

SIEMENS

Ingenuity for life

Installation
Guide

Version
2020.2.0

Simcenter

Simcenter Prescan

Siemens Digital Industries Software

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Chapter 1: Prescan Installation Guide

The **installation guide** guides you through the installation procedure. The following topics are being dealt with:

- Installation Procedure
- Licensing
- System Requirements

Introductory Remarks

Administrator Rights

Note: To be able to install the Prescan application and to install licenses, you need to have administrator rights on the computer where the application is installed.

Multiple Prescan versions

Multiple Prescan versions may exist on your computer starting Prescan R5.2. Please take care you select a new directory for your experiments such that the experiments created with the older version are not overwritten.

Uninstall

Prescan can be uninstalled using the normal uninstall option of your Windows version.

It may happen that some files could not be deleted because they were in use by other programs during uninstall. They need to be deleted manually.

Prescan License Model Summary

Prescan offers 2 types of licenses, viz.:

License	Description	Requires
Stand-alone (node-locked)	Allows end users to use Prescan on their own PC/laptop, even when commuting or working at home.	- License code - Flexnet license server
Network (floating)	Allows end users to "check out" a license authorization from a network server and check it back in when they are done. User must stay connected to the network	- License code - Installation of Flexnet license server

Prescan licensed via a server (network license)

With an external license manager running on a server in a network, Prescan can run on multiple computers which are part of this network. Prescan (and MATLAB) still needs to be installed locally conform the system requirements.

The license server keeps track of all Prescan licenses and handles requests from network users who want to run Prescan, granting authorization to the requesters to allow them to run Prescan, and denying requests when all licenses are in use. When one of the existing users exits Prescan, his license is freed and made available for the next user.

It is possible for the Prescan application and the license manager to run on the same system. In this case the network address of this system needs to be entered when installing the Prescan application in network license mode.

Non-Western Installation

Note: Please do not use non-western characters (e.g. Japanese, Korean, Chinese, etc.) in the installation path(s).

1.1 Installation Procedure

In this section, the installation procedure for Prescan 2020.2.0 is described.

Before following the installation procedure, please read the Introductory Remarks, and check if your system fulfills the System Requirements.

The following steps should be followed when installing Prescan:

Step 1: Installation of MATLAB.

This is not mandatory but advised as first step if MATLAB is to be used for simulations. How this is done is explained in MATLAB Installation.

Step 2: Obtaining and Installing a Prescan License

Obtain and install the Prescan License depending on the selected license scheme: either as a stand-alone (node-locked) license or a network (floating) license. The difference is explained in Installation Guide - Prescan License Model Summary.

Step 3: Installation of Prescan

Follow the steps described in Installation Procedure - Prescan. The information of the MATLAB installation (step 1) and location of the License Server (step 2) is needed during this step.

Step 4: Improve Performance by verifying the Graphics Card Configuration.

Step 5: Install any of the optional components or 3rd party products described in 3rd Party Products.

1.1.1 MATLAB

MATLAB and Simulink must be installed on the system if Prescan is to be used for simulation. If MATLAB/Simulink has not yet been installed, install the product using the installation procedure as provided with the MATLAB product.

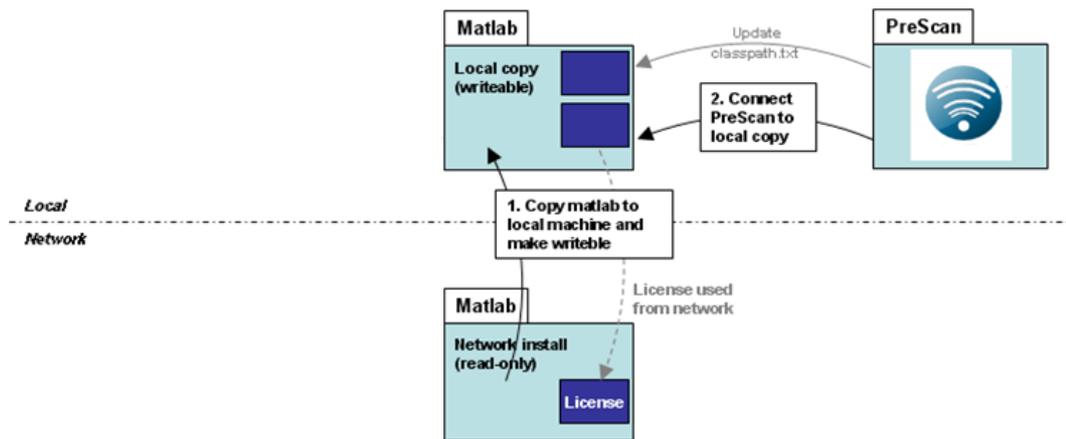
Note: See System Requirements for the compatibility table between Prescan 2020.2.0 and MATLAB/Simulink. It is mandatory to have a supported compiler installed.

MATLAB path

If a previous Prescan installation was used on the PC, and the MATLAB path was modified using the **'Set Path'**-option under the File menu in MATLAB, it is possible that some references to old Prescan installation paths exist in the MATLAB path. They should be manually removed using the **'Set Path'**-option under the **File** menu in MATLAB.

How to use a network installation of MATLAB with Prescan

To be able to use a **network installation** of MATLAB together with Prescan, you have to make a copy of the network installation of MATLAB to your local machine. After that, you can install Prescan and ControlDesk and connect the two programs to the local copy of MATLAB.



A benefit of making a local copy of MATLAB for all users of the network license is that MATLAB uses in this case the files on your local drive, therefore reducing network use and increasing speed.

Changing your MATLAB version

If you would like to change your MATLAB version, please use the Prescan GUI.

1.1.2 Prescan

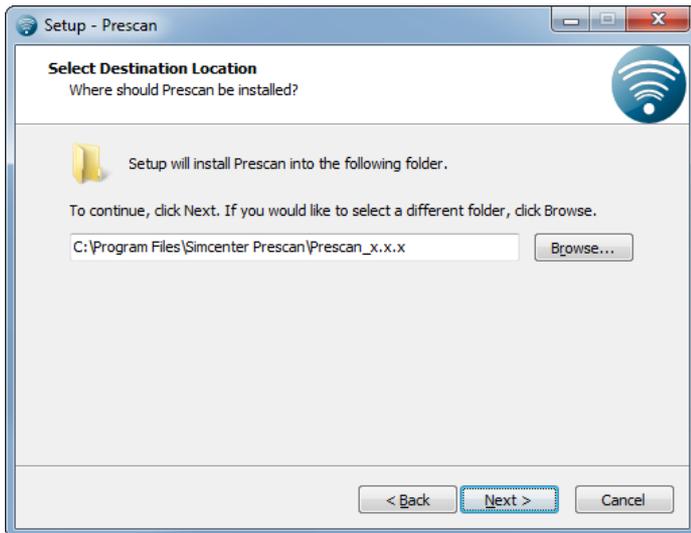
Prescan installation will begin with the welcome window as shown below. Please read the information shown and press next if you are ready to continue with the installation.



Prescan Welcome

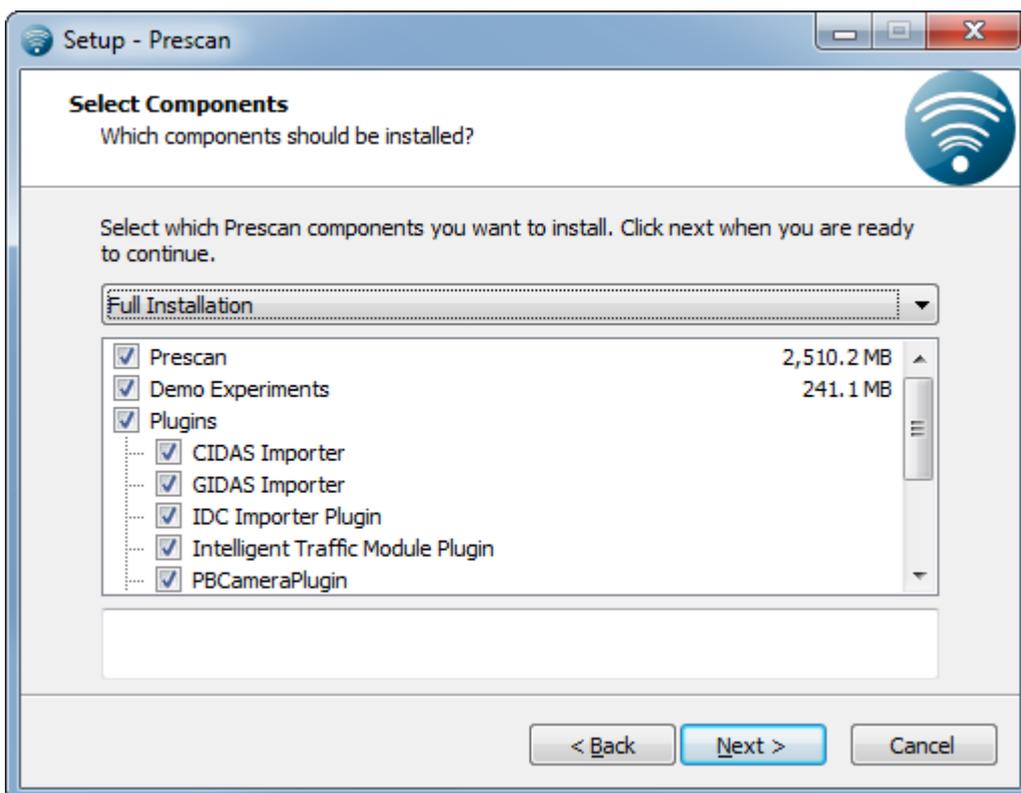
Now the installation of your new Prescan version will take place in a number of steps.

Next the destination installation directory needs to be defined. Note that a full Prescan installation requires approximately 1,6 GB of disk capacity.



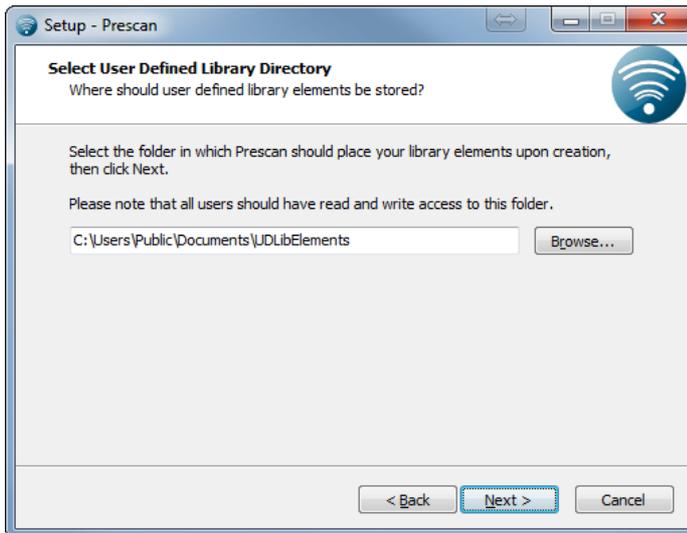
Select Destination Folder

A choice is offered which components should be installed. The remainder of this guide assumes that a full installation is chosen.

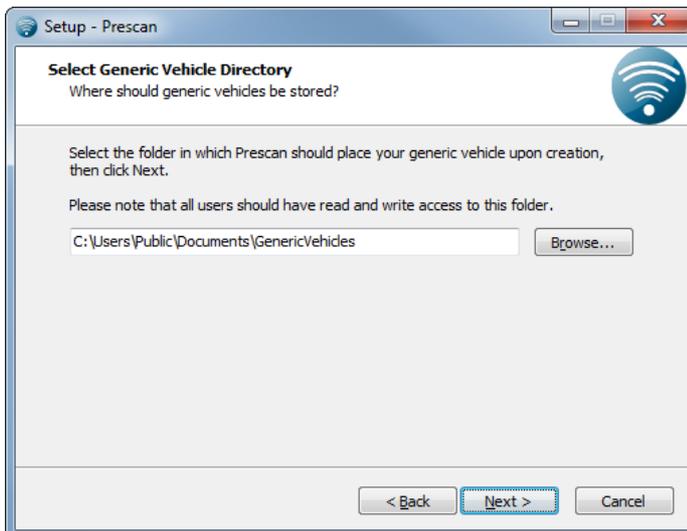


Select Components to Install

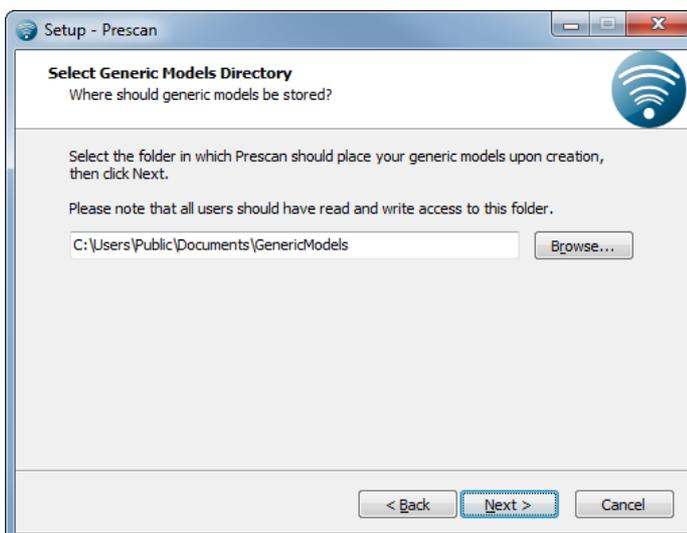
Library folders need to be defined for User Defined elements, for Generic Vehicles and for Generic Models. Prescan will look here for libraries added by the user. It is advised to use the proposed directory so all users can use each others elements. This directory can later be changed in the GUI.



Selection UD Library Folder

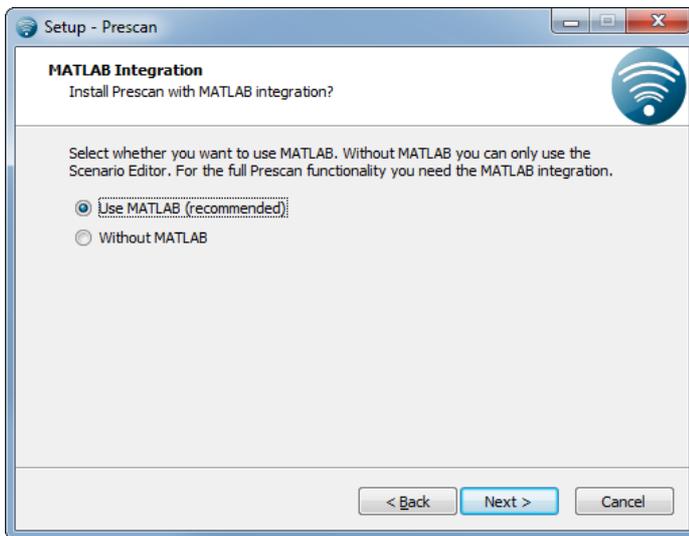


Selection Generic Vehicle Folder



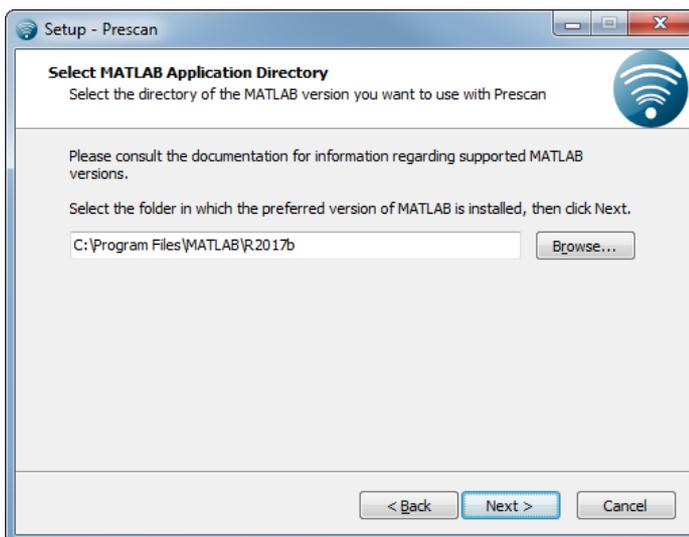
Selection Generic Model Folder

Prescan requires an installed MATLAB application for its simulations. If not present the user can skip the MATLAB step.



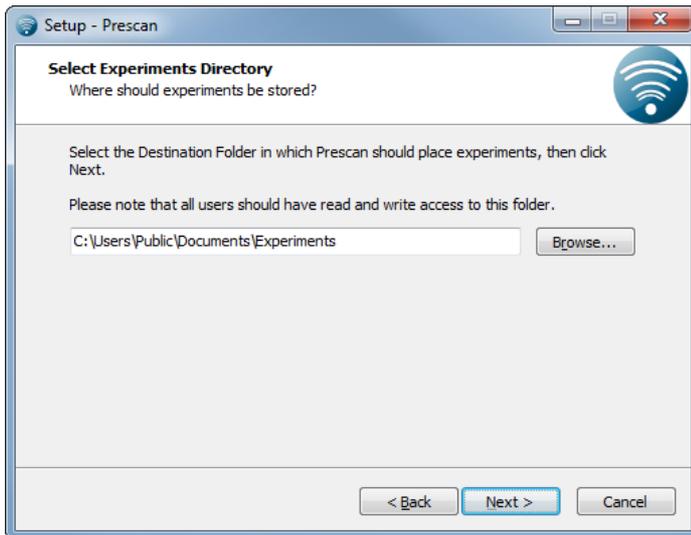
MATLAB installation present?

If a MATLAB version is to be used the user needs to specify where the version can be found.



Select MATLAB Installation Directory

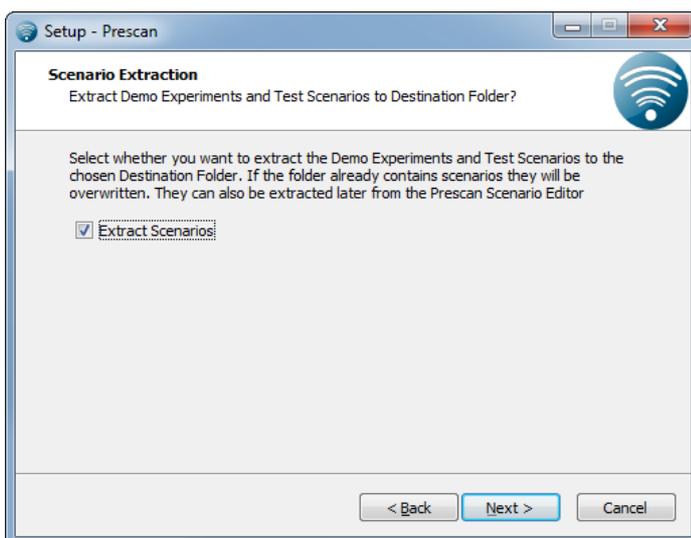
A directory must be configured that Prescan will use to store new experiments.



Select Experiments Destination Folder

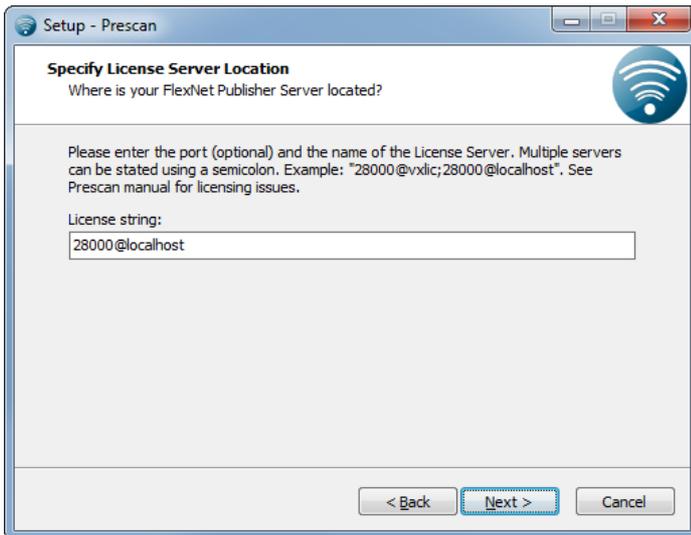
The Demo Experiments and Test Scenarios can be extracted to the Experiments Destination Folder.

Note: Do not use space characters (' ') in experiment names or experiment location names.



Extract scenarios to Destination Folder

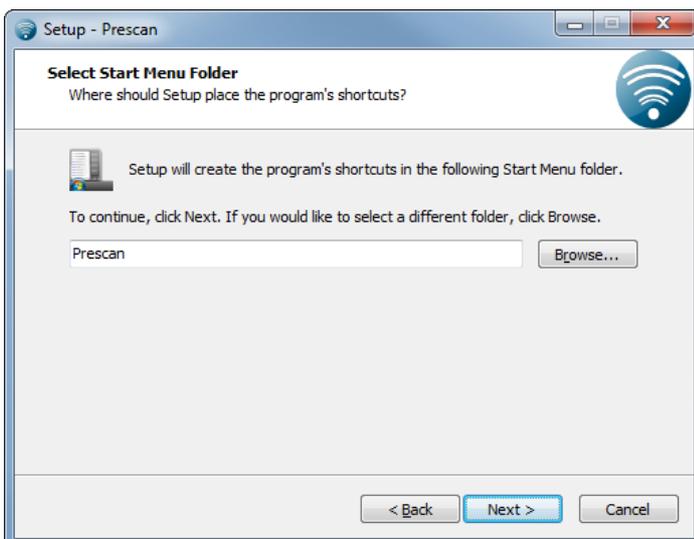
Prescan 2020.2.0 works with Siemens PLM licensing tools. For set up please refer to Managing the License Server for more information on how to set up the licensing mechanism. Important during installation is to add the license server if not yet present. This is done by adding ";28000@<license server name>".



Add License Server

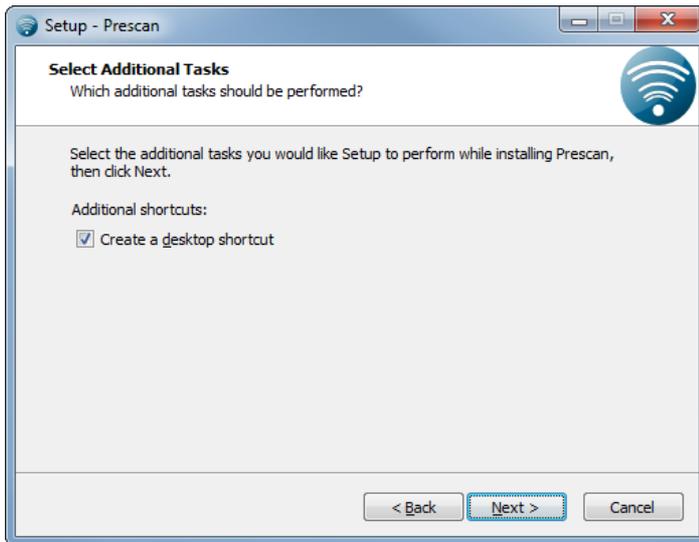
Note: By entering the license server, the installer will create the environment variable SPLM_TASS_LICENSE_SERVER. Prescan will use the variable to identify where the license server is located.

Now indicate what the name is for Prescan in the Start Menu Folder.



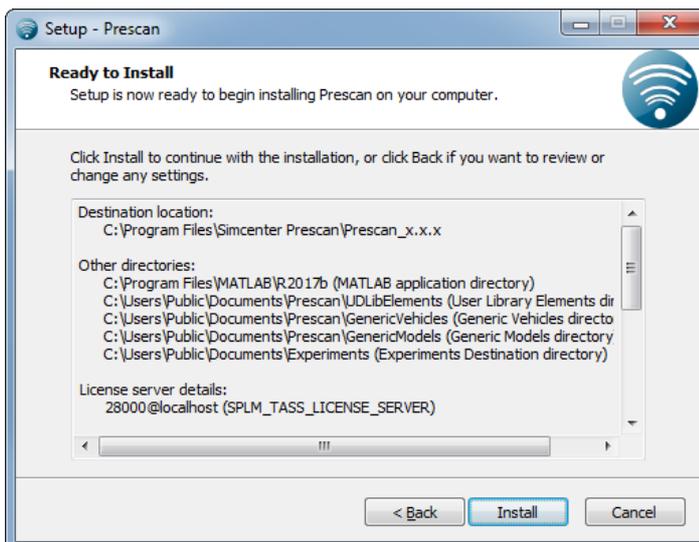
Select Start Menu Folder

Select if a desktop icon needs to be created.

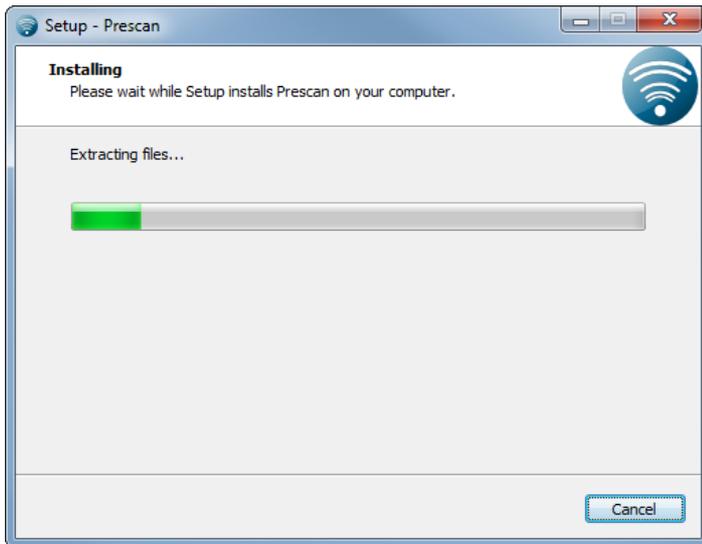


Select Additional Tasks

Finally, check the installation settings and correct if needed by clicking the <Back> button to the appropriate dialog. The *Install* button will start the installation with the given settings.

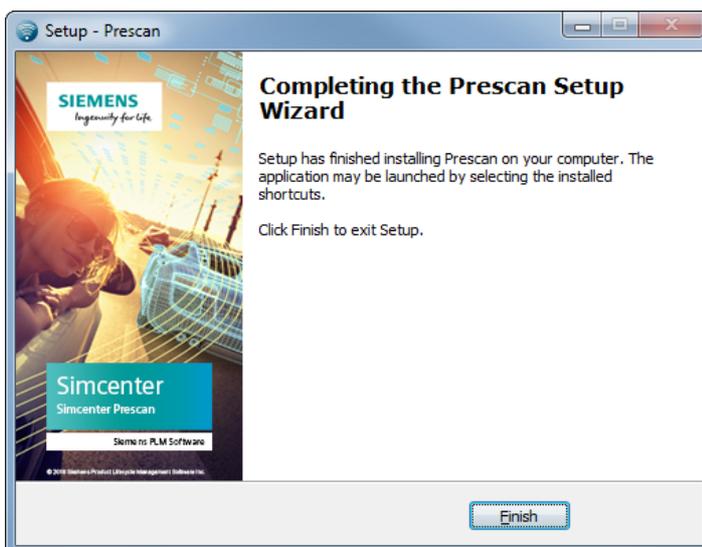


Installation settings confirmation



Installation in progress

The final screen confirms that the installation was successful.



Installation finished

1.1.3 Prescan for Linux and Prescan Real-Time

Note 1: To be able to use Prescan Real-Time on a Concurrent RedHawk system, the Concurrent SimWB Control Center with the ML Toolkit need to be properly installed on the Windows host system. Refer to SimWB installation manual for installation instructions.

Note 2: To be able to use Prescan Real-Time on an ETAS RTPC, the LABCAR-OPERATOR and Experiment Environment need to be properly installed on the Windows host system. Refer to the ETAS installation manual for installation instructions.

Prescan for Linux is a solution for running compiled Prescan experiments on a CentOS 7.2 Linux system. Prescan Real-Time is a solution to run on real-time in the following supported platforms:

- National Instruments PXI Controllers;

- Concurrent RedHawk;
- ETAS RTPC.

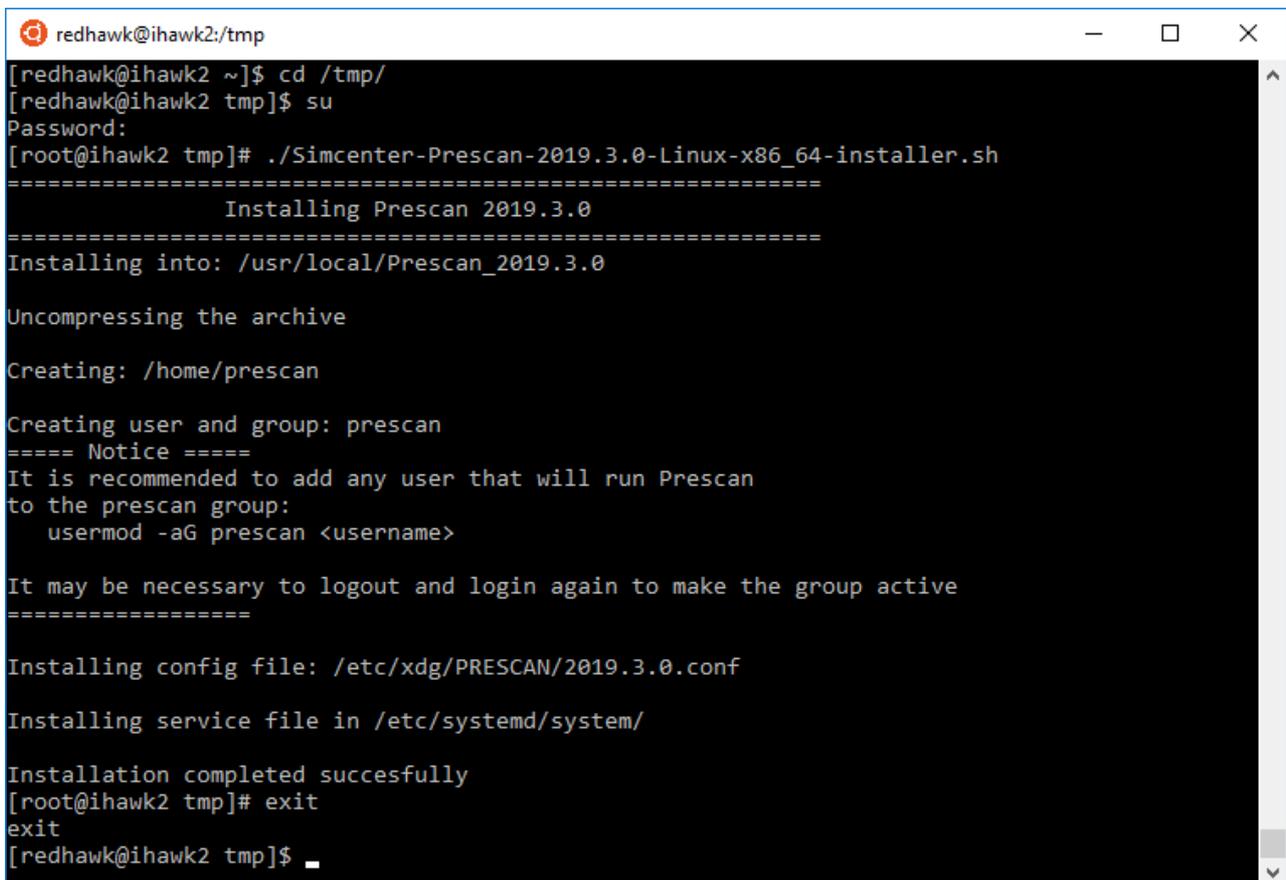
Both Prescan for Linux and Prescan Real-Time share a single installer.
The following installation instructions are valid for both Prescan for Linux and Prescan Real-Time.

Note: Prescan for Linux has only been tested on CentOS 7.2. It might also work on other Linux distributions but we advise to use Docker containers to run Prescan for Linux on other Linux systems.

Installing Prescan on Linux

Download the Prescan for Linux installer (`Simcenter-Prescan-2020.2.0-Linux-x86_64-installer.sh`) and copy it to a temporary folder on the Linux system.

Log in and run the installer in the temporary directory as root. Use the `--target` option to specify the target system Prescan is being installed on. See the next section for a list of targets and other installation options.



```

redhawk@ihawk2:~/tmp
[redhawk@ihawk2 ~]$ cd /tmp/
[redhawk@ihawk2 tmp]$ su
Password:
[root@ihawk2 tmp]# ./Simcenter-Prescan-2019.3.0-Linux-x86_64-installer.sh
=====
                Installing Prescan 2019.3.0
=====
Installing into: /usr/local/Prescan_2019.3.0

Uncompressing the archive

Creating: /home/prescan

Creating user and group: prescan
==== Notice ====
It is recommended to add any user that will run Prescan
to the prescan group:
    usermod -aG prescan <username>

It may be necessary to logout and login again to make the group active
=====

Installing config file: /etc/xdg/PRESCAN/2019.3.0.conf

Installing service file in /etc/systemd/system/

Installation completed succesfully
[root@ihawk2 tmp]# exit
exit
[redhawk@ihawk2 tmp]$ _

```

Edit or create the file `/etc/profile.d/lm.sh` and make sure the following line is present:

```
export SPLM_TASS_LICENSE_SERVER=port@host
```

Where `host` and `port` are the hostname and port number of the license server. See Licensing for more information.

Installation Options

The Prescan linux Installer accepts a number of options to control the installation process:

<code>-h, --help</code>	Shows all options with a short description of their use
<code>--target=<target_name></code>	Specify the target Prescan is being installed on. The supported targets are <i>national-instruments</i> , <i>concurrent</i> , <i>etas</i> and <i>cluster</i> . This option will trigger additional installation steps necessary for each target.
<code>--skip-config</code>	Do not write the current configuration to <code>/etc/xdg</code> . This configuration file is used by Prescan to locate its components and data. If this configuration step is skipped, manual verification of the current file is needed to ensure it is configured to use the new installation.
<code>--skip-service</code>	Skip installation of the background service file. The <code>DeploymentService</code> can run as a background process (started manually, or at system start). In order to facilitate this a configuration file is installed. Use this option to suppress installation of this file.
<code>--skip-user</code>	Skip the creation of a prescan user and group, and corresponding <code>/home/prescan</code> folder. Use this option if there is already a prescan user, group and home directory present that is already used for another purpose, and was not created by a Prescan installer.
<code>--prefix=dir</code>	Specify the root installation directory for Prescan. By default, Prescan is installed in <code>/usr/local</code> . Using this option will install Prescan in the specified <code>dir</code> instead.
<code>--postfix=name</code>	Specify a custom postfix to the default installation folder name. By default, Prescan is installed in a folder named <code>Prescan_2020.2.0</code> . To facilitate multiple side by side installations, a postfix can be added to this name. For example, using <code>--postfix=-demo</code> would use <code>Prescan_2020.2.0-demo</code> as the installation folder name.
<code>--force-install</code>	Use this option to overwrite an existing Prescan installation. When this option is specified, the existing installation directory is removed before installing Prescan again. It is imported to note that this only applies to installations of Prescan with the same version, and prefix and postfix settings.
<code>--install-minimal</code>	Install only Prescan libraries and header files. Use this option to cross compile experiments in Windows for a Linux target. When this option is used, <code>--skip-config</code> , <code>--skip-service</code> , and <code>--skip-user</code> are automatically set. The <code>--prefix</code> and <code>--postfix</code> options can be used in combination with this option.

Installing Prescan Linux on National Instruments PXI Controller

On National Instruments PXI Controllers, add the `lvuser` to the `prescan` group:

```
# usermod -aG prescan lvuser
```

Installing Prescan Linux on Windows for Cross Compilation

VeriStand uses the C/C++ Development Tools 2017 (provided by National Instruments) to cross-compile Simulink models into Linux shared libraries. The Prescan Linux libraries and header files shall be installed in the `sysroot` folder of the toolchain to be able to build Prescan Experiments for the PXI Controller. Use Linux Bash for Windows to perform a minimal installation of Prescan Linux on Windows as follows:

```
$ ./Simcenter-Prescan-2020.2.0-Linux-x86_64-installer.sh --install-minimal --prefix=/mnt/c/build/17.0/x64/sysroots/core2-64-nlirt-linux/usr/local/
```

The postfix and prefix options used in the installation of Prescan Linux on Windows shall be identical to the options used when installing Prescan Linux in the PXI Controller. The only difference is that the installation in Windows shall use the `sysroot` directory of the cross compile toolchain as the root directory. If the toolchain directory does not exist, make sure you install the C/C++ Development Tools as specified in the Section System Requirements for Prescan software.

Installing Prescan Linux on Concurrent RedHawk

On Concurrent RedHawk, restart the `simwb` service by running the following command as root:

```
$ service simwb restart
```

Installing Prescan Linux on ETAS RTPC

On ETAS RTPC, by using the option `--target=etas`, the Prescan installer will provide further instructions on how to complete the installation on the RTPC. These steps are mandatory.

Linux Installation Troubleshooting

Error during building of platform dependent library when using --target=concurrent with sudo

Building of the platform library uses the `SIMWB_ROOT` environment variable to locate the Prescan installation. When using `sudo` to install Prescan, this variable is not properly propagated to the installer. To resolve this use the `-E` option with `sudo` to forward all current environment variables. Also use the `--force-install` option to make sure the new installation overwrites the former one: `sudo -E Simcenter-Prescan-2020.2.0-Linux-x86_64-installer.sh --force-install`.

Post Installation Troubleshooting

Error during running a simulation

When running a simulation in Prescan Linux, the simulation may be aborted with the following error message:

```
error while loading shared libraries: libGLU.so.1: cannot open shared object file:
No such file or directory
```

This is due to the missing `libGLU` library, which can be resolved by installing it using the local package manager.

Error during running the Deployment Service

When running the Deployment Service in Prescan Linux, the following error may occur:

```
error while loading shared libraries: libgomp.so.1: cannot open shared object file:
No such file or directory
```

This is due to the missing `libgomp` library, which can be resolved by installing it using the local package manager.

Installing Prescan Linux on Windows for Cross-Compilation

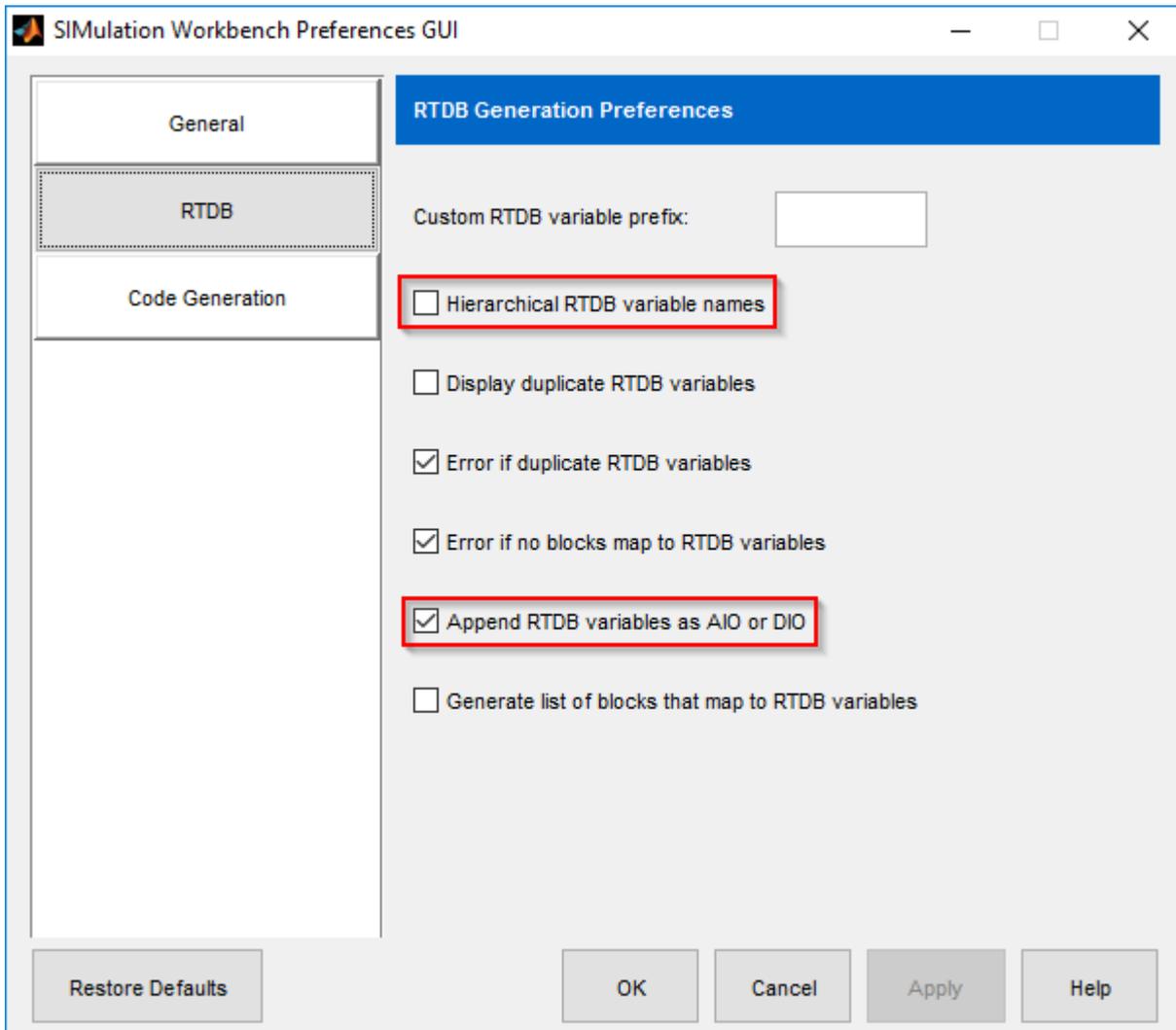
VeriStand uses the C/C++ Development Tools 2017 (provided by National Instruments) to cross-compile Simulink models into Linux shared libraries. The Prescan Linux libraries and header files shall be installed in the `sysroot` folder of the toolchain to be able to build Prescan Experiments for the PXI Controller. Use Linux Bash for Windows to perform a minimal installation of Prescan Linux on Windows as follows:

```
$ ./Simcenter-Prescan-2020.2.0-Linux-x86_64-installer.sh --install-
minimal --prefix=/mnt/c/build/17.0/x64/sysroots/core2-64-nilrt-linux/usr/local/
```

The postfix and prefix options used in the installation of Prescan Linux on Windows shall be identical to the options used when installing Prescan Linux in the PXI Controller. The only difference is that the installation in Windows shall use the `sysroot` directory of the cross compile toolchain as the root directory. If the toolchain directory does not exist, make sure you install the C/C++ Development Tools as specified in the Section System Requirements for Prescan software.

Configuring Prescan Real-Time in Simulink on Windows for SimWB

After starting MATLAB, open a Simulink model (either new or existing). In the SimWB menu in the menu bar, click Preferences. Go to the RTDB tab, deselect 'Hierarchical RTDB variable names' and select 'Append RTDB variables as AIO or DIO'.



1.1.4 Prescan Cluster Solution

Deployment.

The current solution is deployed by Prescan support team.
For assistance please contact the Prescan distributor or sales contact.

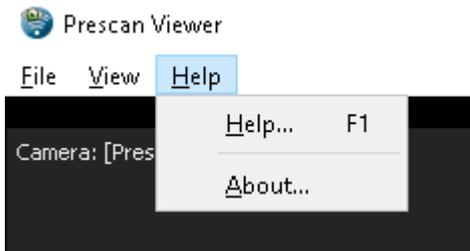
1.1.5 Graphics Card Configuration

It is important to configure your graphics card properly in order to maximize the performance of Prescan. This section helps you to find a configuration that suits your needs.

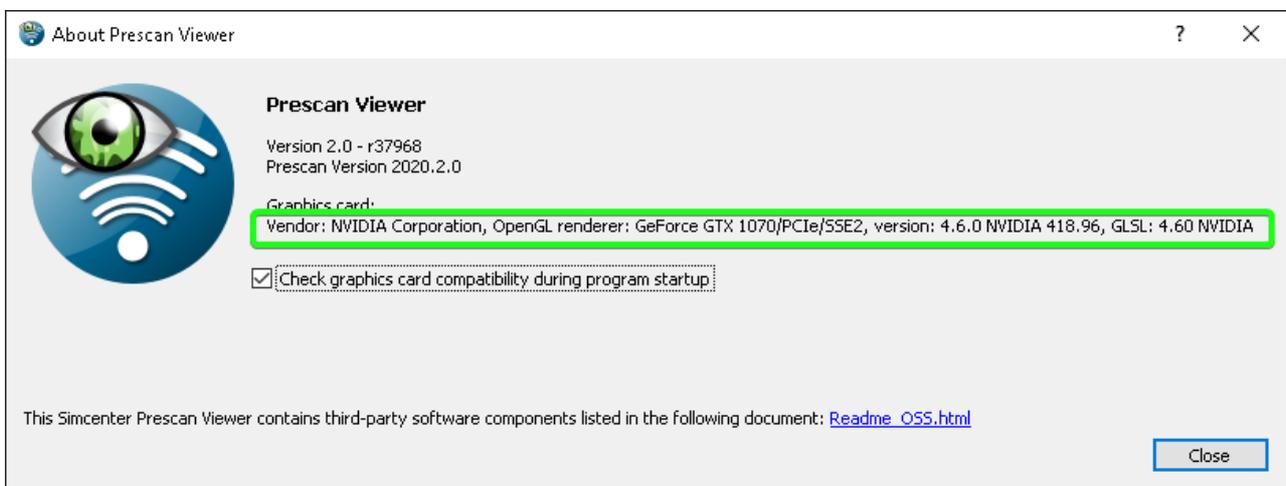
Install the latest drivers

Many computers nowadays come with an on-board GPU. While this GPU is perfectly suited for basic rendering purposes, it is not suitable for use with Prescan. Users should always use NVIDIA or AMD graphics cards when running Prescan, preferably using the latest drivers.

Install the latest drivers for your graphics card, which can be found on the website of your graphics card manufacturer. Make sure you reboot after installing the new drivers. After the reboot, start the Prescan Viewer and click on the About menu item:

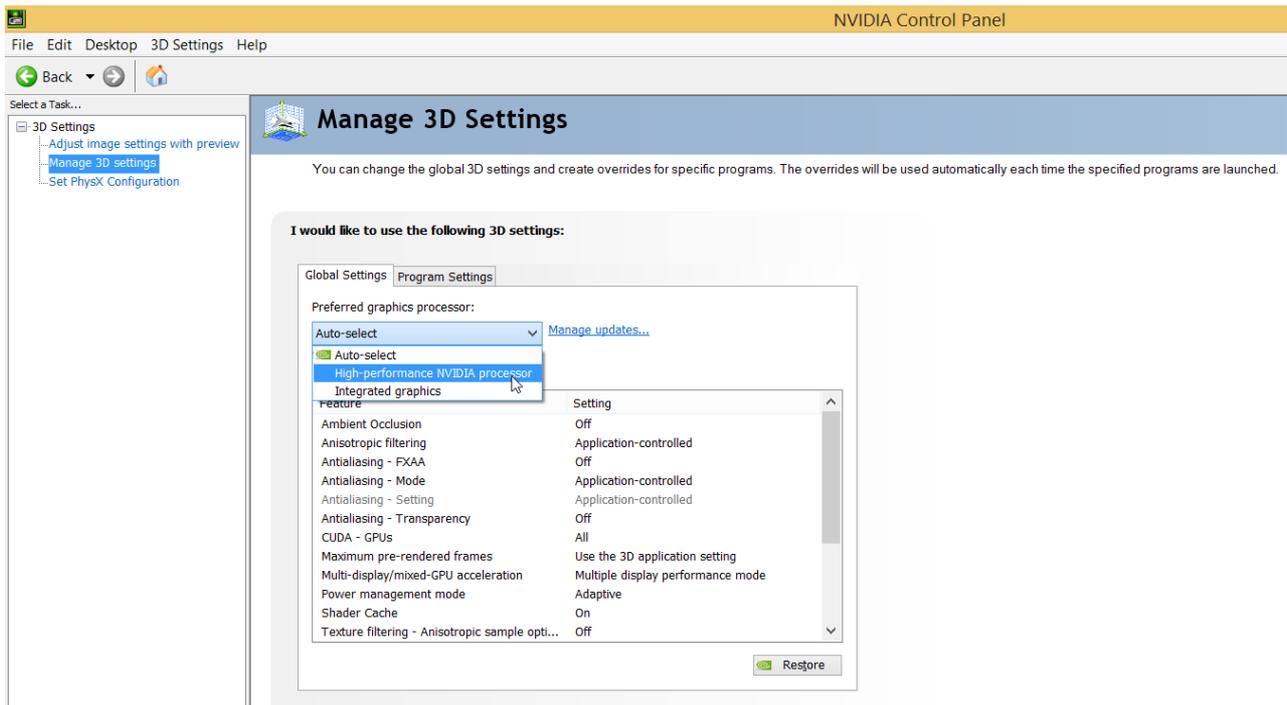


Your graphics card information will now be listed as in the figure below. It will show either an AMD or a NVIDIA graphics card.



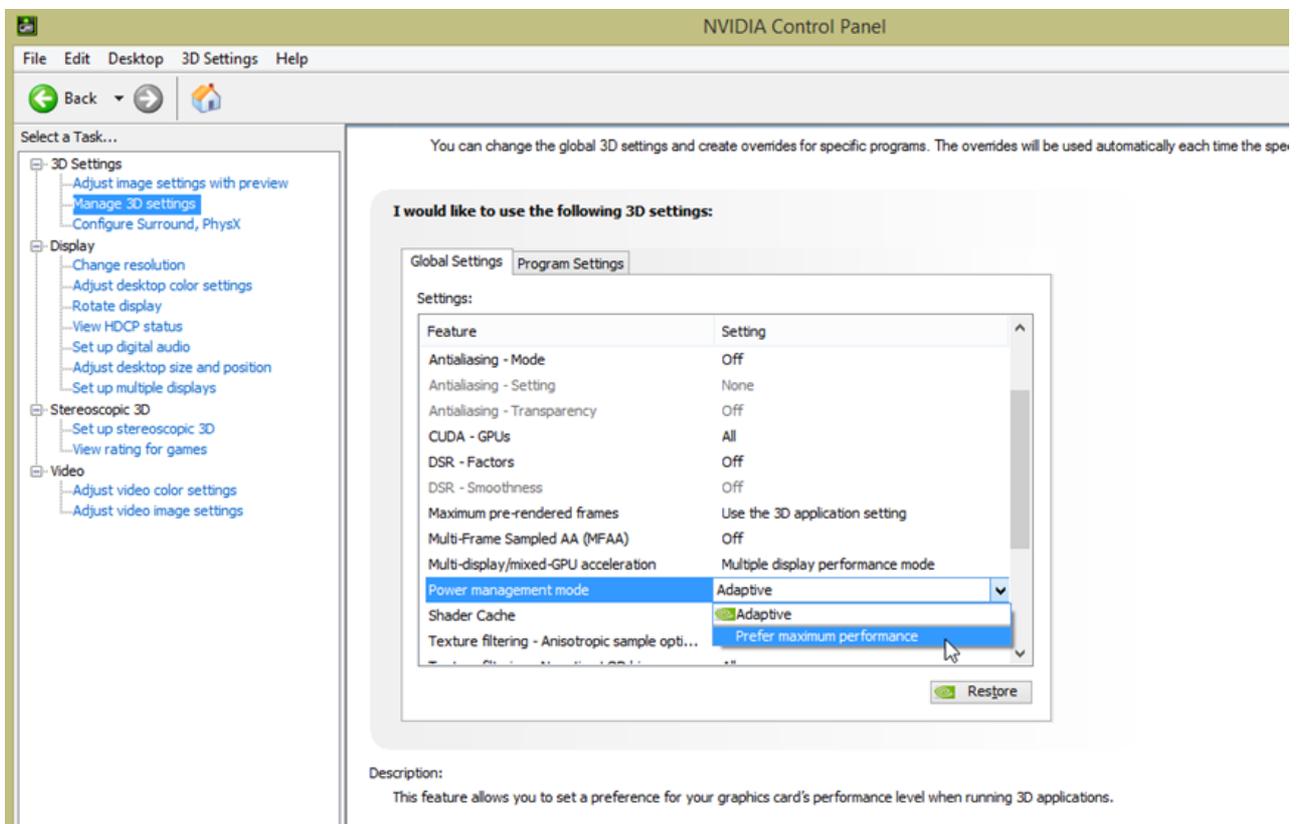
Graphics card assignment

With the latest drivers installed, Prescan will typically use the dedicated graphics card automatically. However, Windows might still force (parts of) Prescan to use the on-board GPU even when a dedicated graphics card is present. For NVIDIA graphics cards there is a simple solution. In the *NVIDIA control panel* -> *Manage 3D Settings*, you can configure the system to use the NVIDIA card by default.

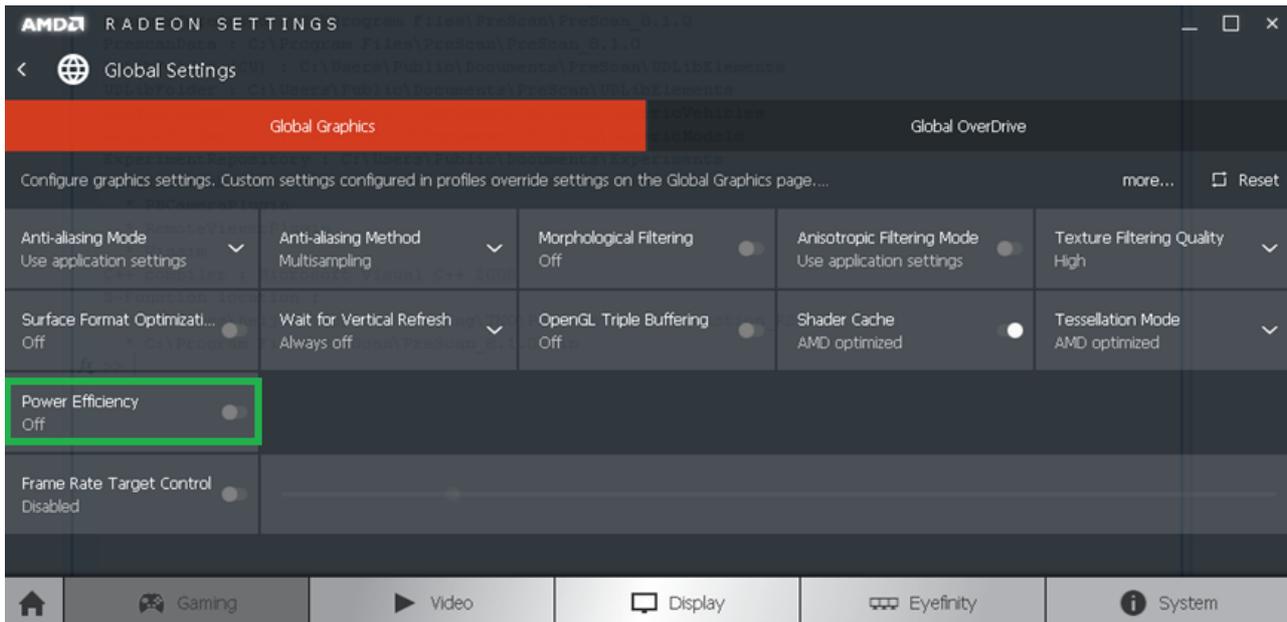


Power managements settings

Some graphics cards have a power management system, which is often enabled by default. This is often the case with notebooks. It is best to disable this power management in order to get more performance out of your graphics card.



Power management settings for NVidia cards

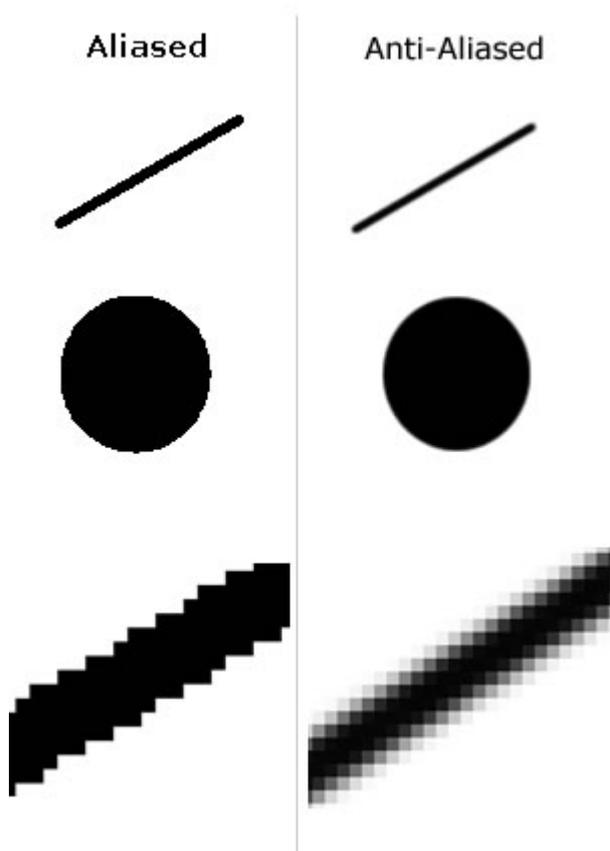


Power management settings for AMD cards

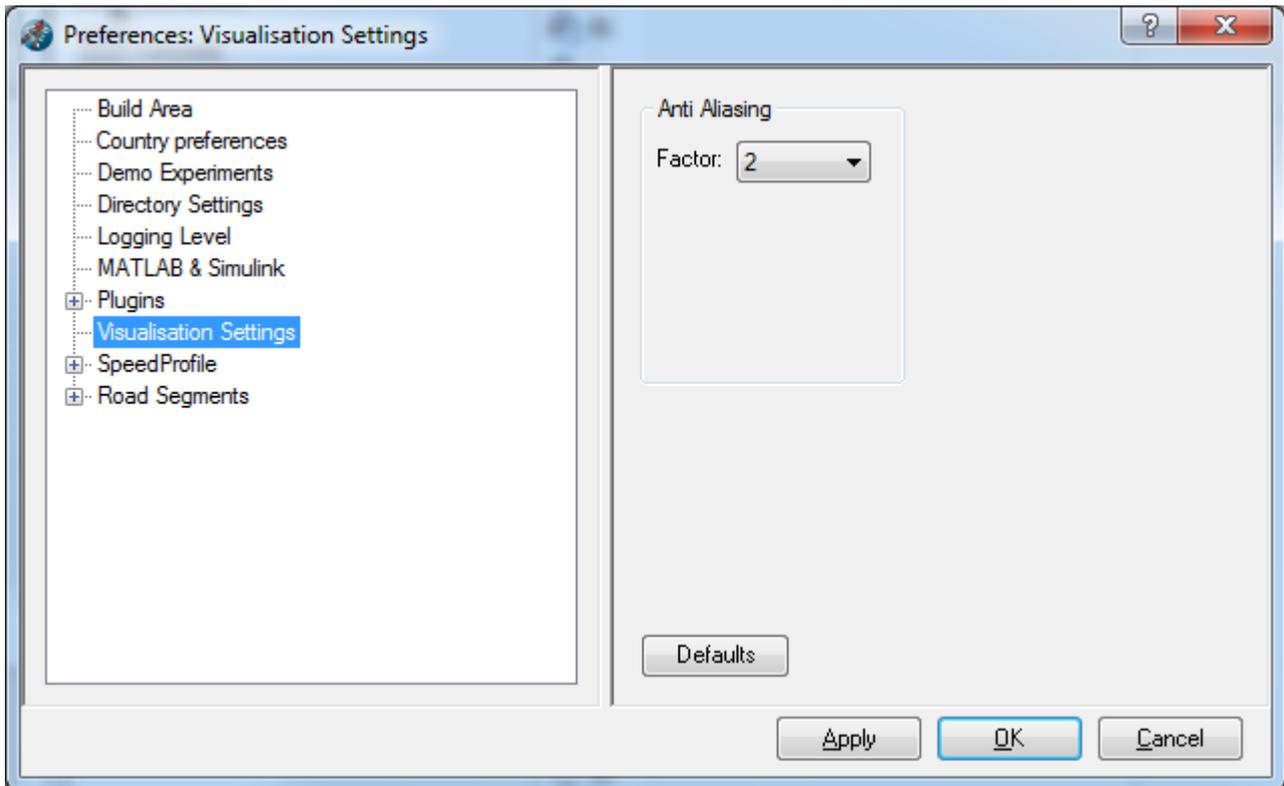
Anti-aliasing settings

Note: Anti-aliasing is of specific importance for **white line detection** with a **camera system**. Without anti-aliasing, lines further away might 'flicker' (appear and disappear from view) whereas with anti-aliasing turned on, they will remain in view.

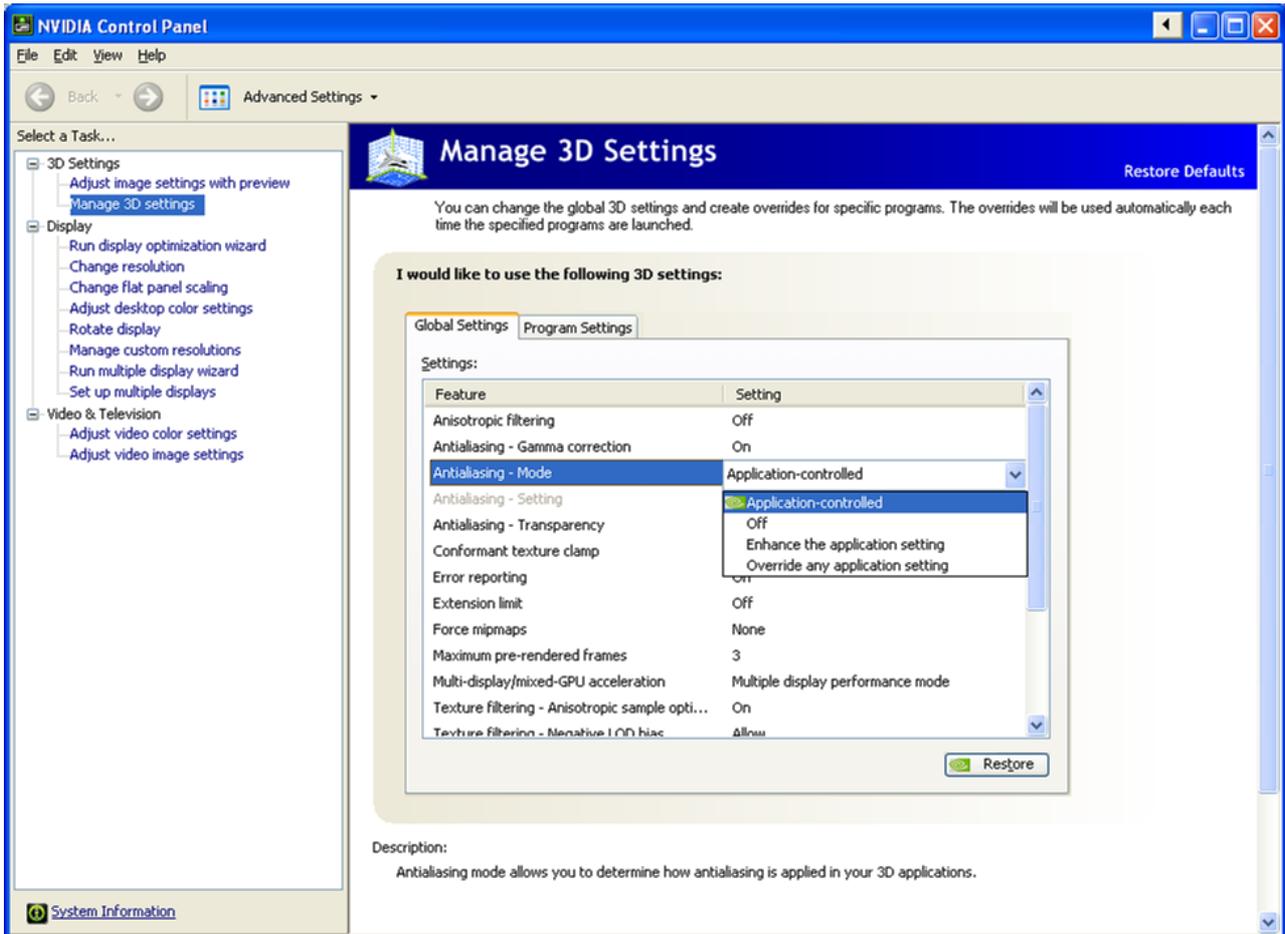
Computer screens that display images use a limited number of pixels. As a result, shapes (e.g. circles, lines) are displayed with jagged edges. This jagged shape is known as aliasing or *jaggies*.



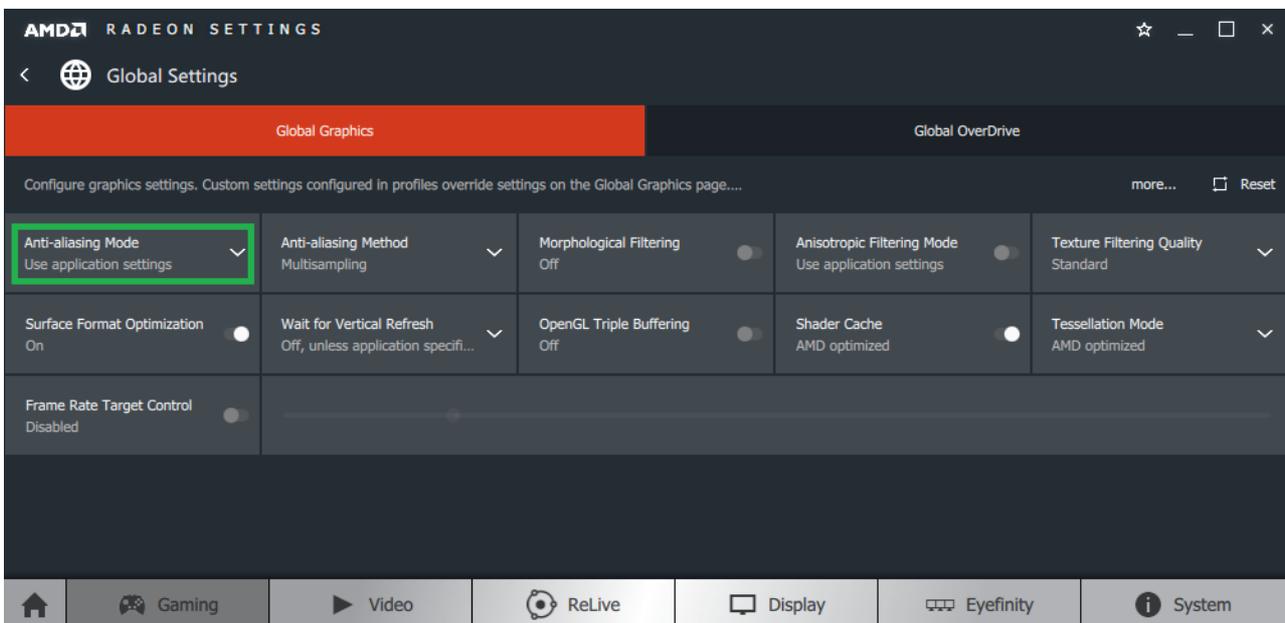
We can suppress these *jaggies* using a technique called **anti-aliasing** (AA). In practice, there is not much improvement when going from an AA factor of 2 to 4 or higher. It is therefore advised to have a default setting of 2 which can be accessed through Settings -> Preferences -> Visualisation Settings. The chapter Visualization Settings provides more info on anti-aliasing.



In order for these settings to have an effect, make sure your graphics card is configured to use the application-specific AA settings. This is shown in the images below.



Application-specific AA setting for NVIDIA



Application-specific AA setting for AMD

Threaded optimisation

NVIDIA GPUs have a driver feature called *Threaded optimisation*, which can cause problems with the Prescan

Viewer and/or the Remote Viewer Federate. For systems with NVIDIA Titan GPUs, this feature needs to be turned off. You can turn *Threaded optimisation* off in the *NVIDIA control panel* -> *Manage 3D Settings*.

Note: Make sure you close and then **restart** the Prescan Viewer in order for the change to take effect.

1.1.6 3rd Party Products

Typical 3rd party products to be installed with Prescan are:

- (Preferred) Google SketchUp for creation of User Library Elements
A free version with limited but sufficient functionality can be found here: <http://www.sketchup.com/>.
A great source of models can be found in: <https://3dwarehouse.sketchup.com/index.html>

Typical 3rd party products to be installed with Prescan but which need a special connection to Prescan are:

- CarSim
Install the product using the installation procedure as provided with the product. More information about the connection method can be found in the following section Connection to 3rd Party - CarSim.
- LabView
Install the product using the installation procedure as provided with the National Instruments product. More information about the connection method can be found in the following section Connection to 3rd Party - LabView.
- VeDYNA
Install the product using the installation procedure as provided with the Tesis - DYNAWare product. More information about the connection method can be found in the following section Connection to 3rd Party - VeDYNA

1.2 Licensing

This document contains information regarding the license system used to run Siemens products.

The licensing documentation will refer to **installdir**. This directory is platform specific and refers to the following default installation paths:

Windows: C:\Program Files\Simcenter Prescan\Prescan_2020.2.0\

Linux: /usr/local/Prescan_2020.2.0/

Licensing Tools

The licensing tools are distributed via the regular installer and can be found at: **installdir > Licensing**

Licensing tools are also available via the Siemens PLM Download Server at <https://download.industrysoftware.automation.siemens.com/>:

1. Log in using your WebKey username and password
2. On the Siemens PLM Download Server page, from the list on the left, click Simcenter Prescan
3. Full products > SPLM Licensing Tools
4. Select the appropriate platform to get the tools for your intended platform

1.2.1 Licensing Set Up

Available License types

Prescan is licensed by the feature licenses which allows a specific Prescan module to run. A single license for the given feature name is checked out when feature based licenses are used. The licensing mechanism supports floating and node-locked floating licenses. No uncounted node-locked licenses are offered for native Prescan licensing.

Obtaining a license

The license(s) for Siemens products will be delivered after completing the purchase order for Prescan.

If you are an existing customer using previous versions of Prescan (2019.3 and older) please contact your sales representative.

In the course of requesting a license a 'CID' may be requested. This tool is included in the Prescan installation and can be found in:

- A. **installdir** > Licensing > utilities > win64 > getcid.exe for Windows
- B. **installdir** > Licensing > utilities > linux-x86_64 > getcid for Linux
- C. Using your Webkey see Licensing Tools

Environment variables to be set

The Siemens PLM license server(s) has(have) to be specified by the **SPLM_TASS_LICENSE_SERVER** environment variable. This environment variable is used by the applications to find the license server. When no license server is specified via the environment variable, the license server defaults to port 28000 on the local machine (28000@localhost). This is valid for both multiple stack and single stack licenses.

Note: The SPLM_TASS_LICENSE_SERVER environment variable will also be automatically set by the Prescan installation process.

1.2.2 Managing the License Server

This section provides procedural information on how to configure and manage the Siemens PLM License Server.

1.2.2.1 Installing the License Server

Prior to beginning the Siemens PLM Licensing installation, you must have a license file. The file should have already been provided.

The install must be run with a user account that has administrative permissions.

The Siemens PLM License server installation software can be found at **installdir > server_installations**

The Windows Prescan installer contains both the Windows and Linux Siemens PLM Licensing installers.

1. Select the appropriate license server installer for your platform.
2. Install by following the instructions provided in **installdir > Licensing > documentation > SPLM_Licensing_Install.pdf**

1.2.2.2 Administrating the License Server

A graphical user interface to the license server manager tools is provided called LMTOOLS. Some of the functions LMTOOLS performs include:

- starting, stopping, and configuring FLEXnet license server systems
- getting system information, including hostids
- getting server status

In order to control the operation of lmgrd from the LMTOOLS user interface, you must first install the PLM License Server. Follow the procedure in [Installing the License Server](#) before proceeding.

After installation please refer to [installdir > Licensing > documentation > SPLMLicensing_user_guide.pdf](#)

1.2.3 License Troubleshooting Guide

1. Make sure that your Siemens PLM License Server is the latest available version
2. The environment variable SPLM_TASS_LICENSE_SERVER should be set to "<portnumber>@<hostname>"; portnumber is the connection port number of the license server, where hostname is the name of the license server without the domain name. See the first line in the license file for these details. Note that the first hostname should be <portnumber>@localhost. This will enforce to look locally on your system if the machine is detached from the network.
3. Considerable delays in start up of the applications have been noticed if the license file contains license strings of which the end date has expired.
4. Considerable delays in start up of the applications have been noticed if nonexistent servers are assigned to the SPLM_TASS_LICENSE_SERVER environment variables or even in the registry.
5. The questions below have been taken from the FLEXlm™ user guide and are important when you have questions for Siemens First Line Support:
 - What kind of machine is your license server running on?
 - What version of the operating system?
 - What machine and operating system is the application running on?
 - What version of FLEXlm™ does the FLEXlm™-licensed application use? Use the lmver script, or, on Linux, execute the following command on your lmgrd, vendor daemon, and application: strings binary_name | grep copy. Alternatively, lmgrd -v gives the lmgrd version, and this works with the vendor daemon also.
 - What error or warning messages appear in the log file?
 - Did the server start correctly? Look for a message such as: server xyz started for: feature1 feature2.
 - What is the output from running lmutil lmstat -a?
 - Are you running other products which are also licensed by FLEXlm™?
 - Are you using a combined license file or separate license files?
 - Are you using a three-server redundant license server (multiple SERVER lines in your license file)?
6. Set the environment variable FLEXLM_TIMEOUT to 10000000. Its value is in microseconds and corresponds to 10 seconds. As the name suggests it sets a timeout value of 10 seconds to contact the FLEXlm™ server. This should be considered to be a last resort in case of failing license checkouts.
7. Further FlexNet documentation is included in [installdir > Licensing > documentation > fnp_LicAdmin.pdf](#)

1.3 System Requirements for Prescan software

Hardware requirements

Processor:

Minimum required CPU: Intel Core2Duo E8400, or equivalent.

Note: Due to the memory requirements of the application it is highly recommended to use 64bit systems with at least 8GB of memory.

Minimal required amount of memory:

Windows 64 bit: 7/8.1/10: = 8GB

Video Cards:

All video cards need to support OpenGL 4.2 and GL shading language 4.20. They can be of any brand (NVIDIA, AMD). Remember to always install the latest driver versions that are available for you system. In house tested are the following cards:

Graphics Card Manufacturer	Series
NVIDIA	GeForce GTX 970
	GeForce GTX 980
	GeForce GTX 1060
	GeForce GTX 1070
	Quadro P2000
	Quadro P4000
	Titan X (Pascal)
	GeForce RTX 2080
AMD/ATI	Radeon R9 380X

Note: Integrated chipsets (eg. Intel HD graphics) have in general a very limited specification due to which the Prescan Prescan Viewer may fail to run or results are incorrect. The use of systems with this type of graphics hardware is discouraged.

Screen Resolution:

In order to have a correct view of scenarios, menus and 3D view, a minimum screen resolution of **1280x1024** pixels is required.

Note: Remote desktop can **not** be used in combination with Prescan 3D Visual Viewer. The application may block or crash in an attempt to do so.

Software requirements

Supported OS:

- Windows 64bit: 7/8.1/10

Other:

- Engineer's control system modeling tool: 64-Bit MathWorks Products MATLAB/Simulink

The table below shows the compatibility of Prescan with MATLAB/Simulink versions. General notes unrelated to MATLAB versions are stated below the table as well.

Prescan Real-Time Requirements:

Prescan 2020.2.0 can be used in combination with a real-time platform, this section describes the hardware and software requirements for this.

National Instruments:

- National Instruments PXI Controller with NI Linux Real-Time
- VeriStand 2018 SP1
- VeriStand 2018 SP1 Model Framework f1 patch
- C/C++ Development Tools 2017 (provided by National Instruments)
- A MATLAB version supported by both Prescan 2020.2.0 and VeriStand
- Linux Bash shell for Windows (only supported on Windows 10)

Note: The following link shows the compatibility between VeriStand and MATLAB versions: <https://www.ni.com/en-us/support/documentation/compatibility/17/veristand-version-compatibility.html>

Concurrent:

- Concurrent iHawk hardware platform (or a platform compatible with Concurrent RedHawk Linux)
- Concurrent RedHawk Linux 7.2 [on the real-time hardware platform]
- Concurrent Simulation Work Bench (SimWB) version 2017.1.0
- Concurrent MATLAB Toolkit (ML Toolkit) installed as part of the SimWB installation

Note: Matlab versions 2017a and higher are not compatible with SimWB 2017.1.0

ETAS:

- ETAS RTPC v6.2.2
- ETAS LABCAR-OPERATOR 5.4 with ETAS Experiment Environment

Note: Not all versions of Matlab are supported by LABCAR-OPERATOR. Use the ETAS "Matlab Version Selector" tool to select a Matlab version which is also supported by Prescan. This tool is part of the installation of LABCAR-OPERATOR.

Compatibility Requirements

Prescan 2020.2.0 is compatible with the following MATLAB/Simulink releases:

Versions	Build-No.	32/64 bit	Windows	MATLAB
Release 2020.2.0		64 bit	7 / 8.1 / 10	2014 b 2015 aSP1/b Note 5 2016 a/b 2017 b 2018 b

Note 1: Prescan is compatible with Windows 7, 8.1 & 10 for the user profiles **Administrator** and **User**. It is **not** compatible with the profile **Guest**, due to file restrictions.

Note 2: Prescan is tested with the 'b' MATLAB releases only.

Note 3: For 64-bit platforms an additional requirement needs to be fulfilled to run Simulink models in general. A C/C++ compiler does not come standard with the MATLAB for 64-bit platforms. The presence of a compiler can be verified and updated by executing "mex -setup" or "mex -setup C" and "mex -setup C++" in a MATLAB command window. For Matlab 2014b and higher, the Microsoft Windows SDK 7.1 (and the .NET Framework 4) will suffice. This can be found here:
<http://www.microsoft.com/en-us/download/details.aspx?id=8279>

With the introduction of MATLAB R2015b, the MinGW-w64 compiler is supported. This compiler is available at no charge.

Please refer to The MathWorks documentation for supported compilers for your version of MATLAB/Simulink. In particular, pay attention to the C/C++ compiler versions required by the Simulink Coder, which may have different compatibility requirements than the other MATLAB components. Incompatible C/C++ compilers may not give any warnings/errors when working with Prescan Real-Time work flow, but they will result in undefined behavior when compiling/running the generated code on the real-time target.

Links to documentation and installation tips can be found here:

<http://www.mathworks.com/support/compilers>

http://www.mathworks.com/support/compilers/previous_releases

<http://www.mathworks.com/matlabcentral/answers/101105-how-do-i-install-microsoft-windows-sdk-7-1>

http://www.mathworks.com/help/matlab/matlab_external/install-mingw-support-package.html

Note 4: When different versions of MATLAB are installed on the same machine, it is possible that they require different versions of MinGW. This is the case for MATLAB R2015b, where MinGW 4.9.2 is used, and MATLAB 2017b which requires MinGW 5.3. In this case, one must pay special attention to the system environment variable `MW_MINGW64_LOC`, which holds the path to the installed MinGW compiler. MATLAB reads its value to select the MinGW version to use. In many versions, MATLAB only updates the value of the environment variable when installing the MinGW compiler. This means that when switching between MATLAB versions `MW_MINGW64_LOC` could hold the path to the wrong MinGW version.

The workaround for this is to manually check the value of the environment variable when starting up MATLAB. This can be done with `getenv('MW_MINGW64_LOC')`. The typical installation directories are:

- MinGW 4.9.2 - `C:\MATLAB\SupportPackages\R2015b\MW_MinGW_4_9`

- MinGW 5.3 - `C:\ProgramData\MATLAB\SupportPackages\R2017b\3P.instrset\mingw_w64.instrset`

In recent versions (R2017b and later) this problem does not occur as MATLAB checks its version on start-up and updates `MW_MINGW64_LOC` accordingly. Still, we advise the users to do their own verification and from there learn from experience how MATLAB is selecting MinGW.

If the value of `MW_MINGW64_LOC` is not correct, it can be set by running `setenv('MW_MINGW64_LOC', <path>)`, where `<path>` is the directory to the installed MinGW compiler that should be used with the MATLAB version being used. This change will take effect immediately but only in the current MATLAB session. This step must therefore be repeated every time MATLAB is started. Alternatively, the environment variable

can be set in Windows provided the user has administrator rights.

When MATLAB is started for Prescan, using the Prescan Process Manager, the Prescan GUI or otherwise, the whole Prescan environment is passed to MATLAB and with it MW_MINGW64_LOC. This implies that every time MATLAB is restarted without restarting the process from which it was started (Prescan Process Manager or other), the original environment will be again passed to MATLAB, and any changes made in the previous MATLAB session are not taken into account. For this reason, if MinGW has been installed on a MATLAB session which has been closed and another session is started from the same Prescan Process Manager instance (or other process from which MATLAB was started), MATLAB will still not know the new value of MW_MINGW64_LOC. The same applies for when uninstalling MinGW. For this reason, in these cases, the Prescan Process Manager (or, again, any other process from which MATLAB was started) must be terminated and restarted too.

Note 5: MATLAB 2015a should work with Prescan. However, only MATLAB 2015a SP1 is officially supported.

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