

Table of contents

1. [Local SMATH Licensing Server](#)

- 1.1. [Features](#)
- 1.2. [Delivery](#)
- 1.3. [System requirements](#)
 - 1.3.1. [Hardware requirements](#)
 - 1.3.2. [Software requirements](#)
- 1.4. [Installation and start](#)
- 1.5. [Initial configuration](#)
- 1.6. [Loading licenses](#)
 - 1.6.1. [With Internet access](#)
 - 1.6.2. [In offline mode](#)
- 1.7. [Authentication modes](#)
- 1.8. [Licenses reservation](#)

2. [SMATH Studio Enterprise Edition](#)

- 2.1. [Features](#)
- 2.2. [Delivery](#)
- 2.3. [System requirements](#)
- 2.4. [Installation](#)
 - 2.4.1. [On Windows OS](#)
 - 2.4.2. [On Linux OS](#)
- 2.5. [Launch](#)
 - 2.5.1. [With a graphical user interface](#)
 - 2.5.2. [In command line mode](#)
 - 2.5.3. [As a service](#)
- 2.6. [Activation](#)

1. Local SMath Licensing Server

The Local SMath Licensing Server is an optional component of the SMath infrastructure that provides greater flexibility in managing SMath software across an organization's network.

1.1. Features

By installing the SMath licensing server on your organization's network, you get a convenient tool for working with SMath software licenses, which has the following advantages:

- User friendly interface available in your favorite browser.
- Compact installation package – just about 254 Mb to download.
- Driven by Docker technology and may be easily installed on any Operating System just in a few minutes.
- Both Fixed and Floating licenses supported.
- Additional capabilities to monitor and manage your licenses.
- Anonymous authentication type supported, so the end users do not need to remember their credentials to access SMath Studio.
- SMath Studio branding supported.
- May be moved to another IP address, another port, another machine in your network any moment without involving vendor at all.
- Adding new license(s), changing or prolonging it does not require Server recreation/reinstallation or SMath Studio reinstallation.
- Offline mode supported, so it is possible to access licenses without Internet access.
- SMath Studio Enterprise may use both SMath.com and Local Licensing Server if required.
- Local Cloud version of SMath Studio can be included to the Local Licensing Server package.
- Full technical support for the Local License Server is provided by the developer of SMath Studio.

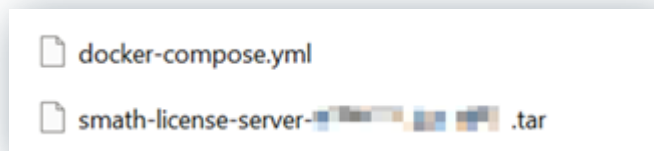
1.2. Delivery

An installation package for the local SMath Licensing Server will be prepared for organization after signing the Agreement. Each such installation package is unique, is not subject to publication on publicly accessible resources and is intended for use by a single legal entity only.

Local SMath Licensing Server package can be downloaded in format of **Docker** using one of the following methods:

- Using SMath.com web: [the link will be provided after signing the Agreement](#) (authentication may be required using the data from the electronic license file sent earlier to the e-mail address specified in the Agreement).
- Using cloud storage iCloud.com: [the link will be provided after signing the Agreement](#) (access to this link may be limited in time).

Extract downloaded archive to the local disk (please do not use network shares or mapped disks) and perform all further steps in the folder where you placed extracted files.



You should get the following files there:

- **docker-compose.yml** – text file, describing Docker configuration.
- **SMath-License-Server-XXX-4_2_-1--1.tar** – Docker images archive.

All these files may be used without any changes if you are OK with default configuration.

1.3. System requirements

SMath Local Licensing Server Images may be deployed to any operating system, supporting Docker. Provided images have been tested on both Windows and Linux (Fedora, Ubuntu and Debian at least).

1.3.1. Hardware requirements

The SMath Local Licensing Server can be installed either directly on a physical server or on a virtual machine.

Minimal SMath Local Licensing Server System requirements are: 2Gb HDD, 1Gb RAM and 2 cores CPU 64-bit. While the SMath Local Licensing Server is running, our application does not accumulate any significant permanent data volume and therefore does not save it to disk. It allows to avoid potential low disk space reported over time.

If the Cloud version of SMath Studio is included in the delivery package of the SMath Licensing Server, the requirements for the server machine depend on the number of simultaneous connections to it and the complexity of the tasks being performed. For every 2-5 users of the Cloud version of SMath Studio, we recommend adding 1 processor core, 0.5 GB of RAM and 0.5 GB of ROM, it is important to take into account that while the application is running, the permanent memory of the server machine is filled and is determined by the volume of processed worksheets, and its available amount should be increased over time by the administrator in accordance with the load on the cloud version of SMath Studio.

Software updates provided as part of technical or warranty support may require increased performance resources in terms of RAM and CPU.

1.3.2. Software requirements

The provided Licensing Server in Docker format allows its deployment on almost any modern server: both Linux and Windows based. The Docker platform must be available on the server machine where the licensing server will be installed.

- If you already have a Docker host in your network, the installation will take just a few minutes, because you are provided with a self-sufficient Docker Compose configuration (you just may need to change the external ports in the configuration if the standard 80 and 443 ports are already occupied).
- If you still do not use any Docker host, you may install Linux on any available hypervisor or dedicated physical machine (we recommend [Ubuntu](#) and [Fedora Linux](#), but you may also use alternative distributives you prefer) in order to install [Docker](#) there. We provide configuration file, set of images and command to be executed in terminal window in order to get SMath Local Licensing Server up and running.

If there are traffic filtering tools (firewalls) in the network environment, it is necessary to ensure that traffic passes through the specified ports:

- To the server: ports 80 and 443 (if they are not changed when deploying the server).
- From the server: requests to the address <https://smath.com:7443> (not required in offline mode).

You also need to allocate static IPv4 address for Docker host in organization's network (it has to be kept for the whole server life cycle), since SMath Studio Enterprise will be getting licenses namely using this IP address. You are also free to register some human readable DNS name for the server and use it instead of IP both for web access to the server management console and during configuration of SMath Studio.

1.4. Installation and start

Make sure Docker and Docker Compose are installed and tuned on a Server machine. Run terminal window and navigate to the folder where you extracted SMath Docker images.

```
D:\SMathLicensingServer>
```

In order to import necessary images into Docker run the following command:
docker image load -i SMath-License-Server-XXX-4_2_-1--1.tar

```
D:\SMathLicensingServer>docker image load -i smath-license-server- .tar
```

As a result, SMath Local Licensing Server Images will be imported into local Docker host.

```
D:\SMathLicensingServer>docker image load -i smath-license-server- .tar
6e3b92711bf1: Loading layer [=====] 84.83kB/84.83kB
7665576fefb9: Loading layer [=====] 36.52kB/36.52kB
d11d6f920aa3: Loading layer [=====] 70.80kB/70.80kB
a08d2df67902: Loading layer [=====] 2.56kB/2.56kB
a297a95dee96: Loading layer [=====] 20.39kB/20.39kB
a8154f24c567: Loading layer [=====] 1.53kB/1.53kB
a58776e7f1ca: Loading layer [=====] 82.67kB/82.67kB
7b42f7a0cab: Loading layer [=====] 1.53kB/1.53kB
edec29e4360: Loading layer [=====] 7.68kB/7.68kB
0d6656fd37e2: Loading layer [=====] 20.22kB/20.22kB
59d93aa0ea26: Loading layer [=====] 21.68kB/21.68kB
2dd50054362a: Loading layer [=====] 81.87kB/81.87kB
947fee2ee67: Loading layer [=====] 19.98kB/19.98kB
65752b825299: Loading layer [=====] 5.63kB/5.63kB
Loaded image: smath-app:0.314.0-8271
f0b3a14a9f6f: Loading layer [=====] 54.28kB/54.28kB
1a16373d3ded: Loading layer [=====] 2.56kB/2.56kB
Loaded image: smath-init:0.314.0-8271
4693057ce236: Loading layer [=====] 7.62kB/7.62kB
50df5b6a773: Loading layer [=====] 12.8kB/12.8kB
0129a3a7da15: Loading layer [=====] 2.04kB/2.04kB
4e63d660f940: Loading layer [=====] 232.20kB/232.20kB
752ea8471656: Loading layer [=====] 63.49kB/63.49kB
5dc8d9fe9551: Loading layer [=====] 2.56kB/2.56kB
829ffa20a1ad: Loading layer [=====] 3.58kB/3.58kB
f8c29878cc22: Loading layer [=====] 15.87kB/15.87kB
5f70b9f18a086: Loading layer [=====] 1.02kB/1.02kB
697e751c5f7d: Loading layer [=====] 5.63kB/5.63kB
Loaded image: smath-db:0.314.0-8271
```

In order to orchestrate imported images, you got a file **docker-compose.yml**, where you may customize the following parameters if necessary:

- HTTP port 80 for accessing Licensing Server Webpage.
- HTTPS port 443 for SMath software access via protected network connection.

In order to deploy the server on local Docker host run the following command:
docker compose up -d

```
D:\SMathLicensingServer>docker compose up -d
```

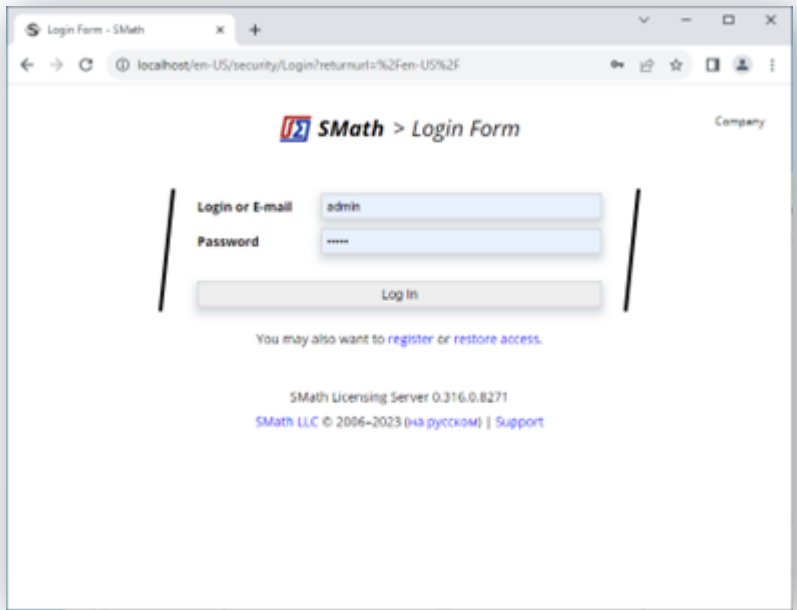
After this command is succeeded you should get a number of Docker containers started, providing you access to your Local Licensing Server application.

```
D:\SMathLicensingServer>docker compose up -d
[+] Running 5/5
✔ Network smathlicensingserver_smath-net      Created
✔ Volume "smathlicensingserver_postgres-data" Created
✔ Container smath-db                          Healthy
✔ Container smath-init                        Exited
✔ Container smath-app                          Started
```

1.5. Initial configuration

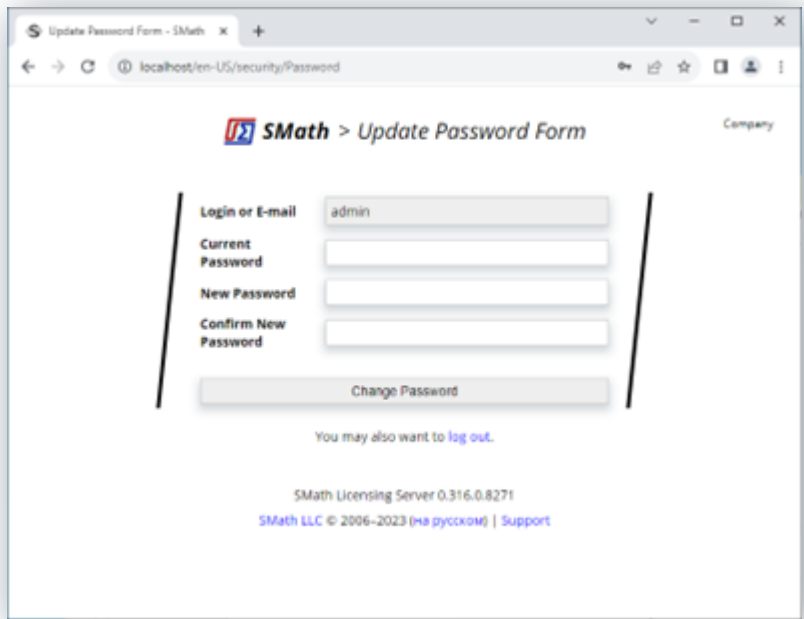
To begin configuring the installed SMath Licensing Server on the server machine, open any web browser and go to the link <http://localhost>. If you have changed the default port (which is 80), use the custom port you set in the **docker-compose.yml** file. Additionally, you can configure the SMath Licensing Server from a web browser on any

other device connected to the same local network. In this case, use the server's IP address along with the port number as the URL. Make sure the server's firewall is either disabled or properly configured to allow access through the external port.



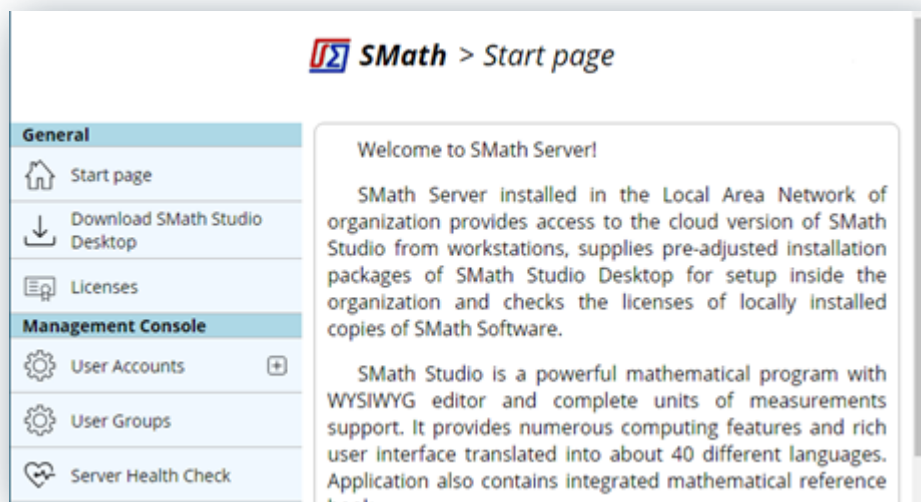
The screenshot shows a web browser window titled "Login Form - SMath". The address bar displays "localhost/en-US/security/Login?returnurl=%2Fen-US%2F". The page header includes the SMath logo and the text "SMath > Login Form" on the left, and "Company" on the right. The main form area is enclosed in a box with vertical lines on the sides. It contains two input fields: "Login or E-mail" with the value "admin" and "Password" with masked characters "*****". Below these fields is a "Log In" button. Underneath the button, there is a link: "You may also want to [register](#) or [restore access](#)." At the bottom of the page, the text reads "SMath Licensing Server 0.316.0.8271" and "SMath LLC © 2006-2023 (на русском) | [Support](#)".

First time use the following username and password to login: **admin/admin** – you will be able to change the password later on (please keep it in a safe place).



The screenshot shows a web browser window titled "Update Password Form - SMath". The address bar displays "localhost/en-US/security/Password". The page header includes the SMath logo and the text "SMath > Update Password Form" on the left, and "Company" on the right. The main form area is enclosed in a box with vertical lines on the sides. It contains four input fields: "Login or E-mail" with the value "admin", "Current Password", "New Password", and "Confirm New Password". Below these fields is a "Change Password" button. Underneath the button, there is a link: "You may also want to [log out](#)." At the bottom of the page, the text reads "SMath Licensing Server 0.316.0.8271" and "SMath LLC © 2006-2023 (на русском) | [Support](#)".

After changing password navigate to Home page and select *Licenses* item in the left side menu.



1.6. Loading licenses

Page *Licenses* is designed for managing SMath Studio software licenses.

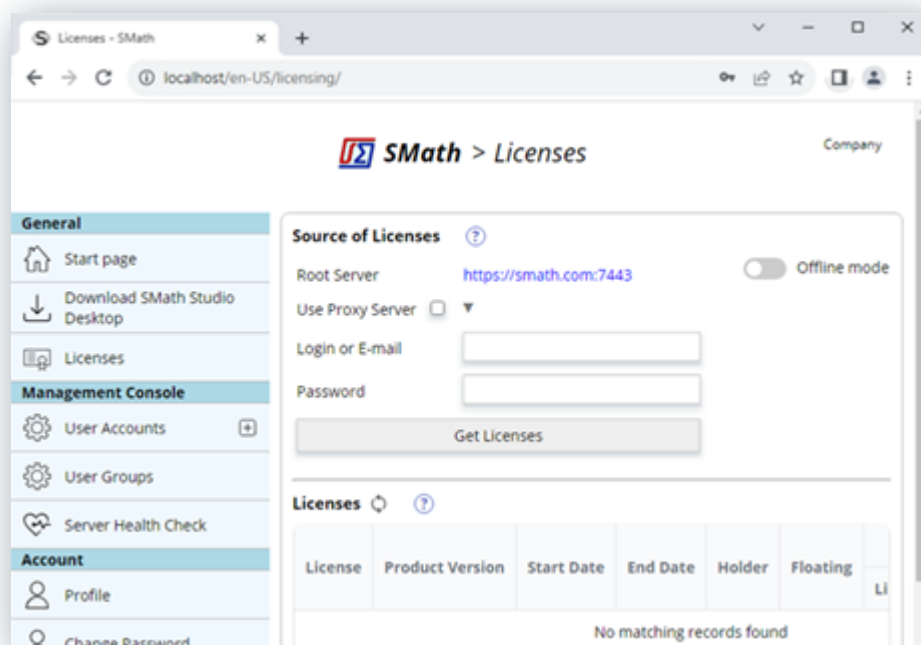
After initial licenses download all licensing details will be available on this page. Detailed info on particular downloaded license and its status can be observed by clicking license name link in the grid.

1.6.1. With Internet access

If the server machine has a direct Internet access or it is connected via proxy server, for performing initial licenses download first you need to perform server login. Please use credentials, provided to you in the Electronic License Document. It has been sent to you earlier on the email address you provided us before making License Agreement.

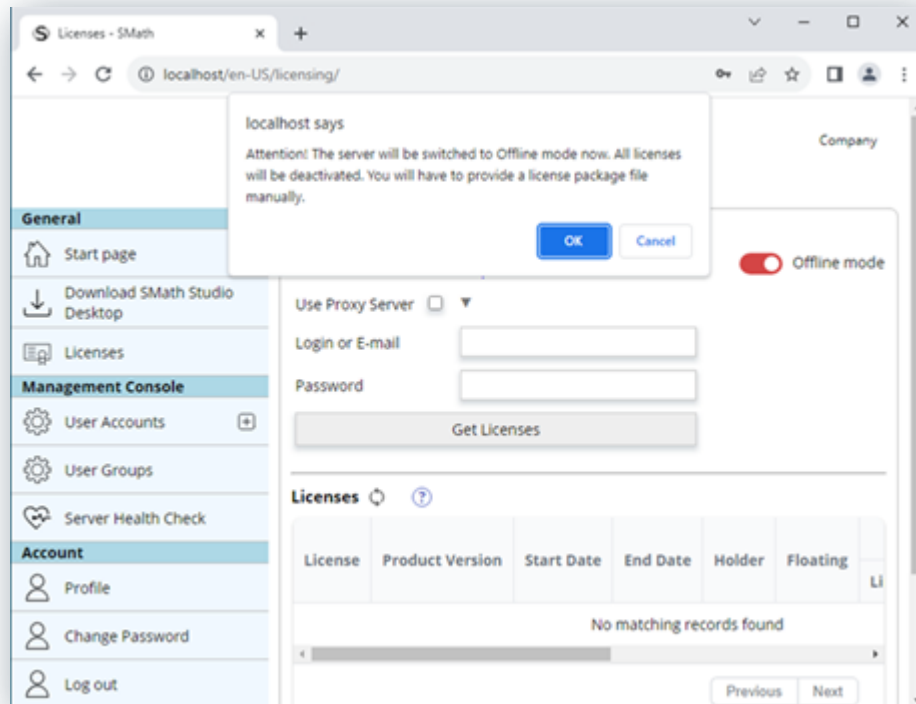
Internet Access allows Local Licensing Server the following features:

- Automatic license properties refresh, including additional licenses download and/or prolongation. Without Internet access it has to be performed manually.
- Automatic SMath Studio software updates when it is published on SMath Root Server. In such a case all the users will get a notification about new version is available.
- SMath Studio Plugins access for end users via embedded update manager (including Beta versions access).

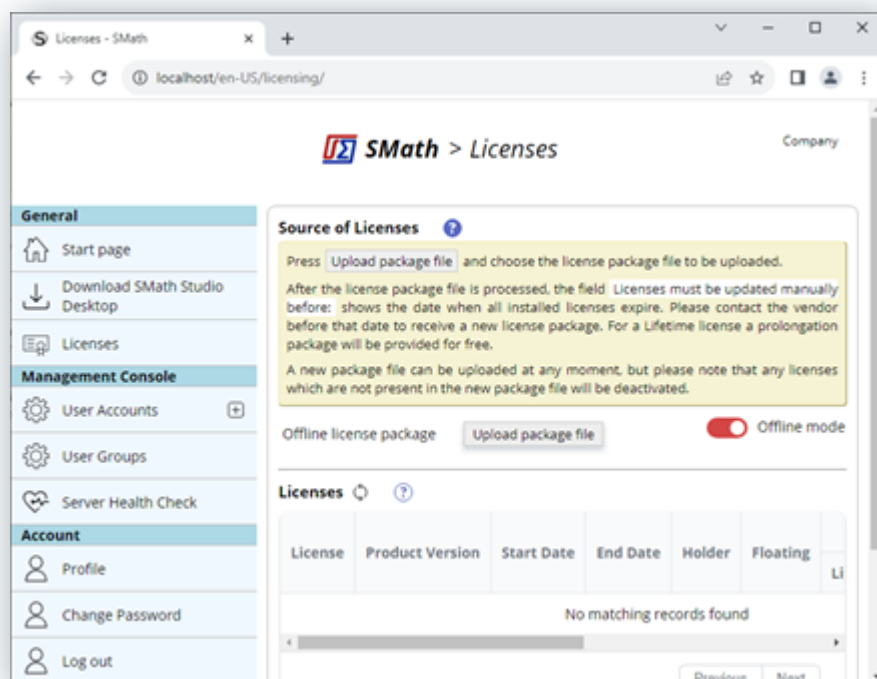


1.6.2. In offline mode

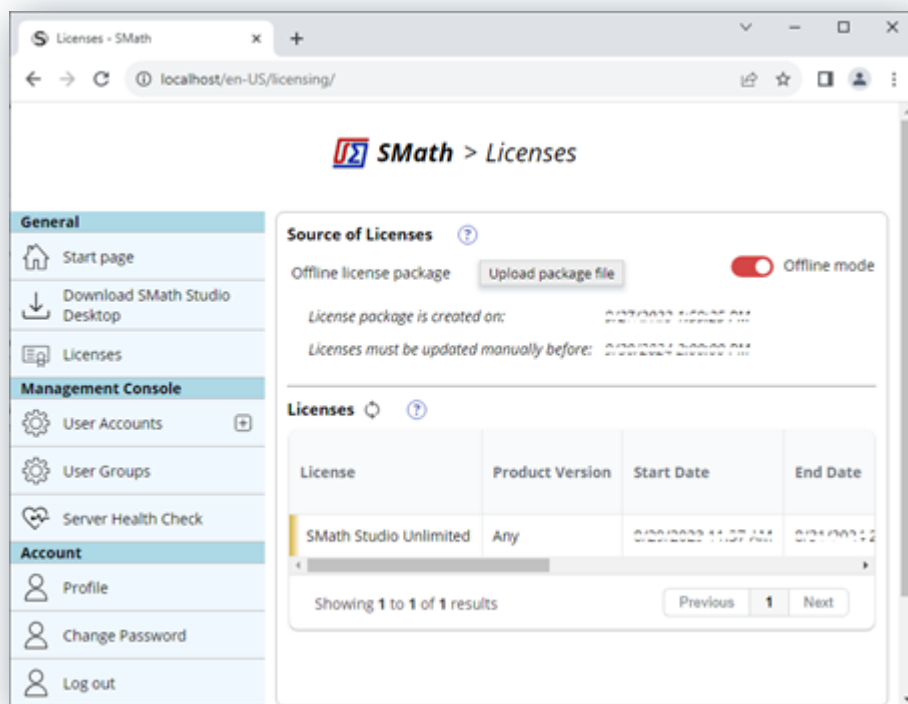
Without Internet access, SMath Local Licensing Server is capable to work in *Offline* mode. In order to switch it to *Offline* mode, please navigate to *Licenses* page and use the switch at the right. If the Server already had some licenses downloaded online, it will be automatically released.



After switching the server to *Offline* mode *Licenses* page will be reloaded and new button *Upload package file* should appear. Use it for selecting License file.



Select License archive file (ZIP format), provided by your software vendor.

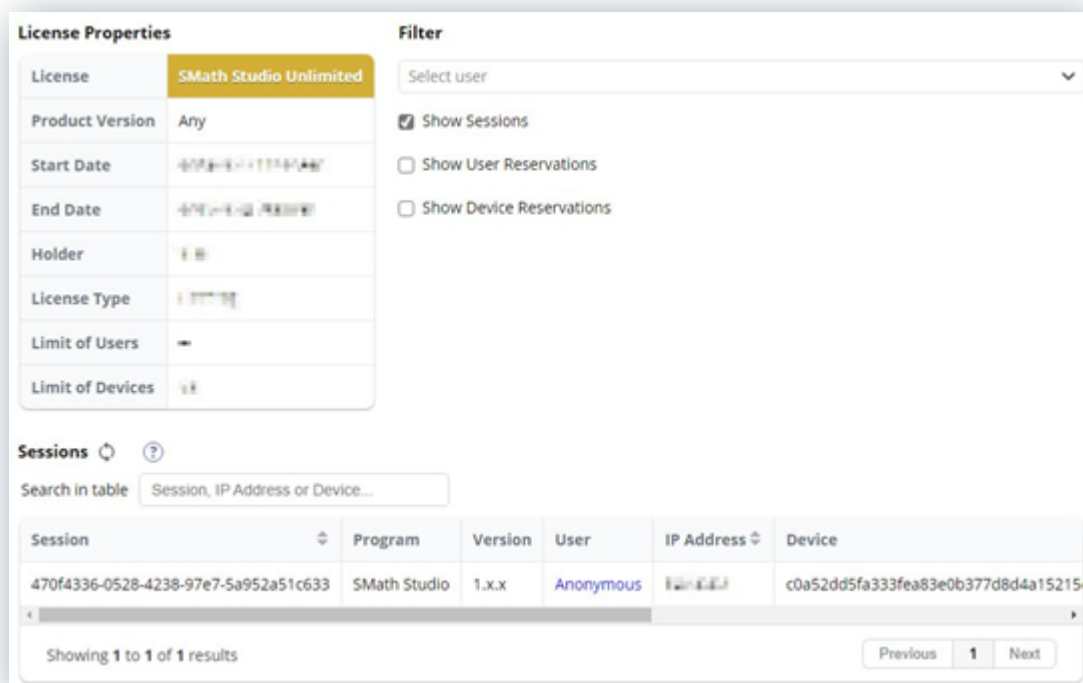


Please note that the license package for offline operations must be renewed every year while you are using SMath Local Licensing Server. It is because information about downloaded licenses is considered reliable only for 13 months (12 months of use + 1 month for updating) after receiving the license package. License update packages for offline use are provided by the supplier free of charge.

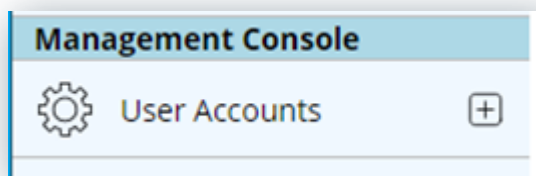
1.7. Authentication modes

The following authentication modes can be used to obtain licenses from the Local Licensing server:

- **Anonymous:** in this case SMath Studio is automatically registered on Local Licensing Server when first time used in some new environment. It silently performs available license reservation. This mode does not require any manual actions from admin and / or end user:



- **User registration by server admin:** admin manually registers end users, using Create new User Account page ("+" button on left side menu item User Accounts) – <http://localhost/en-US/Management/User/New>:



In this mode Server admin is responsible for informing end users about created accounts and provide them authentication credentials. Each end user is responsible to perform login to SMath Studio, using provided credentials.

- **User self-registration:** each end user performs self-registration on Local Licensing Server for getting individual User Account – <http://localhost/en-US/security/Register>:

 A screenshot of the 'SMath > Registration Form' page. The form is titled 'SMath > Registration Form' with the SMath logo. It contains several input fields: 'E-mail', 'Your Name', 'Country' (a dropdown menu), 'Password', 'Confirm Password', and a math problem '6+7=' with an input field. Below these fields is a 'Register' button. At the bottom, there is a link: 'You may also want to [log in](#) or [restore access](#).'

This mode requires each end user should perform login to SMath Studio, using credentials he/she just created on Local Licensing Server.

1.8. Licenses reservation

The Licensing Server reserves licenses for users and devices depending on the type of licenses and the settings of the server itself.

- **Fixed licenses**, by default, can only be reserved for authenticated users who have been added to the reserved list by the server administrator. This means that anonymous users cannot obtain a fixed license, nor can authenticated users who are not manually added to the reservation list on the license page. This behavior can be changed by the server vendor during server provisioning.

 A screenshot of the 'User Reservations' interface. It has a title bar with 'User Reservations', a refresh icon, and a help icon. Below the title bar, there is a section 'Add users' with a 'Select user' dropdown menu. To the right of this section is a 'Reserve' button. Below the dropdown menu is a table with columns 'User' and 'Action'. The table contains one row with 'Admin' in the 'User' column and 'Delete' in the 'Action' column. Below the table, there is a status bar that says 'Showing 1 to 1 of 1 results' and navigation buttons 'Previous', '1', and 'Next'.

Registered users can be added to the reservation list or removed from it on the license page. Removing from the list of reserved users is not an immediate operation, which distinguishes fixed licenses from floating licenses. Please note that the link to the license page is the name of the license in the list on the [Licenses page](#) of the Licensing Server installed on your organization's network. These operations are available only to the administrator.

- **Floating (network) licenses** are automatically reserved by the server for any user from any device when requested from a client application, if there are free ones in the pool of floating licenses. If the license pool is

busy, the user will be informed that it is impossible to obtain licenses at a given time.

2. SMath Studio Enterprise Edition

For the legal entity to access the licenses of public Licensing Server or local SMath Licensing Server installed on organization's network, it is required to use the Enterprise edition of SMath Studio.

2.1. Features

SMath Studio Enterprise has the following advantages over the standard personal edition:

- The software can be configured to the address of the SMath Licensing Server installed on the organization's network.
- The program does not connect to the Internet – all communications are made exclusively through the SMath Licensing Server.
- Anonymous authentication of end users is supported, eliminating the need to register users on the server.
- Organization logos are integrated into the program interface.
- The icon button in the main menu of the program is a link to the organization's website (if available).
- A list of links to resources on the local network or on the organization's website can be added to the main menu of SMath Studio (optional).

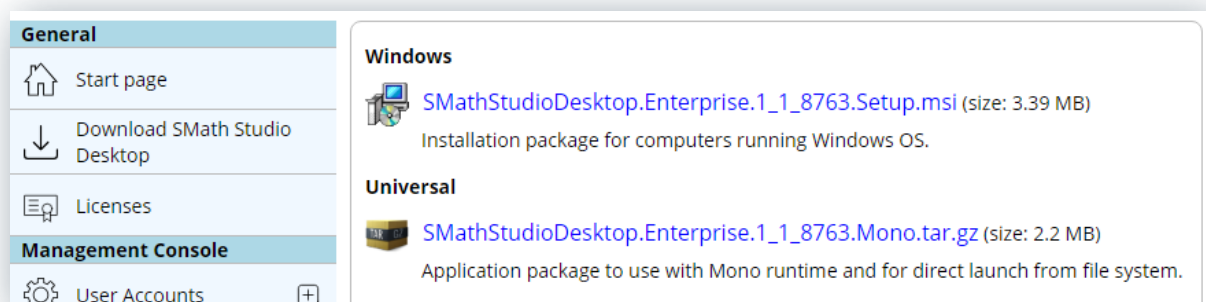
2.2. Delivery

SMath Studio Enterprise is available in various installation packages:

- **MSI** – installation package for computers running Windows OS;
- **.TAR.GZ format archive** – application package for use with the Mono runtime environment and for launching directly from the file system;
- **Applmage format container** – application package for running on the corresponding version of Linux OS.

SMath Studio Enterprise can be obtained using the following ways:

- Click the *Download SMath Studio Desktop* link in the left side menu of the SMath Licensing Server: <http://localhost/en-US/Downloads>. The server must be online to do this.



- Using the SMath root server, accessible via the Internet from any device with a browser installed: <https://smath.com/en-US/view/SMathStudioEnterprise/download>.

2.3. System requirements

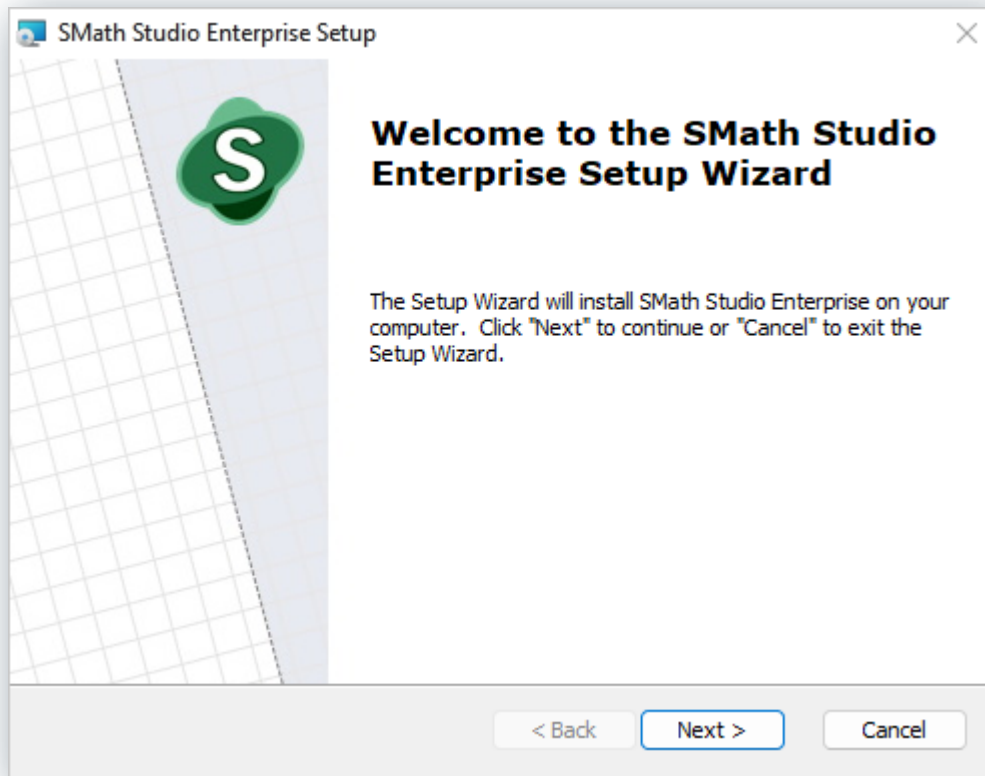
To install and operate SMath Studio Enterprise program, the PC must meet the following minimum requirements: 4GB of ROM, 1GB of RAM and 2 CPU cores 32 or 64-bit at 1GHz. The following versions of Windows OS are supported: 8, 8.1, 10, 11 (with any update packages) and Linux OS that support the installation of Mono runtime: Ubuntu (from version 16.04), Debian (from version 9), CentOS/RHEL (from version 6) and their derivatives, including Astra Linux and ALT Linux.

2.4. Installation

To use SMath Studio application it must be installed to the system. You can choose the installation method depending on the platform and operating system you are using.

2.4.1. On Windows OS

Use the MSI installer to install the program. During the installation process, you will be able to review the user agreement, select the installation folder, the user for whom the installation is being performed, and define some other options.



For silent installation (without using the user interface) SMath Studio software using the MSI installer via the command line, use the following command:

```
msiexec /i D:/PATH/SMathStudioDesktop.X_X_XXXX.Setup.msi /quiet /qn
```

Launching SMath Studio without installation is possible by using the *.tag.gz archive. To do this, just run the *Solver.exe* application from the unpacked archive. You can also create a portable version of the software by creating a file with the name *portable* and the extension *version* (an empty file *portable.version* will be created) next to other files and folders extracted from the archive. In portable mode, SMath Studio will not leave traces of launch on the system, and all settings and additions will be saved in the original folder with the program, which can be located, for example, on an external drive or on a shared folder on the network.

2.4.2. On Linux OS

For some Linux distributions, the most convenient way to launch SMath Studio is to run the corresponding [ApplImage container](#). To do this, you just need to download the ApplImage format package, enable its execution (can be done through the file properties in the user interface, or through the terminal `chmod +x *.ApplImage`) and run (standard, through the user interface, or through terminal `./*.ApplImage`).

An alternative way to deploy SMath Studio on a Linux operating system is to install the [Mono runtime](#) and run SMath Studio using it. Follow these steps to use SMath Studio with Mono:

1. Launch a terminal and execute: `sudo apt-get update`;
2. Run in the terminal: `sudo apt-get install mono-full` or `sudo apt-get install mono-complete`;
3. Download *.tag.gz SMath Studio package and extract it;
4. Run *Solver.exe* from the directory where *.tag.gz was extracted: `mono Solver.exe`.

To run SMath Studio on some versions of Linux OS which has compatibility issues with mono runtime, [wine](#) has to be used. Follow these steps to use SMath Studio with wine:

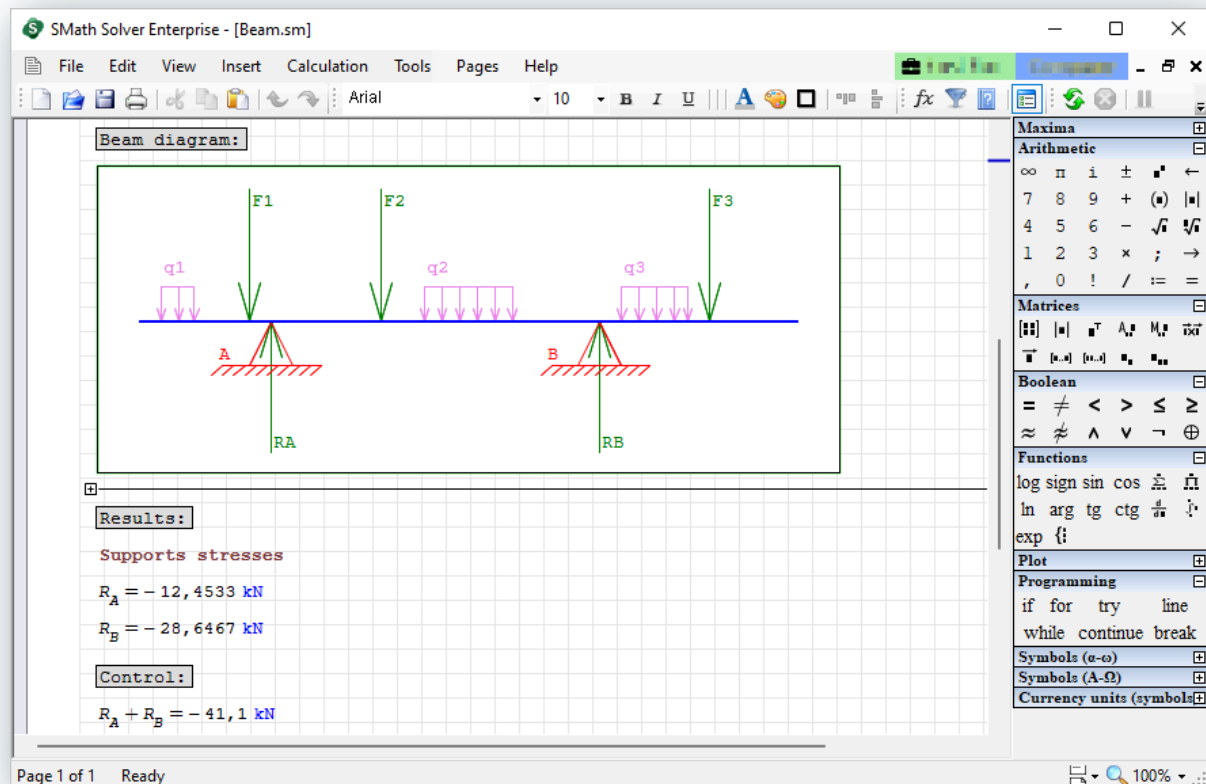
1. Download *.tar.gz SMath Studio package and extract it;
2. Download and install wine;
3. Download and install Winetricks;
4. Run in terminal: `run winetricks`;
5. Select *Select the default wineprefix* and press OK;
6. Select *Run an arbitrary executable (.exe/.msi/.msu)* and press OK;
7. Run *Solver.exe* from the directory where *.tar.gz SMath Studio package was extracted.

2.5. Launch

SMath Studio comes as a set of applications for different purposes of use, such as manual work with calculations, automation of calculation processes and integration with third-party software. When it is opened first time, before activating the application, SMath Studio software will start in trial mode.

2.5.1. With a graphical user interface

To open SMath Studio program with graphical user interface *Solver.exe* application should be started. Depending on the platform, operating system, and method of installation, you may have access to a shortcut for easy launch on the desktop or on the taskbar. In some cases launch file should be found in the folder of the unzipped installation package.



2.5.2. In command line mode

SMath Studio supports command line. Use the following syntax to start: `SMathStudio_Desktop.exe -silent`. Launch file should be found in the folder of the unzipped installation package.

```
Command Prompt
C:\Program Files (x86)\SMath Studio Enterprise>SMathStudio_Desktop.exe -s

SMath Studio Enterprise Desktop 1.1.8763.0 64-bit CLR 4.8.9181.0 (29.12.2023)
Created by SMath LLC (all rights reserved).

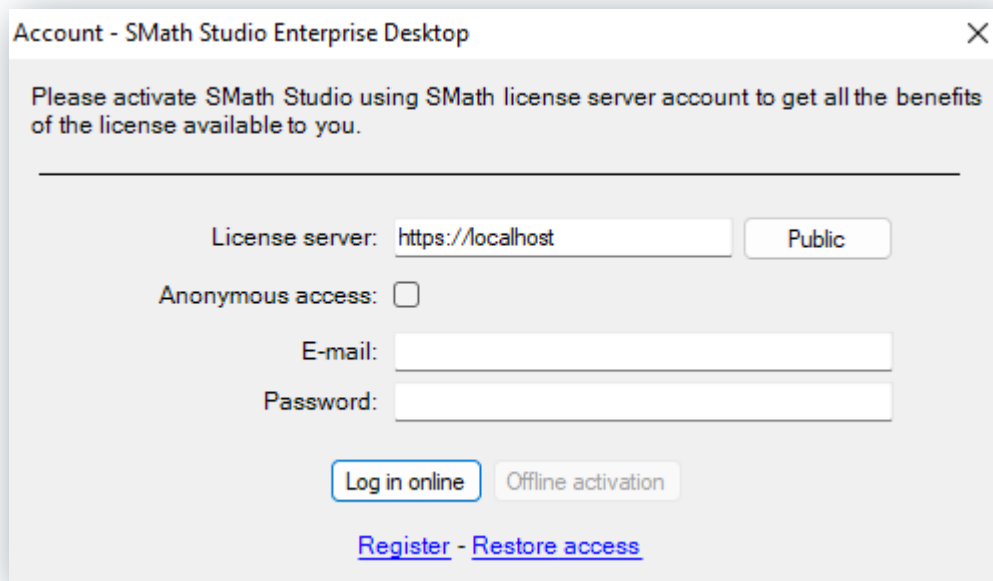
Usage: SMathStudio_Desktop.exe -silent <paths to worksheets or directories>
-s|-silent
    Start the application in command line mode and perform the requested action(s).
    If neither -silent nor -help flags are specified then the program starts in GUI mode.
    This argument is ignored by GUI mode executables.
[-?|-help]
    Start the application in command line mode and show the help text.
[-i|-info]
    Provide a flag to display current SMath Studio installation details.
[-e|-exportextension <export file extension>]
    Provide an output file extension for export. File will be opened
    and recalculated to update regions state before export. Exported file
    will be saved in the same directory next to original one.
    Additional options for export are accepted via -o command.
[-p|-print <printer name>]
    Provide a flag to initiate printing of the worksheet(s) using specified
    printer. Worksheet will be opened and recalculated to update regions
    state before export. Set "default" to use system default printer.
[-o|-options <context options>]
    Provide additional options when that is supported by the context of operation.
    See descriptions of the other commands for more details.
[-t|-test]
    Provide a flag to perform testing of the worksheet. Testing allows
    to verify that all calculations in the worksheet returns the same
```

2.5.3. As a service

SMath Studio can be launched as a service to immediately perform integration tasks with other applications. To operate as a service, a convenient API is provided that can be used in third-party projects for the purposes of your organization. For use cases, please contact your vendor.

2.6. Activation

SMath Studio Enterprise must be configured to connect to the Licensing Server. To do this, click on the Activate button in the upper right corner of the main program window and fill out the form in the opened dialog.



The dialog box titled "Account - SMath Studio Enterprise Desktop" contains the following elements:

- A message: "Please activate SMath Studio using SMath license server account to get all the benefits of the license available to you."
- A "License server:" label followed by a text input field containing "https://localhost" and a "Public" button.
- An "Anonymous access:" label followed by an unchecked checkbox.
- An "E-mail:" label followed by a text input field.
- A "Password:" label followed by a text input field.
- Two buttons at the bottom: "Log in online" and "Offline activation".
- A link at the bottom: "Register - Restore access".

The dialog form contains the following fields:

- *License server* – address of the public Licensing Server or local Licensing Server in the organization's network. Please note that the protocol must be explicitly specified in the address: HTTP or HTTPS.
- *Anonymous login* – when this checkbox is checked, there is no need to specify any user profile, because access to licenses will be anonymized. Please note that the IP address of the computer on which the software is installed will still be visible to the Licensing Server administrator to manage available licenses. It is also important that in order for anonymous users to obtain fixed licenses, the Licensing Server must be specially configured.

- *E-mail* and *Password* – are required if it is necessary to authenticate users on the Licensing Server. You can obtain login information using the *Register* link available on the dialogue form.

To activate SMath Studio Enterprise from the command line please use the following: *SMathStudio_Desktop.exe -s -a -o Server=<SERVER>;Username=<USERNAME>;* where **<SERVER>** – url to the Licensing Server and **<USERNAME>** – email or username of the user registered on the Licensing Server, anonymous authentication will be used if empty string will be specified here. A password will be requested interactively, if required.