GeoDict

Download, installation, and licensing

User Guide

GeoDict release 2024

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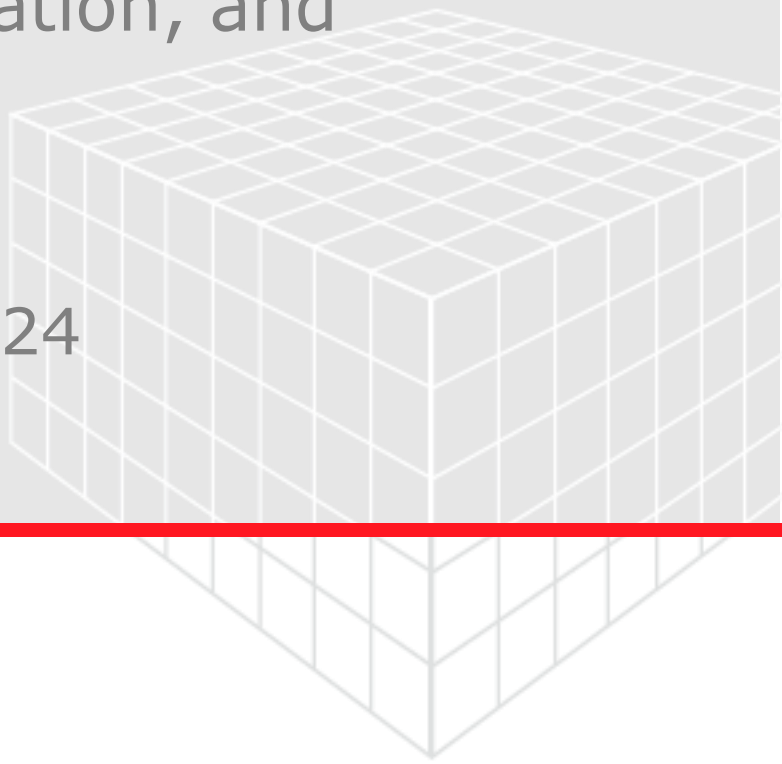

GeoDict

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GeoDict 2024 download, installation, and licensing

System requirements and recommendations

The following are the minimum requirements and some recommendations. For up-to-date recommendations visit our website at:

https://www.geodict.com/service-support/technical-support/system-requirements.html

- 8 GB of RAM (32 GB recommended)
- 6.5 GB of available hard-disk space
- 3D video card with a minimum of 1 GB of memory
  (Recommended is a 3D NVidia graphics card with at least 2 GB of memory, which additionally allows to use the GPU with a compute capability of at least 3.7 according to the lists given in https://developer.nvidia.com/cuda-gpus)
- 64 bit OS
  - Microsoft® Windows 10 Home / Pro
  - Linux (any linux distribution using glibc with version 2.17 or higher, e.g. RHEL 7.x, CentOS 7, openSUSE 15.1, ubuntu 18.04)
- OpenGL 2.0 or newer

GeoDict's internal representation of the structure consists of rectangular 3D arrays of equal sized boxes, so-called volume elements or **voxels**. Approximately 32 million voxels can be visualized per GB of RAM.

The size of available RAM also determines the size of the largest structures handled by GeoDict's solvers.

When computing the properties of large structures, pay attention to the Task Manager to detect memory overflow.

The Task Manager starts after clicking the right mouse button on the task bar of the computer. When the program uses unusually large amounts of memory, it is advisable to terminate the executable and review the settings for structure generation or property solvers.

DOWNLOADING AND INSTALLING GEODICT 2024

The necessary files to install GeoDict on your computer can be downloaded from GeoDict's web site (https://www.geodict.com) by opening the **GeoDict Software → GeoDict Software Download** page.

For each operating system, three packages are available for download:

- The **GeoDict package** contains the installer for GeoDict and all necessary files to run GeoDict.
- The **GeoDict Tools** package contains open source tools which are licensed under the GNU Public License (GPL).
- **Examples of Gray-value Datasets** from µ-CT images.

It is important to install the **GeoDict package** first.

Afterwards, it is recommended but not absolutely required to also install the example dataset and the GeoDict-Tools package. The tools contain:

- The MinGW compiler needed to compile UMATs in ElastoDict on Windows (Windows only).
- x264, a free software library and application for encoding video streams into the H.264 or MPEG-4 AVC compression format (Windows and Linux).
- Notepad++, a text file editor for Windows (Windows only).

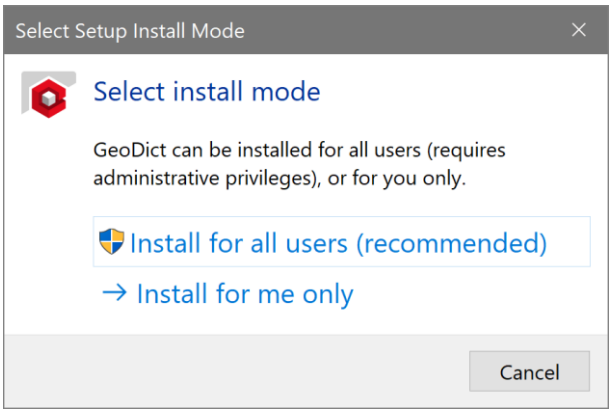
The Windows installer of the GeoDict package offers the option to additionally download and install the other two packages, and we recommend using this option. In that case, all is set up after the Windows installer is finished and the other packages do not need to be installed separately afterwards.

In Linux, the packages must be downloaded and installed separately.

Installation on Microsoft® Windows

GeoDict Installation

After starting the GeoDict installer, a pop-up window asks you if you want to install GeoDict with administrator privileges for all users, or if you want to install it in your user's directory.



Installation as Administrator

The installation wizard installs GeoDict by default in:

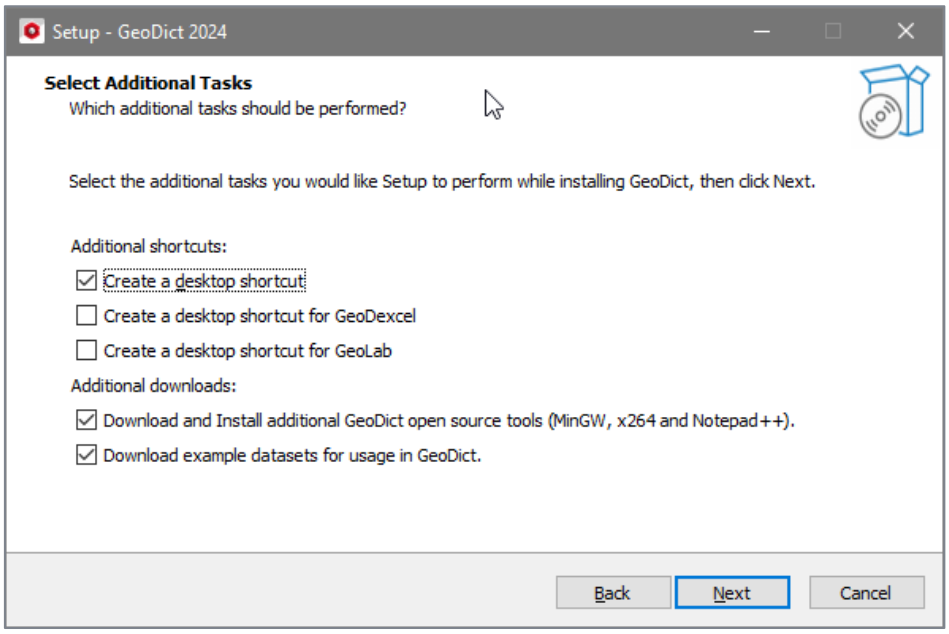
C:\Program Files\Math2Market GmbH\GeoDict 2024

and we recommend to use this folder for installation. Approximately 4.43 GB of hard disk space is needed for installation.

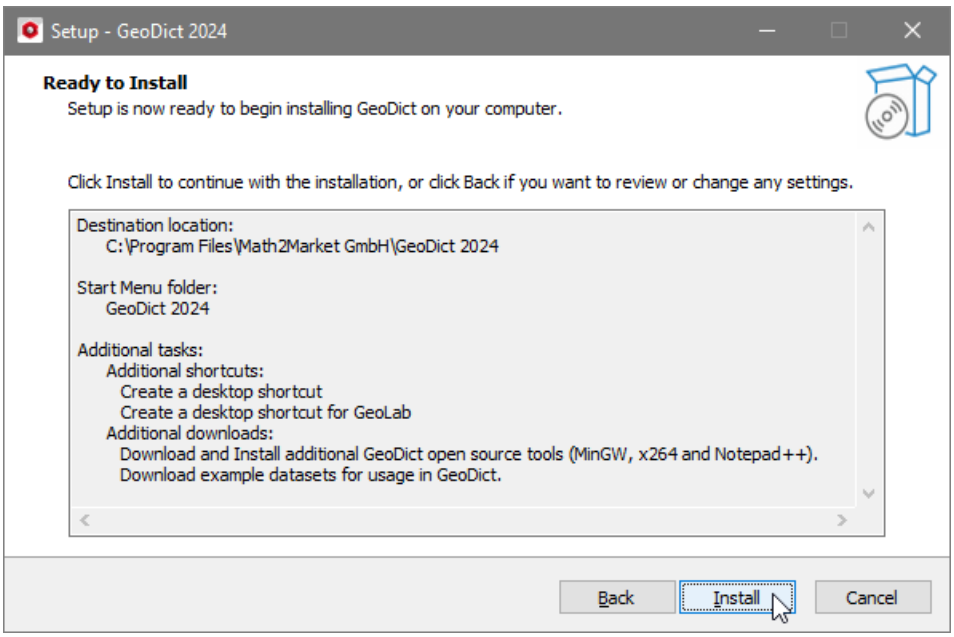
Follow the wizard through the usual installation steps: allow the installer to make changes on your computer, accept the GeoDict License Agreement, and select a folder for the installation.

During the installation process, the wizard will ask you to select additional tasks. You can select which shortcuts will be created. More important, you can select to download and install additional open source tools required by GeoDict. If selected, the installer will automatically download and install the GeoDict-Tools package, too. In this case, it is not necessary to install the GeoDict-Tools package separately as described below on page 5.

It is also possible to download and install additional example datasets.

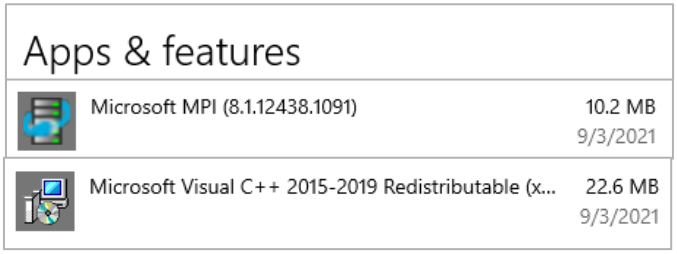


After you have made the selections, the additional packages are downloaded. Then, a dialog summarizes the selections. Confirm them and start to install the packages to the hard drive by clicking **Install**:



During the GeoDict 2024 installation, two Microsoft redistributables are installed if they have not been previously installed by other programs.

Among them is **Microsoft MPI**, a Microsoft implementation of the Message Passing Interface standard for running parallel applications on the Windows platform. The Microsoft MPI redistributable (version 8.1.12438.1091) is installed into **C:\Program Files\Microsoft MPI**.



Also, the runtime library **Microsoft Visual C++ 2015-2019 Redistributable (x64)**, version 14.27.29016.0 is installed if it was not previously installed by another program.

Installation as User

The installation wizard installs GeoDict by default in:

C:\Users*username*\AppData\Local\Programs\Math2Market GmbH\GeoDict 2024\

Approximately 5.69 GB of hard disk space is needed for installation.

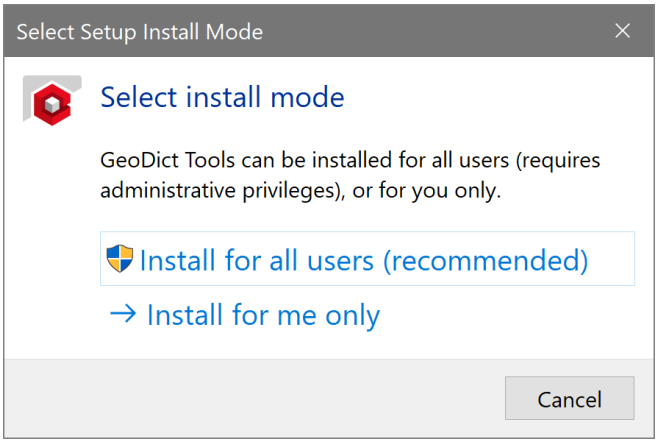
Follow the wizard through the installation steps.

Without administrator privileges, the Microsoft redistributables cannot be installed. If they had been previously installed by other software products, it is not necessary to re-install them and GeoDict will use the installed Microsoft products.

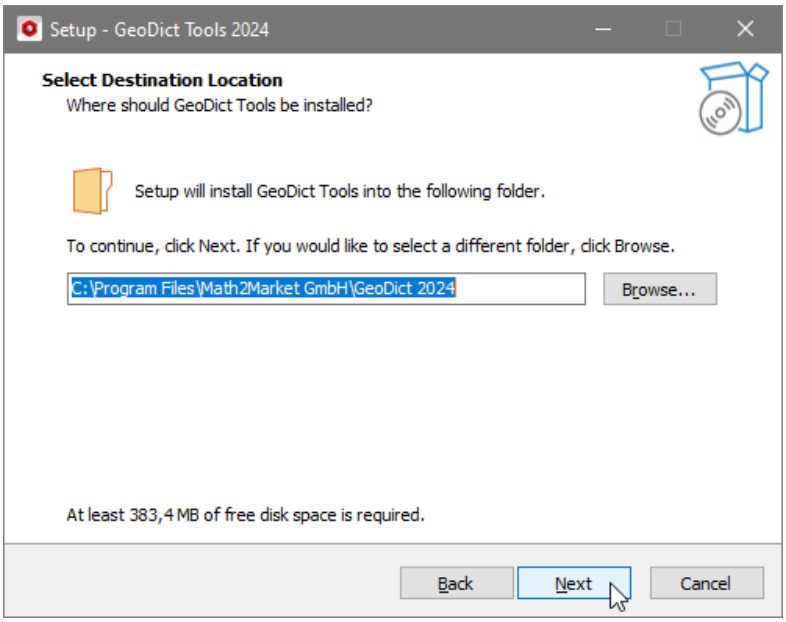
Installation of GeoDict-Tools

If the GeoDict-Tools have not already been installed during the installation of GeoDict, it is recommended to install them afterwards.

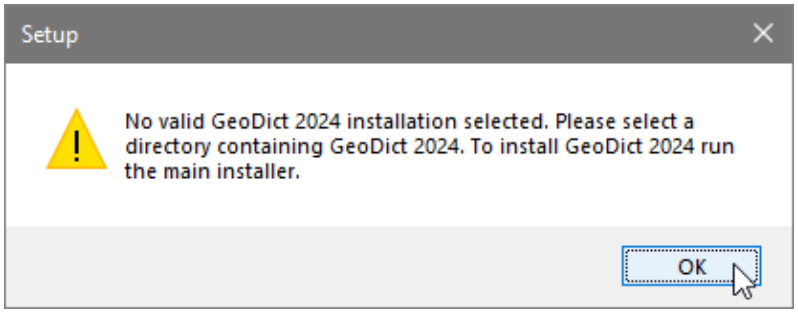
After starting the GeoDict-Tools installer, a pop-up window will ask if the GeoDict-Tools package should be installed with administrator privileges for all users, or only in your user's directory. Here, the same choice as during the GeoDict installation must be made. If you installed GeoDict for all users, install the tools for all users, too.



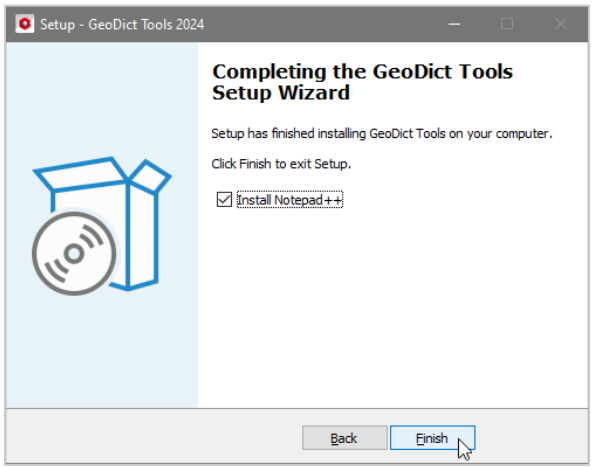
When asked to select the Destination Location, you must select the folder where GeoDict is already installed. The installer uses the same default locations as the GeoDict installer, so if you have not changed the installation folder during the GeoDict installation, do not change anything here.



If the selected folders are not the same, a warning appears.



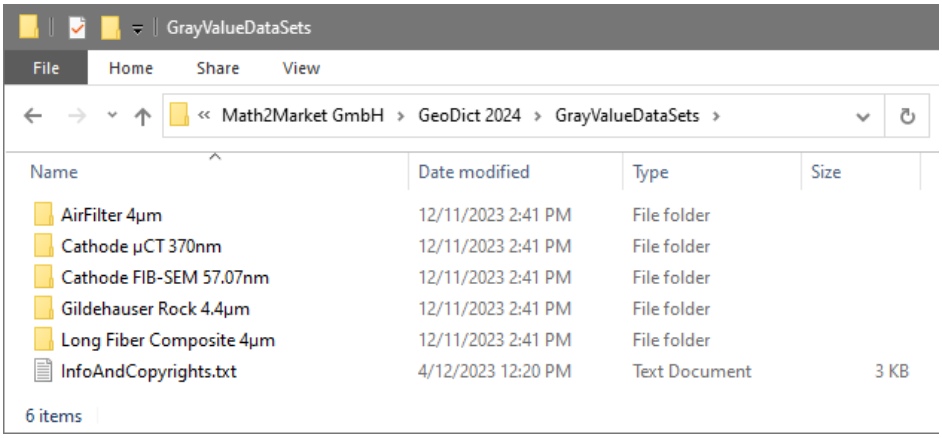
The wizard installs MinGW and x264 in the appropriate locations inside of the GeoDict installation folder. After the installation of those tools is finished, you will be asked if you want to additionally install Notepad++.



Leaving the button checked will launch the Notepad++ installation wizard (version 8.1.5, 64bit) By default, Notepad++ is installed in **C:\Program Files\Notepad++,** and we recommend to use this folder. It is not recommended to install Notepad++ into the GeoDict installation folder used before.

Installation of Gray-Value Dataset Examples

If the dataset is downloaded and installed during the GeoDict installation as described above, the datasets are installed into the GeoDict installation folder. The folder contains 5 data sets:



If the dataset is downloaded separately from the website, select any folder to store the datasets and unzip the downloaded file GeoDict2024-GrayValueDataSets.zip there.

STARTING GEODICT

When the installation of GeoDict 2024 is completed, the wizard suggests launching GeoDict.

If you do not un-check **Launch GeoDict 2024**, GeoDict 2024 launches now and the GeoDict GUI appears.

However, the program cannot run yet without loading a license. A dialog opens requesting a valid license to start. See pages 10ff. for instructions on requesting a license file for GeoDict2024 from Math2Market GmbH.

GeoDict needs to establish a TCP-connection to itself, and this procedure might be blocked by some firewalls.

If GeoDict hangs at startup and the complete Graphical User Interface does not appear, check your firewall settings.

You should allow to connect to localhost on port 45161.

For more help, contact support@math2market.de.

The GeoDict software for Windows is now installed and ready for licensing.

Up to three shortcut icons have been saved to the computer desktop:

The **GeoDict 2024** icon is a shortcut to the GeoDict2024 edition located (by default) at C:\Program Files\Math2Market GmbH\GeoDict 2024.

The **GeoDexcel 2024** icon is a shortcut to the GeoDexcel spreadsheet, for the analysis and plotting of GeoDict results.

The **GeoLab 2024** icon is a shortcut to GeoLab, GeoDict's interface to Matlab®.

PARALLEL COMPUTING AND MPI FOR WINDOWS

GeoDict uses the MPI message passing interface protocol to run parallel computations in DiffuDict, ConductoDict, FlowDict, FilterDict-Media, FilterDict-Element, AddiDict, SatuDict and AcoustoDict.

GeoDict's parallel solvers use the MPI library from Microsoft.

If Microsoft MPI is not already installed, the Microsoft MPI redistributable is installed into **C:\Program Files\Microsoft MPI** during the installation of GeoDict2024 as indicated in page 4.

Installation on Linux

GeoDict Installation

GeoDict requires that the installed glibc library is version 2.17 or higher. To find out which version runs on your linux system, open a terminal and type in the command line

```
getconf GNU_LIBC_VERSION
```

and get (for example) glibc 2.19 as output. In this case you may install GeoDict. If the glibc version of your Linux system is 2.16 or lower, you cannot install GeoDict on this system.

After downloading the .tgz file, open a terminal, move the file to the folder where you want to install GeoDict and extract GeoDict by typing

```
tar -xzvf GeoDict2024-2-1-Linux-x86_64-Release.tar.gz
```

The exact file name depends on the minor version and build numbers (here 2-1). The tar command unzips the file and creates the folder **geodict2024** in the working directory. This installation folder contains all GeoDict files.

Launch GeoDict from the command line by starting

```
./geodict2024
```

from this installation folder or start it by browsing to the installation folder and clicking on the geodict2024 executable.

Recommended: As administrator, create a link in /usr/local/bin to the geodict2024 executable in the installation folder, such that the program can easily be started by all users.

GeoDict for Linux is now installed and ready for licensing.

Should GeoDict 2024 not start properly after licensing, the most likely reason is a missing library on your machine. To identify the missing library, type

ldd geodict2024 > libraries.txt

in the GeoDict installation folder. Check whether one or more libraries are labelled as **Not found** and send the file **libraries.txt** by email to support@math2market.de.

Installation of GeoDict-Tools

After downloading the .tgz file, open a terminal, move the file to the folder where GeoDict was installed and extract GeoDict-Tools by typing

```
tar -xzvf GeoDict2024-2-1-Linux-x86_64-Tools-Release.tar.gz
```

The exact file name depends on the minor version and build numbers (here 2-1). The content is unpacked into the folder

geodict2024/Tools

and contains the x264 video encoder.

It is important that both GeoDict and GeoDict -Required Tools are unpacked in the same folder with the same build version number and date.

Installation of Gray-Value Dataset Examples

Download the **GeoDict2024-GrayValueDataSets.zip** from the website. Then, select a folder to store the datasets and unzip the downloaded **GeoDict2024-GrayValueDataSets.zip** file there.

Parallel Computing and MPI for Linux

GeoDict uses the MPI message passing interface protocol to run parallel computations. The MPI interface and the required **mpiexec** executable can be provided through different packages from different vendors. Unfortunately, these packages are not compatible with each other.

The installation package of GeoDict 2024 contains solver executables for Mpich 3.2 and OpenMPI 1.10.7. This means that one of these three libraries must be installed.

It is NOT possible to use OpenMPI 1.10.6 or 1.10.8 instead of OpenMPI 1.10.7

To allow for an easy installation, the packages:

mpich-3.2.tar.gz

openmpi-1.10.7.tar.gz

and a shell script can be found in the GeoDict installation folder:

setupMPI.sh

To install the MPI libraries, simply run the setupMPI.sh script. The script will unpack, configure, make, and install the libraries. If the script is called without any command line argument, the libraries are installed locally in the GeoDict installation folder. If the script is called with the command line argument 'root':

sudo ./setupMPI.sh root

the libraries are installed in /usr/local. For this, root privileges are required.

For more details on MPI and how to install and use it please refer to the High-Performance Computing handbook of this User Guide.

LICENSING GEODICT

In general, GeoDict licenses can be node-locked or floating.

1. Node-locked license:
   - A node-locked license is bound to the computer from which the license request file (.glr) was generated.
2. Floating license:
   - A floating license allows to use the software everywhere in a local network.
   - To use a floating license, the RLM license server must be installed before GeoDict can be used.

REQUESTING A NODE-LOCKED LICENSE

After downloading and installing GeoDict, the GeoDict GUI opens automatically and requests a valid license to start.

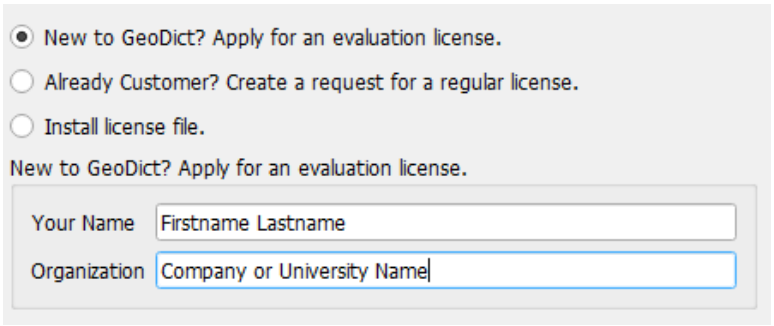
If you un-checked **Launch GeoDict 2024** during the installation (see page 7), double-click the GeoDict icon on your Windows desktop or, in Linux, call ./**geodict2024** from the installation folder.

Then, in the Menu bar, select **File** → **Choose License File...**.

The **GeoDict License** dialog opens now.

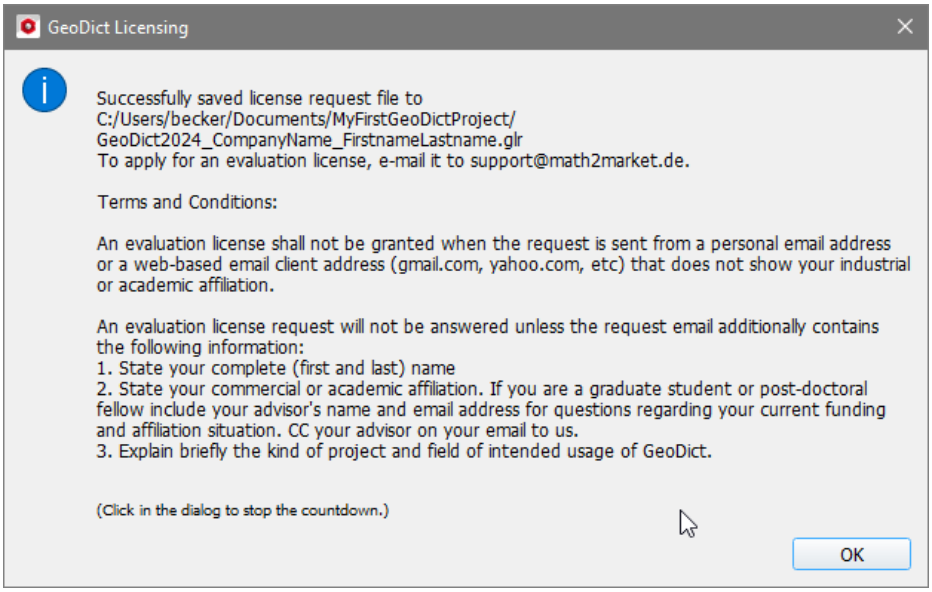
Check the option that describes your situation. If you are new to GeoDict or already a customer of Math2Market applying for or renewing a license, check one of these options. Tool tips will guide you through the procedure.

Type **Your Name** and the name of your **Organization** (Company, University, Institute, etc.), and then click **OK**.



This generates a .glr (GeoDict license request) file that is saved at the default location (/Documents/MyFirstGeoDictProject) or in a specified location.

The saved .glr file contains information that identifies the computer on which it was generated and that is needed to issue **a license file that is exclusive for the computer**. The license file cannot be used on a different computer.



Now, as indicated in this message:

1. Write an e-mail with the subject line **License request**, and
   a) If you are new to GeoDict, follow the instructions shown in the message and enter all the information needed in the body of the e-mail.
   b) If you are a customer of Math2Markt who is renewing the license or has contacted us otherwise and we have agreed to provide you with an evaluation license, there is no need to enter the complete information.
2. Attach the saved .glr (GeoDict license request) file to the e-mail (here: GeoDict2024_CompanyorUniversityName_FirstnameLastname.glr).
3. Send the e-mail to **support@math2market.de**

After a positive outcome of the application, a reply e-mail is sent containing an attached license file (*.glic). An evaluation license is valid for a limited time and only for the computer on which the GeoDict license request file was generated.

Install the license as described in the section *Installing a Node-Locked License* on page 15.

REQUESTING A FLOATING LICENSE (RLM)

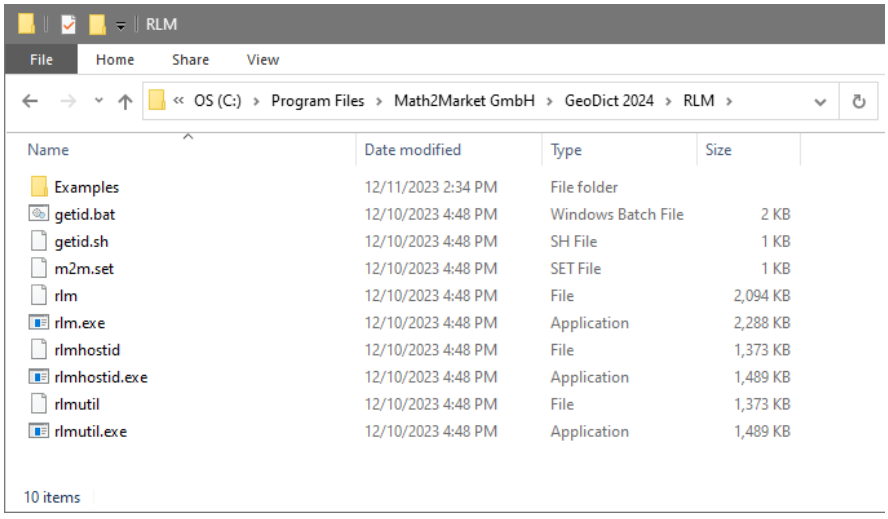
GeoDict uses RLM to manage floating licenses and thus a RLM server must be installed to use GeoDict. RLM (Reprise License Manager) is a software licensing system from Reprise Software Inc. (www.reprisesoftware.com). All Files needed for the installation are packaged with GeoDict, it is not necessary to download an installer from the RLM homepage.

The operating system of the computer on which you install the RLM server is independent of the operating system under which GeoDict is installed. For example, you may run GeoDict on a Windows computer while the RLM server is installed on a Linux computer, and vice versa. The RLM server and GeoDict may also be installed on the same computer.

We do not recommend installing the RLM license server on a virtual machine. For security reasons, Math2Market's ISV server will not start on virtual license servers by default. Installation of the RLM license server on a virtual machine is possible but requires a special license from Math2Market. So please contact Math2Market if you intend to run the RLM server on a virtual machine.

SETUP OF A NEW RLM SERVER FOR GEODICT

The RLM server executables are deployed with GeoDict and can be found in the GeoDict installation folder:



To set up a new RLM license server, copy the whole RLM subfolder to the desired license server host. To create a license for this RLM server, Math2Market requires the following information about the server and its host:

- The IP address and hostname of the server.
- The IP port used by the license server (by default, the RLM license server will use the IP port 5053 for communication with GeoDict and 5054 for the web interface.)

- The host ID is used by RLM to identify the server.

To collect this information automatically, you can run one of the scripts provided.

In Windows, run getid.bat:

```
PS C:\UserGuide\RLM> .\getid.bat
Please wait, gathering information...
Wrote hostid.txt. Please send this file to math2market to receive a GeoDict license for your RLM server.
PS C:\UserGuide\RLM>
```

In Linux, run getid.sh.

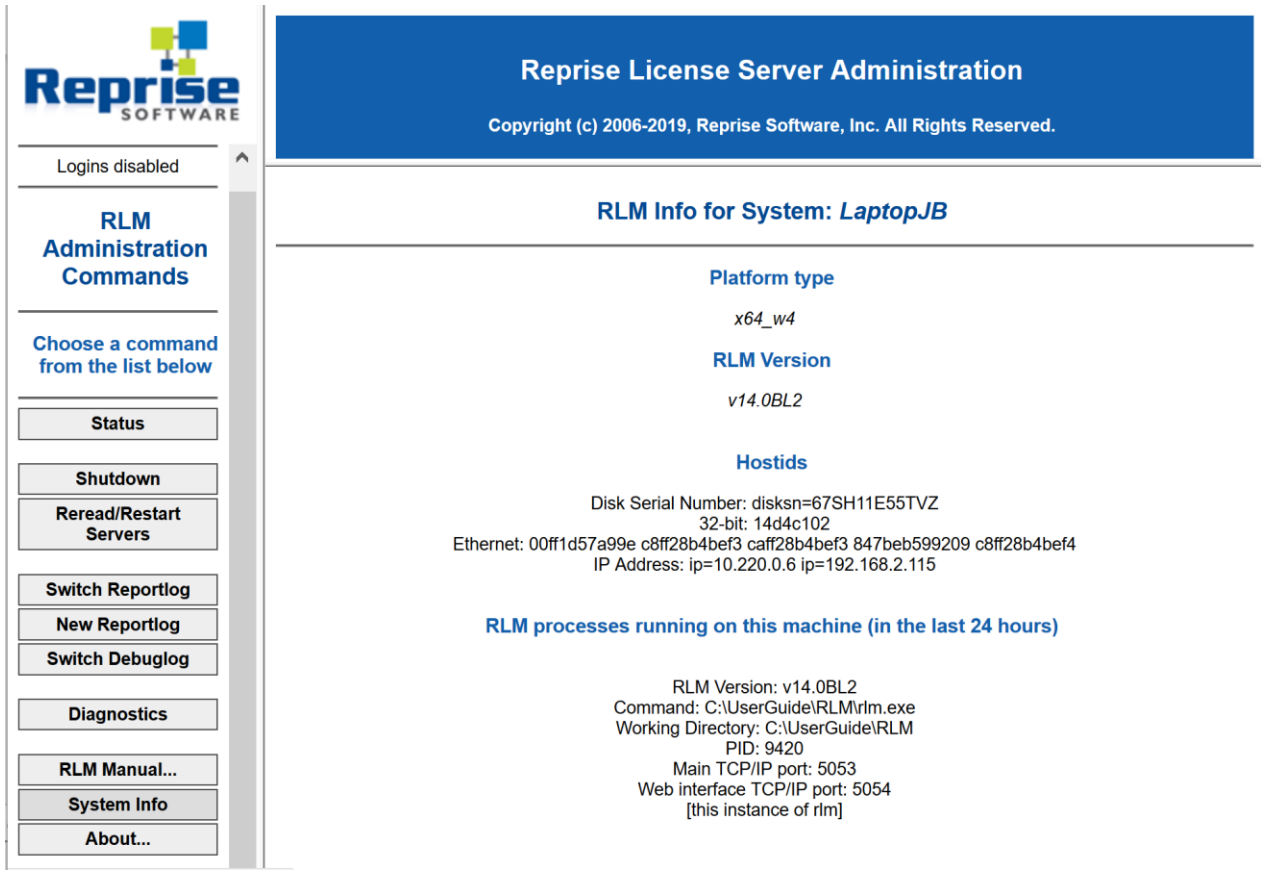
Both scripts will create a file named hostid.txt, containing the information required to create a floating license. Please send this file to support@math2market.de to receive a floating license.

A reply e-mail is sent containing two attached license files (*.glic and *.lic). Install the license files as described in the section *Installing a Floating License (RLM)* on page 18.

Adding the GeoDict license to a RLM server already used for other products

A RLM server may be used to manage software licenses of different vendors, so it is possible that you might want to use an already installed server to manage also your GeoDict licenses. This is possible if the RLM server is version 14 or newer (V14.0 was released in Nov 2019).

In this case, the simplest way to collect the server information is to open the web interface of the RLM server, click on System Info, and make a screenshot of the web page shown:



Please, send this screenshot to support@math2market.de to receive a floating license.

A reply e-mail is sent by Math2Market containing two attached license files (*.glic and *.lic). Install the license files as described in the section *Installing a Floating License (RLM)* on page 18.

INSTALLING A NODE-LOCKED LICENSE

Having received a GeoDict license file (*.glic), you are ready to load and install the license and begin using GeoDict.

INSTALLATION AS USER

In Windows, double-click the GeoDict2024 icon that appeared on the desktop after installing GeoDict2024, or find and double click the executable **geodict2024.exe**.

In Linux, call ./**geodict2024** from the installation folder, or find and double click the executable.

The **GeoDict License** dialog box opens. This time, check **Install License file** and click **Find License...**.Tool tips guide you through the procedure.

In the opening **Select File** dialog box, navigate the path to the folder where you saved the received license file (e.g., .../GeoDict/GeoDictLicenses), and click **Open** to install the license.

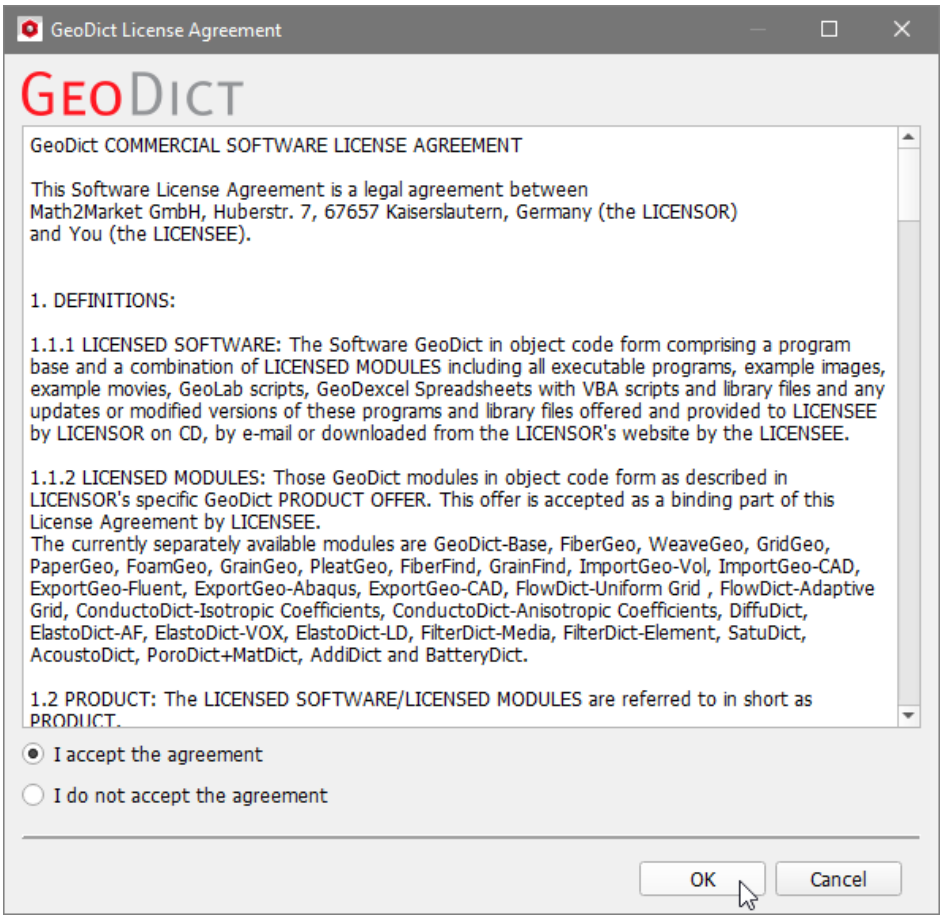
Back in the **GeoDict License** dialog box, keep **Set license as default** checked, so that GeoDict starts immediately when clicking its icon once the license is installed.

If checked, GeoDict will copy the license file into the users' home directory into the folder **C:\Users*username*\GeoDict2024\License**

If un-checked, it would be necessary to click **Find License...** and to repeat the process of finding the license every time you want to work with GeoDict.

After finding and loading the license, the license information is updated to reflect the **Status: Valid**, the license **Expiry Date**, the **Type** of license, the **License Owner**, its **Description**, the license **File Name**, and the path to the **Location** of the installed license.

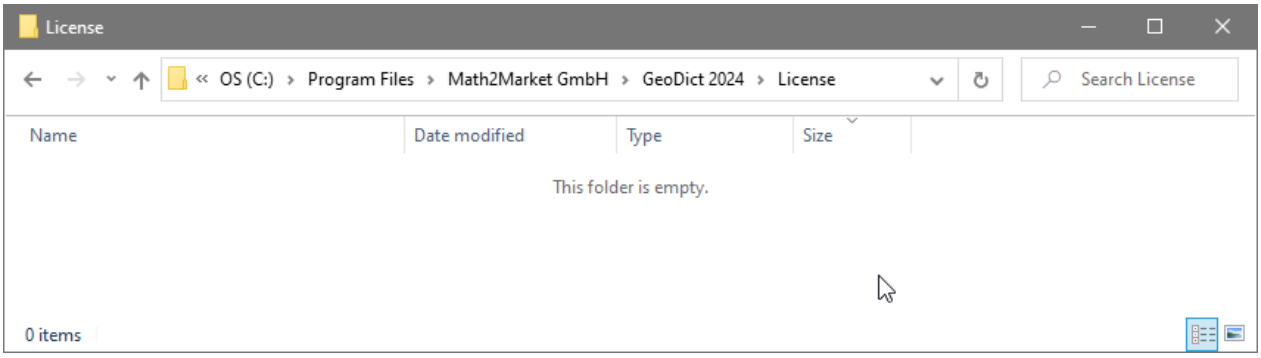
The **GeoDict License Agreement** appears.



After accepting and clicking **OK**, a message confirms that the license was installed successfully. Click **OK** to close the message. The complete GeoDict GUI appears automatically, and you are all set to work with GeoDict.

Installation as administrator

The GeoDict installation folder (**C:\Program Files\Math2Market GmbH\GeoDict 2024** by default) contains an empty folder **License**:



To install a GeoDict license for all users, put the received license into this folder. Afterwards, the license is automatically available for all users. Make sure that only one license file (*.glic) is present in this folder. If multiple license files are present in this folder a warning appears when GeoDict is started and the user will have to select a license file manually.

A user may override this behavior and manually select and install another license file as described in the previous section. If the user selects **Set license as default**, this manually selected license will be copied to his GeoDict settings folder

C:\Users*username*\GeoDict2024\License

Afterwards, this license will be used. Any license file in the installation folder will be ignored for as long as a valid license is present in the local users' settings folder.

INSTALLING A FLOATING LICENSE - RLM SERVER

After emailing the server information (either the hostid.txt file or a screenshot of the System Info page) to support@math2market.de, two license files are sent from Math2Market: a *.glic license file, used to operate GeoDict, and a *.lic license file, used to operate the RLM Server.

First, install the .lic file on the RLM server as described in the sections below. Then, install and use the .glic file as described for node-locked licenses before.

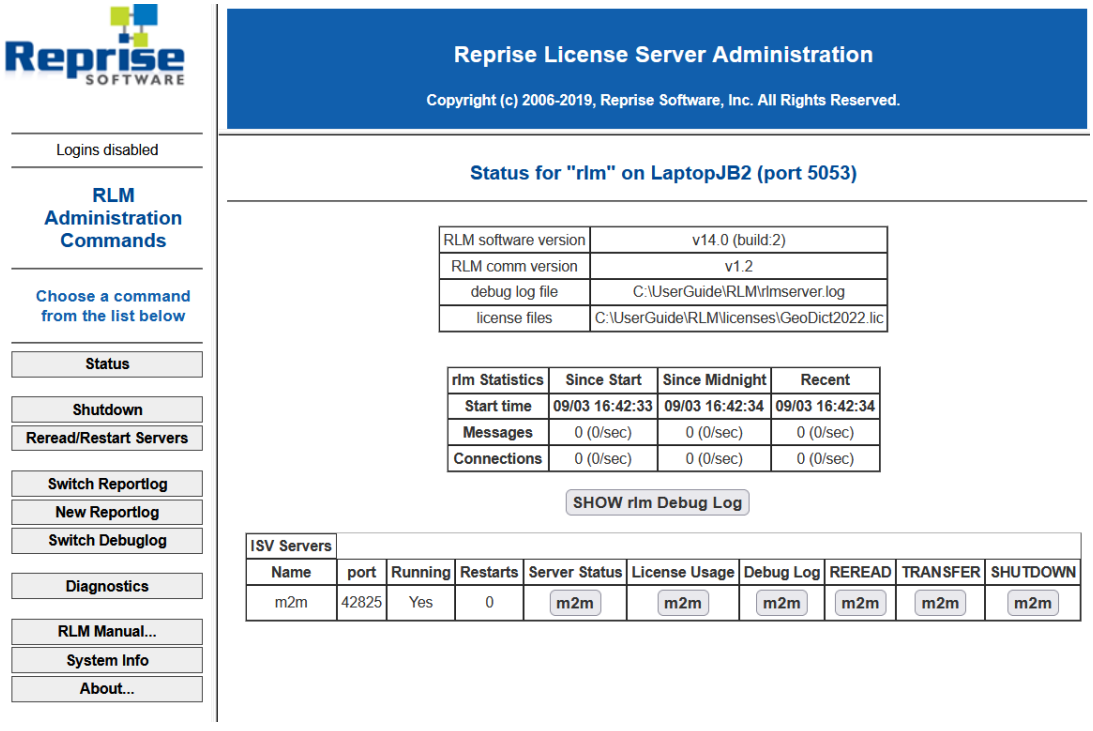
SETUP OF A NEW RLM SERVER FOR GEODICT

Recall, that to create the server information, the RLM subfolder of the GeoDict installation folder was already copied to the desired location (see page 12). The RLM server is a single executable file. In principle, it can be started like any other executable by simply clicking on it. However, if started like this, the server will stop running when the user that started it closes the terminal window in which the server is running, or logs out, or shuts down the computer. This is not the behavior needed from a license server, which should be accessible at any time. So, the difficulty in installing a license server is to make sure that the server is running all the time and is accessible from all computers with a GeoDict installation. This is typically achieved by running rlm as a service and must be done by a system administrator.

INSTALLING RLM LOCALLY

Copy the received *.lic file into the RLM folder that also contains the rlm executable and the ISV server file (m2m.set). Then, start the license server. The license is automatically found and imported in the server.

By default, the license server uses IP ports 5053 (main RLM server) and 42825 (Math2Market ISV server) for communication with GeoDict and 5054 for the web interface. Hence, access the web interface by typing localhost:5054 in the web browser.



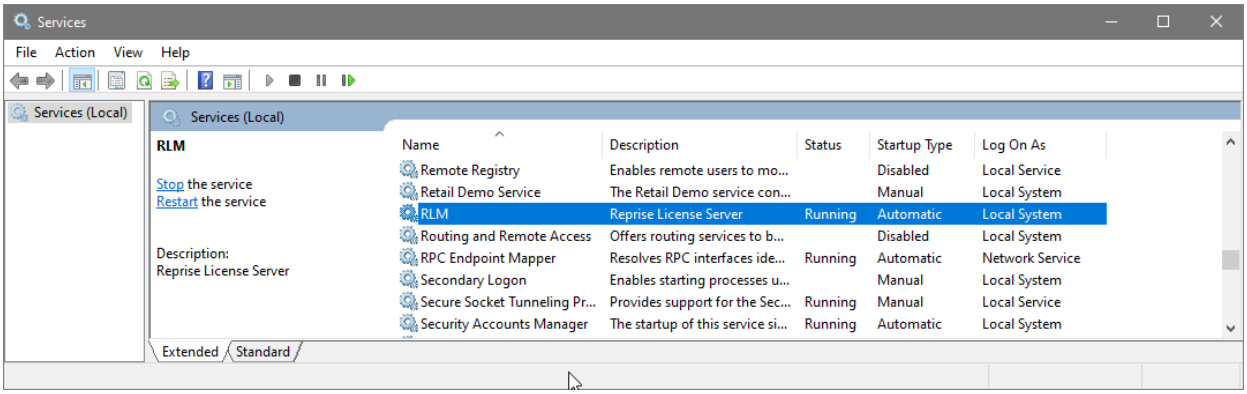
Afterwards, install the .glic file for GeoDict as described for node-locked licenses in pages 15ff. The .glic file is an encrypted file. Besides other information, it contains the address (hostname or IP and port number) under which the GeoDict client will find the RLM license server. Therefore, it is not possible to change the address or port number of the RLM license server after installation (it is possible to change the port number of the ISV server, though).

Installation as a service in Windows

To install RLM as a service that is automatically started when the computer is started, open a command shell as administrator and start rlm with the -install_service option, e.g. with

```
PS C:\UserGuide\RLM> ./rlm -install_service -dlog C:\UserGuide\RLM\rlmserver.log -c C:\UserGuide\RLM\licenses
PS C:\UserGuide\RLM>
```

Installing RLM as a service does not start RLM, services are started via the Windows Services control panel, and at boot time. When installing RLM as a service, you should make sure to use the -c option with a folder as argument, and not with a single license file. If used with a folder as argument, additional GeoDict licenses received later can simply be placed in the same folder without the need to restart the service.



For more details, please refer to the RLM License Administration Manual:

http://www.reprisesoftware.com/RLM_License_Administration.pdf

Installation as a service in Linux

Installing a service in Linux requires creating a script that includes functions to start, stop and restart the program that should run as a service. The system administrator must then copy and link the script in the right locations to make it start as a service at boot time.

Unfortunately, this is not completely standardized, and so the exact steps to be taken may differ slightly from distribution to distribution. The commands presented in the following work on ubuntu 20.04 but may need to be adjusted for other distributions.

Step 1: Decide where rlm binaries, licenses and log files should be placed. You may place all files in one folder, or

- Create a `bin` folder that contains the `rlm` binary, the `rlmutil` binary and the `m2m.set` ISV server. The ISV server `m2m.set` must be placed in the same directory as the rlm binaries.
- Create a `lic` folder that contains all license files and the ISV options file `m2m.opt`.
- Create a `log` folder that will contain all log files.

Step 2: Modify the ISV options file. The `RLM/Examples` folder contains an example that can be used after changing the paths inside the script to the locations selected in Step 1. Place the ISV options file in the same location as the license files.

Step 3: Create a start script called e.g. `rlmserver`. The `RLM/Examples` folder contains an example script that can be used after changing the paths inside the script to the locations selected in Step 1.

Step 4: Make `rlmserver` executable with `chmod +x rlmserver` and as administrator copy the file to `/etc/init.d`:

```
sudo cp rlmserver /etc/init.d/
```

Step 5: You may now start rlm as a service with

```
sudo /etc/init.d/rlmserver start
```

and stop or restart it with

```
sudo /etc/init.d/rlmserver restart
sudo /etc/init.d/rlmserver stop
```

Step 6: To make the service automatically start at boot time, create a symbolic link in `/etc/rc5.d`, which contains symbolic links for all services that should be started at runlevel 5:

```
cd /etc/rc5.d
sudo ln -s ../init.d/rlmserver S98rlmserver
```

Firewall settings

For the GeoDict floating license to work, the RLM server must be running and accessible from all computers where GeoDict will be used. That means, if the RLM server is behind a firewall, open the specified TCP/IP ports (by default 5053, 5054 and 42825), such that GeoDict will be able to connect to the server.

Adding the GeoDict license to a RLM server already used for other products

Remember, that is only possible if the RLM server is version 14 or newer. To make the RLM server automatically detect the new license files, it is also necessary that the currently used server was started with the `-c` option and a folder as argument (not a single license file).

1. Copy the ISV server file named `m2m.set` from the GeoDict installation folder to a location where the RLM server will find it. Usually, you have to place it in the folder where the `rlm` executable file is located.
2. Copy the received *.lic GeoDict license file to the folder that also contains your other license files. If you want to use an ISV options file (see page 21), name this file `m2m.opt` and copy it also in this folder.
3. Then, click on **Reread/Restart Servers** in the web interface to import the license.

By default, GeoDict will use the ISV server port 42825 and therefore, you have to additionally open this port, if the server is behind a firewall.

The port number used by the ISV server can be changed by the server administrator, please refer to the RLM License Administration manual.

LICENSE USAGE REPORTS

RLM allows to control how log files are created and what level of detail is stored in those files. This is controlled through an "ISV options file" (see also http://www.reprisesoftware.com/RLM_License_Administration.pdf). This text file must be created by the administrator and should be located beside the license files that M2M delivers. An example ISV options file can be found in the GeoDict installation folder at `RLM/Examples/m2m.opt`

The ISV options file for the m2m server must be named 'm2m.opt'. To log the license usage, a text file containing the REPORTLOG, DEBUGLOG and ROTATE parameters is necessary, e.g. similar to the following lines

```
REPORTLOG +/usr/local/rlmserver/logs/m2m-report.log detailed
DEBUGLOG +/usr/local/rlmserver/logs/m2m-debug.log
ROTATE daily
```

In this example, a new log file named `m2m-report.log.YYYY.MM.DD` would be started every day and stored in the `/usr/local/rlmserver/logs/` folder. Make sure to adjust file paths inside the file before using the example file.

After this file is created and placed beside the license, it is necessary to shut down the RLM server completely and start it again (it is not sufficient to click on reread/restart in the web interface of the server). RLM will then start logging the usage.

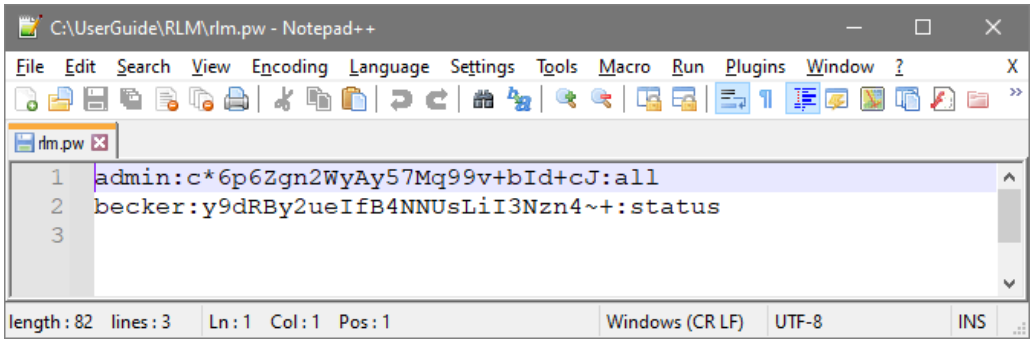
RLM's report log file format is also described in the RLM License Administration manual, see the section "Reportlog File Format". The format is not easily human readable and the RLM server does not include tools for a deeper analysis of those files. If such an analysis is needed Math2Market recommends using OpenLM (http://www.openlm.com) for this task.

ACCESS CONTROL TO THE RLM WEB INTERFACE

RLM allows to control which users can access the web interface. Different privileges can be assigned to different users.

We strongly recommend to use this feature and to require users to log in to the RLM Web Interface. System administrators should have "all" privileges. We recommend to give any GeoDict user the "status" privilege, which allows a user to see who is currently using a GeoDict license, but does not allow an user to do any changes on the server.

The login capability is provided via the RLM password file, named rlm.pw. If such a file is present, only users defined in this file can access the web server with the privileges given in this file. Please see the RLM License Administration manual for a detailed description how to create this file and set up different accounts.



Managing User Access to Licenses

The license administrator can control which users may use a certain license, or how many licenses a user may use at the same time.

This is also controlled through the "ISV options file" See the manual http://www.reprisesoftware.com/RLM_License_Administration.pdf for details.

An INCLUDE line in the ISV options file states that a certain module can only be used by the defined users, e.g. with

```
INCLUDE elastodict user joe
```

only the user “joe” may use the module ElastoDict.

An EXCLUDE line in the ISV options file states that a certain module cannot be used by the defined users, e.g. with

```
EXCLUDE elastodict user charlie
```

the user “charlie” is not allowed to use the module ElastoDict.

A GROUP line in the ISV options file defines a group of users, and the group can then be used to define access rights for the whole group:

```
GROUP departmentA charlie joe john
INCLUDE elastodict group departmentA
```

A MAX line in the ISV options file defines the maximum number of licenses a certain user or group may use, e.g. the line

```
MAX 4 elastodict-processes user joe
```

limits the number of parallel ElastoDict processes that the user “joe” can use to 4.

These options can be used to reserve some licenses for certain departments or user groups. A license administrator can modify the ISV options file at any time. To apply the updated file, click Reread/Restart for the m2m ISV server in your RLM web interface.

Be aware that there are several more options available, e.g. it is possible to restrict the usage to certain IP addresses or hostnames. For a reference of all options confer the “ISV Options File” section in the RLM License Administration manual.

INSTALLING A FLOATING LICENSE HOSTED BY M2M

Instead of using a RLM license server hosted by the user (or the user's company or organization), licenses may also be configured to use a license server hosted by M2M. This may be the case for

- evaluation licenses,
- licenses for pay-per-use licensing models,
- licenses for cloud computing,

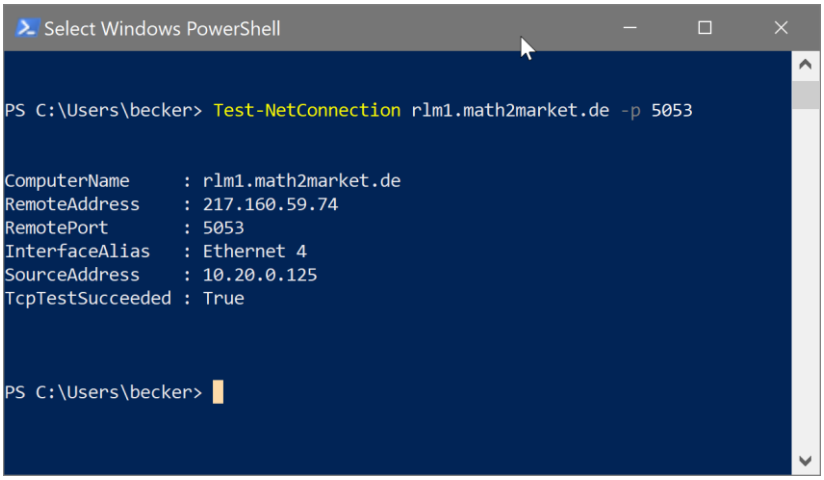
Also, M2M may host floating licenses on their server upon customer request.

In this case, a single *.glic license files from Math2Market is provided. Install the .glic file for GeoDict as described for node-locked licenses in pages 15ff. The .glic file is an encrypted file. Besides other information, it contains the address under which the GeoDict client will find M2M's license server and a specific key which identifies the user and gives him access to a specific license on the web server which is not accessible to other users.

Therefore, any firewall active on the computer or domain where GeoDict is installed, has to allow the geodict.exe executable to access both servers rlm1.math2market.de and rlm2.math2market.de through TCP/IP ports 5053 and 42825.

To test the access to the M2M license server under Windows run in the power shell:

```
Test-NetConnection rlm1.math2market.de -p 5053
Test-NetConnection rlm1.math2market.de -p 42825
Test-NetConnection rlm2.math2market.de -p 5053
Test-NetConnection rlm2.math2market.de -p 42825
```



To test the access to the M2M license server under linux run in a terminal:

```
nc -zv rlm1.math2market.de 5053 42825
nc -zv rlm2.math2market.de 5053 42825
```

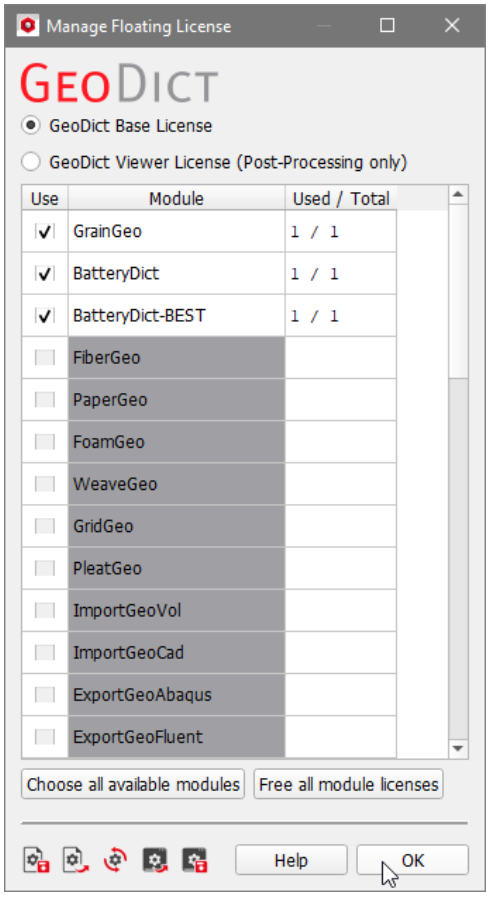
In this licensing model, GeoDict cannot run if there is no internet connection or if the communication between GeoDict and the license server is blocked in any way.

Be aware that the license server logs the usage of each license and can create detailed usage reports (as is a requirement to bill customers based on the usage of their license).

Using floating Licenses

The delivered floating license contains individual licenses for GeoDict -Base and for each purchased GeoDict module. To run GeoDict, a user requires one GeoDict -Base license. To use a GeoDict module, one license of this module is needed.

When a floating license is installed, the **Manage Floating License** dialog appears:



In this dialog, you may choose between a **GeoDict Base License** and a **GeoDict Viewer License,** which allows only to visualize and post-process structures and result files.

When **GeoDict Base License** is selected, choose the modules you want to use.

By default, all modules for which a license is available are chosen. Uncheck all modules that you do not plan to use in this session. These modules will stay free for others to use. Click **OK** when you have made your choice.

You may open the **Manage Floating License** dialog anytime later and change your choice of modules. The dialog can be opened by choosing **File → Manage Floating License...** in the main menu.

A single license allows to open multiple GeoDict user interfaces (GUI) in one session on the same computer.

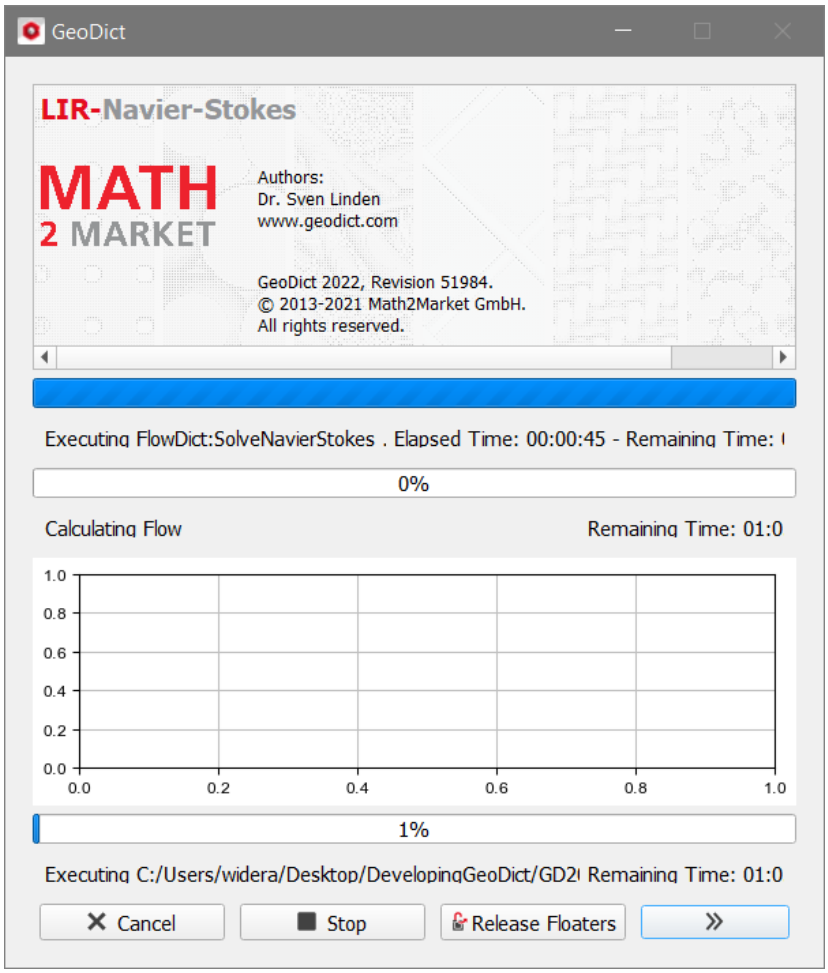
Releasing unused Floating Licenses

While GeoDict runs, a GeoDict Base license is always required. To have access to each module's section and settings dialogs, a license of the respective module is also required.

While a (parallel) computation runs, the respective number of licenses for the parallel processes are required. For example, a FlowDict computation using 8 parallel processes will require 8 *"FlowDict-Processes"* licenses. If the computation is started from the graphical user interface of GeoDict, the user interface is blocked during the computation. It is possible to free all module licenses except the needed one before starting the computation such that other users may take them as described above. However, this step is unconvenient to do and often forgotten.

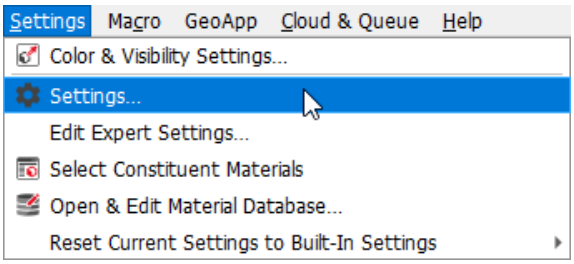
Therefore, GeoDict 2024 offers the possibility to free all unused modules while a computation runs:

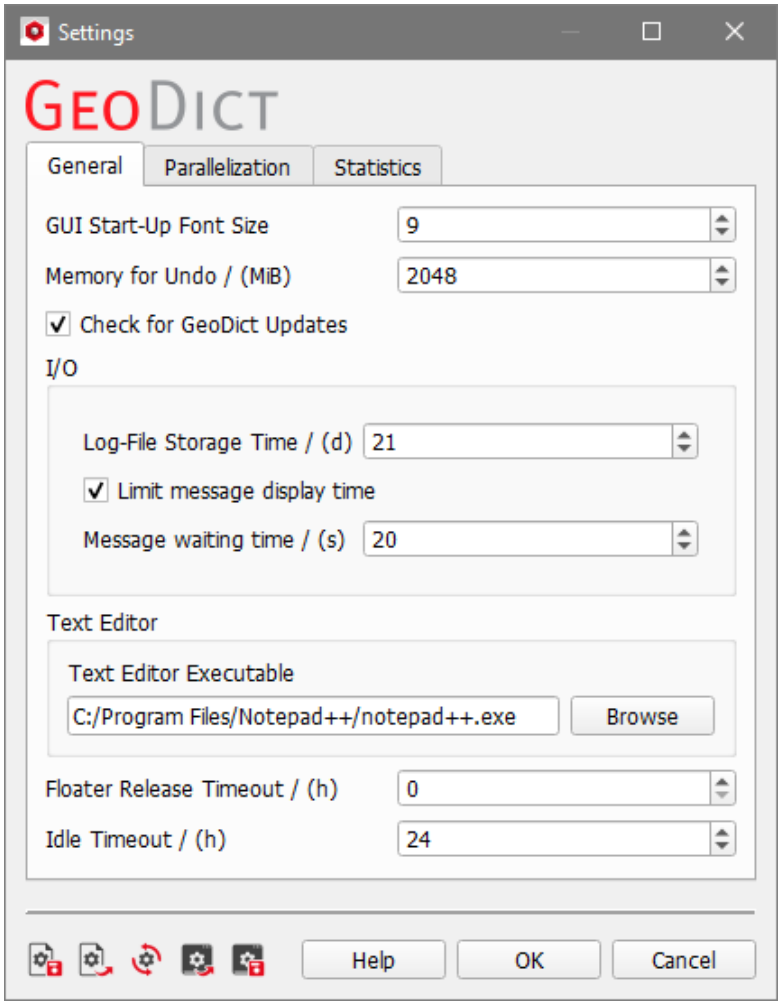
All progress bar windows contain a button **Release Floaters**. By clicking this button, all module licenses held by this instance of GeoDict will be freed.



Be aware that this means that after the computation has finished the respective module sections will no longer be available in this GeoDict instance and the user has to take them again through the **Manage Floating License** dialog as described above.

It is also possible to set up GeoDict such that the floaters are automatically released after a certain time. Select **Settings → Settings...** in the main menu.





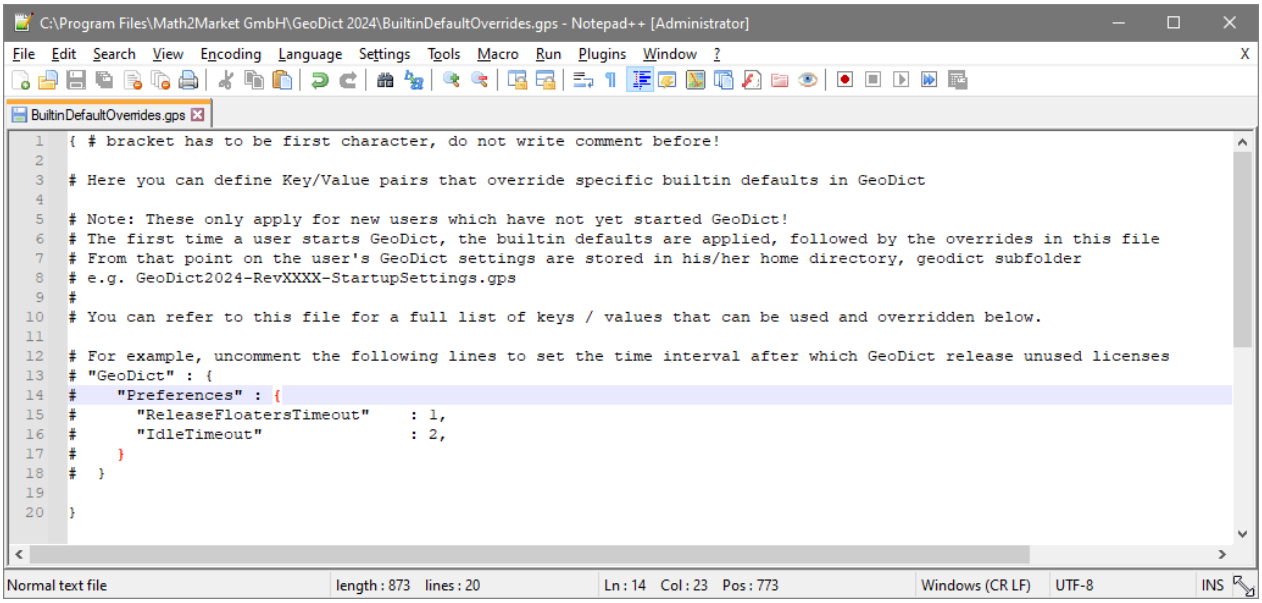
In the dialog, you may set the **Floater Release Timeout**. The given time interval (in hours) determines after which runtime of a process unused floaters will be released (the behavior is identical to clicking on the Release Floaters button). A value of 0 switches off this feature. Do not forget to click on the **Set current settings as startup settings** button to store these settings afterwards.

It may easily happen that users forget to close GeoDict after they have finished using the software. In these cases, the GeoDict executable continues to block a license, even if it does not do any computations. Therefore, it makes sense to define an **Idle Timeout**. The given time interval (in hours) determines after which idle time (i.e., no running computation and no user interaction with the software) GeoDict will give back all licenses to the server. A value of 0 switches off this feature.

When GeoDict automatically gives back the license it does not close. Unsaved data is therefore not lost. Rather, GeoDict displays a blocking pop-up window that lets you reacquire the license and continue to work anytime later.

Define Company Settings

It is possible to change the default values of the **Floater Release Timeout** and the **Idle Timeout** for all GeoDict users. For this, an administrator has to set these values in C:\Program Files\Math2Market GmbH\GeoDict 2024\BuiltinDefaultOverrides.gps. In this file, it is possible to override the default values selected by Math2Market to your own company's defaults. The example file already contains the lines needed as a commented-out example how to use the file.


C:\Program Files\Math2Market GmbH\GeoDict 2024\BuiltinDefaultOverrides.gps - Notepad++ [Administrator]
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?
BuiltinDefaultOverrides.gps
{ # bracket has to be first character, do not write comment before!
Here you can define Key/Value pairs that override specific builtin defaults in GeoDict
Note: These only apply for new users which have not yet started GeoDict!
The first time a user starts GeoDict, the builtin defaults are applied, followed by the overrides in this file
From that point on the user's GeoDict settings are stored in his/her home directory, geodict subfolder
e.g. GeoDict2024-RevXXXX-StartupSettings.gps
#
# You can refer to this file for a full list of keys / values that can be used and overridden below.
# For example, uncomment the following lines to set the time interval after which GeoDict release unused licenses
# "GeoDict" : {
#   "Preferences" : {
#   "ReleaseFloatersTimeout"   : 1,
#   "IdleTimeout"   : 2,
#   }
# }
}
Normal text file
length : 873 lines : 20
Ln : 14 Col : 23 Pos : 773
Windows (CR LF)
UTF-8
INS

LICENSING ERROR MESSAGES

GeoDict may not recognize the license file and give one of the following error messages:

- **License error: You cannot run two different GeoDict versions simultaneously on the same host with your license.**

Reason - Another GeoDict version is currently running on this host, possible by another user.

Solution - Make sure all other GeoDict instances are closed before installing the license. If you have multiple floating licenses available, and need to use different GeoDict versions simultaneously, ask support@math2market.de to provide a license that allows simultaneous usage of different versions on the same host.

- **License error: corrupt**

Reason - the chosen file is not a GeoDict license file, or the license file has been modified. This might happen if GeoDict and your e-mail program are used on different operating systems, and a transfer program has changed line ends when saving or moving the .lic file.

Solution - Make sure that the license file is the original file delivered by Math2Market GmbH.

- **License error: expired** or **License error: license period has not started yet**

Reason - the license is used outside of its licensed time period.

Solution - Contact support@math2market.de to receive a new license file.

- **License error: -1744 (Wrong GeoDict version or revision)**

Reason - this license is either valid for another version of GeoDict or install a newer Service Pack of your current version.

Solution - Download the correct version of GeoDict for the license file.

- **License error: -1701 (or another number)**

Reason - Modifications to the computer hardware have resulted in the license file to become invalid for the computer. Node-locked license files are issued for a specific computer and configuration.

Solution - Contact support@math2market.de with any questions and, if asked to do so, send a newly generated GeoDict License Request (.glr) file following the procedure outlined above in pages 10ff.

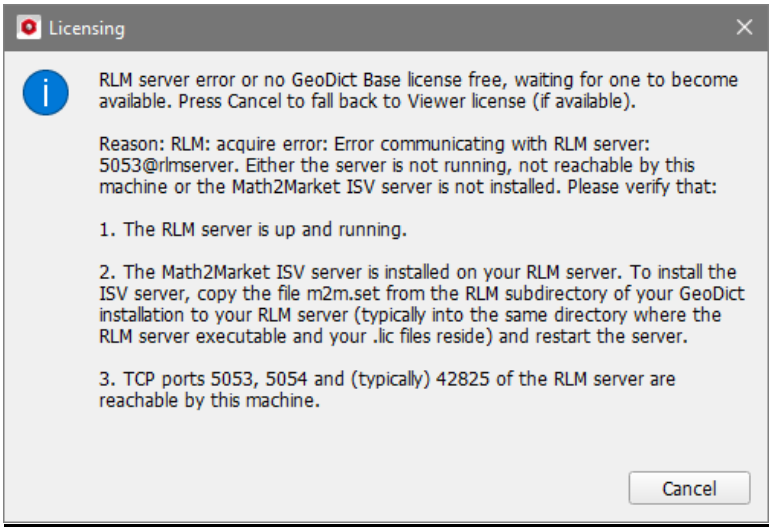
- **RLM: acquire error: Bad RLM server host name**

Reason - GeoDict cannot connect to the given hostname.

Solution - Check whether the floating license server is set up correctly as described below.

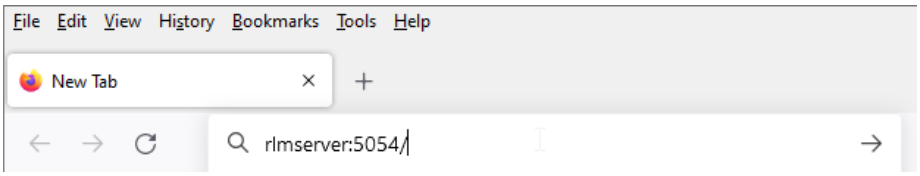
- **RLM: acquire error: Error communicating with RLM server**

Reason - GeoDict cannot find or cannot connect to the floating license server.

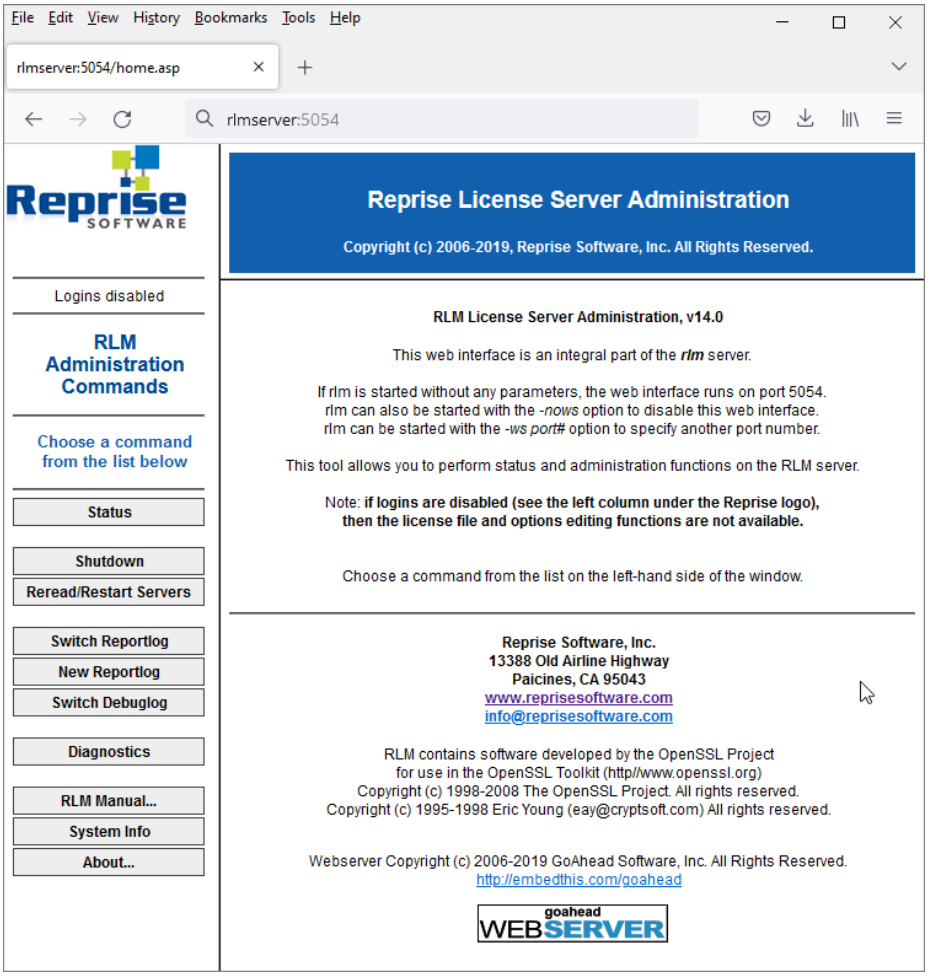


Solution - Check whether the floating license server is set up correctly, as follows:

1. Open a web browser on the computer where GeoDict is installed
2. Enter the IP address (or hostname) and port number of the license server (use your own IP address and port number instead of rlmserver:5054)



If the license server is reachable, the license server's web interface will appear:



If the web interface does not appear,

a. make sure that the license server is running,
b. check if the firewall settings prevent access of the server,
c. make sure to used the correct server address and port number.

If the web interface appears, click on the Status button and check that

a. the RLM software version is v14 or higher,
b. the GeoDict license is listed in the license files,
c. the m2m ISV Server is running

ISV Servers									
Name	port	Running	Restarts	Server Status	License Usage	Debug Log	REREAD	TRANSFER	SHUTDOWN
m2m	42825	Yes	0	m2m	m2m	m2m	m2m	m2m	m2m

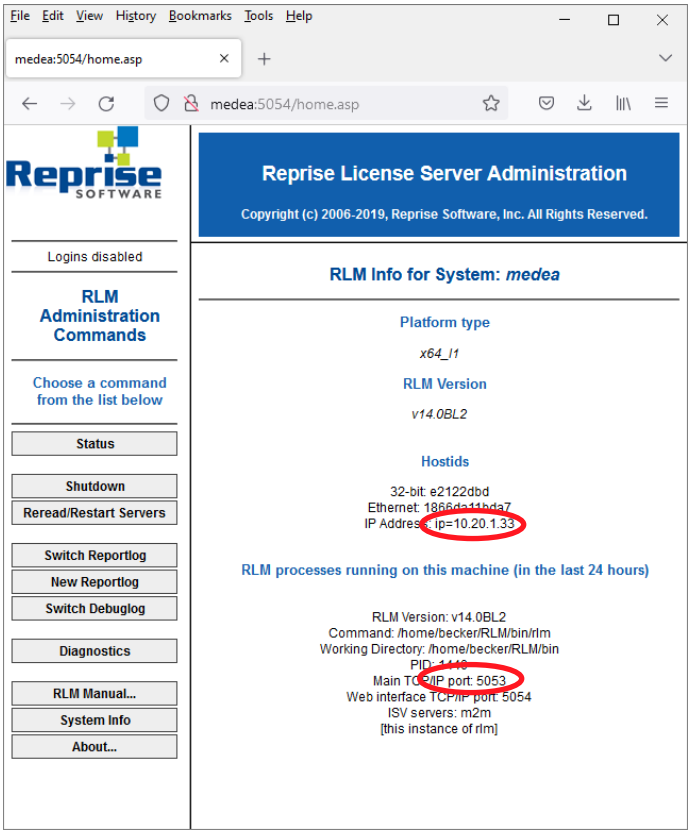
In the ISV Server line, click on the Server Status, and make sure that all licenses appear in the License pool status.

License pool status

Product	Pool	Ver	Expires	count	soft lim	inuse	res	timeout	share	checkouts	Show Usage
geodictbase	1	2023	1-jan-2023	24	24	1	0	0	None	5	usage...
geodict-viewer	2	2023	1-jan-2023	24	24	0	0	0	None	0	usage...
fibergeo	3	2023	1-jan-2023	24	24	1	0	0	None	1	usage...
fibergeo-processes	4	2023	1-jan-2023	24	24	0	0	0	None	0	usage...

If everything is ok on RLM server, and GeoDict still does not run, most likely the server address encrypted in the .glic file is not correct (e.g., because the port number was changed after the license file was requested).

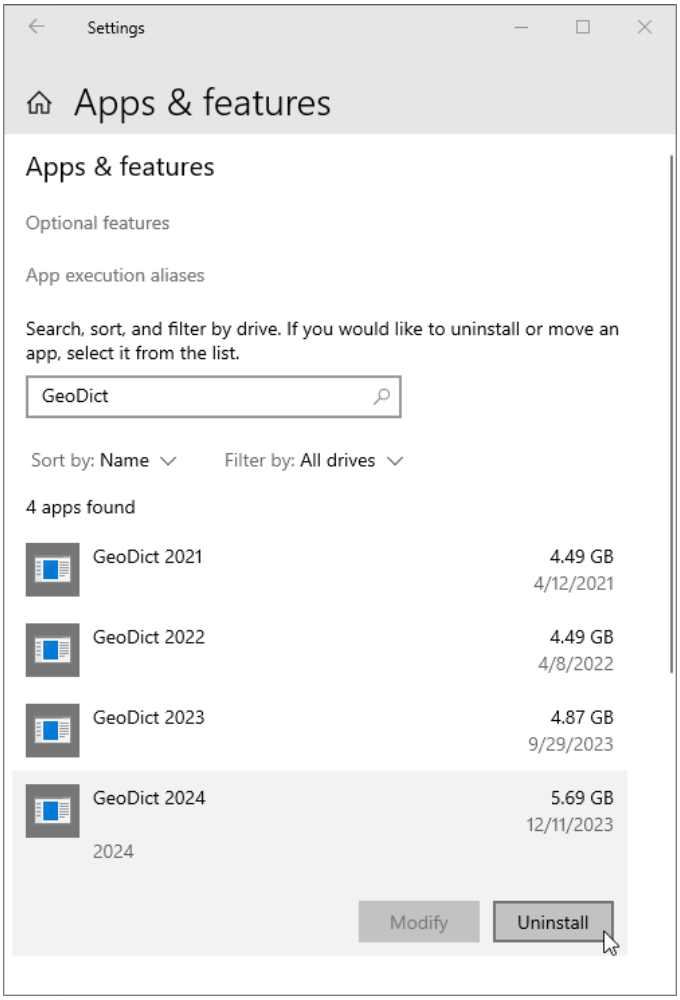
Inform support@math2market.de about the correct server address and port number. The information can be found on the **System Info** page of the server, **IP Address** and **Main TCP/IP** port.



UN-INSTALLING GEODICT

Be logged on as administrator on the computer and find GeoDict 2024 in the list of installed applications.

Click **Uninstall** to remove GeoDict 2024 and its components. Files that remain in user-created folders may not be removed and should be removed manually if needed.



https://doi.org/10.30423/userguide.geodict

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