right-hand list (object area), select the license keys you want to transfer.
4. Click on the menu command "License Key" > "Transfer..." > "Transfer License Key" dialog box.
5. Select the local drive of your computer to which you want to transfer the license keys and confirm with "OK". The license keys are transferred.

Note

For more detailed information on the "Automation License Manager", refer to the online help for the program.

Communication settings

After you have transferred the license keys, the PC reports successful installation of the SIMATIC NET PC products. If multiple network adapters are installed on the PC, the "Communication Settings" dialog box opens.

Note

If the network adapters have not yet been installed, close the dialog with "Cancel" and continue with the instructions in the section "Installing communication modules". Once you are finished, the "Communication Settings" dialog box opens once again.

Note

To transfer a configuration with STEP 7 to a destination PC, a communication module is required in the destination PC that can receive the configuration data. If multiple network adapters are displayed, select the one that is connected to the same network and subnet as the PC on which STEP 7 is installed.

Proceed as follows to select a network adapter using the "Communication Settings" dialog:

1. Select the "Remote Communication" check box. This enables remote configuration.
2. Enter the password for the STEP 7 communication.
3. Select the desired network adapter.

Note

For security reasons, clear the "Remote Communication" check box if you do not need remote configuration.

Installing communication modules

Proceed as follows to install the communication modules to be used:

1. Read the installation manual or operating instructions for the communications module and any other relevant documentation.
2. Install the communications modules as explained.
3. Restart the PC.

Starting the configuration

After restarting the PC, you will need to log on with administrator privileges. It is possible that the Microsoft "Found New Hardware Wizard" will appear. You will then be asked whether or not you want to install the software automatically. Select this option, click "Next" and close the wizard when it has completed its work with "Finish". The PC now contains the SIMATIC NET communication software that still needs to be configured. The steps involved are described in the "Commissioning PC Stations" manual.

Installing further software components

Observe section "SNMP service, SNMP OPC MIB compiler and profile files (Page 35)" on installing optional software components.

Installation and configuration with VMware vSphere

This section describes the requirements for installation as well as the installation of the "SIMATIC NET PC Software" on the "VMware vSphere Hypervisor ESXi 6.5 Update 3" platform and "VMware vSphere Hypervisor ESXi 6.7 Update 2". The steps in configuration described in this section relate to the vSphere Client. The descriptions apply correspondingly to the vSphere Web Client.

3.1 Requirements and notes

3.1.1 User experience

To install and operate the SIMATIC NET PC software products with "VMware vSphere Hypervisor ESXi 6.5 Update 3" and "VMware vSphere Hypervisor ESXi 6.7 Update 2", you require experience of the product "VMware vSphere".

Information on "VMware vSphere" VMware (<http://www.vmware.com/>)

To configure the communications modules, you should have experience and knowledge of the following:

- Structure of the plant involved
- Configuration of the plant
- "SIMATIC NET PC Software", see Further Information (Page 45)

Note

You should only undertake the installation and configuration described below if you have this knowledge.

3.1 Requirements and notes

3.1.2 Requirements and notes relating to the software

Operation on a VMware ESXi server

The "SIMATIC NET PC Software" is suitable for operation on virtual machines with the server operating system VMware vSphere.

Note the specific product and module releases in the following sections.

Released guest operating systems

You will find a list with the guest operating systems compatible with the "ESXi 6.5 Update 3" and "ESXi 6.7 Update 2" servers and that are suitable for operation as PC station in the section "Released operating systems (Page 13)".

Note

Configuration of passthrough for ESXi 6.5

The PCIe modules for use in the passthrough method are configured in the vSphere Web Client.

Note

UEFI/EFI BIOS

"SIMATIC NET PC Software" does not support installations with UEFI/EFI BIOS for servers guest operating systems.

Notes on licenses

Note

A license must be obtained for each virtual machine (VM). If, for example, you want to operate 5 VMs with the S7 protocol, you need to purchase the product that provides the S7 protocol functionality 5 times. The license keys then need to be installed on the VM in which the corresponding functionality is used.

3.1.3 Requirements and notes relating to the hardware

You will find a list with the server hardware compatible with the ESXi server on the Web page of VMware.

VMware compatibility list (<http://www.vmware.com/resources/compatibility/search.php>)

The requirements and restrictions for operation without virtualization also apply.

Minimum requirements of SIMATIC NET for a VM (virtual machine):

- 2.4 GHz (2 cores)
- 4 GB RAM

3.1.4 Restrictions

3.1.4.1 VMware vSphere vMotion

"vMotion" is the term used by VMware for moving virtual machines from one server to another during operation.

vMotion is not possible if SIMATIC NET modules are used in passthrough mode in the relevant VM.

vMotion has been released for operation of SOFTNET-IE S7 via the virtual network adapter VMXNET3. When moving a VM, there will be interruptions in communication (drop out). Make sure that you take this into account when setting the monitoring times of the communications protocols.

3.1.4.2 Options for operating the virtual machines

The following option for operating virtual machines is released:

- Microsoft Remote Desktop connection

See also the notes in the readme of Remote Desktop and Terminal Services.

Note

Operator control restriction

A virtual machine must not be operated via more than one console at any one time.

Make sure that the connection between the Remote PC and VM is not interrupted. Otherwise the VM can only be operated again after a fresh logon of the Remote Desktop client.

When using Remote Desktop, the connection must be established as an administrator to be able to use the full range of functions of the "SIMATIC NET PC Software". The call from the client uses `mstsc.exe /admin`.

3.2 VMware passthrough

3.1.4.3 Intel SR-IOV

SR-IOV stands for "Single Route I/O Virtualization" and allows several VMs direct access to a PCIe device at the same time.

The use of SR-IOV has not been released for SIMATIC NET communication.

3.1.4.4 Configuration of the MAC address in STEP 7 projects

The MAC address of a virtual network adapter is assigned automatically by VMware. If it changes and the adapter involved is part of a configuration, the configuration may need to be changed.

3.2 VMware passthrough

Note

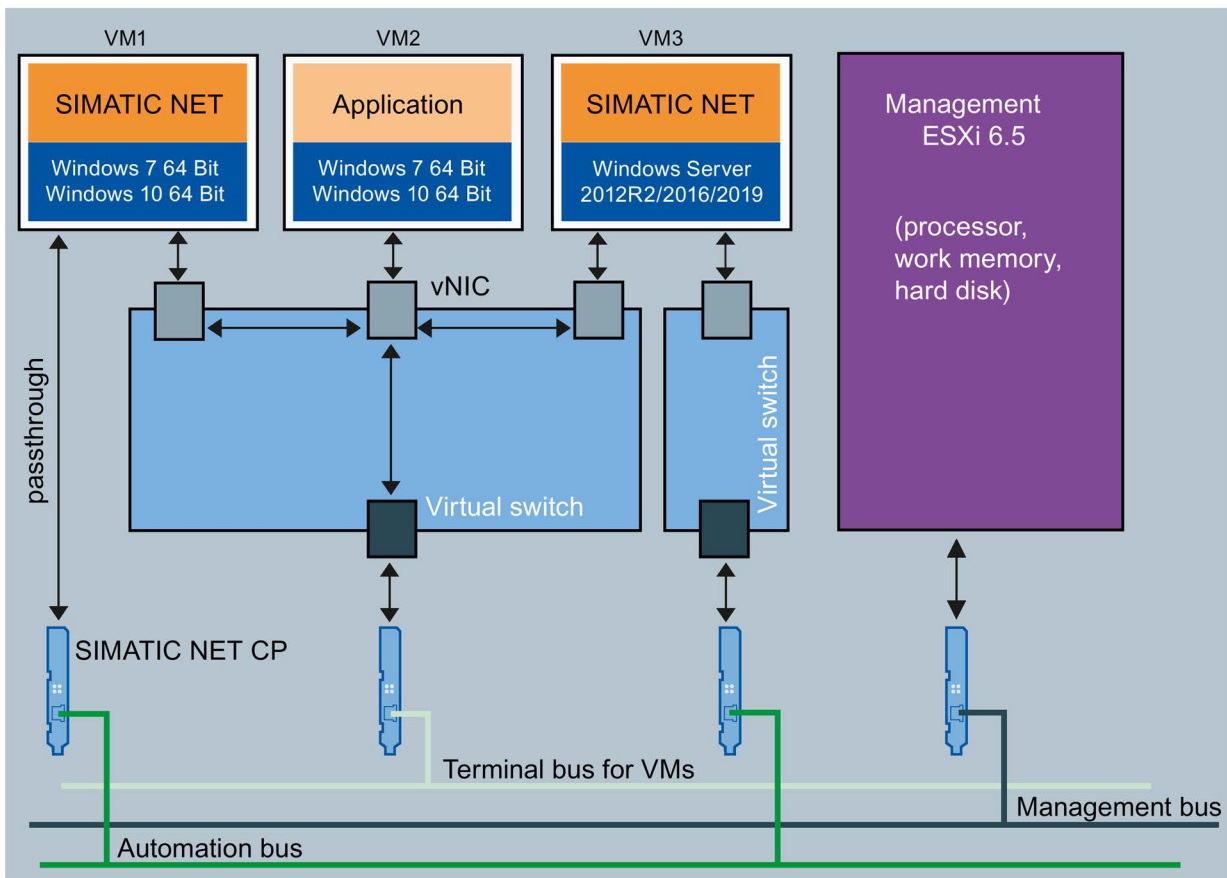
VMware Passthrough is supported up to ESXi V6.5.

If the SIMATIC NET communication is exclusively via virtual networks, you can skip this section.

Following installation, the VMware ESXi server supports only standard hardware (main boards, processors, graphics cards, network adapters, ...) from the compatibility list of VMware (refer to the section "Requirements and notes relating to the hardware (Page 19)").

Assuming that the server hardware supports "Intel Virtualization Technology (Intel VT) for Directed I/O (Intel VT-d)" and this is activated in the BIOS, modules can be passed through to the virtual machine. You can install and use these modules with the drivers of the vendor.

For this method, VMware uses the terms "direct path I/O" or "passthrough". In the remainder of this document, only the term "passthrough" will be used.



vNIC virtual network adapter

Figure 3-1 Division of the Ethernet networks

The Figure "Division of the Ethernet Networks" shows a suggestion for dividing up the Ethernet networks based on their tasks:

- VM1 uses a HARDNET module (e.g. CP 1623) for access to the automation network.
- VM2 is only connected to one virtual adapter on a separate virtual switch, at the same time it shares a real adapter with the other two virtual machines.
- VM3 uses a virtual Ethernet interface (SOFTNET IE) with a separate virtual switch for access to the automation network.
- The management of the ESXi server also uses its own virtual switch to avoid disruptions (e.g. during backups).
- The terminal bus is intended for the connection of "Remote Desktop Service".

Note

Loss of the connection to the management bus.

When replacing PCIe modules, it is possible that the connection to the management network will be lost.

Check the active network card in the console of the server and if necessary specify the network card to be used.

3.2.1 SIMATIC NET modules released for ESXi

The following modules are released for use with the specified ESXi versions:

Module	ESXi 6.5	ESXi 6.7 Update 2
IE General	Yes	Yes
CP 1623	Yes	No
CP 1628	Yes (without Industrial Security function)	No
CP 5622	Yes	No
CP 5623	Yes	No
CP 5711	Yes	Yes

3.2.2 Setting up SIMATIC NET modules for passthrough with the vSphere Web Client

Step 1 - enabling Intel Virtualization Technology in the BIOS of the server

Requirement:


The server hardware supports the "Intel® Virtualization Technology (VT-d)".

You will find information as to whether your hardware supports "Intel® Virtualization Technology (VT-d)" on the Intel website:

INTEL (<http://www.intel.com>).

Step 2 -configuring the module for passthrough

Follow the steps below to assign a module to a VM using passthrough:

1. Start the vSphere WebClient.
2. Go to the server in the navigation tree on the left.
3. Click the "Manage > Settings > Hardware > PCI Devices" tab.
4. Click on the  symbol to edit the hardware.

5. Select one or more modules based on their device ID/vendor ID and subdevice ID/subvendor ID.

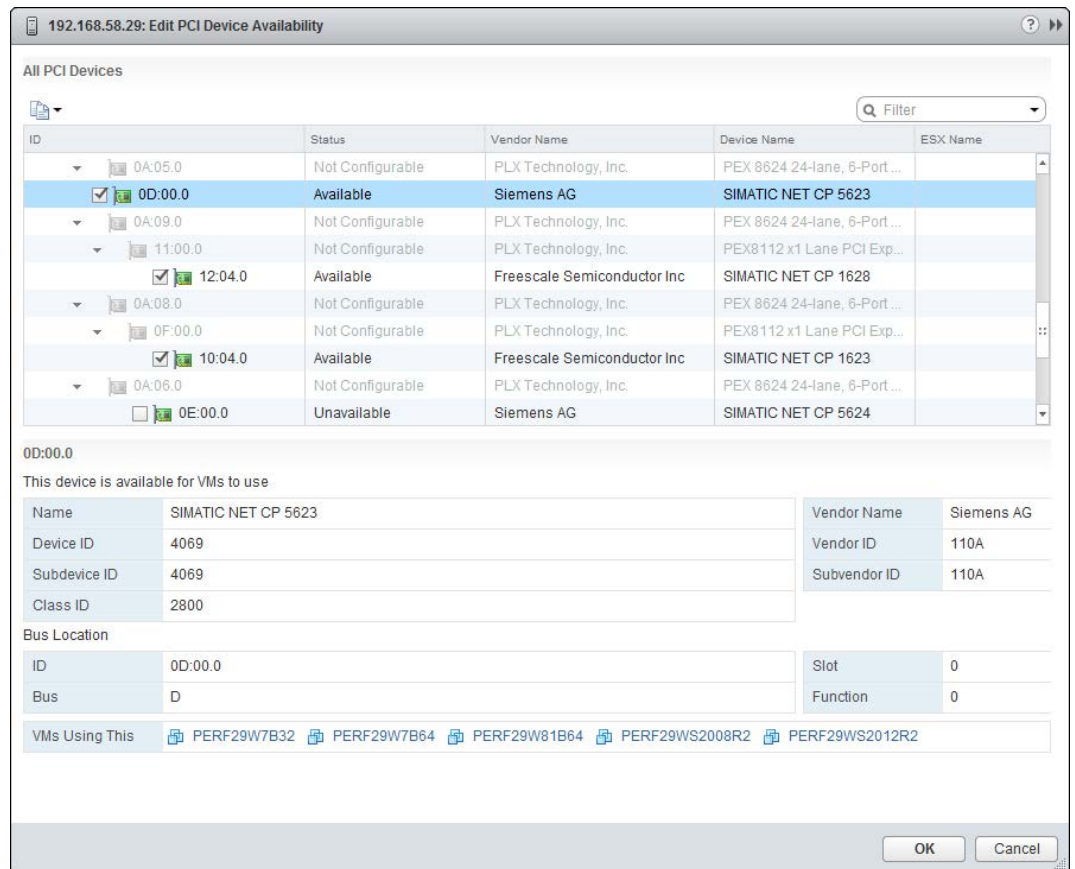


Figure 3-2 Selecting modules for passthrough with the vSphere WebClient

6. Save the entry by clicking the "OK" button.
7. Restart the ESXi server to activate the passthrough configuration.

3.3 Installation of the SIMATIC NET PC software in a virtual machine

To reduce the number of restarts of virtual machines and the ESXi server required during installation, follow the steps below when commissioning SIMATIC NET modules with VMware passthrough:

1. Install the required SIMATIC NET modules in the ESXi server.
2. Start the ESXi server.
3. Select the required passthrough modules in the server settings (see section "AUTOHOTSPOT").
4. Restart the ESXi server.
5. Install the "SIMATIC NET PC Software" in the required virtual machine as described in section "Installation of the SIMATIC NET PC software products (Page 9)".
6. Shut down the operating system of the virtual machine.
7. Add the relevant module in the settings of the virtual machine.
8. Restart the virtual machine.

3.4 Upgrade

3.4.1 Upgrade procedure SIMATIC NET

The "SIMATIC NET PC Software V16" has been released for use with the following versions of VMware vSphere Hypervisor:

- ESXi 6.5
- ESXi 6.7

To upgrade from "SIMATIC NET PC Software" V15 SP1 to "SIMATIC NET PC Software V16", the ESXi server must first be updated to version 6.5 or version 6.7.

1. Run the update of the software VMware vSphere Hypervisor.
2. Following the server upgrade, update the virtual machines. To do this, the current VMware Tools must be installed on the virtual machines.
SIMATIC NET communication has been released for virtual machines as of version "vmx-09".
3. Then install the "SIMATIC NET PC Software V16".

3.4.2 Upgrading Hypervisor

"SIMATIC NET PC Software V16" has been released for VMware vSphere Hypervisor ESXi 6.5 Update 3 and ESXi 6.7 Update 2.

Follow the steps below to upgrade your server:

1. Make sure that you do not use any PROFIBUS module in the passthrough, otherwise a host upgrade is not allowed.
2. Shut down all virtual machines.
3. Install the upgrade to VMware vSphere Hypervisor ESXi 6.5 or ESXi 6.7.
4. Update the "SIMATIC NET PC Software" to version V16.

Note

To use the "SIMATIC NET PC Software" to create and manage the virtual machines, the vSphere WebClient is required.

4.1 Configuration of the virtual Standard Switch (vSS)

For SIMATIC NET communication via SoftNet Ethernet products, a separate virtual Standard Switch (vSS) must be used. You will find a schematic diagram in the section VMware passthrough (Page 20), Figure 3-1 Division of the Ethernet networks.

Configuring a VMkernel port for server management tasks on this switch (vSS) is not permitted.

Note

SIMATIC NET communication is not released for the virtual Distributed Switch (vDS).

To be able to use SIMATIC NET communication via vSS, make the following settings in the properties of the vSwitch and the port groups.

Note

The settings can be specified separately for the vSwitch, individual port groups or individual VMkernel ports.

Remember that the settings for the port group/VMkernel port overwrite the settings on the vSwitch and therefore have priority.

You can open the properties as follows:

1. Open the vSphere Web Client.
2. Click on the server in the navigation tree on the left.
3. Click on the "Configuration" tab.
4. Click "Network" in the small "Hardware" dialog window.
5. To configure the network, click "Properties..." on the right above the network.
6. In the menu on the left, select the port group for the created network (the settings can be seen in the right-hand column, see Figure 4-1).

4.1 Configuration of the virtual Standard Switch (vSS)

To change the settings, click the "Edit..." button at the bottom left.

The properties dialog and the settings to be made are explained in the following sections.

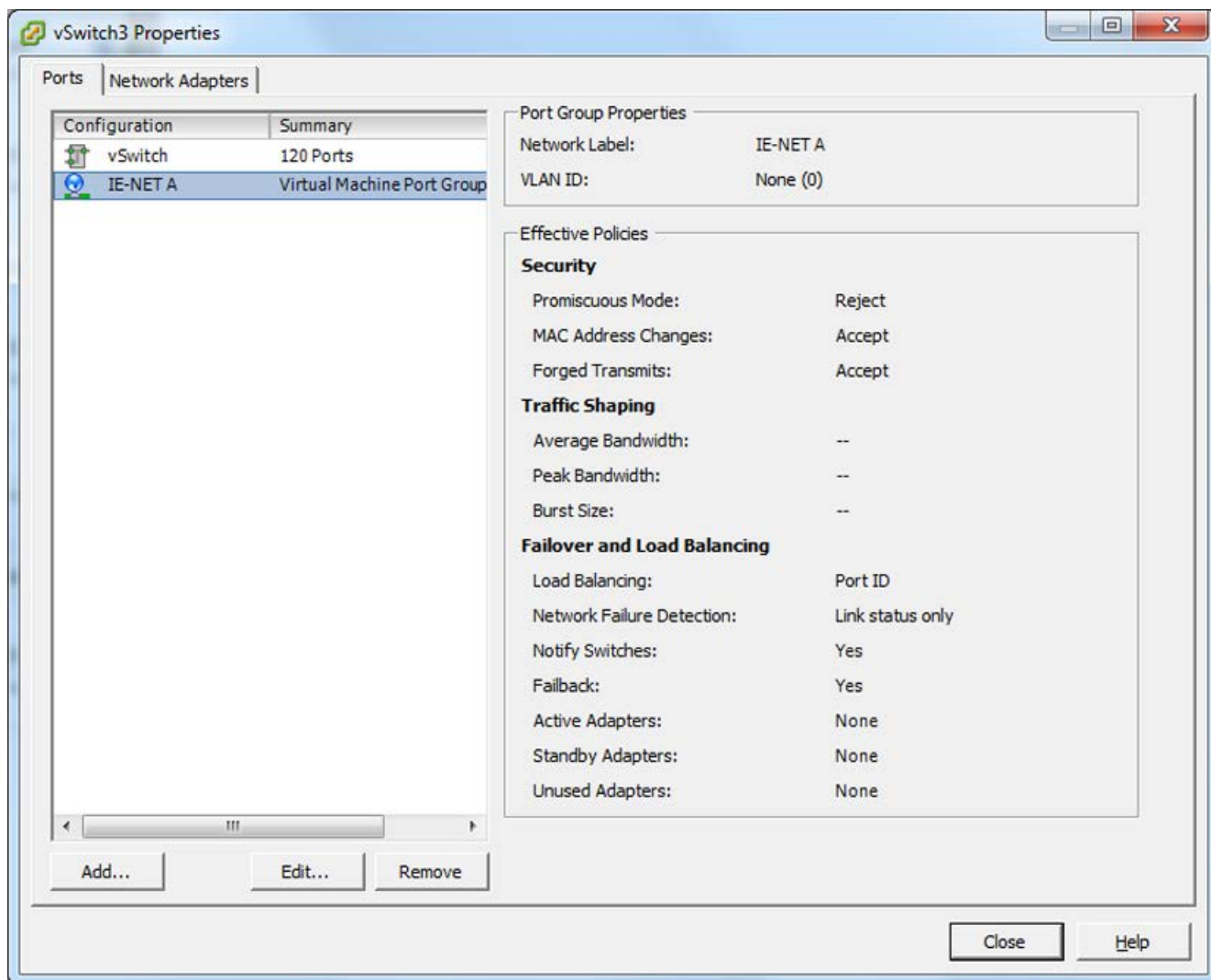


Figure 4-1 Selecting the port group in the properties of the vSwitch

4.1.1 General

The name of the port group is assigned on this page. This name is the name of the network connection that can be selected in the "Properties of virtual machines".

The default setting for VLAN ID "None (0)" must be retained.

4.1.2 Security

For SIMATIC NET communication, the default settings for security must be retained.

- Promiscuous Mode: "Reject"
- MAC Address Changes: "Accept"
- Forged Transmits: "Accept"

4.1.3 Traffic Shaping

The VMware function "Traffic Shaping" allows central and distributed restriction of the usable bandwidth.

The VMware function "Traffic Shaping" has not been released for the "SIMATIC NET PC Software".

The default setting "Disabled" must be retained for "Traffic Shaping".

4.1.4 NIC Teaming

The settings in the "NIC Teaming" tab allow the settings for load balancing and failover configuration.

The default settings for NIC groupings must be retained.

Note

The server settings for assigning the MAC addresses must not be changed when using SIMATIC NET communication.

This involves the assignment type and the VMware OUI value (Organizationally Unique Identifier). The default values are as follows:

Assignment type: "VMware OUI assignment"

VMware OUI: for example "00:50:56" :xx:xx:xx

4.2 Configuration of the virtual machine

4.2.1 Hardware

Note

1:1 assignment between module and VM recommended

If a module marked for passthrough is assigned to several VMs, only one of these VMs can be started because the module can only be operated exclusively by one VM. The module should therefore only be assigned to one VM.

1. Open the vSphere client.
2. Click on the required machine in the navigation tree on the left.
3. To edit the properties of the virtual machine, open the shortcut menu (right-click) and select "Edit Settings".

Reaction: The "Virtual Machine Properties" window opens.

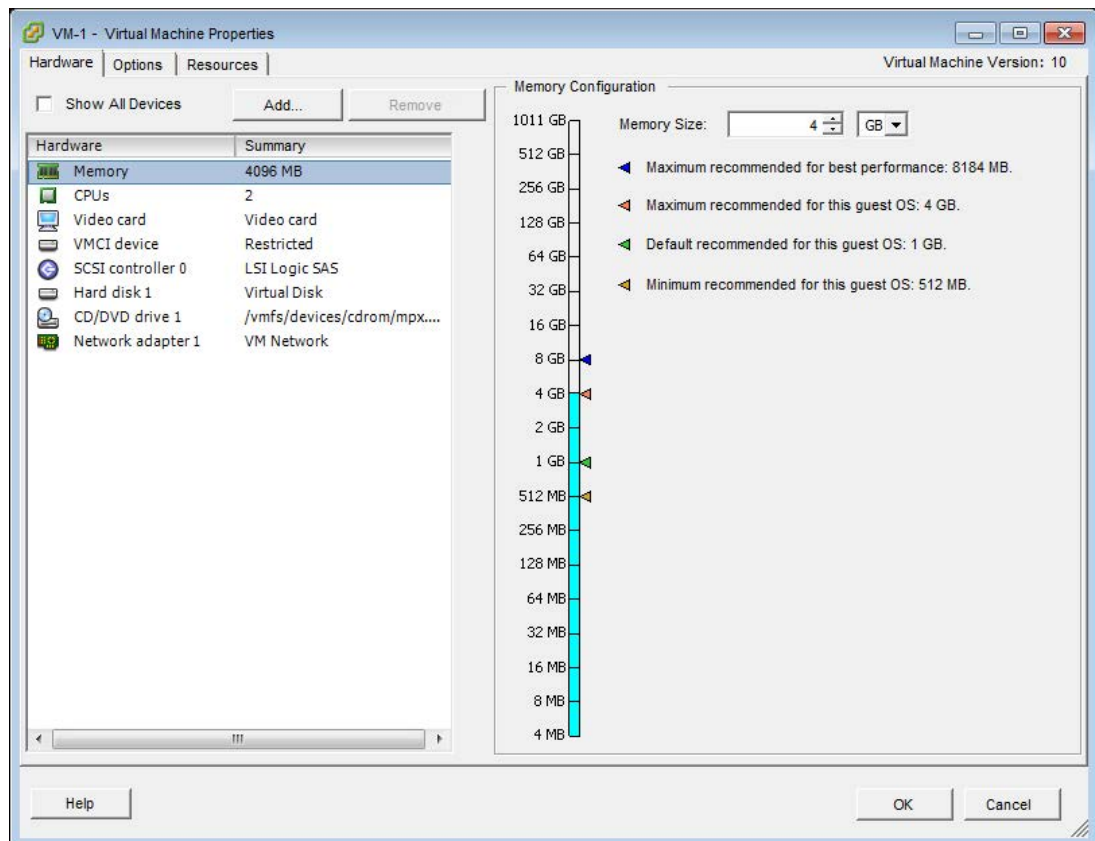


Figure 4-2 Properties of virtual machines

4.2.1.1 CPU/RAM settings

Select "Memory" on the left and configure the memory for 64-bit systems at least 4 GB.

Select "CPUs" and set 1 for the "Number of virtual sockets" and at least 2 for the "Number of cores per socket".

4.2 Configuration of the virtual machine

4.2.1.2 Assigning a PCIe module marked with passthrough to a virtual machine

Follow the steps below to assign a module marked with passthrough to a virtual machine:

1. Click the "Add..." button.

Reaction:

The "Add Hardware" dialog box opens.

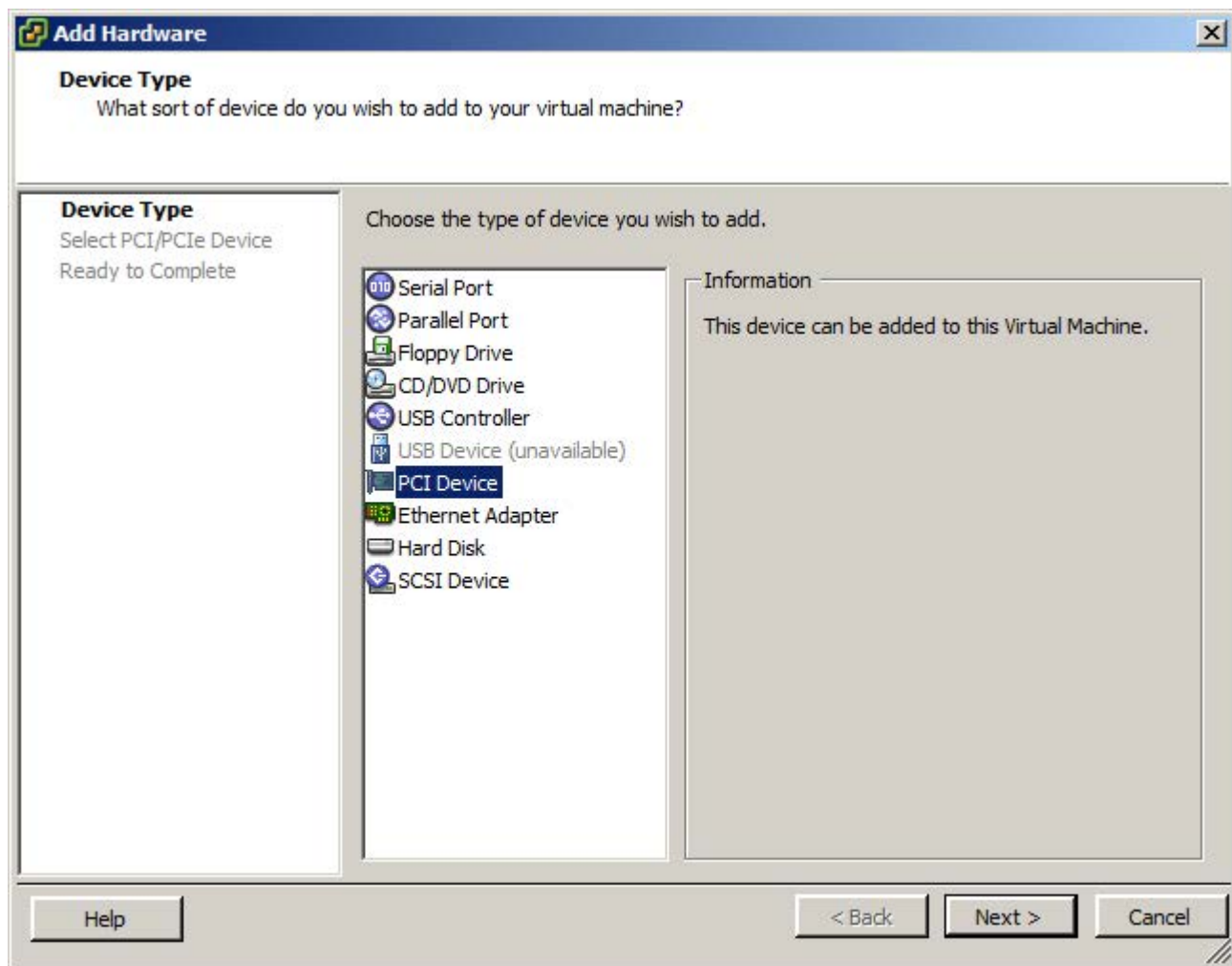


Figure 4-3 Selecting the device type

2. From the list, select the device type you want to add to the virtual machine and click "Next".
3. In the drop-down list, select the module you want to add to the virtual machine and click "Next".

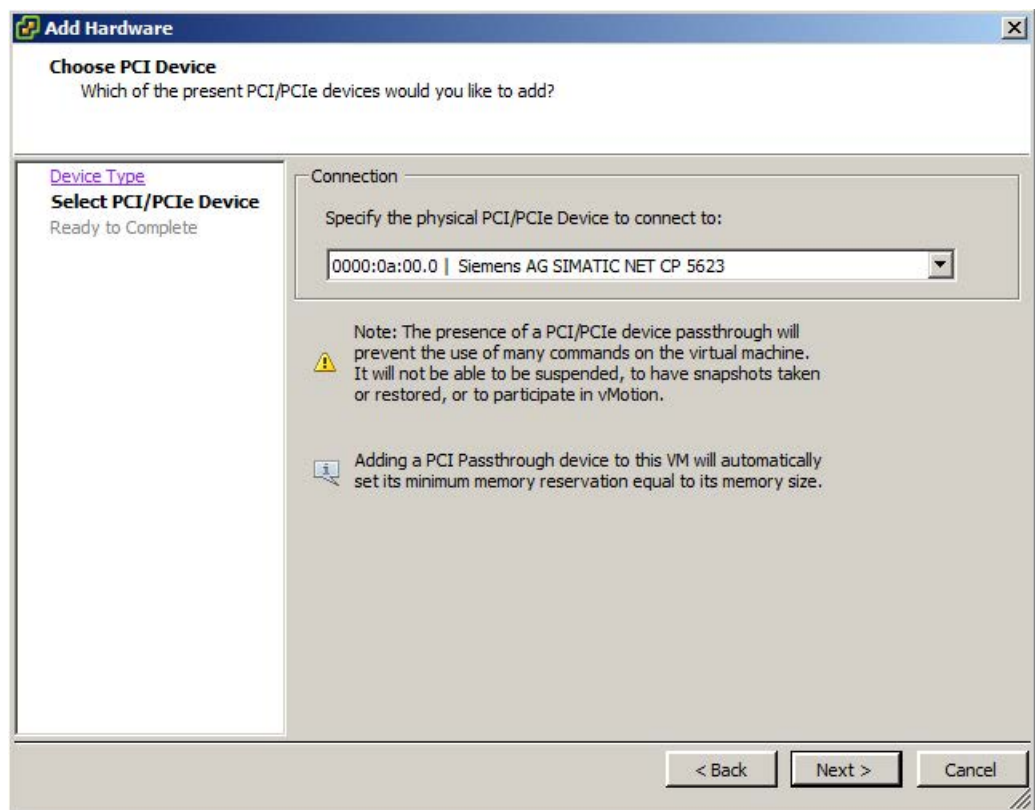


Figure 4-4 Selecting a module

Note

With a CP 5711, first add a USB controller

To be able to assign a CP 5711 to a virtual machine, you must first add a USB controller. Follow the steps described below:

1. Initially select "USB controller" instead of "PCI device".
2. Start the VM and wait until the VMware device drivers for the controller are installed. You can then shutdown the VM and continue at Step 3.
3. You can add the CP 5711 by selecting "USB device" in the "Add Hardware" dialog.

Note

A passthrough module can be operated by only one VM at any one time.

4.2 Configuration of the virtual machine

4.2.1.3 Adding network adapter to the virtual machine

SIMATIC NET communication has been released for the network adapter VMXNET 3.

The setting of the MAC address for SIMATIC NET communication must remain set to the default (automatic).

When adding an Ethernet adapter, you need to select the corresponding network based on the port group name (section "Configuration of the virtual Standard Switch (vSS) (Page 27)").

4.2.2 Options

The following settings relate to the advanced options in the "Options" tab.

4.2.2.1 Memory/CPU Hotplug

The settings for "Memory/CPU Hotplug" must remain set to the defaults:

- "Disable memory hot add for this virtual machine"
- "Disable CPU hot plug for this virtual machine"

4.2.2.2 Boot options

The "Boot options" must remain set to "BIOS" for the specified boot firmware.

4.2.2.3 Starting a virtual machine

Once you have assigned the module marked for passthrough to a virtual machine, the device manager of the operating system recognizes the virtual machine when the corresponding module starts up.

If "SIMATIC NET PC software" is installed and a SIMATIC NET module is assigned, the suitable driver will be installed automatically.

Note

1:1 assignment between module and VM recommended

If a module marked for passthrough is assigned to several VMs, only one VM can be started because the module can only be operated exclusively by one VM. The module should therefore only be assigned to one VM.

5.1 Installing the SNMP service

Purpose

The SNMP OPC Server requires the SNMP service in the operating system. Full use of the SNMP OPC Server is only possible if this Windows component is installed / enabled.

Introduction

Following standard installation of Windows, the full SNMP service is not yet available in the operating system. Without taking further steps, you can query items but cannot use SNMP traps.

Installing the SNMP service involves the following steps:

- Installing the SNMP service
- Adapting the network security settings to your own security needs

Requirement

You must be logged on as administrator or as a member of the administrators' group to be able to perform the installation.

Note

If programs already use the OPC server and the SNMP service was installed while an OPC Server was active, all programs that use the OPC Server must be closed and restarted. The OPC server must also be shut down with "Communication Settings" > "Exit OPC Server" and then restarted.

Note

If the computer is connected to a network, the general network settings may prevent installation of the SNMP services.

Step 1 - Installing the SNMP service

Procedure with Windows 7 SP1 and Windows 10 (until version 1809)

Install the SNMP service as described below:

1. In the Control Panel, go to "Programs" > "Programs and Features" > link "Turn Windows features on or off".

Reaction: The dialog box with the tree structure of the installed Windows features opens.
2. Enable the "Simple Network Management Protocol (SNMP)" check box in the "Windows Features" list and confirm with "OK". The SNMP service starts automatically whenever you restart the system.

Note

Exit OPC server

If the SNMP service was installed on an OPC server that is already active, the OPC server must be shut down.

Shut down the OPC server with "Communication Settings" > "Exit OPC server" to ensure that the settings are adopted. With the next request, it will start up again automatically.

Procedure with Windows Server 2012 R2 and Windows Server 2016

For the local server, add the "SNMP service" feature. The SNMP service starts automatically whenever you restart the system.

Note

Exit OPC server

If the SNMP service was installed on an OPC server that is already active, the OPC server must be shut down.

Close the OPC server with "Communication Settings" > "Exit OPC server" to ensure that the settings are adopted. With the next request, it will start up again automatically.

Procedure with Windows 10 (version 1903 and higher) and Windows Server 2019

Install the SNMP service as described below:

1. In the Control Panel, go to "Start > Settings > Apps > Optional Features + Add Features".
2. In the "Windows Features" list, click "Install" for "Simple Network Management Protocol (SNMP)". The SNMP service starts automatically whenever you restart the system.

Note

Exiting OPC server

If the SNMP service was installed on an OPC server that is already active, the OPC server must be shut down.

Close the OPC server with "Communication Settings" > "Exit OPC server" to ensure that the settings are adopted. With the next request, it will start up again automatically.

Step 2 - Adapting the network security settings to your own security requirements

When you install the SNMP service, not only the SNMP protocol but also an SNMP agent is installed.

Adapt the network security settings and the access permissions of the SNMP agent to your own security needs. In the Control Panel, go to "System and Security" > "Administration" > "Services" entry > "Services" dialog, "SNMP Trap" entry > right-click on "Properties" > "Security" tab. You will find more detailed information in our manual "Commissioning PC Stations".

5.2 SNMP OPC MIB compiler and profile files

MIB compiler of STEP 7

The range of information that can be monitored by the devices with the SIMATIC NET SNMP OPC server depends on the particular device profile. With the integrated MIB compiler of STEP 7, existing profiles can be modified and new device profiles created for any SNMP-compliant device. It requires MIB files according to the SMIv1 standard.

MIB files for CP 1613 A2, CP 1623 and CP 1628

Suitable MIB files ship with STEP 7.

When you enter the required device in the plant configuration, the "device profile" parameter offers you the profiles with the name of the module, for example "CP1623_V10.txt" and they can be selected here.

The following MIB files are supported for the CP 1613 A2:

- rfc1213.mib
- automationSystem.mib
- automationTime.mib

The following MIB files are supported for the CP 1623 and CP 1628:

- rfc1213.mib
- automationSystem.mib
- automationPS.mib
- automationTime.mib

Uninstalling the SIMATIC NET PC software products

Note

After uninstalling the SIMATIC NET PC software products, any CP installed in the PC will no longer be ready for operation because the associated device driver is also uninstalled. This is indicated in the device manager by a yellow exclamation point. You can remedy this situation by reinstalling the "SIMATIC NET PC Software" DVD. SOFTNET modules can also be operated with other SIMATIC products (e.g. STEP 7).

Uninstalling the SIMATIC NET PC products is achieved using "Control Panel" and the entry "Programs" or "Uninstall programs". Depending on what you installed from the data medium "SIMATIC NET PC Software" you can also uninstall these parts again:

- SIMATIC NET PC Software
- SIMATIC NET PC Software Doc
- SIMATIC NET SOFTNET-IE RNA
- Siemens Automation License Manager (only uninstall if no other product on your device uses license keys and after you have removed the license keys from the device)

If you uninstall "SIMATIC NET PC Software", you can also uninstall the following software if it is not required by other products:

- Microsoft SQL Server Compact
- OPC UA Local Discovery Server

We do not advise uninstalling Microsoft Visual C++ Redistributables.

Note

Any license keys left on the PC can no longer be backed up without the "Automation License Manager".

Automated installation

7.1 Purpose and general description

Use in enterprises

Enterprises that install plants with large numbers of computers generally want to use the same installation everywhere. Automated installation provides this option. The settings are made with a control file.

Sequence

Installation only requires a few user decisions that generally need to be taken at the end of the installation.

Control file

The control file is generated during a sample run and is structured like an INI file. It is clear to read as an ASCII file and in exceptional cases can be corrected manually.

7.2 Structure of the control file

Description

The control file has the name "Ra_Auto.ini" and has the following structure:

```
[BUNDLEINFO]
CreatedWith=SIMATIC NET PC Software
RaSetupVersion=
[GENERAL]
AutoReboot=True
RebootOnEnd=True
Setuplanguage=en
IdName=
IdCompany=
IdNumber=
LicenseKeyDestinationDrive=C:
TransferLicenseManagerKey=False
InstallLanguage=de;en
OnlyUpdateInstallation=False
[DIALOGS]
DialogLicenseList=False
DialogDone=True

[PRODUCTCODE1]
DestinationDrive=C:
Selected=True
DestinationPath=[ProgramFilesFolder]SIEMENS\SIMATIC.NET
```

If necessary, the following parameters can be adapted, the other parameters should not be changed

[General] area

General settings are made in the [General] area.

Parameters	Value range	Description
AutoReboot	True/false	Automatic restart at the end
RebootOnEnd	True/false	Display of restart prompt
Setuplanguage	de=German en=English	Installed language

[Dialogs] area

The display of dialog boxes can be influenced in the [Dialogs] section.

Parameters	Value range	Description
DialogDone	True/false	Display of the closing dialog

[PRODUCTCODE1] area

The [Productcode1] area contains the product code as a title and the three following parameters. Examples of product codes are: [LICENSEMANAGER] or [SIMNETPC].

Parameters	Value range	Description
DestinationDrive	-	Installation drive, e.g. "C:\\"
Selected	True/false	Product selection
DestinationPath	-	Installation path The installation path can be changed dynamically by a placeholder.

7.3 Generating the control file automatically

Description

The "Ra_Auto.ini" control file is generated by the setup program by making a trial installation and can then be used to control the installation program.

The setup program can be called by a batch file.

Note

The configuration of the PC on which you create the control file must correspond to the configuration of the destination PC.

If the "Microsoft Visual C++ 2012 Redistributable" is already installed on the destination PC, for example, the corresponding package in the control file is considered to be unnecessary:

```
[VCREDIST2012]
```

```
Selected=False
```

This would have the effect that the package would not be installed on all destination PCs and the product possibly could not be installed successfully.

Example of a batch file

The batch file shown here generates the control file "Ra-Auto.ini".

Create a batch file with the following content:

```
cd \sw\x64
setup.exe /record
```

Copy the batch file to the directory of the SIMATIC NET DVD. Change to this directory and start the batch file from there.

Following this, a screen is displayed in which other settings can be made.

The lines of the batch file example have the following significance:

Line	Meaning
1	The program changes to the work directory to record der installation.
2	The program starts the manual test installation and generates the control file "Ra_Auto.ini" with the "/record" parameter. All user actions in the dialogs are stored there. The record action stops after the "component selection" and closes the program.

Note

During the automatic installation, note that the path for the "Ra_Auto.ini" file can be set with the following instruction:

```
sw\x64\setup.exe /silent=<Dr>:\<folder>\Ra_Auto.ini
```

Unless a path is specified, the Windows directory is searched.

If additional questions arise or error messages are displayed during installation, a suitable dialog opens.

Further Information

8.1 Documentation guide

Readme file of the SIMATIC NET products

All the important information relating to the SIMATIC NET products and other information on configuration and operation can be found in the two readme files for the overall product (main directory of the product DVD).

Quick Start for SIMATIC NET products

You will find a quick start for configuration in the "Commissioning PC Stations" document if you have installed the documentation (Start menu "Start" > "Siemens Automation" > "Documentation" > "Manuals" > "English" > "SIMATIC NET - Commissioning PC Stations").

Commissioning PC Stations

The "Commissioning PC Stations" document contains overview information on all PC configuration programs (Start menu "Start" > "Siemens Automation" > "Documentation" > "Manuals" > "English" > "SIMATIC NET - Commissioning PC Stations").

The "Commissioning PC Stations" manual is a PDF document and can be read and printed out when required with the Acrobat Reader.

"Communication Settings" configuration program

Here, you will find information relating to a variety of topics, for example procedures manuals for the project engineering and configuration of connections.
("Communication Settings" > "Help" > "SIMATIC NET Configuration")

Manual Collection

The SIMATIC NET Manual Collection contains all SIMATIC NET documentation and is supplied with the "SIMATIC NET PC Software" product.

8.2 Other documents

Supplied documents and information

Documents and information on SIMATIC NET products are available on the accompanying DVD. The most important documents are:

- The "Readme.htm" file with the latest information on each product (in the main directory of the DVD).
- Any printed leaflets accompanying a product

Following installation, the following documents are available:

- SIMATIC NET - Commissioning PC Stations
- SIMATIC NET - Industrial Communication with PG/PC

You can also obtain information in the integrated online help systems using the F1 key.

Additional Information on the Internet

Along with a wide range of other information, you can also obtain documentation on the product from the Internet:

(<http://support.automation.siemens.com/WW/view/en/>)> Manuals > Operating Instructions

Other product-related Internet addresses include:

- Siemens AG, Process Industries and Drives, SIMATIC NET
(<http://www.siemens.com/net> (<http://www.siemens.com/net>))
- SIMATIC NET catalog "IK PI"
(http://w3app.siemens.com/sc-static/catalogs/catalog/IK_PI_2015_de.pdf)

8.3 Technical support, contacts and training

You will find information on this in the file "TechnicalSupport.pdf" in the "doc" folder of the "SIMATIC NET PC Software" DVD.