SIEMENS

SINUMERIK

SINUMERIK ONE
Installing Create & Run MyVirtual Machine

Installation Manual

Valid for:
MACHINUM
Create & Run MyVirtual Machine V1.4
SINUMERIK ONE
SINUMERIK Virtual CNC software V6.23
SINUMERIK STEP 7 Toolbox V19

Legal information

Warning notice system

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

⚠ **DANGER**

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

⚠ **WARNING**

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

⚠ **CAUTION**

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

NOTICE

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

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

Qualified Personnel

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

Proper use of Siemens products

Note the following:

⚠ **WARNING**

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

Trademarks

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

Disclaimer of Liability

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

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Introduction 1

1.1 About SINUMERIK

From simple, standardized CNC machines to premium modular machine designs – the SINUMERIK CNCs offer the right solution for all machine concepts. Whether for individual parts or mass production, simple or complex workpieces – SINUMERIK is the highly dynamic automation solution, integrated for all areas of production. From prototype construction and tool design to mold making, all the way to large-scale series production.

Visit our website for more information SINUMERIK (https://www.siemens.com/sinumerik).

1.2 About this documentation

Target group

This documentation is intended for the following target groups:

- CNC configuration and commissioning personnel
- CNC programming personnel for job planning
- Personnel in CNC training
- CNC operators (beginners or retraining)
- Sales personnel for the presentation of CNC or machine features in sales talks

Purpose

This documentation describes the installation environment required for working with the Create & Run MyVirtual Machine products.

Create & Run MyVirtual Machine are made available via a common installation package. This includes the simulation environment for the NCK, PLC, drive components, and SINUMERIK Operate. You can use the user interfaces to create machine projects based on templates or from scratch and operate the control.

For Create MyVirtual Machine users:

Optional software packages, such as those required for commissioning, the migration of existing projects based on SINUMERIK 840D sl and for extended simulation options, are also described briefly.

To allow the use of all functions, such as PLC programming and monitoring of variables and inputs/outputs, SIMATIC STEP 7 Professional (TIA Portal) with option packages must also be installed. SIMATIC STEP 7 Professional can be installed on the same computer or on another computer or in a virtual machine. Communication takes place via Ethernet.

Benefits

This documentation enables the addressed target group to install, license and configure the system.

Standard scope

This documentation only describes the functionality of the standard version. This may differ from the scope of the functionality of the system that is actually supplied. Please refer to the ordering documentation only for the functionality of the supplied drive system.

It may be possible to execute other functions in the system which are not described in this documentation. This does not, however, represent an obligation to supply such functions with a new control or when servicing.

For reasons of clarity, this documentation cannot include all of the detailed information on all product types. Further, this documentation cannot take into consideration every conceivable type of installation, operation and service/maintenance.

The machine manufacturer must document any additions or modifications they make to the product themselves.

Websites of third-party companies

This document may contain hyperlinks to third-party websites. Siemens is not responsible for and shall not be liable for these websites and their content. Siemens has no control over the information which appears on these websites and is not responsible for the content and information provided there. The user bears the risk for their use.

1.3 Documentation on the internet

1.3.1 Documentation overview SINUMERIK ONE

Comprehensive documentation about the functions provided in SINUMERIK ONE Version 6.13 and higher is provided in the Documentation overview SINUMERIK ONE (https://support.industry.siemens.com/cs/ww/en/view/109768483).

You can display documents or download them in PDF and HTML5 format.

The documentation is divided into the following categories:

- User: Operating
- User: Programming
- Manufacturer/Service: Functions
- Manufacturer/Service: Hardware
- Manufacturer/Service: Configuration/Setup
- Manufacturer/Service: Safety Integrated
- Information and training
- Manufacturer/Service: SINAMICS

1.3.2 Documentation overview SINUMERIK operator components

Comprehensive documentation about the SINUMERIK operator components is provided in the Documentation overview SINUMERIK operator components (https://support.industry.siemens.com/cs/document/109783841/technische-dokumentation-zu-sinumerik-bedienkomponenten?dti=0&lc=en-WW).

You can display documents or download them in PDF and HTML5 format.

The documentation is divided into the following categories:

- Operator Panels

- Machine control panels

- Machine Pushbutton Panel

- Handheld Unit/Mini handheld devices

- Further operator components

An overview of the most important documents, entries and links to SINUMERIK is provided at SINUMERIK Overview - Topic Page (https://support.industry.siemens.com/cs/document/109766201/sinumerik-an-overview-of-the-most-important-documents-and-links?dti=0&lc=en-WW).

1.4 Feedback on the technical documentation

If you have any questions, suggestions, or corrections regarding the technical documentation published in the Siemens Industry Online Support, use the link "Give feedback" link which appears at the end of the entry.

1.5 mySupport documentation

With the "mySupport documentation" web-based system you can compile your own individual documentation based on Siemens content, and adapt it for your own machine documentation.

To start the application, click on the "My Documentation" tile on the "mySupport links and tools" (https://support.industry.siemens.com/cs/ww/en/my) portal page:

mySupport Links and Tools

Support Request >	My Filters >	My Favorites >	My Notifications >	My Products >
My Documentation ↗	CAx download >	My IBase Registrations ↗		
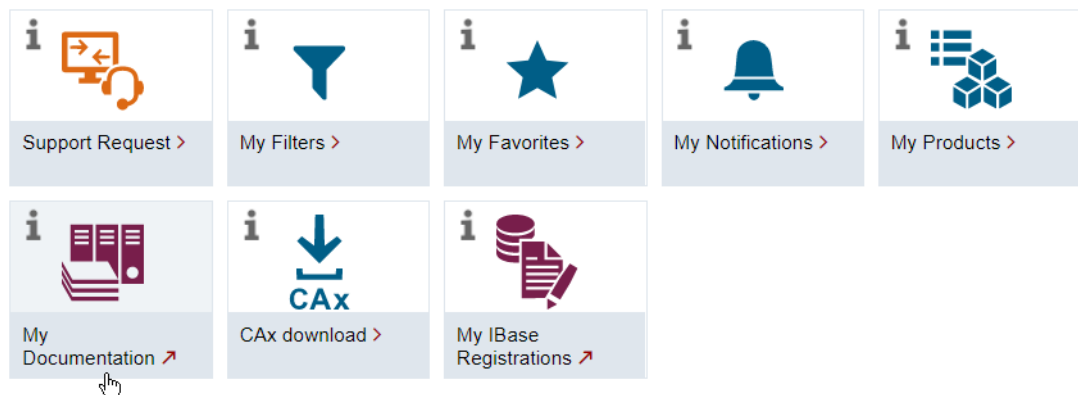
The configured manual can be exported in RTF, PDF or XML format.

Note

Siemens content that supports the mySupport documentation application can be identified by the presence of the "Configure" link.

1.6 Service and Support

Product support

You can find more information about products on the internet:

Product support (https://support.industry.siemens.com/cs/ww/en/)

The following is provided at this address:

- Up-to-date product information (product announcements)

- FAQs (frequently asked questions)

- Manuals

- Downloads

- Newsletters with the latest information about your products

- Global forum for information and best practice sharing between users and specialists

- Local contact persons via our Contacts at Siemens database (→ "Contact")

- Information about field services, repairs, spare parts, and much more (→ "Field Service")

Technical support

Country-specific telephone numbers for technical support are provided on the internet at address (https://support.industry.siemens.com/cs/ww/en/sc/4868) in the "Contact" area.

If you have any technical questions, please use the online form in the "Support Request" area.

Training

You can find information on SITRAIN at the following address (https://www.siemens.com/sitrain).
SITRAIN offers training courses for automation and drives products, systems and solutions from Siemens.

Siemens support on the go
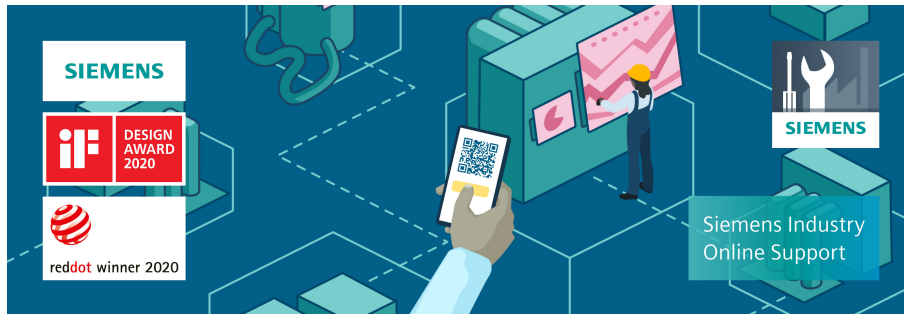
With the award-winning "Industry Online Support" app, you can access more than 300,000 documents for Siemens Industry products – any time and from anywhere. The app can support you in areas including:

- Resolving problems when implementing a project
- Troubleshooting when faults develop
- Expanding a system or planning a new system

Furthermore, you have access to the Technical Forum and other articles from our experts:

- FAQs
- Application examples
- Manuals
- Certificates
- Product announcements and much more

The "Industry Online Support" app is available for Apple iOS and Android.

Digital product information as QR code

The ID link according to IEC 61406 provides you with digital information about your product.

The ID link is a globally unique identifier and appears as a QR code on the product.

You can recognize the ID link by the frame with a black corner at the bottom right.

In addition to the digital nameplate you will find the following product information:

- Technical specifications
- FAQs

- Manuals
- Certificates
- Product announcements
- Application examples

1.7 Using OpenSSL

This product can contain the following software:

- Software developed by the OpenSSL project for use in the OpenSSL toolkit
- Cryptographic software created by Eric Young.
- Software developed by Eric Young

You can find more information on the internet:

- OpenSSL (https://www.openssl.org)
- Cryptsoft (https://www.cryptsoft.com)

1.8 Compliance with the General Data Protection Regulation

Siemens complies with standard data protection principles, in particular the data minimization rules (privacy by design).

For this product, this means:

The product processes or stores the following personal data in log files.

- Name of the Windows user account in the specification of the user path (User-Path)
- Time stamp log functions for events that occurred

It does not involve data from the personal or private sphere. The above data is required for the SINUMERIK Trace diagnostic function. The data saved is limited to the absolute minimum as this is absolutely necessary for diagnostics purposes.

Fundamental safety instructions 2

2.1 General safety instructions

> ⚠ **WARNING**
>
> **Danger to life if the safety instructions and residual risks are not observed**
>
> If the safety instructions and residual risks in the associated hardware documentation are not observed, accidents involving severe injuries or death can occur.
> - Observe the safety instructions given in the hardware documentation.
> - Consider the residual risks for the risk evaluation.

> ⚠ **WARNING**
>
> **Malfunctions of the machine as a result of incorrect or changed parameter settings**
>
> As a result of incorrect or changed parameterization, machines can malfunction, which in turn can lead to injuries or death.
> - Protect the parameterization against unauthorized access.
> - Handle possible malfunctions by taking suitable measures, e.g. emergency stop or emergency off.

2.2 Warranty and liability for application examples

Application examples are not binding and do not claim to be complete regarding configuration, equipment or any eventuality which may arise. Application examples do not represent specific customer solutions, but are only intended to provide support for typical tasks.

As the user you yourself are responsible for ensuring that the products described are operated correctly. Application examples do not relieve you of your responsibility for safe handling when using, installing, operating and maintaining the equipment.

2.3 Cybersecurity information

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

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

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

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

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

To stay informed about product updates, subscribe to the Siemens Industrial Cybersecurity RSS Feed under
https://new.siemens.com/cert.

Further information is provided on the Internet:

Industrial Security Configuration Manual (https://support.industry.siemens.com/cs/ww/en/view/108862708)

> ⚠️ **WARNING**
>
> **Unsafe operating states resulting from software manipulation**
>
> Software manipulations, e.g. viruses, Trojans, or worms, can cause unsafe operating states in your system that may lead to death, serious injury, and property damage.
>
> - Keep the software up to date.
> - Incorporate the automation and drive components into a state-of-the-art, integrated industrial cybersecurity concept for the installation or machine.
> - Make sure that you include all installed products in the integrated industrial cybersecurity concept.
> - Protect files stored on exchangeable storage media from malicious software by with suitable protection measures, e.g. virus scanners.
> - Carefully check all cybersecurity-related settings once commissioning has been completed.

Installation environment

<div align="right">3</div>

3.1 Installation package

The installation package "Create & Run MyVirtual Machine" combines the previous individual installations Create MyVirtual Machine and Run MyVirtual Machine. When installing, the complete package for both applications is installed. The individual applications Create or Run MyVirtual Machine can be started as usual via the Start menu or the desktop icons. Depending on the existing or active licenses, you can use Create or Run MyVirtual Machine with a full or reduced scope of functions.

Differentiation between Create and Run MyVirtual Machine

Both applications are based on an identical software platform. Depending on the intended use and requirements, the range of functions for the user is scaled according to the work task.

*   **Create MyVirtual Machine (CMVM)**
    Create MyVirtual Machine includes all the functions of Run MyVirtual Machine plus the necessary functions for setting up, automating and commissioning machine concepts and CNC machines. This gives machine manufacturers the opportunity to virtually create and test software for machine automation without real prototype machines. Create MyVirtual Machine is also required by the machine manufacturer to create individual machine projects (*.vcp) for the Run MyVirtual Machine software solution.

*   **Run MyVirtual Machine (RMVM)**
    Run MyVirtual Machine is an NC programming workstation with identical controls on the PC for machine tools using SINUMERIK ONE. The offline programming workstation Run MyVirtual Machine simulates a machine tool controlled by SINUMERIK ONE. SINUMERIK Operate, together with a simulated machine control panel, ensures realistic operation and programming on the PC.

3.2 Create MyVirtual Machine product description

Create MyVirtual Machine (license Create MyVirtual Machine /Operate)

Create MyVirtual Machine is a virtual CNC system that simulates a SINUMERIK ONE on your PC. The hardware components of the control are modeled as software components, and represent a complete image of a real CNC.

With Create MyVirtual Machine, you can develop and test the next control generation in the development phase of a CNC machine, or NCK, PLC and HMI software without requiring any hardware. Parts of the machine commissioning are preconfigured on the virtual model. Thus you can significantly shorten the commissioning time of the real machine by configuring the system using the virtual model. Furthermore, the created machine projects can be made available by Create MyVirtual Machine for processing in Run MyVirtual Machine for work preparation.

Create MyVirtual Machine /Open

Create MyVirtual Machine /Open is an additional option to Create MyVirtual Machine /Operate and provides an interface to the Create MyVirtual Machine platform. External applications can use this interface to control the Create MyVirtual Machine /Operate system and communicate with it at runtime, e.g. remote control, automated tests, black box mode, external simulation system, etc.

Create MyVirtual Machine /3D

In conjunction with Create MyVirtual Machine/Operate (prerequisite), the machine manufacturer is able to create a kinematic 3D model of his machine. This 3D model can be used for mechanical engineering (e.g. commissioning of the measuring cycle). In addition, the created 3D model can be used for efficient work preparation in Run MyVirtual Machine /3D. The machine user can run NC programs virtually and detect possible collisions, programming errors, and optimization potential.

Create MyVirtual Machine and license

Create MyVirtual Machine can only be used with a valid license. Without a license, you can only start the application, without any further functionality.

More information can be found in Section Licensing Create/Run MyVirtual Machine.

3.3 Run MyVirtual Machine product description

Run MyVirtual Machine (Run MyVirtual Machine /Operate license)

Run MyVirtual Machine is an NC programming workstation with identical controls on the PC for machine tools using SINUMERIK ONE.

The offline programming workstation Run MyVirtual Machine simulates a machine tool controlled by SINUMERIK ONE. SINUMERIK Operate, together with a simulated machine control panel, ensures realistic operation and programming on the PC. You only require SINUMERIK CNC programming know-how.

Run MyVirtual Machine enables offline CNC programming on the PC, for example in work preparation. Exactly the same scope of CNC language commands, CNC machining cycles, and ShopMill/ShopTurn work steps is available as in the real CNC. Regardless of whether CNC programs were generated via Run MyVirtual Machine itself or via CAM systems, they can be checked for freedom from errors in the best possible way.

Run MyVirtual Machine /Open

Run MyVirtual Machine /Open is an additional option to Run MyVirtual Machine /Operate. You need it to operate an external SW application, for example, your own machine room simulation.

Run MyVirtual Machine /3D

Run MyVirtual Machine /3D is an additional option to Run MyVirtual Machine /Operate. This option extends Run MyVirtual Machine to include integrated 3D machining and material removal simulation. This enables you to evaluate machine movements visually and to check for freedom from collision. Using the material removal simulation, workpiece machining can be tested in advance via simulation.

The 3D Simulation is also ideal for training setup procedures and running in machines on a virtual model without exposure to any risks whatsoever.

Run MyVirtual Machine demo mode (without license)

Run MyVirtual Machine can also be used without a license. After installation, use Run MyVirtual Machine without a license in the demo mode variant. In this variant you can only open and work with special template machine projects. The demo machine projects are provided via the installation package "Machine Projects Create/Run MyVirtual Machine". The functionality of these machine projects is limited in demo mode (project cannot be saved).

3.4 Components of Create & Run MyVirtual Machine

Create & Run MyVirtual Machine (including SINUMERIK Virtual CNC software) has software components that correspond to real CNC equipment:

- Virtual CNC core (simNCK)
- Virtual CNC user interface SINUMERIK Operate (HMI)
- Virtual machine control panel (MCP)
- Virtual PLC adaptive control (SIMATIC S7-PLCSIM Advanced based on S7-1500)
- Virtual PLC I/O
- Drive simulation (simDrive SINAMICS S120)
- 3D Simulation of the machine interior (option)
- Open interface for integration of external simulation tools (option)

3.5 Installation environment in general

Installation environment overview

Note

Supplementary packages SINUMERIK Virtual CNC software and machine projects

Create & Run MyVirtual Machine consists of a software package which provides the framework application for the operation of a virtual SINUMERIK controller. You have to additionally install the required version of the SINUMERIK Virtual CNC software and optionally the associated machine projects. These installation packages include the simulation of the components NCK, PLC, HMI, drive replacement components, communication mechanisms and machine examples. Besides the frame application, you can install and use different versions of the SINUMERIK Virtual CNC software in parallel.

An overview of the required software components is provided in the table. Also observe the installation sequence.

Step	SINUMERIK engineering software
1	Create & Run MyVirtual Machine V1.4 or higher
2	SINUMERIK Virtual CNC software V6.13 or higher (current version CNC software V6.23)
3	Templates for machine projects, suitable for SINUMERIK Virtual CNC software (from CNC-SW V6.15 SP2, machine projects are available using a dedicated installation package) **or** Use machine projects ("*.vcp") from the machine manufacturer, e.g. from own machines in the machine inventory.

More information

- More information about installing the CNC software can be found in the *SINUMERIK Virtual CNC software installation instructions*.

- More information about installing templates for machine projects is provided in the *Installation instructions for machine projects Create/Run MyVirtual Machine.*

3.6 Commissioning environment (CMVM)

General information

Additional engineering software is required to create PLC projects for SINUMERIK with SIMATIC PLC S7-1500 and load them into Create MyVirtual Machine.

Installation environment overview

The engineering software for PLC projects can be installed on the same computer as the engineering software for SINUMERIK projects (Create MyVirtual Machine), on another computer, or in a virtual machine. SIMATIC STEP 7 Professional and Create MyVirtual Machine communicate via Ethernet.

The table provides the overview of the required and optional software components.

- **Installation on one computer: Step 1-3**
  Install the entire software on one computer.

  Note

  There is no defined sequence for installing the engineering software for SINUMERIK and PLC projects. You can install SIMATIC STEP 7 Professional with all required option packages first and then Create & Run MyVirtual Machine with all necessary components.

- **Installation on different computers**

  - First computer: Step 1
    Install Create & Run MyVirtual Machine (license for Create MyVirtual Machine) and the required versions of the SINUMERIK Virtual CNC software and templates for machine projects.

  - Second computer: Steps 2 and 3
    Install SIMATIC STEP 7 Professional with all required option packages

Step	SINUMERIK projects engineering software	PLC projects engineering software
1	Create & Run MyVirtual Machine, SINUMERIK Virtual CNC software and optionally templates for machine projects	
2		SIMATIC STEP 7 Professional V19 (TIA Portal) incl. SIMATIC Safety (license)
3		**Option package required for HW configuration and PLC programming** SINUMERIK STEP 7 Toolbox V19
-	Optional: • Software for the peripheral simulation for connection to the Open Interface • SINUMERIK Virtual CNC Software Language Extensions Additional display languages for SINUMERIK Operate	

Note

Two-computer solution

If you work with two computers, you must configure the inbound connections of the TCP communication in the firewall on the computer with Create & Run MyVirtual Machine. Observe the "Cross-computer communication via Ethernet" section in the SINUMERIK Virtual CNC SW Installation Instructions.

More information

- For the installation of SIMATIC STEP 7 Professional and other option packages, observe the software requirements and the installation instructions in the appropriate software documentation.

- More information about installing the CNC software can be found in the *SINUMERIK Virtual CNC SW installation instructions*.

- More information about installing Create & Run MyVirtual Machine can be found in the *SINUMERIK Create & Run MyVirtual Machine installation instructions*.

- More information about installing templates for machine projects is provided in the *Installation instructions for machine projects Create/Run MyVirtual Machine*.

See also

Installation environment in general (Page 18)

3.7 Migration environment (CMVM)

General information

If you need to migrate an existing SINUMERIK 840D sl project to a SINUMERIK ONE (real/virtual) project, further software components must be installed in addition to the SIMATIC STEP 7 Professional commissioning software.

Installation environment overview

The table provides the overview of the additional software components.

Step	Migrate PLC projects from SINUMERIK 840D sl
1	SIMATIC STEP 7 as of V5.5 SP4 with all option packages used in the project
2	SINUMERIK 840D sl STEP 7 Toolbox 4.5 SP2 (or higher)
3	Readiness Check Tool TIA Portal
4	TIA Portal V19 migration tool

Note

One/two-computer solution

The TIA Portal V19 migration tool does not need to be installed if you install SIMATIC STEP 7 V5.5 and SIMATIC STEP 7 Professional V19 on the same computer.

More information

For the installation of SIMATIC STEP 7 and other option packages, observe the software requirements and the installation instructions in the appropriate software documentation.

The *Migration to a SINUMERIK ONE* System Manual contains more information about project and archive migration.

See also

Commissioning environment (CMVM) (Page 18)

3.8 Installation guideline

Installing and configuring Create & Run MyVirtual Machine and additional software

The virtual development and configuration environment for SINUMERIK ONE consists of several individual products which are installed and configured prior to their first use. All necessary work steps for the application in question are shown in the overview. In the right-hand column of the overview you will find the reference to further information.
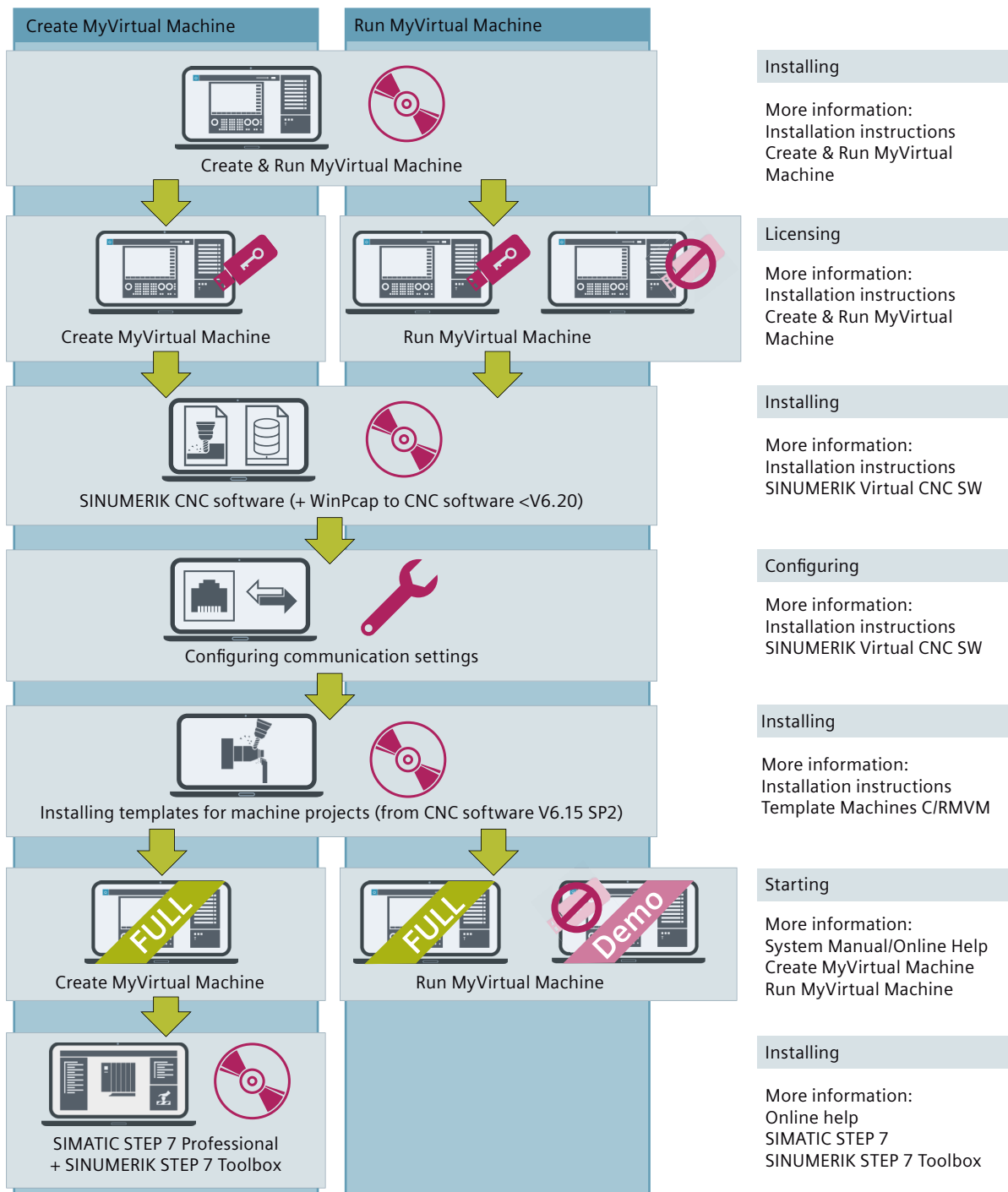
Figure 3-1   Guideline: Installing and configuring MyVirtual Machine products (sample installation sequence)

After you have completed all steps, Create & Run MyVirtual Machine is ready to use.

System requirements

<div style="text-align: right; font-size: 3em;">4</div>

4.1 System requirements

Requirement

You need administrator rights to install Create & Run MyVirtual Machine. After installation, use a user account without administrator rights when working with Create & Run MyVirtual Machine, in order to protect the system against security risks and unauthorized manipulation.

See also: Cybersecurity information (Page 13)

Create & Run MyVirtual Machine

Supported operating systems

- Microsoft Windows 10 Professional/Enterprise/IoT Enterprise/Home (64 Bit)

- Restricted compatibility for Microsoft Windows 11 Home/Pro/Pro Education/Pro for Workstations/Enterprise/Education (64 Bit)

Hardware requirements

- Processor:
  At least 4 processor cores
  (Intel® Core i5 class or comparable)

- RAM:
  4 GB memory (minimum)

- Hard disk (available memory):
  6 GB (minimum)

- Graphic card:
  Intel HD graphic 4000 (or comparable) with the current graphic driver

- Graphic when using the Create/Run MyVirtual Machine /3D option:
  - Use powerful 3D graphics cards with OpenGL support and the respective **current** drivers for your operating system.
  - The use of the 3D option places increased demands on the graphics card. Simple onboard GPUs can be overwhelmed by complex 3D models. This can lead to general display errors during rendering of the 3D machine simulation or to frame rate slumps (faltering display).

- Screen:
  Resolution 1680x1050 or higher, 15.6"

- Input devices:
  Mouse, keyboard

Software requirements

- Microsoft Edge WebView2 Runtime (Page 59)
  (Necessary for using the online help of Create & Run MyVirtual Machine)

Mobile terminals - Notebooks

The processor cycle can be severely restricted in battery mode depending on the power options and the type of notebook. A low battery status may restrict the simulation mode of Create & Run MyVirtual Machine so that simulation performance is reduced to such a degree that individual components come to a standstill.

- Check the configured power options.

- Use the notebook connected to the mains or ensure sufficient charge of the battery.

Note

Increased system requirements

Note the increased system requirements for SIMATIC STEP 7 Professional (TIA Portal) compared with Create & Run MyVirtual Machine when both engineering software packages are installed on the same computer. The system requirements are provided in the readme for SIMATIC STEP 7 Professional.

Note

Using additional software

The release of Create & Run MyVirtual Machine in combination with other software for SINUMERIK 840D sl or other software products refers to the products mentioned in the documentation. Please refer to the documentation of other software products for the combination with Create & Run MyVirtual Machine if they are not listed in this documentation.

See also

Microsoft Windows N versions (Page 61)

4.2 Valid Windows user accounts

User accounts and permitted characters

Create & Run MyVirtual Machine uses the name of the Windows user account (<username>) for data storage and program management. For example, the virtual memory card for data storage/ program management is temporarily stored in the Windows user account. However, conflicts occur when certain characters such as umlauts are used.

The virtual memory card is stored under the following path:

- C:\Users**<username>**\AppData\Local\Siemens\Automation\SINUMERIK ONE\ncu\card

Restrictions for <username>

SINUMERIK Operate accesses the commissioning data, machine data, archives, NC programs and other data via the path of the virtual memory card. Only the following characters are supported in the path name and for <username>:

- A-Z

- a-z

- 0-9

- Blanks

- Underscore (_)

Only use the abovenamed characters and no special characters, umlauts, etc. for the user account <username>.

Invalid characters in <username>

If Create & Run MyVirtual Machine is installed or started under a user account (username) with invalid characters, communication will be interrupted even though the machine project was started successfully.

Example of invalid username: Max Müller

Example of valid username: Max Mueller

Remedy for invalid user account

For the installation and operation of Create/Run MyVirtual, create a user account that does not contain any special characters or umlauts.

Installing and licensing

<div style="text-align: right; font-size: 2em;">5</div>

5.1 Installing Create & Run MyVirtual Machine

Description

The Create & Run MyVirtual Machine installation package is located on the installation medium supplied.

Note

The term "installation medium" is synonymous with DVD, download or other supplied media.

Requirement

- The hardware and software of the PC meet the system requirements.

- You have administrator rights on your computer.

- All running programs are closed.

- Only one version of Create & Run MyVirtual Machine can be installed on a single computer. However, multiple versions of the SINUMERIK Virtual CNC software can be installed with the corresponding template machine projects.
  Uninstall existing older versions of Create or Run MyVirtual Machine.

How to install Create & Run MyVirtual Machine

1. Navigate to the setup files on the installation medium of Create & Run MyVirtual Machine.

2. Double-click "Start.exe". The installation wizard opens.

3. Follow the wizard's instructions and confirm the prompts.

   Note

   Updating during the Setup

   If existing installation requirements are updated during the Setup, an additional restart may be necessary. In this case, the Setup prompts you to restart and then continues with the installation process.

   ---

4. You must restart the computer once the installation has been completed.

Create & Run MyVirtual Machine is now installed and must be licensed. The licensing procedure is described in the following section.

Further procedure

Then install the SINUMERIK Virtual CNC software (own installation file). Create & Run MyVirtual Machine can only be used in combination with one or more installed SINUMERIK Virtual CNC software instances.

5.2 Additional software

Description

After installing Create & Run MyVirtual Machine, check whether the software required for full operation is installed.

Note the installation environment for Create & Run MyVirtual Machine in the following sections.

- Installation environment in general (Page 18)

Note the additional requirements of the installation environment for Create MyVirtual Machine in the following sections.

- Commissioning environment (CMVM) (Page 18)

- Migration environment (CMVM (Page 20))

5.3 Starting Create & Run MyVirtual Machine for the first time

Description

The project management opens first when Create or Run MyVirtual Machine is started.

Note

Requirement

Before starting Create/Run MyVirtual Machine for the first time, you must install at least one version of the SINUMERIK Virtual CNC software and configure the communication settings.

More information can be found in the *SINUMERIK Virtual CNC SW installation instructions*.

Starting Create or Run MyVirtual Machine

1. On the desktop, double-click the icon "Create MyVirtual Machine" or "Run MyVirtual Machine", or select "Start > Siemens Automation > Create MyVirtual Machine" or "Start > Siemens Automation > Run MyVirtual Machine". The Create/Run MyVirtual Machine project management appears.
   In the project management, create and open the machine projects that manage all data required for a virtual SINUMERIK control.

5.4 Licensing

5.4.1 Licensing Create/Run MyVirtual Machine

Description

A license is required for operation of the Create or Run MyVirtual Machine and can be obtained in a license file (*.lic). A license file can include one or more licenses.

The license is managed using a licensing application (License Tool). The application is installed automatically when setting up Create & Run MyVirtual Machine.

Licenses for Create MyVirtual Machine and options

The installation of Create MyVirtual Machine also includes the Open Interface and the 3D Simulation. Additional licenses are required to be able to use the functions of these options.

The following licenses are required to run Create MyVirtual Machine:

- Create MyVirtual Machine /Operate (basic license to use the framework application Create MyVirtual Machine)

The following licenses can optionally be used:

- Create MyVirtual Machine /Open (license for using the Open interface to connect own applications)
- Create MyVirtual Machine /3D (license for using 3D Simulation in Create MyVirtual Machine)

Licenses for Run MyVirtual Machine and options

Installation of Run MyVirtual Machine also includes the open interface and 3D Simulation. Additional licenses are required to be able to use the functions of these options.

The following licenses are required to operate Run MyVirtual Machine:

- Run MyVirtual Machine /Operate (basic license to use the framework application Run MyVirtual Machine)

The following licenses can optionally be used:

- Run MyVirtual Machine /Open (license for using the Open interface to connect own applications)
- Run MyVirtual Machine /3D (license for using 3D Simulation in Run MyVirtual Machine)

Types of licenses

The license is transferred by way of a license file as follows:

- Local license (node-locked configuration) (Page 34)
  Configuration of the license file following installation on the local client or on a connected storage medium with the licensing application.

- License server (server configuration) (Page 34)
  Use of a license server which is managed by the licensing application. The license file with one or more licenses is located on the license server. The licenses can be used by all workstations (computers) in the network with an installed and configured licensing application. Simultaneous use of a license is only ever possible by one open Create/Run MyVirtual Machine.
  The license server can also be installed locally on a work station computer, i.e. the license server and Create/Run MyVirtual Machine are installed on the same computer.
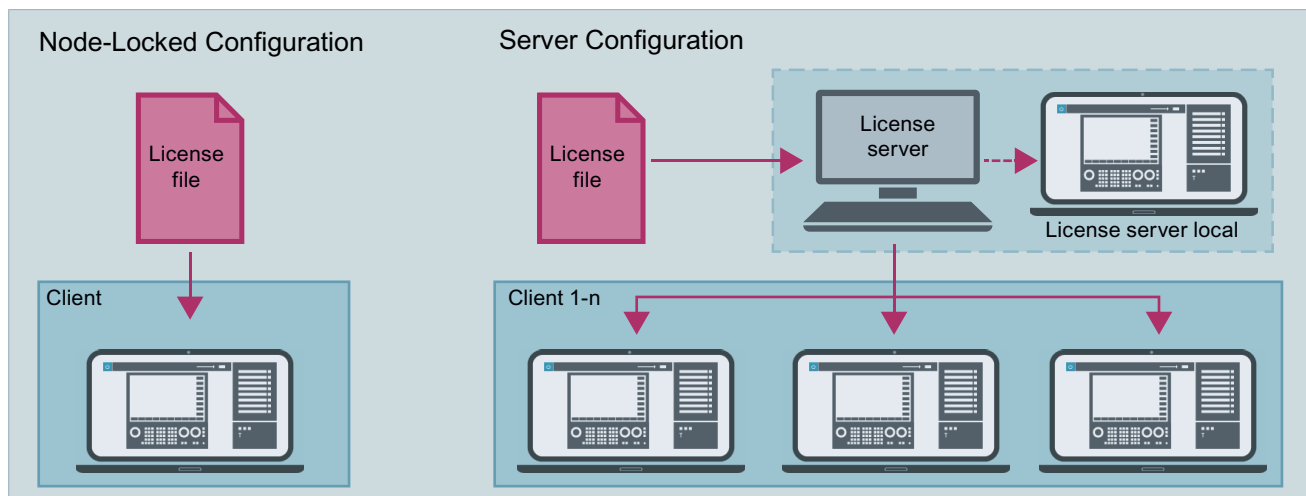
Figure 5-1   License file for local computer or server license

License file source of supply

The license file is generated according to your specifications and infrastructure (license requirement, server, MAC address and computer name of the client) during the order process and is then made available by email.

Example of the information required for a license:

- Hostname (server or client)

- COMPOSITE Host ID

- Sold-To (customer)

Note

After purchasing Create & Run MyVirtual Machine, you can request a license according to your task profile by email. During the license ordering process, you will be provided with the necessary tools to, for example, determine the Hostname or the COMPOSITE Host ID according to your infrastructure.

Managing licenses

- Managing licenses via the user interface (Page 38)

- Managing licenses via the command line (Page 41)

License check

The license is only checked when opening the machine project. If a valid license is not found, a message is displayed and you can directly start the licensing application.

Depending on the license, the functionality of Create/Run MyVirtual Machine is limited.

- No license
  → Run MyVirtual Machine in demo mode with reduced functionality. Only demo machine projects can be opened.
  → No functional scope of Create MyVirtual Machine can be used

- License for Run MyVirtual Machine
  → Full functionality of Run MyVirtual Machine license is available

- Create MyVirtual Machine license
  → Full functionality of Create MyVirtual Machine license is available

- Licenses for Create and Run MyVirtual Machine
  → You can switch between Create MyVirtual Machine and Run MyVirtual Machine in the open application

More information

Detailed documentation for the installation of the license server (Microsoft Windows and Linux) and the installation file for setting up the licenses can be found on the installation medium in the directory "Create and Run MyVirtual Machine\Support\".

5.4.2 Local license

NOTICE
Special case local license
The use of a local license is a special licensing case. As a rule, a local license server with a server license is also used for a single-user station license. Observe the section "License server (Page 34)".

Description (node-locked configuration)

The license file is copied to the local client or is installed on a computer connected in the network, e.g. "C:\LicenseFiles\license-myvirtual-machine-node-locked.lic". The license file is only used by one client. The path for storage of the license file is configured with the licensing application. The client references directly to the license file. The licenses in the license file are assigned to one client (computer name, MAC address) and are not available for any other client.

Note
Permitted characters in the path name

Do not use umlauts or special characters in the path name.

Characteristics of stand-alone configuration of a local license file (node-locked configuration):

- No server and no server configuration required
- Suitable for a small number of installations

5.4.3 License server

Description

A license server is used for management of the licenses. This is the standard use case for license management.

One or more license files used by the clients (floating) are located on the server. A floating license means that each client in the network can use the number of licenses specified in the license file.

The license server is set up and configured in advance. The license server can be installed locally or on a server. The reference to the server with the licensing application is configured on the clients.

The following license configurations are supported:

* Single server configuration
A server manages the license file.

* Redundant server configuration
Redundant servers manage the license file with a corresponding copy of the master license file.

* Configuration of several servers
Each server has a stand-alone license file with its own licenses. The client places a license request at Server 1. If there is no free or available license, the request is forwarded to server n.

Requirement

The license server is configured according to the documentation "Siemens Digital Industries Software License Server Installation Instructions" and "Siemens Digital Industries Software Licensing Manual".

* License server installed and configured.

* License server stored on server and adapted to infrastructure.

* Port for TCP communication for license request is enabled on the server (Windows firewall).

* Name of the "License server" and "Port" are defined and are provided when configuring the licensing application.

See also

Installing the license server under Microsoft Windows (Page 35)

5.4.4 Installing the license server under Microsoft Windows

The following section describes how to install a license server on a computer with Microsoft Windows. Depending on the type of license, the license server can be used for several clients in the network or as a local license server.

With the local license server, Create & Run MyVirtual Machine is installed on the same computer and uses the license of the locally installed license server. This is the standard use case for using a server license for a single-user station, e.g. Run MyVirtual Machine work station for work preparation.

Requirement

* You have administrator rights on the computer.

* A suitable server license file ("*.lic") is available on the computer

* Setup file of the license server is available
Installation medium:
"Create&Run_MyVirtual_Machine\Support\SiemensLicenseServer_<version>_Win64_x86-64.exe"

How to install a license server

1. Double-click on the setup file "SiemensLicenseServer_<version>_Win64_x86-64.exe" of the license server.
    The setup is started.

2. Select the language of the installation wizard in the dialog that appears and confirm with "OK".
    The installation wizard is started in the selected language.

3. Follow the instructions of the installation wizard. The following information is requested during the installation process:

    – Server license file
      Specify the storage location of the license and import it.

    – License server port
      The license server can be reached via this port. The port must be enabled. Port 29000 is used by default. If you do not change port's default settings, you do not have to make any further settings. If you change the port, you must make a note of the port entered and configure the port activation if necessary.

    – Storage location of the installation

    – WebKey (Siemens account)
      Administrative tasks can be carried out more easily via this Siemens account (email address). The function is optional.

    – Confirm installation (firewall access)
      Activate "Allow license server access through local firewall" so that clients in the network can access the computer with the license server.

    > **Note**
    >
    > **License on local license server**
    >
    > If the license server and Create & Run MyVirtual Machine are on the same computer and there is no access to the license server from other clients in the network, you can also deactivate "License server access through local firewall".

4. After installing and configuring the license server, click "Finished" to close the wizard.
    If you want to import additional licenses, click on "Licensing".

The license server is configured and can now be used. The next step is to configure the port number and the host name of the license server in the licensing application on the clients or on the local computer.

> **Note**
>
> **Replacing or adding a license**
>
> Start the license server setup again if you want to replace the current license or add more licenses. Select the "Add/replace license file" option.

Repairing or uninstalling the license server

- Repairing the license server
  Start the license server setup and select the option "Repair license server software"

- Uninstalling the license server
  Start the license server setup and select the "Remove software" option
 Uninstall the software via the Windows Control Panel

See also

Using the license server (Page 41)

5.4.5 User interface of the licensing application

Licensing application (License Tool)

> The user interface of the licensing application allows you to manage the licenses for Create/Run MyVirtual Machine products. The application is installed on the computer with the Create/Run MyVirtual Machine products.
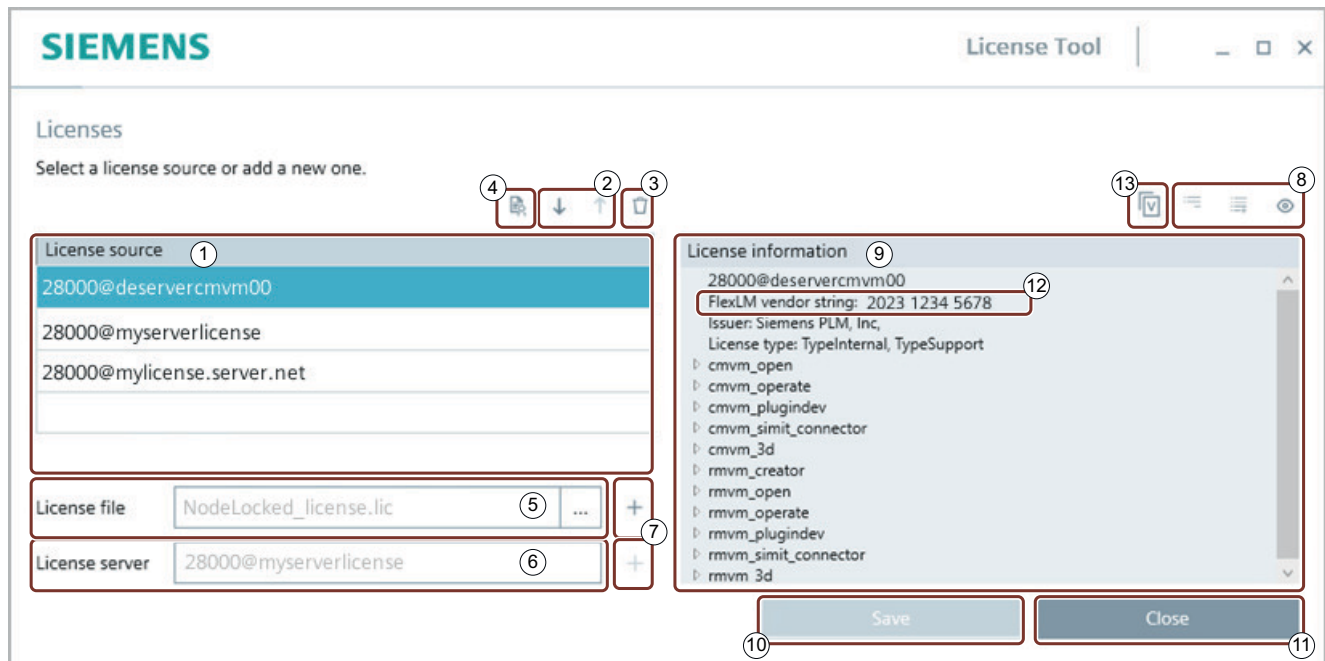
① List of added license servers or license files. When opening the machine project, a search is made for a valid license in the license files on the license servers. The search sequence goes from the top to the bottom. The first valid license found is used.

② The selected license file or the selected license server is shifted either up or down using the arrow keys. This allows you to change the search sequence for the license check.

③ 🗑 Clicking on the button removes the selected license file or the selected license server from the list of license sources.

④ 📇 Clicking on the button displays the selection option for a local license file (node locked). By default, the "License file" selection box is not displayed, because usually only licenses for license servers are in use.

⑤ Selection of the local "license file" (<path and file name>). The selection box is not displayed until you click the button (see ④).

Select the local license file by clicking on "...".

⑥ Specification and display of the port number and name of the "License server" (<port number>@<Servername/Hostname> or <port number>@<IP address>)

The use of the license server is the default use case.

⑦ Clicking on the "+" button adds the license file or the license server to the list of license sources.

⑧ 👁 Clicking on the button displays the license information for the selected license in the "License source" section.

≡ Clicking on the button expands all further information about the listed licenses.

≡ Clicking on the button hides all further information about the listed licenses.

⑨ Display of the license information.
Header
- Server/license name
- FlexLM vendor string
- Issuer
- Type of license
- List of licenses found
Click the button ▷ in front of the license to display more information.

Licenses (for server license)
- License name: Name of the application or information
- Expiration date: Date until when the license is valid
- Version: Software version for which the license is valid
- All users/PC: List of all users currently occupying a license (only visible if at least one license is occupied)
- In use: Indicates if the license from this client is in use (only if a project is open in C/RMVM)
- Number of licenses: Indicates how many licenses for this product are stored on the server
- Licenses in use: Number of currently used licenses

Licenses (for license file)
- License name: Name of the Application
- Expiration date: Date until when the license is valid
- Version: Software version for which the license is valid

⑩ Saving the license sources

If the list does not contain any license, an empty license entry is saved. As a consequence, the Create/Run MyVirtual Machine product has no reference to a valid license and the machine project is not opened.

⑪ Closes the licensing application without saving.

⑫ The unique FlexLM vendor string is used to implement the transfer protection of machine projects. Thus the machine project is linked to the value of the FlexLM vendor string and can only be opened if the linked FlexLM vendor string of the machine project is identical to the FlexLM vendor string of the license. Only users with this unique license can open the protected machine project.

⑬ ⬛ Clicking on the button copies the FlexLM vendor string of the license to the clipboard. You must receive the copied value of the FlexLM vendor string from an end user, for example, so that you can deliver a machine project with transfer protection.

Figure 5-2 Managing licenses with the licensing application (using port 28000)

Requirement

Administrator rights are required for configuration of the licenses via the licensing application.

This is how you work with the user interface of the licensing application

1. In the Windows start menu, select "Start > Siemens Automation > License settings for Create and Run MyVirtual Machine".

2. Acknowledge the confirmation prompt.
The "Licensing" application opens.

3. Select a new license source.

   – Using local licenses (Page 40)

   – Using the license server (Page 41)

4. Click on "+" to add the new license source to the list.

5. Click on the arrow keys to change the search sequence for multiple license sources.
   You use the sequence to specify which license source should be searched first for a valid license.

6. Click on the button 🗑 if you want to remove added license sources from the list.

7. Click "Save" to save the list of license sources. In the window header line, a star "*" is displayed next to "License Tool" if the changes have still **not** been saved.

8. Click "Close" to close the application.

When opening the machine project, a search is made for a valid license in the license sources that have been entered. The machine project is opened in Create/Run MyVirtual Machine if a valid license is found.

5.4.6 Using local licenses

NOTICE
Special case local license
The use of a local license is a special licensing case. As a rule, a local license server with a server license is also used for a single-user station license. Observe the section "License server (Page 34)".

This is how you configure a local license file

1. Copy the license file *.lic locally to a directory on the client, e.g. "C:\LicenseFiles\license-myvirtual-machine-node-locked.lic".

2. Open the operator interface of the licensing application.

3. Show the "License file" option by clicking the 📑 button.

4. Under "License file", select the path for storage of the local license file.

5. Click on "+" to add the new license source to the list.

6. Confirm with "Save".

7. Close the app with "Close".

See also

User interface of the licensing application (Page 38)

5.4.7 Using the license server

This is how you configure access to a license server

1. Open the licensing application.

2. Enter the port number and the name of the host in the "License server" field. The default port is 29000.

   – Syntax: <port>@<host name> or <port>@<IP address>

   – Example: 29000@mylicenseserver

   – Example for local license server: 29000@127.0.0.1 or 29000@localhost

3. For multiple servers, enter all names, separated by semicolons.

   – Example:
     29000@mylicenseserver1;29000@mylicenseserver2;29000@mylicenseserver3

4. Click on "+" to add the new servers to the list.

5. Confirm with "Save".

6. Then close the app with "Close".

See also

User interface of the licensing application (Page 38)

5.4.8 Command line of the licensing application

Licensing application "VMxLicenseTool.exe" can be controlled via the command line and is then executed without user interface. The functional scope is identical to that of the user interface, and allows licenses to be managed, e.g. for automated licensing procedures.

License Tool storage location

After installing the MyVirtual Machine product you can find the licensing application at the following storage location:

- `"C:\Program Files (x86)\Common Files\Siemens\VMx Middleware\VMxLicenseTool.exe"`

Functions

The command `VMxLicenseTool.exe` is extended by the following parameters (options and arguments). The parameters are attached to the command using a space followed by a separator. The different separators and the short and/or long form of the parameter can be used alternatively.

Separator	Short parameter	Long parameter	Arguments	Significance/example
/ – --	m	menu	-	Starts the user interface and closes the application in the command prompt. `VMxLicenseTool.exe /m`

/
–
--
	l	list	-	Lists the registered licenses line-by-line (line number 0-n). The sequence in the license list corresponds to the search sequence when checking the license.
				`VMxLicenseTool.exe /l`
				
				Example of a license list:
				`Id   Type     Path`
				`0    File     c:\License\mylicense.lic`
				`1    Server   29000@myserver`
				`2    Server   29000@licenseserver`
				`3    Server   29000@backupserver`

/ – --	as	addServer	`<port@servername>` Server port and server name	Inserts a license server at the end of the list. `VMxLicenseTool.exe /as 29000@myserver`

/
–
--
	af	addFile	`<path to file\filename>`
			Path and file name
				Inserts a local license (license file) at the end of the list.
				`VMxLicenseTool.exe /af`
				`c:\License\mylicense.lic`
				Note:
				Do not use umlauts or special characters in the path name.

/ – --	r	remove	`<Line>` Specifies the line ID (line number)	Deletes the specified line with the entered license (ID of the line). `VMxLicenseTool.exe /r 2`
/ – --	s	swap	`<src Line> <dst Line>` Specifies the line ID (line number) of the source and the destination.	Exchanges the license of the source line <src Line> with the destination line <dst Line>. The modified license list is displayed after the exchange. `VMxLicenseTool.exe /s 1 3`
/ – --	i	licenseInfo	-	Lists the license information for the licenses, e.g. license name, expiration date. `VMxLicenseTool.exe /i`
/ – --	rr	removeAll	-	Deletes all registered licenses from the list. The licenses are deleted after the prompt by entering DELETE and pressing the ENTER key. `VMxLicenseTool.exe /rr`
/ – --	h	help	-	Displays the help for the command. `VMxLicenseTool.exe /h`

See also

> Using the command line of the licensing application (Page 43)

5.4.9 Using the command line of the licensing application

You can manage licenses via the command line directly via the Windows command prompt or via batch files.

This is how you use the command line to manage licenses

1. In Windows, open the command prompt.

2. Enter the path to the licensing application in the command prompt.
   `"C:\Program Files (x86)\Common Files\Siemens\VMx Middleware\"`

3. Check the current license status using `VMxLicenseTool.exe -l`.
   A list of registered licenses is displayed.

4. Register the local licenses or the license server, for example. At least one license must have been registered.

5. Manage the licenses with the other parameters of the licensing application.

6. Close the command prompt.

See also

> Command line of the licensing application (Page 41)

5.5 Uninstalling Create & Run MyVirtual Machine

Introduction

The software package Create & Run MyVirtual Machine is automatically uninstalled by a setup program. Once started, the Setup program guides you step-by-step through the entire uninstallation.

Note

During uninstallation, the entire application package Create & Run MyVirtual Machine is uninstalled, i.e. you cannot uninstall Create or Run MyVirtual Machine individually.

Uninstalling selected components using the Windows settings

To uninstall selected software packages, follow these steps:

1. Open "Windows settings" with "Start > Settings".

2. Double-click on the "Apps" entry in the settings.
   The "Apps Select Features" window is opened.

3. Select the software package to be uninstalled "Create & Run MyVirtual Machine" and click on "Uninstall".

4. Confirm the displayed message with "Uninstall".
   The dialog for selecting the setup language opens.

5. Select the language in which you want the dialogs of the Setup program to be displayed and click the "Next" button.
   The dialog for selecting the products you want to uninstall opens.

6. Activate the checkboxes for the products you want to uninstall and click the "Next" button.
   The next dialog displays an overview of the installation settings.

7. Check the list with the products to be uninstalled. If you want to make any changes, click the "Back" button.

8. Click the "Uninstall" button.
   Uninstalling begins.

9. The computer may need to be restarted. Activate the "Yes, restart computer now" checkbox. Then click the "Restart" button.

10. If the computer does not need to be restarted, click the "Exit" button.

Manual uninstallation of user-specific data

During use of the software package, data is backed up in Microsoft Windows user directories. This data is not automatically removed during uninstallation. This applies, for example, to machine projects, application settings, and log files.

Note

Different user accounts (<username>)

If Create & Run MyVirtual Machine was used with different user accounts, user-specific data is located in different user directories (<username>). Depending on the access rights, you may not be able to read or delete all user-specific data.

After uninstalling the software package, check the saved data to see whether you want to save or permanently delete certain data. The software product backs up data in the following directories:

Standard storage of machine projects

• C:\Users\<username>\Documents\Siemens\Automation\Create and Run MyVirtual Machine

Application settings, trace

- C:\Users\<username>\AppData\Local\Siemens\Automation\Create and Run MyVirtual Machine

- C:\Users\<username>\AppData\Local\Siemens\Automation\SINUMERIK ONE

- C:\Users\<username>\AppData\Local\Siemens\Automation\VMxMiddelware

5.6 Checking the signature of the installed files

After installing the software, you can check whether the installed files ("*.dll", "*.exe") have a signature of the publisher SIEMENS AG. By checking the signature you can identify if the files have been manipulated. When signing software, executable files and scripts are digitally signed to confirm and guarantee that since the signature, the code has neither been changed nor corrupted. With this process, cryptographic hashes are employed to check authenticity and integrity.

To check the authenticity and integrity of the installed Windows software, you can manually check the corresponding files under Microsoft Windows or use suitable verification programs for automated verification.

More information

In the *SINUMERIK ONE Industrial Security Configuration Manual*, you will find more information on checking options in the section "Checking software signatures".

Communication settings

6

6.1 Communication settings tab

In the "Settings" tab in Create & Run MyVirtual Machine, you configure the communication settings (PG/PC interface), e.g. for communication between HMI and PLC. The communication settings are automatically configured and displayed. Further settings are usually not necessary.

Checking the communication settings

The communication settings are checked when starting a machine project. If a valid setup is not available, and communication is not taking place an error message is displayed and the NCU remains in the stop state.

In this case you must check the current communication settings.

Requirement

- Create & Run MyVirtual Machine and SINUMERIK Virtual CNC software are installed on the computer and licensed
- Create or Run MyVirtual Machine is open

How to configure/check the communication settings

1. Click the "Settings" button 🔧.

2. Select tab "General settings" in the window that opens.

3. In selection list "Access point 1 - S7Online / CP1543", select the interface name of the hardware that is used (first network adapter). The access points for S7Online and CP1543 are configured at the same time.
   The selection of possible interfaces is logically prefiltered.

   Note

   You can display information about a specific function using the ⓘ button.

4. Optional, if you are using a second access point:
   In selection list "Access point 2 - CP1543_2", select the interface name of the hardware that is used (second network adapter).
   The selection of possible interfaces is logically prefiltered. If you do not use the second access point, the selection remains empty or select the "empty" entry.

   Note

   Only different interfaces can be selected for access point 1 and access point 2.

5. Activate "Support TIA device search".
   Default setting, should not be changed.

6. Click "Apply".
   The "Apply" button is only active if the communication settings have been correctly configured.

7. If a project was open, restart the machine project after configuring the communication settings. The new communication settings are active.

Result

The communication settings have been configured. Create & Run MyVirtual Machine can be used.

More information

If you want to make further settings or work with the "Siemens communication settings" application, refer to the "Expert settings (Page 48)" section. All settings and special cases are described in detail in this section.

6.2 Expert settings

6.2.1 Configuring communication settings (PG/PC interface)

Description

You must configure the communication settings (PG/PC interface) for communications between the TIA Portal or HMI and PLC.

If you select an interface parameter assignment, then assign this to the access point. This means that you establish the connection between the access point, the interface parameter assignment and the interface itself.

Note

Establishing communication with SIMATIC STEP 7 Professional on a second computer

The network adapter configured at the **SINUMERIK CP1543** access point is relevant to the communication between SIMATIC STEP 7 Professional and the MyVirtual Machine products. If communication takes place across computer boundaries (e.g. SIMATIC STEP 7 Professional on another computer in the network), the network adapter with which the computer is connected to the network must be configured at the **SINUMERIK CP1543** access point. The same network adapter must be configured for **SINUMERIK CP1543** and **S7ONLINE (STEP 7)**.

Options for configuring communications

You have two options when configuring the PG/PC interface

- Configuring in Create/Run My Virtual Machine under "Settings" in tab "Communication settings (Page 49)"
  → For the compact and simple setup of the PG/PC interface

- Configuring using application "Siemens communication settings (Page 50)"
  → More complex operation with access to additional communication parameters

Both variants configure the same communication parameters and visualize identical settings.

Checking the communication settings

The communication settings are checked when starting a machine project. If a valid setup is not available, and communication is not taking place an error message is displayed and the NCU remains in the stop state.

Restart the machine project after configuring the communication settings. The new communication settings are active.

6.2.2 Configuring access points at the CP and S7Online in MyVirtual Machine

Configure the communication settings for the access points in tab "Settings" in Create/Run MyVirtual Machine.

Requirement

- Create & Run MyVirtual Machine and SINUMERIK Virtual CNC software are installed on the computer

- Create or Run MyVirtual Machine is open

This is how you configure communication settings

1. Click the "Settings" button ⬚.

2. Select tab "General settings" in the window that opens.

3. In selection list "Access point 1 - S7Online / CP1543", select the interface name of the hardware that is used (first network adapter). The access points for S7Online and CP1543 are configured at the same time.
   The selection of possible interfaces is logically prefiltered.

   Note

   You can display information about a specific function using the ⓘ button.

   (Corresponds to communication setting "Configuring access points at the CP and S7Online (Page 50)")

4. Optional, if you are using a second access point:
   In selection list "Access point 2 - CP1543_2", select the interface name of the hardware that is used (second network adapter).
   The selection of possible interfaces is logically prefiltered. If you do not use the second access point, the selection remains empty or select the "empty" entry.
   (Corresponds to communication setting "Configuring the second access point at the CP (optional) (Page 53)")

   Note

   Only different interfaces can be selected for access point 1 and access point 2.

5. Activate "Support TIA device search".
   When the switch is activated, the device search for a locally installed TIA Portal is supported. For the network adapter set in access point 1, function "DCP" in S7Online is deactivated. DCP queries are responded to via the CP1543.
   (Corresponds to communication setting deactivate DCP in Section "Configuring access points at the CP and S7Online (Page 50)")

6. Click "Apply".
   The "Apply" button is only active if the communication settings have been correctly configured.

7. If a project was open, restart the machine project after configuring the communication settings. The new communication settings are active.

Result

You have now configured the access points for the application. Create/Run MyVirtual Machine can be used.

More information

If SIMATIC STEP7 Professional and Create/Run MyVirtual Machine are installed on different computers / virtual machines, you must still make settings for cross-computer TCP communication. Observe the Preparing cross-computer communication via Ethernet (Page 55) section.

6.2.3 Configuring access points in den "Siemens communications Settings"

6.2.3.1 Configuring access points at the CP and S7Online

You configure the PG/PC settings using the "Siemens communication settings" application.

Precondition

Create/Run MyVirtual Machine and SINUMERIK Virtual CNC software are installed on the computer.

This is how you configure communication settings

1. Enter "Control Panel" in the search field of the Windows taskbar and open the displayed application.

2. Select "All control elements".

3. Click "Communication settings". The "Siemens communication settings" window opens.

4. Click "Access points" in the navigation. The available access points are displayed in the right-hand area.

5. Click the arrow in front of "S7ONLINE" to display the settings.

6. In the "Used interface parameter assignment" field, select the entry "<network adapter>.TCPIP.1". <network adapter> is a placeholder for the interface name of your deployed hardware.
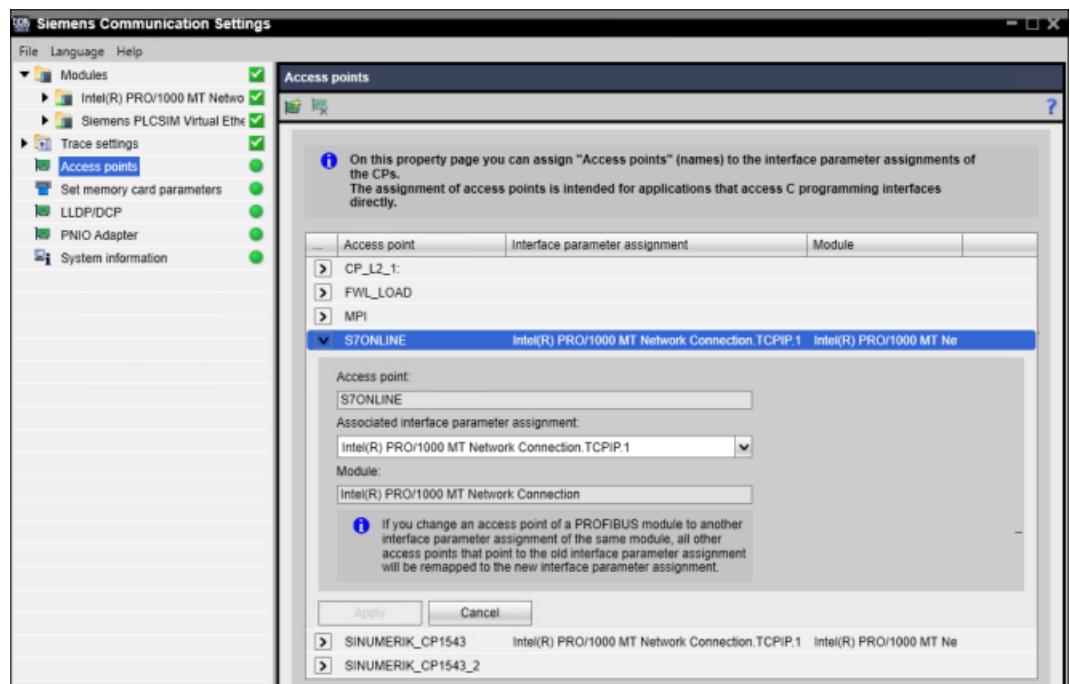
Figure 6-1   Setting the access point

7. Click "Apply".

8. Click the arrow in front of "SINUMERIK_CP1543" to display the settings.

9. In the "Assigned interface parameter assignment" field, select the entry "<network adapter>.TCPIP.1". <network adapter> is a placeholder for the interface name as used previously.
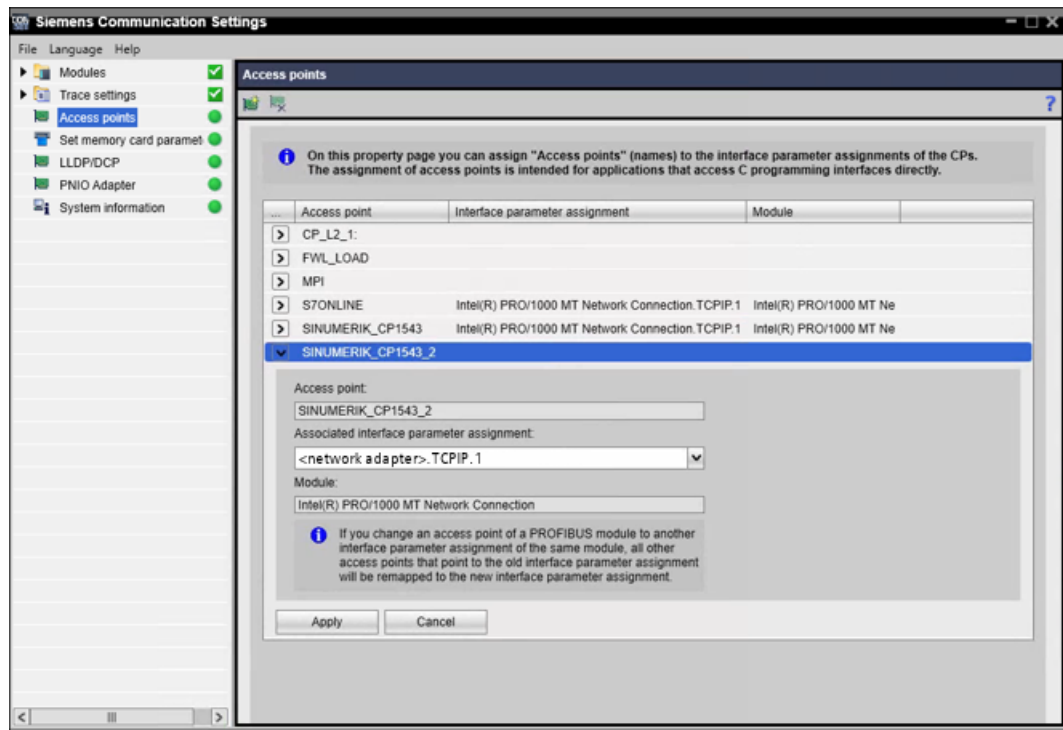
10. Click "Apply".

11. Click on "LLDP/DCP" in the navigation. The available protocols are displayed in the area on the right.

Note

To ensure communication mechanisms/device search between Create/Run MyVirtual Machine and TIA Portal, you need to deactivate the DCP function on the computer with Create/Run MyVirtual Machine (S7DOS). If the DCP function is disabled, then the "Livesearch" function is also functional when searching for the target system for Create/Run MyVirtual Machine. For the network adapter set in access point 1, function "DCP" in S7Online is deactivated. DCP queries are responded to via the CP1543.

If DCP is not deactivated, the connection to an incompatible device may be detected and reported in TIA Portal.

12. Uncheck the DCP box for the network adapter "<network adapter>" (same adapter as in the section above under point 9).
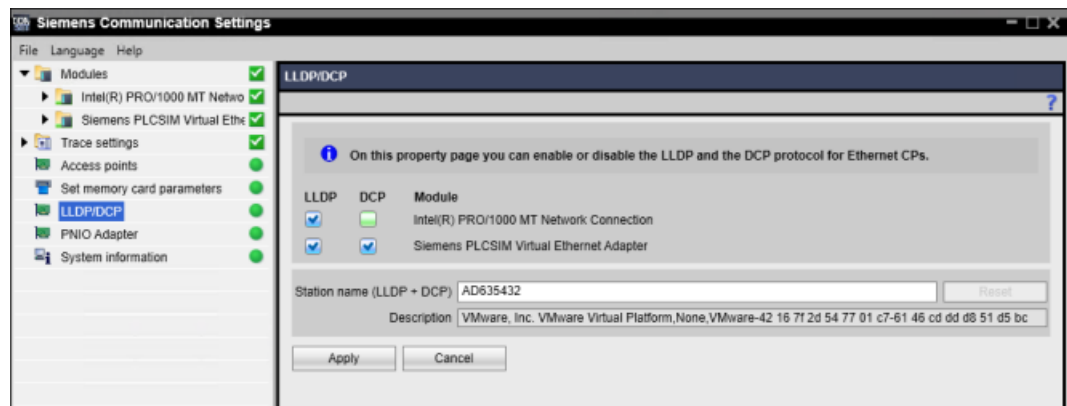
Figure 6-2   Disabling the DCP function

13. Click "Apply".

14. Select "File > Exit" in the menu to close the window.

15. Restart the computer to apply the changes.

Result

You have now configured the access points for the application. Create/Run MyVirtual Machine can be used.

More information

If SIMATIC STEP7 Professional and Create/Run MyVirtual Machine are installed on different computers / virtual machines, you must still configure the settings for cross-computer TCP communication. Observe the Preparing cross-computer communication via Ethernet (Page 55) section.

6.2.3.2 Configuring a second access point at the CP (optional)

The CP1543 can optionally communicate via a second network. For this purpose, you can assign another network adapter to the SINUMERIK CP1543_2 access point provided for this purpose. This can make sense if communications should be established to an external component via the second network adapter.

Without assignment, the system behaves as before and uses only the two previously known access points S7ONLINE and SINUMERIK CP1543.

Only when the second access point is assigned to SINUMERIK CP1543_2 will two interfaces actually be processed by the CP.

Precondition

- Create/Run MyVirtual Machine and SINUMERIK Virtual CNC software are installed on the computer.
- The "Siemens communication settings" are open (See, Configuring the first access point at the CP (Page 50)).

This is how you configure the second access point in the communication settings

1. Click "Access points" in the navigation. The available access points are displayed in the right-hand area.
2. Click the arrow in front of "SINUMERIK_CP1543_2" to display the settings.

3. In the "Used interface parameter assignment" field, select the entry "<network adapter>.TCPIP.1". <network adapter> is the placeholder for the interface name of the second network adapter.

Figure 6-3   Setting the second access point CP1543_2

4. Click "Apply".

5. When using "Livesearch", deactivate the DCP functions on the second network adapter (See Configuring the first access point at the CP (Page 50)).

6. Select "File > Exit" in the menu to close the window.

6.2.4   Communication HMI via alternative network adapter

If the HMI is to communicate with SINUMERIK Operate not via the primary network adapter (localhost) but via the second assigned network adapter, the IP address assigned at the second network adapter must be entered in the mmc.ini configuration file of HMI Operate.

Requirement

- The Create/Run MyVirtual Machine project is open to modify mmc.ini on the virtual memory card.

- The second access point CP1543_2 (Page 53) is configured

How to enter the IP address of the second network adapter

1. In Create/Run MyVirtual Machine, click ☐. The Windows Explorer opens with the storage location of the virtual memory card in the directory ...\card\. (%LOCALAPPDATA% \Siemens\Automation\SINUMERIK ONE\ncu\card).

2. Navigate to the directory "..\addon\sinumerik\hmi\840evo_vc\cfg" and open the file "mmc.ini" in the editor.

3. Navigate to the line with the IP address ADDRESS1=**127.0.0.1**.
   ```
   [840EVOVC}
   ...
   ADDRESS1=127.0.0.1,Line=20,NAME=/PLC,MAX_BUB_CYCLICS=1000
   ```

4. Enter the IP address of the second network adapter instead of the IP address **127.0.0.1** of the localhost.

5. Save the file.

The HMI communicates via the alternative network adapter after starting the machine project.

General conditions

- The IP address is only stored in the changed machine project. If the HMI is to generally communicate via the second interface, you must change the IP address in each machine project.

- If the IP address of the network adapter changes, you must also add it in mmc.ini. This may be the case, for example, with dynamic IP address assignments via DHCP.

- If the changed machine project is used on another computer, the IP address must also be adjusted.

- If you want to switch between network adapters (e.g. between WLAN and LAN), then the configuration of the access points and mmc.ini may have to be adjusted.

6.2.5 Preparing cross-computer communication via Ethernet

Cross-computer TCP communication

If the TCP communication between MyVirtual Machine products and SIMATIC STEP 7 (TIA Portal) is established across computers and diverse subnets, the inbound connection for the network areas of local port 102 must be enabled in the active firewall on the computer on which the MyVirtual Machine product is installed. This is the case, for example, when the applications are installed on different computers or virtual machines in the network, and you want to go online with SIMATIC STEP 7 Professional on the computer with MyVirtual Machine products. The procedure for the Windows Firewall is explained briefly as an example. The basic settings are also applicable for other firewalls.

Requirement

You are logged in on the computer with installed MyVirtual Machine product and have administrator rights.

Windows Firewall rules for inbound connections, protocols and ports

In the Windows Firewall, you can define the connection security rules for protocols and ports. For the connection rule, you must enable TCP communication via port 102 for the S7DOS (s7oiehsx64.exe) program.

1. Enter "Windows Defender Firewall with Advanced Security" in the search field of the Windows taskbar and open the displayed application.

2. Acknowledge the dialog with "Yes".

3. Click on "Inbound Rule" in the navigation area of the displayed window and select "New Rule" in the shortcut menu. The wizard opens.

4. In the wizard, first make the settings for which program the rules should apply and click "Next".

   – **Rule type**: Program

   – **Program path**: %ProgramFiles%\Common Files\Siemens\Automation\Simatic OAM\bin\s7oiehsx64.exe

   – **Action**: Allow connection

   – **Profile**: Select the appropriate profiles (e.g. domains when a domain controller is used)

   – **Name**: Enter a name for the rule, e.g. S7DOS_Service

5. Click "Finish". The new rule is displayed under "Inbound Rules".

6. Click the newly created rule, and select "Properties" from the shortcut menu.

7. Select the following settings on the "Protocols and Ports" tab in the displayed dialog.

   − **Protocol type**: TCP

   − **Local port**: Specific ports, 102
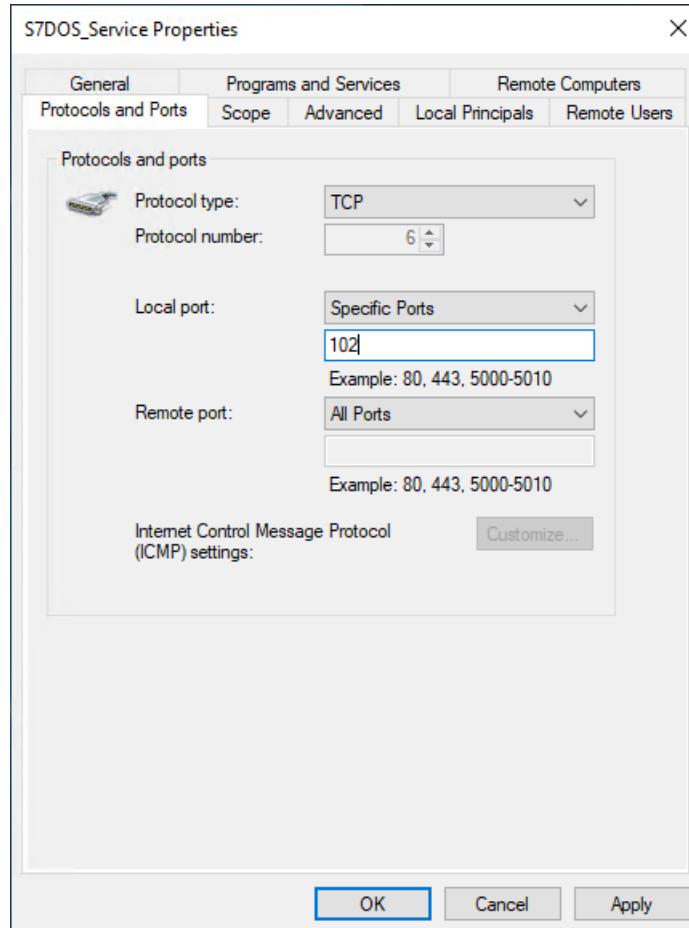
Figure 6-4   Windows Firewall rule: Protocols and ports

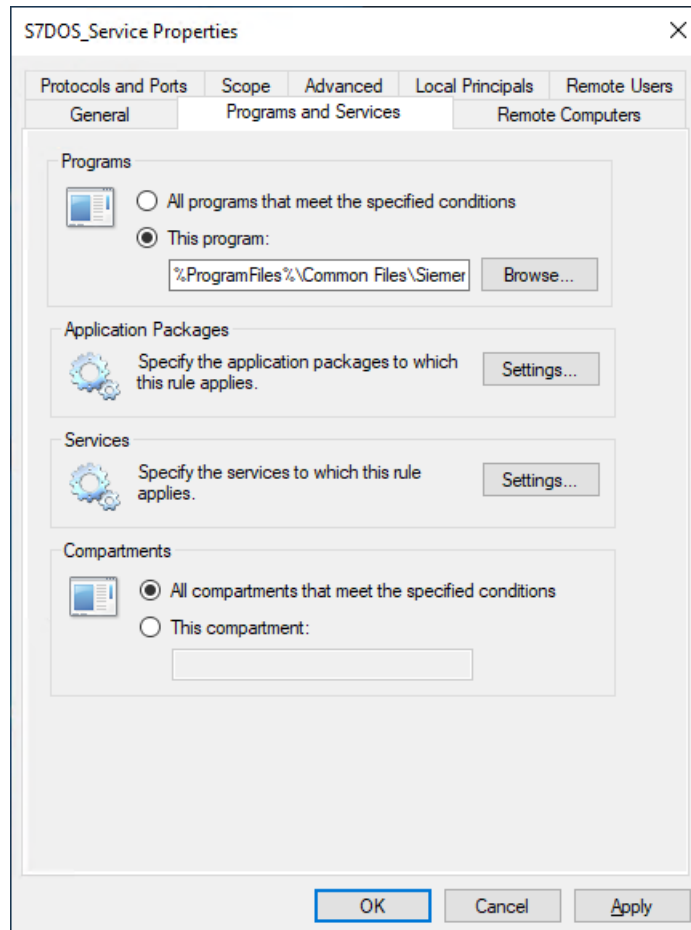8. Check the settings on the "Programs and services" tab.

Figure 6-5   Windows Firewall rule: Programs and Services

9. Confirm with "OK".
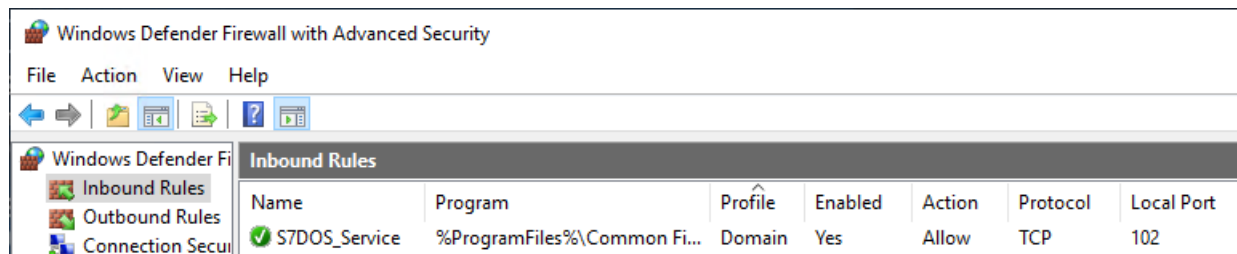   This completes the definition of the rules.

Figure 6-6   Windows Firewall: Inbound rules

Tips & Tricks

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7.1 Online help not working

Online help of Create & Run MyVirtual Machine without function

The start of the online help is aborted with an error message or the online help of Create or Run MyVirtual Machine is not opened.

Remedy

The following software component is required to use the full function of the Create & Run MyVirtual Machine online help:

• Microsoft Edge WebView2 Runtime

The Microsoft Edge WebView2 Runtime app is installed and functional by default.

Checking the installation of the app

1. Open "Windows settings" with "Start > Settings".

2. Double-click on the "Apps" entry in the settings.
   The "Apps and Features" window opens.

3. Search for "Microsoft Edge WebView2 Runtime". If the app is not found, you must install it.

Installing Microsoft Edge WebView2 Runtime

1. Open the following website:
   https://developer.microsoft.com/en-us/microsoft-edge/webview2/
   The "Microsoft Edge WebView2" website opens.

2. Click the "Download" button.

3. Select the "Evergreen Bootstrapper" download option, e.g. "Download", in the window that appears.

4. Confirm the privacy policy and follow the installation wizard.

After installing the app, the Create & Run MyVirtual Machine online help is functional.

7.2 Recurring message, Windows restart

Error case

If error message "Please perform a restart before installing additional programs" is output when installing software, although you have already restarted the PC, the cause can be write-protected files that have not been successfully deleted or renamed. To do this, you must make changes in the registration database.

Remedy

Detailed instructions on how you can resolve the error case described above is provided in the Industry Online Support Portal.

• SIOS entry - recurring "Windows restart" requested (https://support.industry.siemens.com/cs/ww/en/view/8861819)

7.3 3D Simulation is not started/displayed

Error case

The 3D Simulation is not displayed or is terminated immediately after starting the machine project.

Requirement

First check that the following requirements are met.

• The system requirements are fulfilled.

• The option "Create MyVirtual Machine /3D" or "Run MyVirtual Machine /3D" is licensed.

• The machine project contains a 3D machine model.

Possible cause graphics card driver

If the installed graphics card driver is not compatible with the graphics hardware or offers insufficient OpenGL support, the 3D Simulation cannot be started.

Remedy

If possible and available, install an up-to-date graphics card driver with OpenGL support.

Possible cause remote connection

If you use Create MyVirtual Machine or Run MyVirtual Machine with the 3D option activated via remote access through Microsoft "Remote Desktop Connection" (RDP) from a second computer, there may be display errors or a black 3D window due to the lack of OpenGL graphics drivers for this RDP transmission protocol. This depends on the graphics hardware used or the installed graphics drivers on the remote computer on which Create MyVirtual Machine or Run MyVirtual Machine is running.

Remedy

A possible remedy is to install a software OpenGL renderer, such as the "Mesa 3D" freeware on the remote computer running Create MyVirtual Machine or Run MyVirtual Machine.

7.4 Microsoft Windows N versions

Use C/RMVM on Windows N versions (without media player)

When using Create or run MyVirtual Machine under Microsoft Windows N versions, functions, which Microsoft Windows Media Feature Pack requires, are not supported. These include, for example, the camera application in SINUMERIK Operate or playing videos. When starting a machine project in C/RMVM, a check is made as to whether the operating system supports the optional media functions. If this check is not successful, then under certain circumstances the HMI component crashes with an error message, and the component status displays a red LED

Remedy

Install the Microsoft Media Feature Pack (https://support.microsoft.com/en-us/help/3145500/media-feature-pack-list-for-windows-n-editions).

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