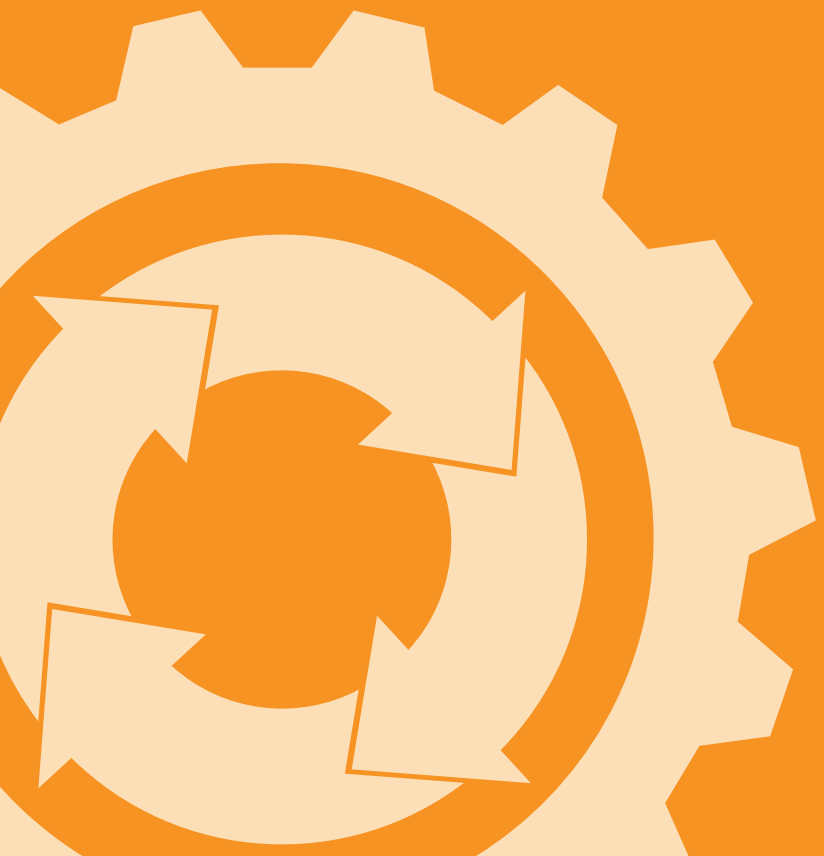
PRAGMADEV PROCESS

INSTALLATION MANUAL



PRAGMADEV
modeling and testing tools

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1 Introduction

1.1 What needs to be installed

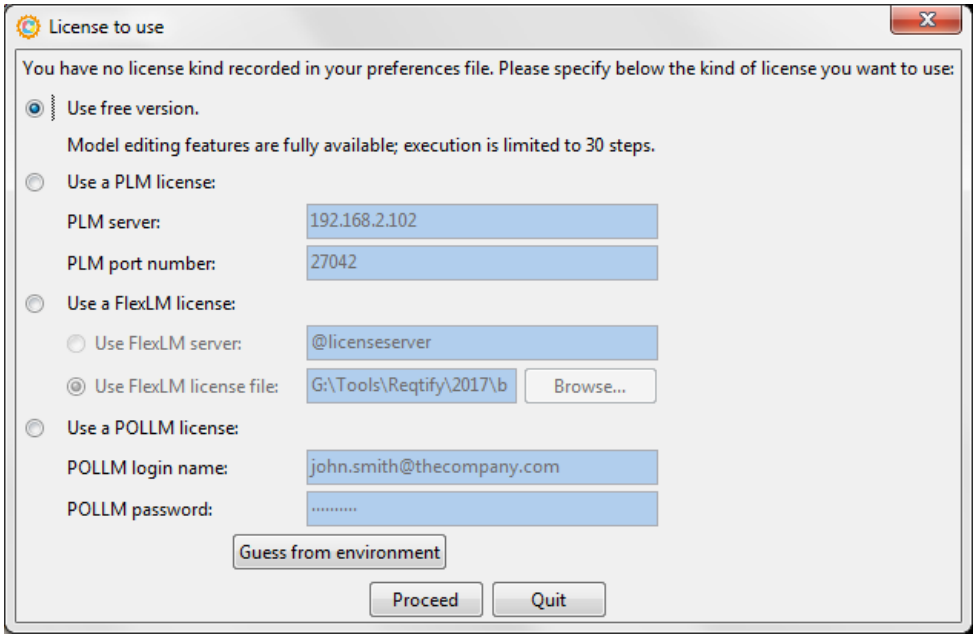
Depending on the desired features the installation might require different items:

- PragmaDev Process for editing and viewing the BPMN models.
- The latest distribution of Java required by OBP for automatic property checking. For Windows and Mac use the Oracle Java distribution, for Linux prefer the OpenJDK distribution which might actually be already installed on your machine.
- A valid license for executing more than 30 steps (manually or automatically). PragmaDev Process comes with a free mode and 3 different license managers: FLEXlm, PragmaDev License Manager (PLM), and PragmaDev On Line License Manager (POLLM).

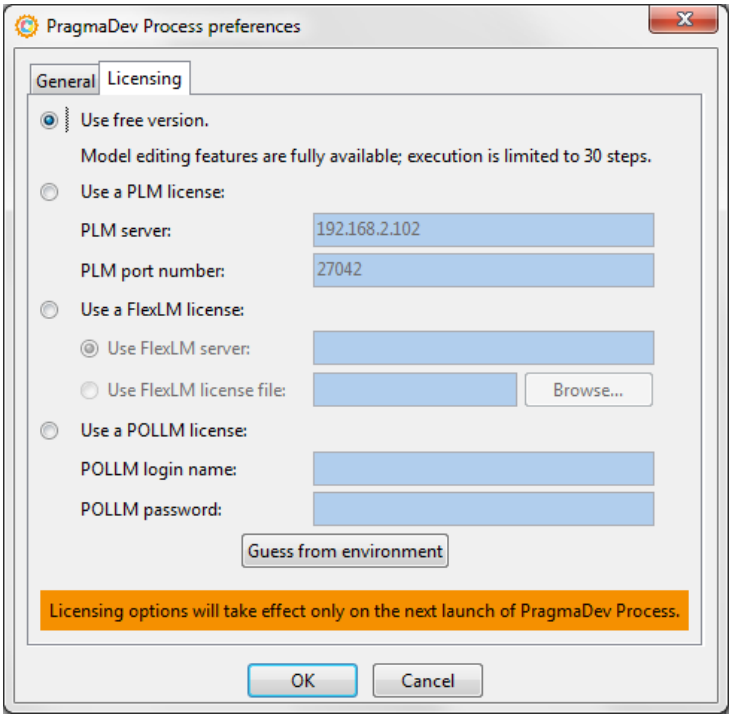
This is summarized in the following table:

	Free version	Java JRE required	Valid license required
BPMN viewer	yes	no	no
BPMN editor	yes	no	no
BPMN executor	<30 steps	no	>30 steps
BPMN property checker	<30 steps	yes	>30 steps

The type of license can be selected the first time you start PragmaDev Process:



Or it can be changed later via the menu “Process / Preferences...” in the tab “Licensing”:

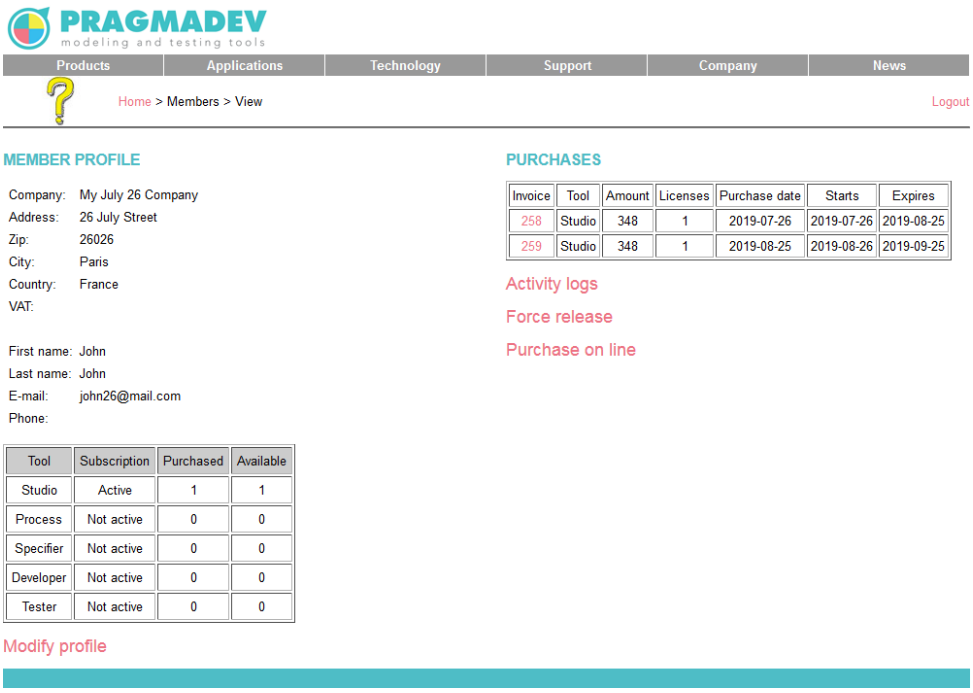


The following paragraphs describe FLEXlm, PLM and POLLM license managers different architectures so that you can choose which one is the best for you. Then the installation process for each platform is described in Windows installation chapter, in Unix installation chapter, and in Mac installation chapter. So pick the paragraphs depending on your target platform and the license management you are willing to use.

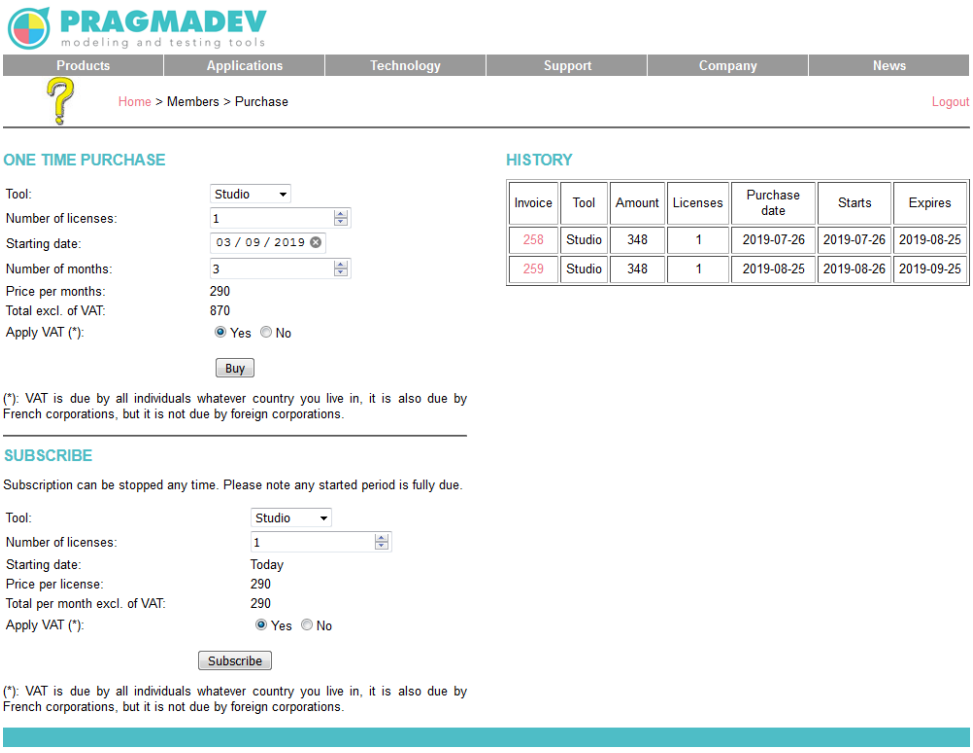
1.2 PragmaDev On Line License Management

As its name states POLLM is an on-line license management. The license is bought on line through PragmaDev web site and when the tool is launched the license is checked out on line. The license server is actually PragmaDev web site. This very flexible licensing allows to use the license anywhere on any computer but requires an internet connection.

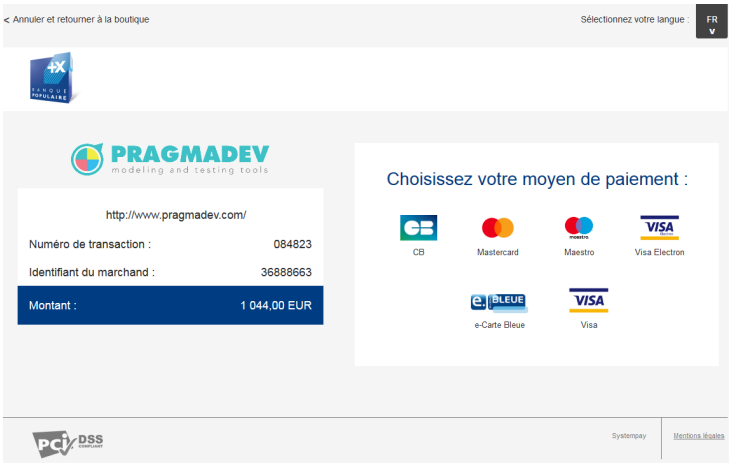
In order to use such a license a member profile must be created on PragmaDev web site as presented below:



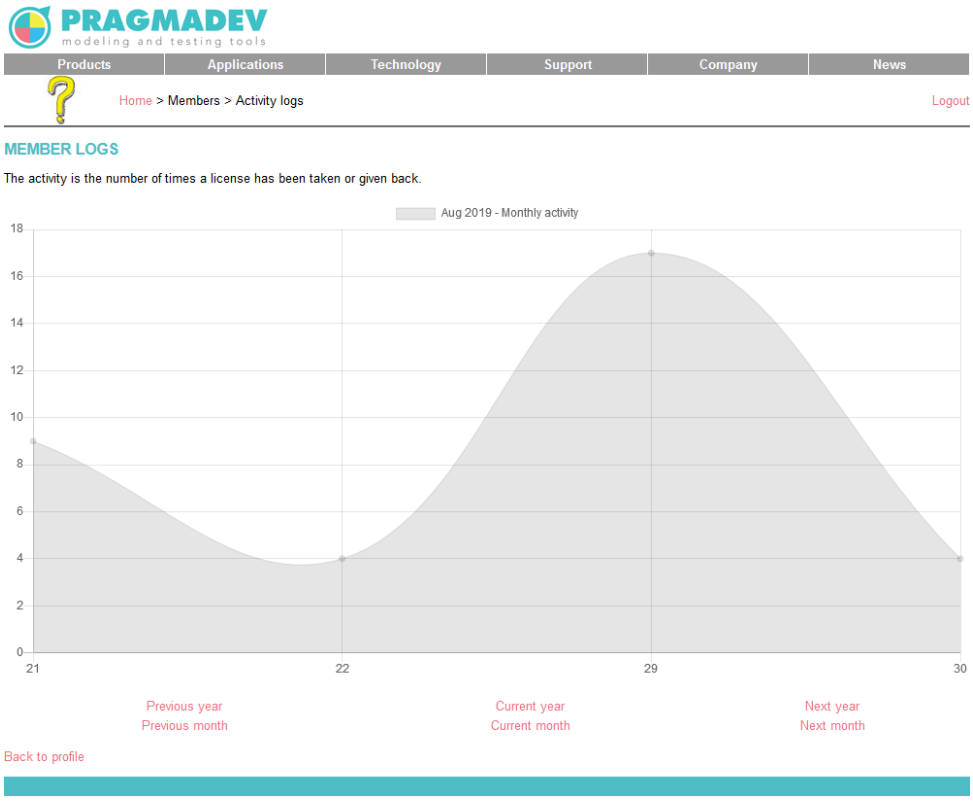
Select if you want to buy at once or subscribe to a monthly payment:



And pay on line with your credit card:



An example activity log is presented below:



The login and password of the member are to be set in the tool preferences to access the license.

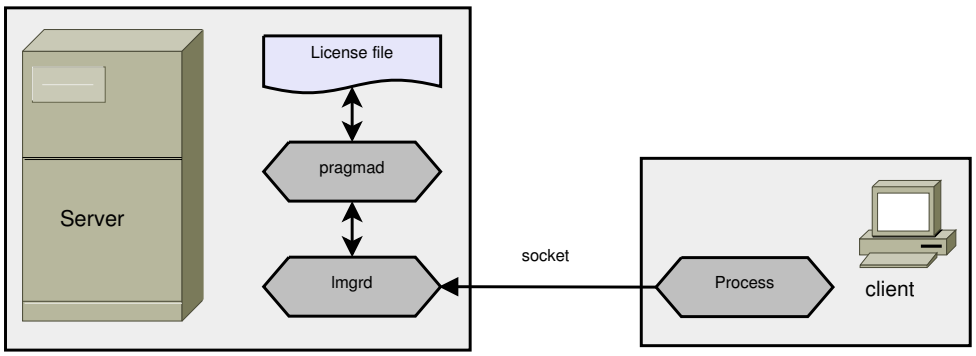
1.3 FLEXlm architecture

PragmaDev Process uses the FLEXlm license manager version 11.5. FLEXlm license manager is based on a client-server architecture. The client is embedded in PragmaDev Process while the server must be started separately before the client. The server is the combination of two executable files:

- lmgrd: a generic license server daemon,
- pragmad: PragmaDev specific daemon.

Please note the server and the client can be installed on the same machine.

The number of licenses for PragmaDev Process is defined in the license file sent to you by PragmaDev. This file is read by the license server that creates a pool of available licenses. Each time PragmaDev Process is started, a license token is requested to the license server pool. When exiting the tool the license token is given back to the pool. When there is no token left in the pool of licenses the request is refused by the server.



The license file describes the server characteristics and the available licenses:

- the SERVER line specifies the name and the hostid of the server:
  `SERVER hostname hostid [port number]`
- the VENDOR line specifies the name of the PragmaDev daemon:
  `VENDOR pragmad`
- the FEATURE line specifies the maximum number of simultaneous PragmaDev Process licenses you can use as well as the version:
  `FEATURE process pragmad version nbOfLicenses SIGN=licenseKey`
  where nbOfLicense indicates the maximum number of licenses available for PragmaDev Process and licenseKey the unique id securing the licenses.
- one or several INCREMENT lines may be added if new licenses are purchased afterwards.

Please note only the following can be modified in the license file:

- The hostname and the port number on the SERVER line, in case your server changes name, or you want it to listen on another port than the default one;
- A "port=..." option can be added to the VENDOR line, as follows: VENDOR pragmad port=27010 This forces the client and the vendor daemon to communicate through this socket port number, the default being to use a dynamically configured port number. Use this setting if your FLEXlm server is behind a firewall and you have to configure the port numbers to open to ensure proper communication between PragmaDev Process and the license server.

Any other modification might result in failure.

The license file which is received by e-mail, is dedicated to the computer running as a license server. If a FLEXlm license server is already installed, it is recommended to

complete the existing license file. To do so, add the VENDOR and FEATURE lines to the existing file and execute a reread with lmtools or lmutil utility.

The necessary files to install the FLEXlm license server are located in:

$PRAGMADEV_PROCESS_HOME/share/flexlm/bin/<platform>

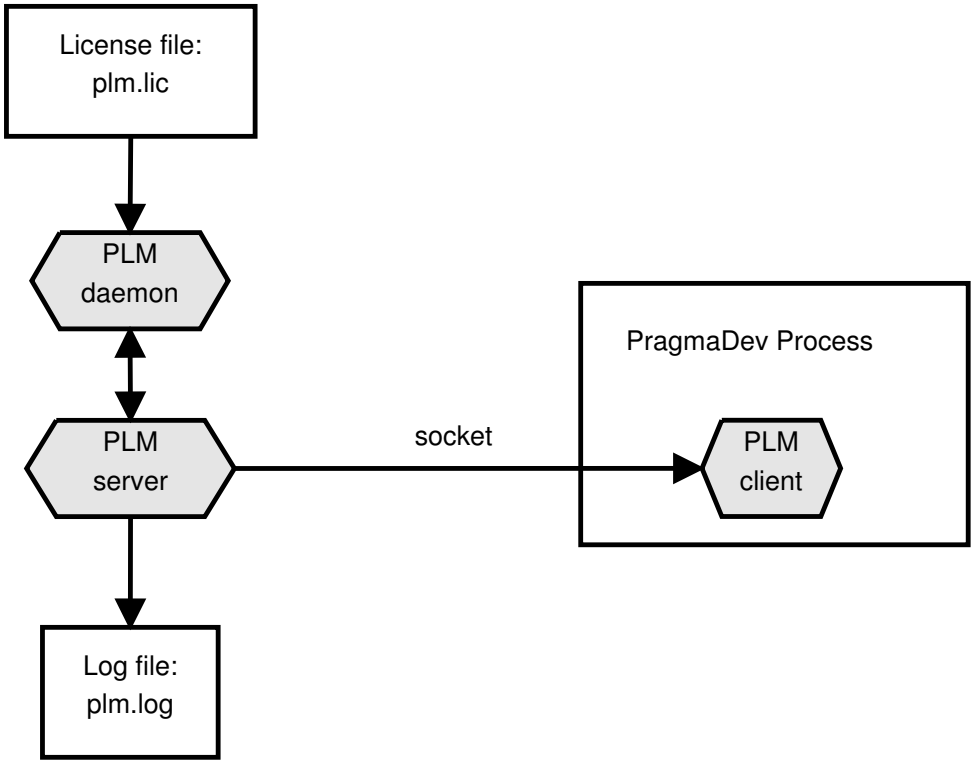
where $PRAGMADEV_PROCESS_HOME is the directory where you installed PragmaDev Process and <platform> is windows, solaris, or linux. The files are: • lmgrd : generic daemon,

- pragmad : PragmaDev daemon,
- lmutil : configuration and administration tool,
- lmtools : for Windows only, to setup the license server and install it as a Windows service.

More information can be found in the FLEXlm end user manual located in the $PRAGMADEV_PROCESS_HOME/share/flexlm/doc directory of your installation of PragmaDev Process.

1.4 PragmaDev License Manager

The architecture of PLM is similar to the one of FLEXlm. There is a license server that reads the license file and starts the vendor daemons. The vendor daemons will verify the keys in the license file are valid. If all is correct the license server will create a pool of available licenses. PragmaDev Process embeds a PLM client that connects to the PLM server. The PLM server will grant or not a license to the client.



The PLM server, PLM daemon, PLM license file, and PLM log file must be in the same directory. The names of the files are:

PLM element	File name
PLM server	sPlmServer
PLM daemon	pragmadev
PLM license file	plm.lic
PLM log file	plm.log

The PLM server and the PLM client can be executed on the same computer. Communications between the different modules is done through sockets. The socket port number to use is defined by the environment variable PLM_PORT_NUMBER.

1.5 Model checker

PragmaDev Process comes with ENSTA Bretagne OBP (Observer Based Prover) checking tool to verify properties on the BPMN model. This tool does not require any license but is java based, so an up-to-date Java installation is required in order to use the property checking features.

1.6 Tutorial

PragmaDev Process comes with a tutorial we recommend to go through.

2 Windows installation

2.1 PragmaDev Process

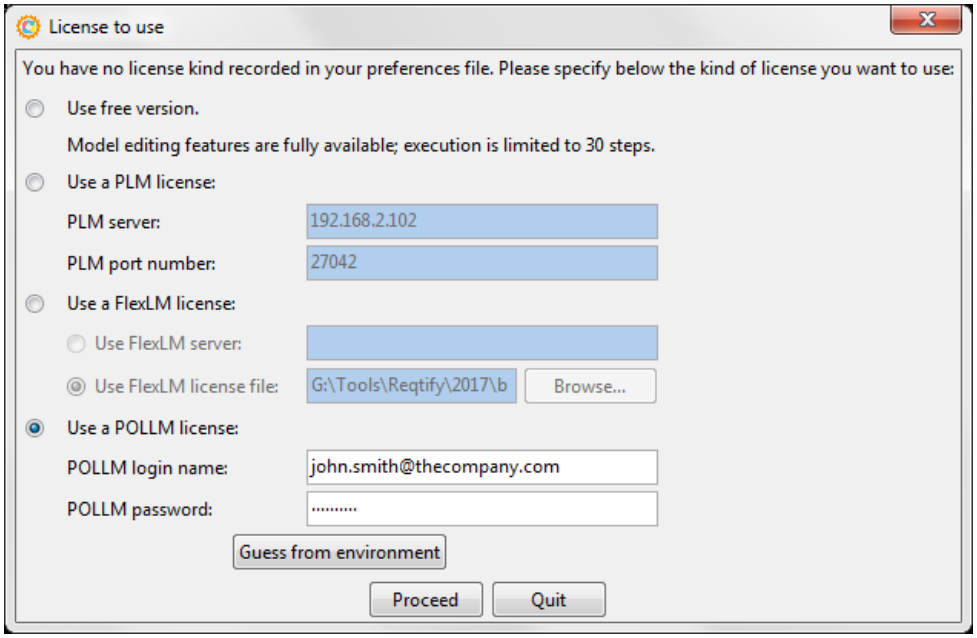
The installation is made by running setup.exe that should start automatically when the CD-ROM is inserted; if not, the installation will run by double-clicking on the executable which is located in the root directory of the CD-ROM. This setup starts an installation wizard to follow step by step. It is required to have administrator privileges in order to run the installation on Windows.

The installation program creates the PRAGMADEV_PROCESS_HOME environment variable to point to the installation directory and %PRAGMADEV_PROCESS_HOME%/bin is added to the path.

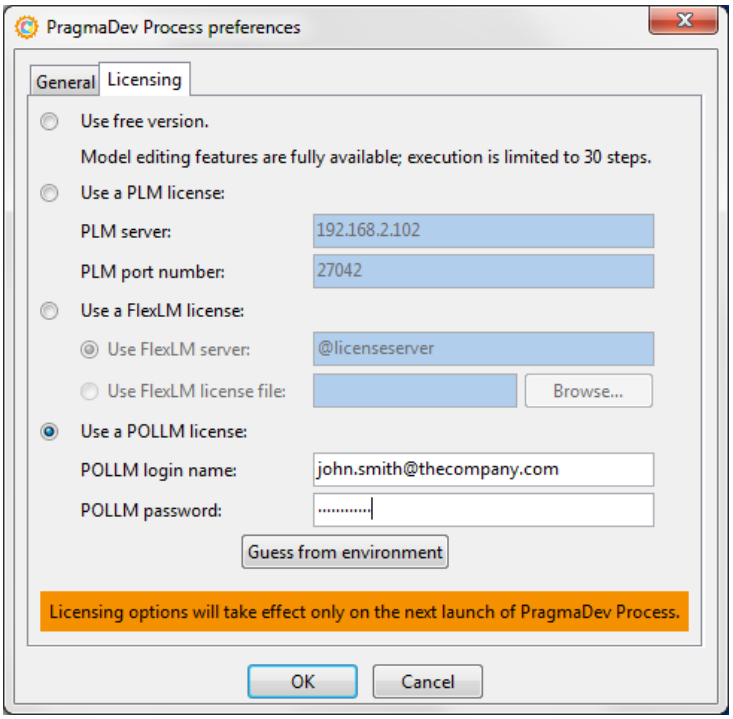
2.2 PragmaDev On Line License Management

One of the license manager is based on an on-line license management. The license is bought on line through PragmaDev web site and when the tool is launched the license is checked out on line. This very flexible licensing allows to use the license anywhere on any computer.

On the client side, when PragmaDev Process is launched, a pop windows will ask for the type of license to use:



Use the login and password used in the members area of PragmaDev web site and that's it.
This can be changed later via the menu "Process / Preferences..." in the tab "Licensing":

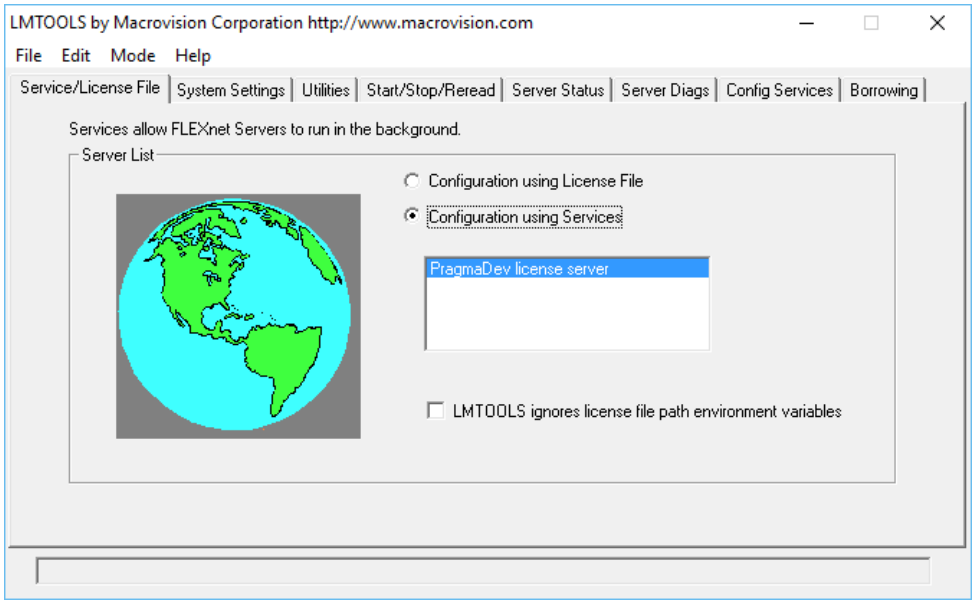


2.3 FLEXlm

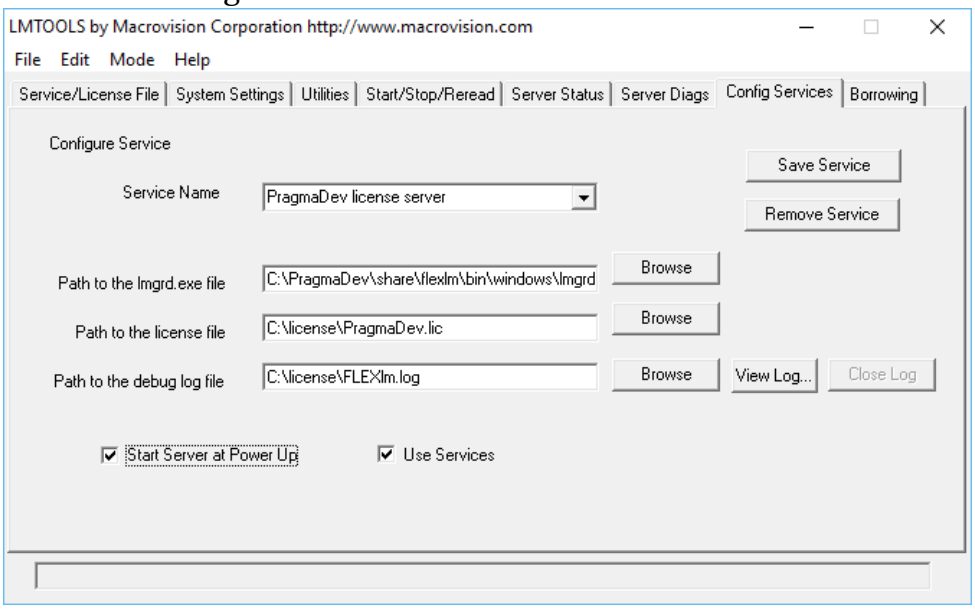
2.3.1 FLEXlm server

If possible, log in as an administrator to install FLEXlm license server as a Windows service. Otherwise, FLEXlm license server will have to be restarted each time the server is restarted.

Go to $PRAGMADEV_PROCESS_HOME/share/flexlm/bin/windows directory and start lmtools from a Command Prompt as administrator (right click on the cmd.exe file and select "Run as Administrator"):



- In the “Service/License File” tab check the “Configuration using Services” radio button.
- Click the “Config Services” tab:



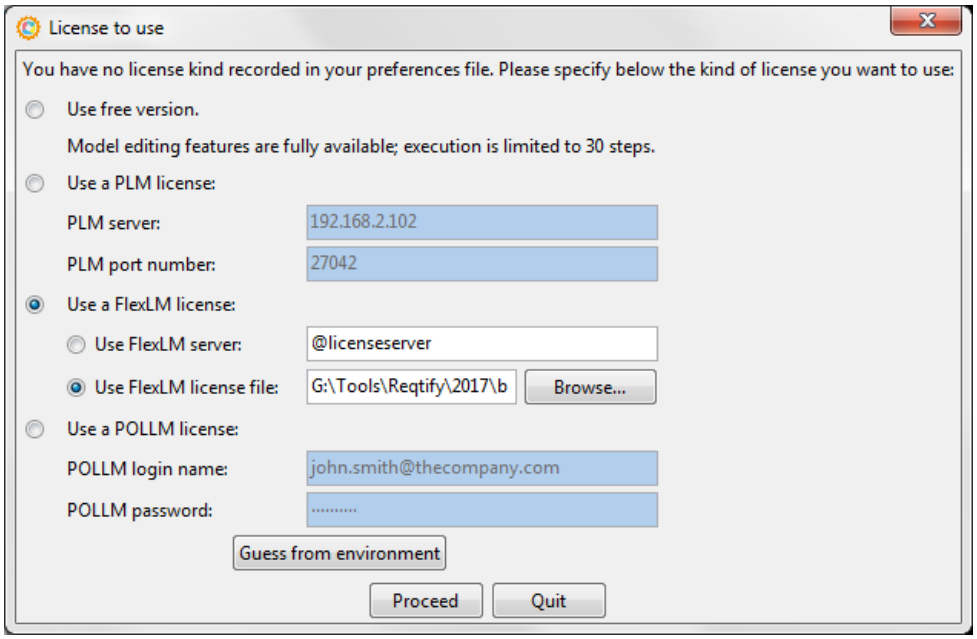
- In the “Service Name”, type the name of the service that will be defined, for example: PragmaDev license server.
- In the “Path to the lmgrd.exe file” field, enter or browse to the lmgrd.exe executable that was installed from the CD-ROM.
- In the “Path to the license file” field, enter or browse to the license file containing the license(s) for PragmaDev Process.
- In the “Path to the debug log file” field, enter or browse to the debug log file. This file will contain all the debug messages from the server.
- If installation is done with administrator privilege, check the “Use Services” and the “Start Server at Power Up” boxes for a proper server installation. If installation

is done with a non administrator account, the boxes can be left unchecked but the license server will have to be restarted each time the server is powered up.

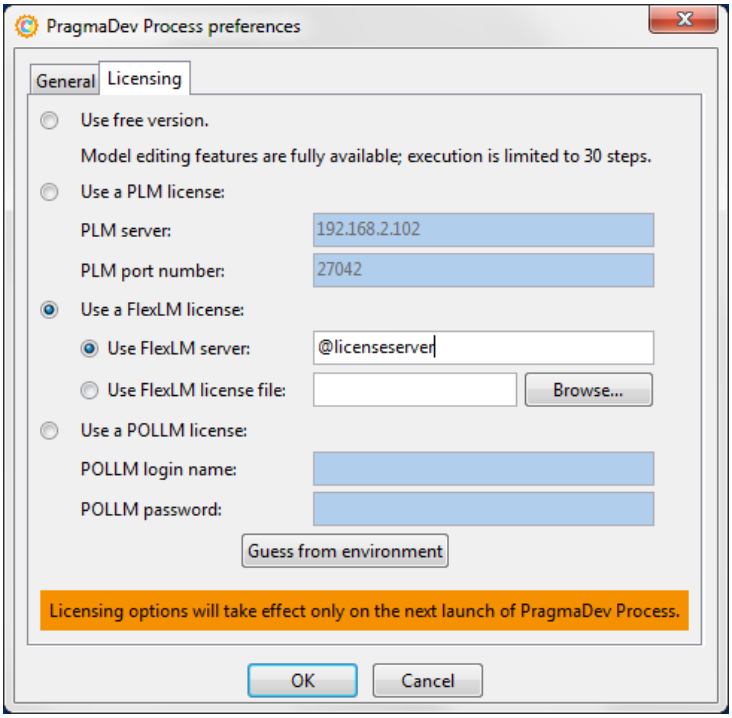
- Save the new service and go to the “Start/Stop/Restart” tab.
- Click on the “Start Server” button.

2.3.2 FLEXlm client

The FLEXlm client is embedded in PragmaDev Process application, so it is started when the application is launched.
The FLEXlm client can be configured the first time PragmaDev Process is started:



This can be changed later via the menu “Process / Preferences...” in the tab “Licensing”:



The client should preferably refer to the license server: `@<license server name>` where the license server name is the one specified on the SERVER line in the license file.

Note that if PragmaDev Process does not work, another FLEXlm license server might be configured on the computer. To solve this problem, the new FLEXlm server must be declared by executing in a Command Prompt (as administrator) in `%PRAGMADEV_PROCESS_HOME%/share/flexlm/bin/windows`:

```
lmutil lmpath -add pragmad serverLocation
```

where *serverLocation* is the name of the server machine (e.g. @myhost), or its IP address, or the full path to the license file.

2.4 PLM

2.4.1 PLM server

All the necessary files are located in
%PRAGMADEV_PROCESS_HOME%\share\plm\plm_server\bin\win32
directory.

The PLM_PORT_NUMBER environment variable should be defined as a system variable so that it is always defined. Its value should be set to a valid socket port number on the computer. We recommend a default value of 27042.

The license file you will receive from PragmaDev should be named plm.lic and put in the same directory.

Once you have received the license file, PLM server should be installed as a Windows service so that it is started automatically when the computer boots and even if no user

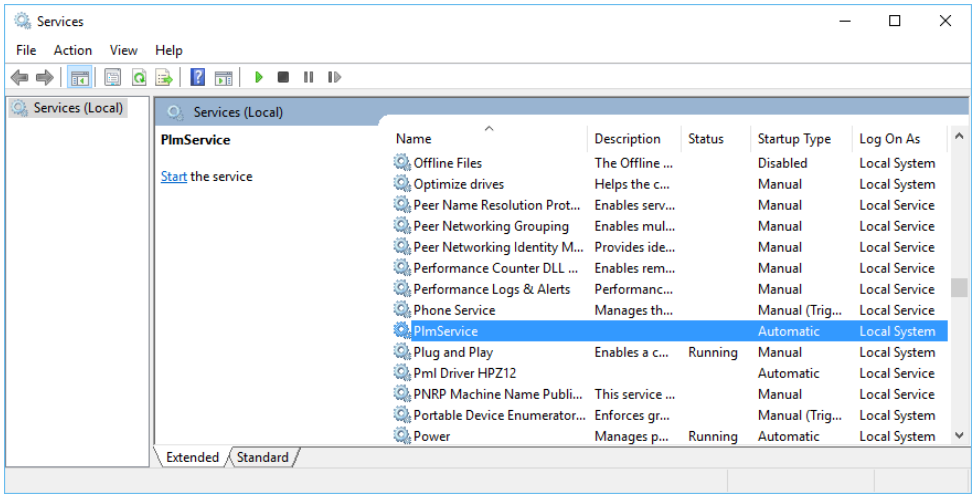
is logged in. The utility PlmService will install a service that will start the executables defined in PlmService.ini. Make sure the path to sPlmServer.exe is correct within that file.

Start a Command Prompt as administrator and go to the %PRAGMADEV_PROCESS_HOME%\share\plm\plm_server\bin\win32 directory.

To install the service, run: PlmService -i

To remove the service, run: PlmService -u

Once the service is installed, it will appear in the list of Windows services that can be accessed with the Services utility through the Control Panel, and the Administrative Tools folder:

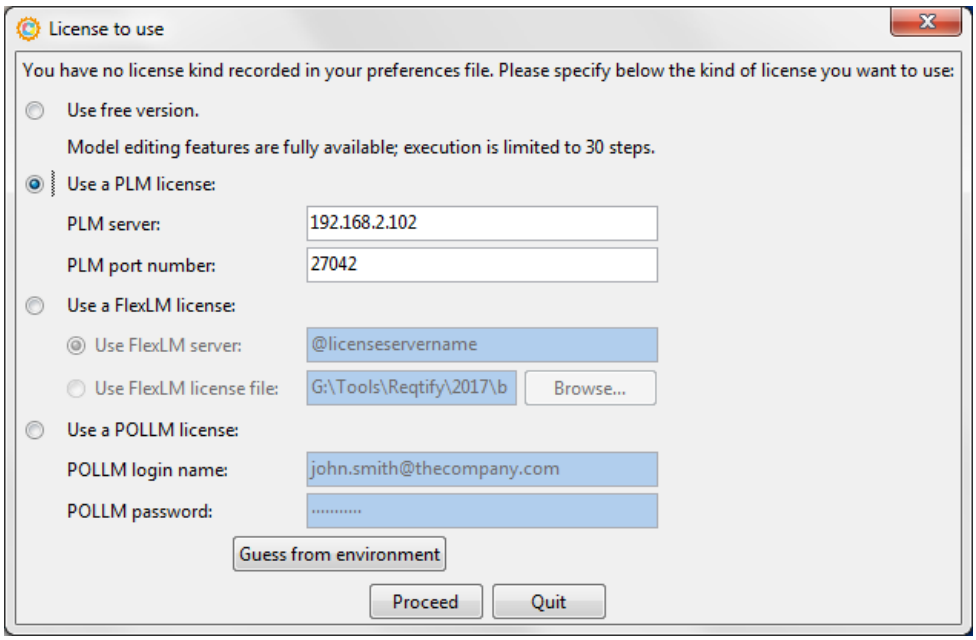


The service should be set to start automatically. As installing the service does not actually starts it the first time, it is necessary to start it manually in order to check everything is fine: double click on the service and click on the start button.

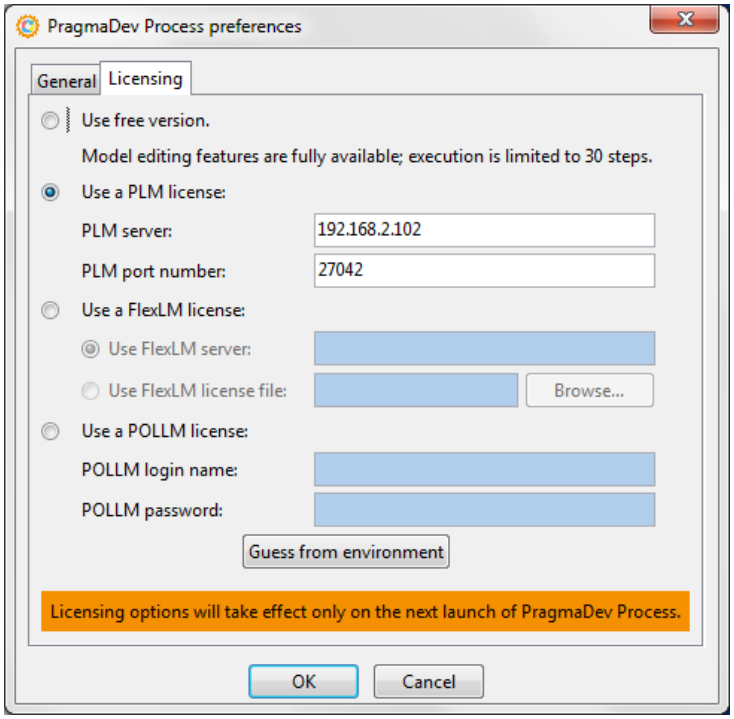
Note it is also possible to manually start the server, to do so just type: sPlmServer in the Command Prompt. In this case all the log information will also be printed in the Command Prompt.

2.4.2 PLM client

The PLM client can be configured the first time PragmaDev Process is started:



This can be changed later via the menu “Process / Preferences...” in the tab “Licensing”:



The “PLM server” is the server hostname or IP address and the “PLM port number” is the port number defined on the server (the PLM_PORT_NUMBER environment variable).

The PLM client can be configured also by defining following environment variables:

- PLM_SERVER set to the server hostname or IP address,
- PLM_PORT_NUMBER set to the port number defined on the server.

If both environment variables are defined, their values will be picked up automatically when starting PragmaDev Process the first time, or at any time via the “Guess from environment” button. Note that because name resolution is not always successful, if the hostname does not work use the IP address of the server. For example, if the license server and the client are the same computer, use 127.0.0.1 instead of localhost.

2.4.3 PLM management

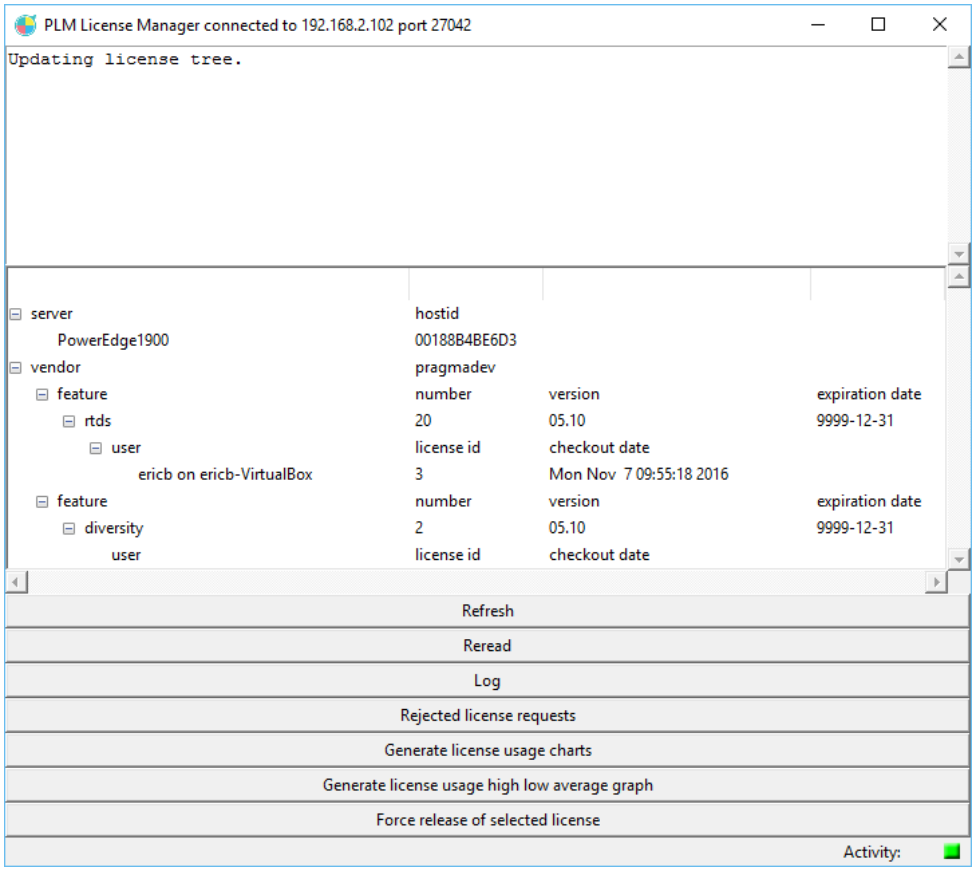
PLM includes a management tool to analyze license usage. It can be run on any computer on the network via the menu “Process / Manage PLM licenses...” provided that a PLM licence was already configured (see “PLM client” on page 14).

Another way is to run

```
%PRAGMADEV_PROCESS_HOME%\share\plm\plm_manager\bin\win32\PLM_Manager.exe
```

provided that both PLM_SERVER and PLM_PORT_NUMBER environment variables have been defined.

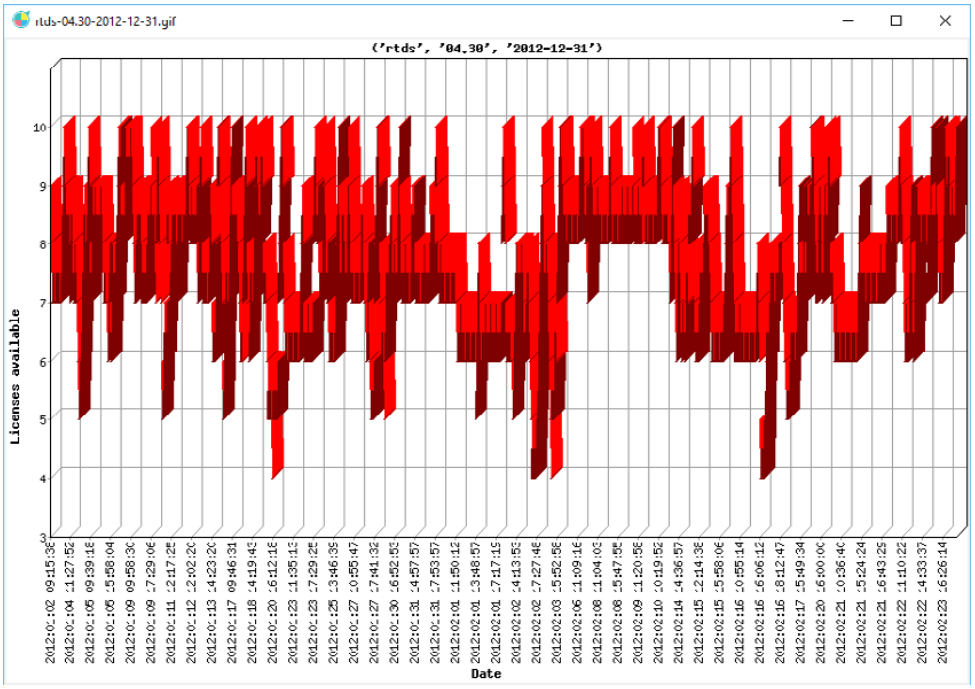
The following window will open and connect to the license server:



The following features are available:

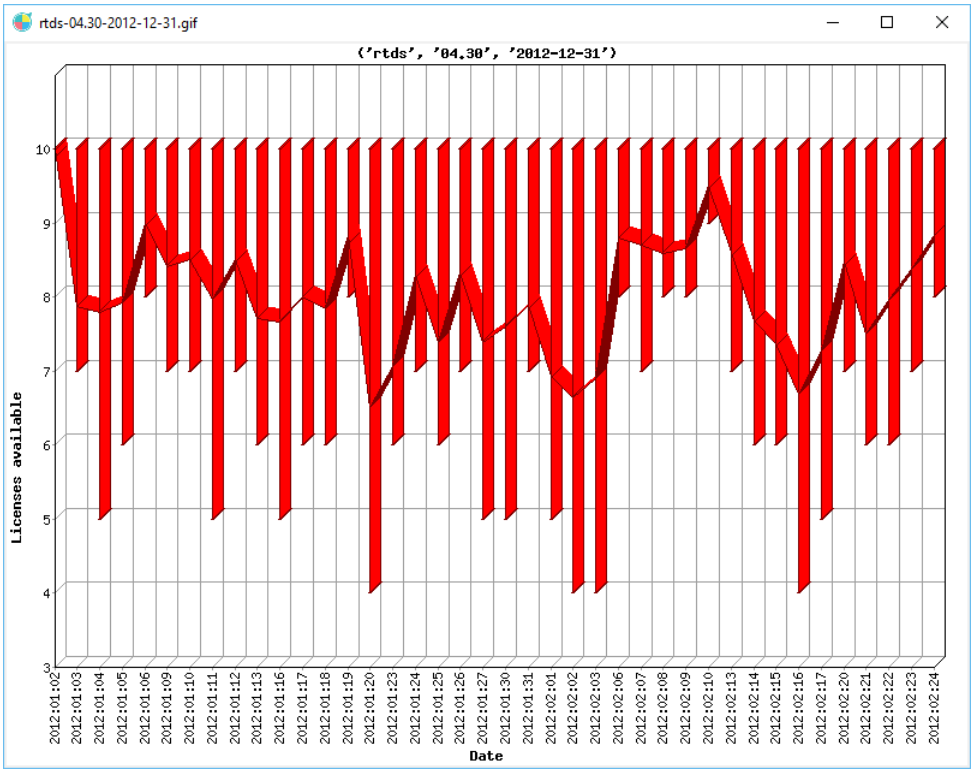
- Refresh
  This will ask the license server some updated information. This is usually not needed since the PLM Manager is refreshed automatically each time the a license is taken or given back.

- Reread
  When updating the license file on the server, Reread will read again the license file. When reading a new license file, licenses are not lost if available in the new license file.
- Log
  Retrieves the whole log file from the server and displays it on the top of the window.
- Rejected license requests
  Retrieves the whole log file - so it might take some time- and displays all license requests that I have rejected.
- Generates license usage charts
  Retrieves the whole log file - so it might take some time- and generates a basic license usage chart for each feature based on the log file such as the following:



Please note the window title is the name of the generated gif file for the graphic.

- Generate license usage high low average graph
  Retrieves the whole log file - so it might take some time- and generates a license usage chart for each feature based on the log file with the highs and lows for each day such as the following:



Please note the window title is the name of the generated gif file for the graphic.

- Force release of selected license
  As PLM does not implement any heartbeat mechanism to test the connection to each client, it might happen a license stays locked because the client did not release it. For that matter it is possible to force the release of a license in the license manager interface. Select a license to release and click on the “Force release of selected license” button.

3 Unix installation

3.1 PragmaDev Process

The installation is made by running the shell script `install.sh` located in the top directory. Once the questions asked by the script are answered, the installation will just copy the required files at the specified location. Make sure you have the proper permissions to write to the installation directory.

The installation script installs PragmaDev Process for the current platform. If you need to install for another platform (e.g. shared installation on a Unix server for Windows clients), you can give the target platform name as a parameter to the script. The possible platform names are `linux64`, `windows` and `macosx64`.

Then, as indicated by `install.sh`, each PragmaDev Process client account should then be configured by "sourcing" the configuration script in their shell startup script. For sh-compatible shells, this is done by including the line:

`. <installation dir>/pragmaprocess-config.sh`

in your `.profile`; if you use a csh-compatible script, this is done by including the line:

`source <installation dir>/pragmaprocess-config.csh`

in your `.cshrc`.

3.2 PragmaDev Process fonts

This part of the installation is optional but recommended to ensure a WYSIWYG behavior of PragmaDev Process when printing and exporting diagrams to images. To do so, PragmaDev Process should preferably use the same font on the display and when printing and exporting.

PragmaDev Process will try to install its fonts itself in the local fonts directory (`~/.fonts`). You may have to quit the application and run it again for the fonts to be seen the first time you run it. If it still does not work, you can run the following command to add the correct font directory to the font search path:

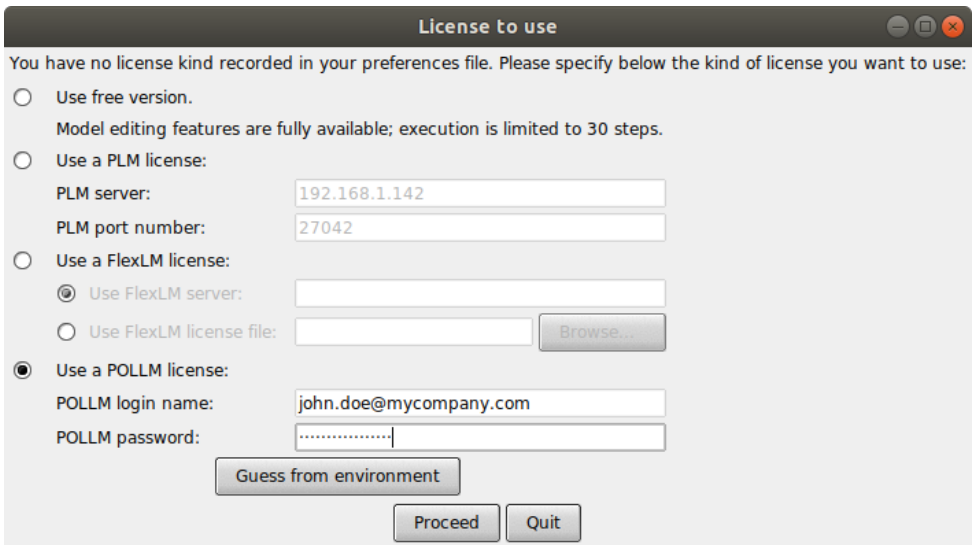
```
xset +fp $PRAGMADEV_PROCESS_HOME/share/print/fonts
```

This command must be run after running the application configuration script and after the X server is launched. The command is usually put in the `.xsession` script (if using `xdm`) or the `.xinitrc` script (if not). This is however highly dependent on the X server and the window manager. Please refer to the platform documentation for more information.

3.3 PragmaDev On Line License Management

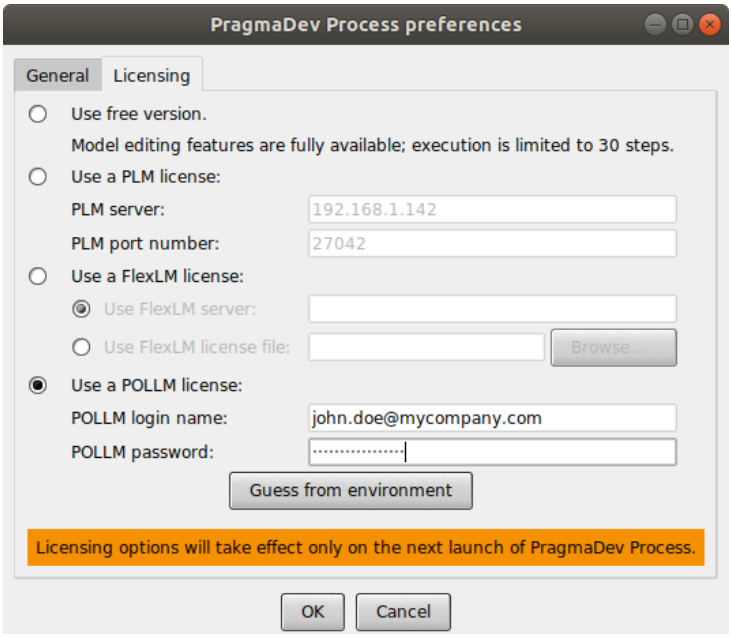
One of the license manager is based on an on-line license management. The license is bought on line through PragmaDev web site and when the tool is launched the license is checked out on line. This very flexible licensing allows to use the license anywhere on any computer.

On the client side, when PragmaDev Process is launched, a pop windows will ask for the type of license to use:



Use the login and password used in the members area of PragmaDev web site and that's it.

This can be changed later via the menu "Process / Preferences..." in the tab "Licensing":



3.4 FLEXlm

3.4.1 FLEXlm server

A proper FLEXlm installation requires the license server to be started automatically at power up. root privileges are required for such an installation. Still the FLEXlm license server can be started without root privilege as explained in paragraph "Manual launch" on this page.

3.4.1.1 Production install

The FLEXlm tools such as lmgrd, lmtools, pragmad,lmutil are located in the `$PRAGMADEV_PROCESS_HOME/share/flexlm/bin/[solaris|linux]` directory. The way to start the license server at power up is beyond the scope of this manual, however a template of a service script file automatically starting or stopping the lmgrd daemon on server boot / shutdown is provided in the sub-directory corresponding to the machine type of `$PRAGMADEV_PROCESS_HOME/share/flexlm/bin/[solaris|linux]`. The name of the service script file is `flexlmd`.

To define the service, just edit the file to uncomment and modify the first lines defining the script variables. Then install the script wherever the service scripts are located on the machine.

3.4.1.2 Manual launch

The license server can be started manually with the following command in `$PRAGMADEV_PROCESS_HOME/share/flexlm/bin/[solaris|linux]` directory:

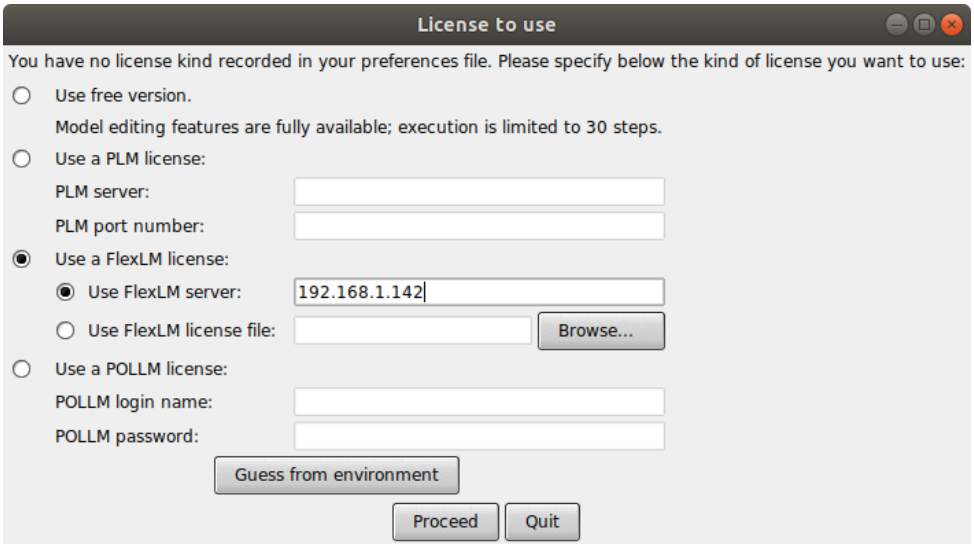
```
> lmgrd -c licensefile
```

where licensefile is the file received by email.

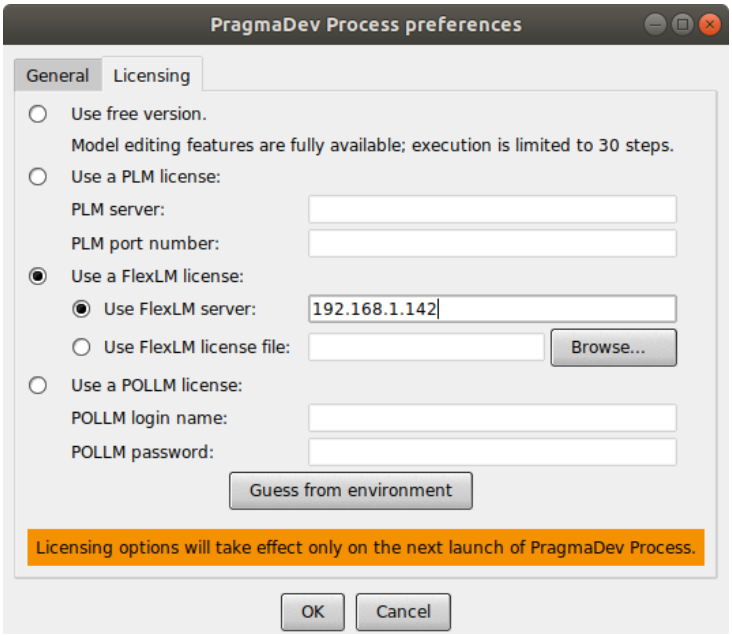
3.4.2 FLEXlm client

The FLEXlm client is embedded in PragmaDev Process application, so it is started when the application is launched.

The FLEXlm client can be configured the first time PragmaDev Process is started:



This can be changed later via the menu “Process / Preferences...” in the tab “Licensing”:



3.5 PLM

3.5.1 PLM server

All the necessary files are located in $PRAGMADEV_PROCESS_HOME/share/plm/plm_-server/bin/<platform> directory.

The PLM_PORT_NUMBER environment variable should be defined as a system variable so that it is always defined. Its value should be set to a valid socket port number on the computer. We recommend a default value of 27042.

The license file you will receive from PragmaDev must be put in the directory where all the files are and named plm.lic. The PLM server requires a /tmp folder to exist.

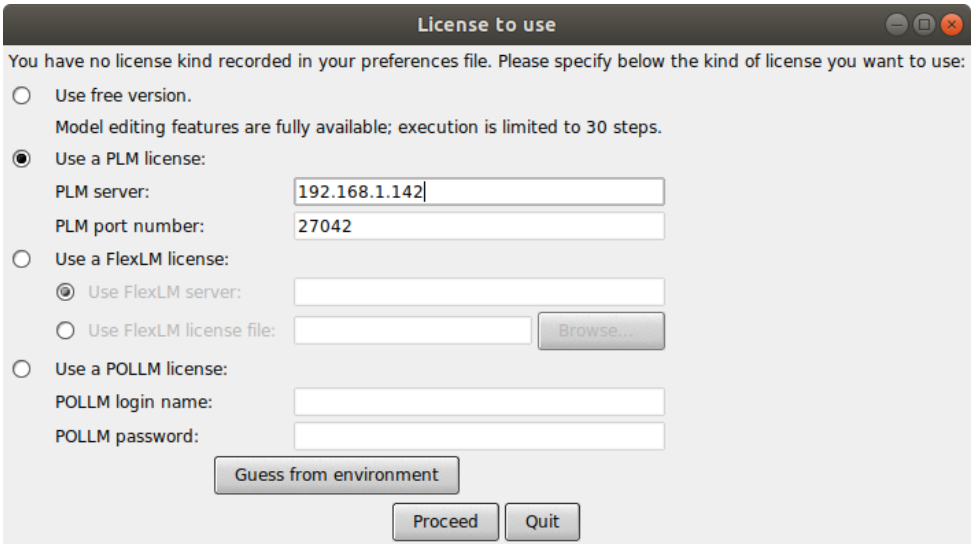
Once you have received the license file, PLM server should be installed as a Unix daemon to be started automatically when the computer boots. A sample script called plmd is provided to be put in /etc/init.d. We suggest to set up a symbolic link from rc5.d/S09plmd to that script so that it is started n°9 at startup level 5. In the example script, all the necessary files have been copied to:

`/opt/pragmadev/plm/bin`

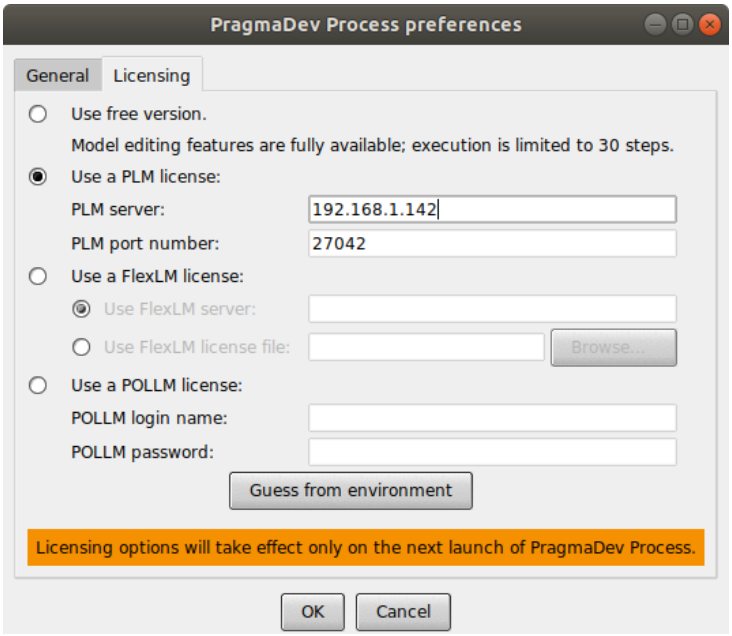
If a PLM server is started while another one is running, the new server will start and the old one will eventually die by itself.

3.5.2 PLM client

The PLM client can be configured the first time PragmaDev Process is started:



This can be changed later via the menu “Process / Preferences...” in the tab “Licensing”:



The “PLM server” is the server hostname or IP address and the “PLM port number” is the port number defined on the server (the `PLM_PORT_NUMBER` environment variable).

The PLM client can be configured also by defining following environment variables:

- `PLM_SERVER` set to the server hostname or IP address,
- `PLM_PORT_NUMBER` set to the port number defined on the server.

If both environment variables are defined, their values will be picked up automatically when starting PragmaDev Process the first time, or at any time via the “Guess from environment” button.

3.5.3 PLM management

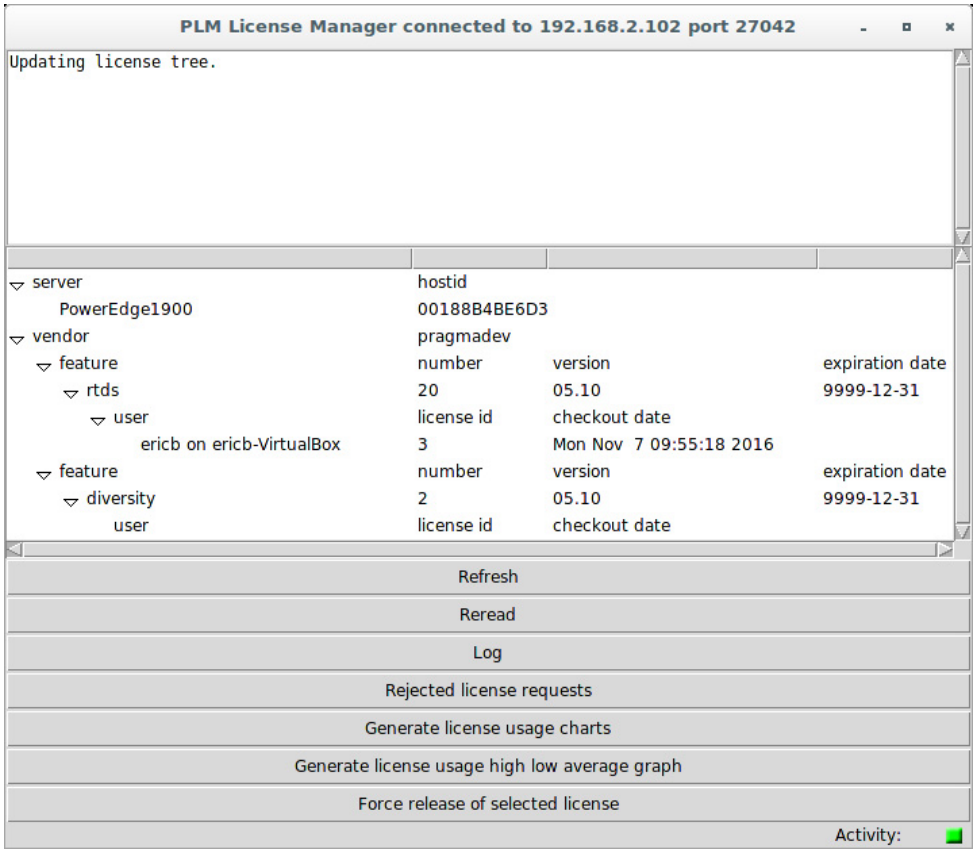
PLM includes a management tool to analyze license usage. It can be run on any computer on the network via the menu “Process / Manage PLM licenses...” provided that a PLM license was already configured (see "PLM client" on the previous page).

Another way is to run:

```
$PRAGMADEV_PROCESS_HOME/share/plm/plm_manager/bin/linux64/PLM_Manager
```

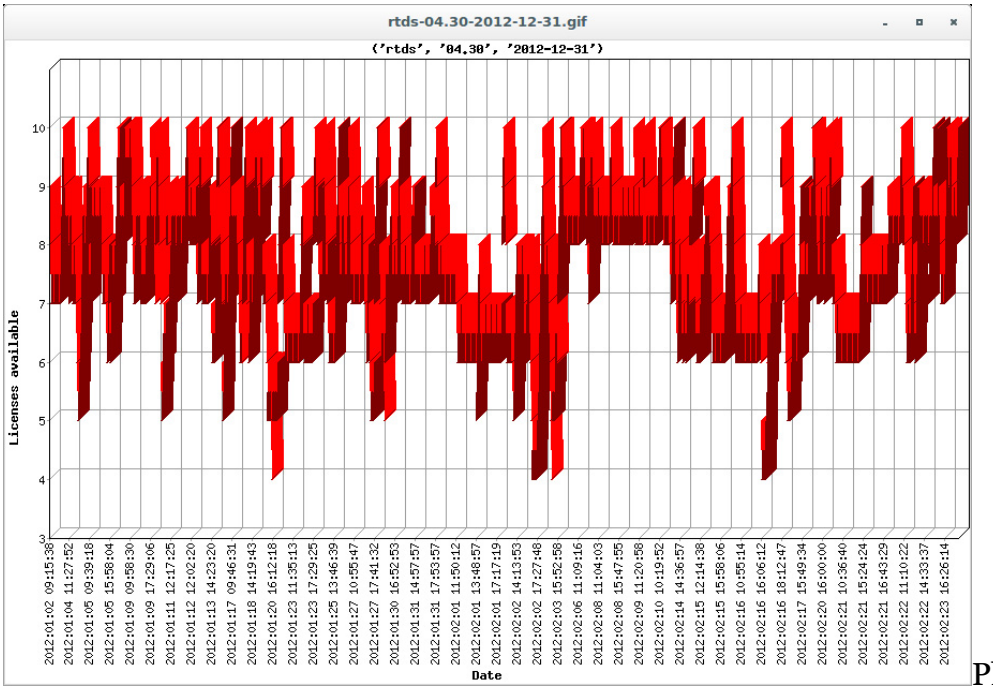
provided that both `PLM_SERVER` and `PLM_PORT_NUMBER` environment variables have been defined.

The following window will open and connect to the license server:



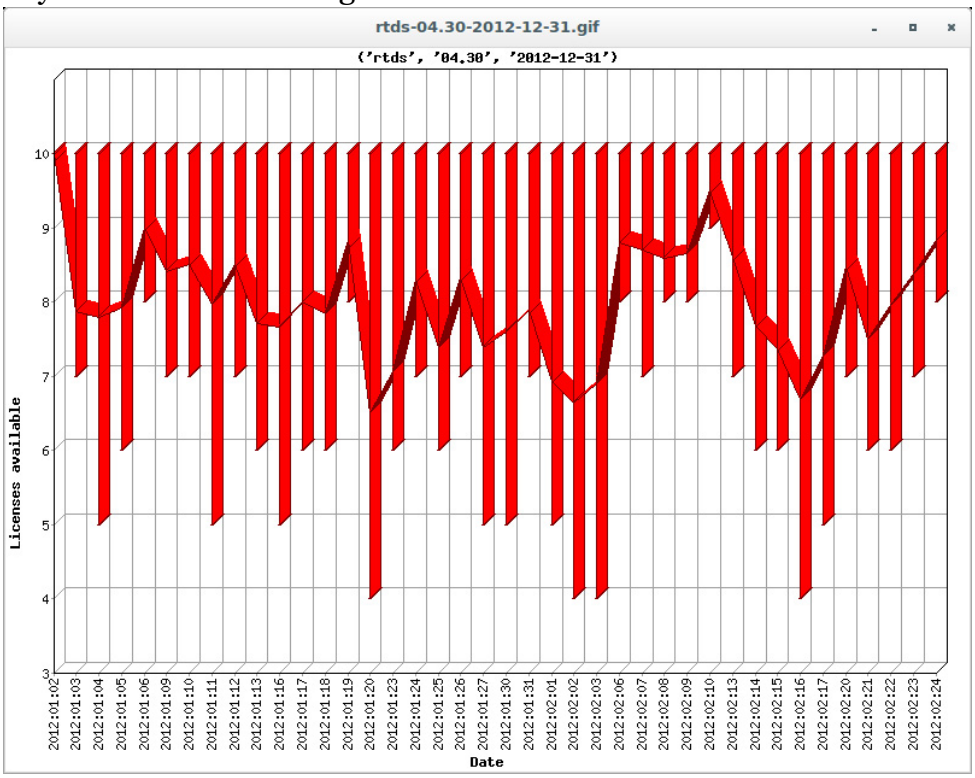
The following features are available:

- Refresh
  This will ask the license server some updated information. This is usually not needed since the PLM Manager is refreshed automatically each time the a license is taken or given back.
- Reread
  When updating the license file on the server, Reread will read again the license file. When reading a new license file, licenses are not lost if available in the new license file.
- Log
  Retrieves the whole log file from the server and displays it on the top of the window.
- Rejected license requests
  Retrieves the whole log file - so it might take some time- and displays all license requests that I have rejected.
- Generates license usage charts
  Retrieves the whole log file - so it might take some time- and generates a basic license usage chart for each feature based on the log file such as the following:



Please note the window title is the name of the generated gif file for the graphic.

- Generate license usage high low average graph
  Retrieves the whole log file - so it might take some time- and generates a license usage chart for each feature based on the log file with the highs and lows for each day such as the following:



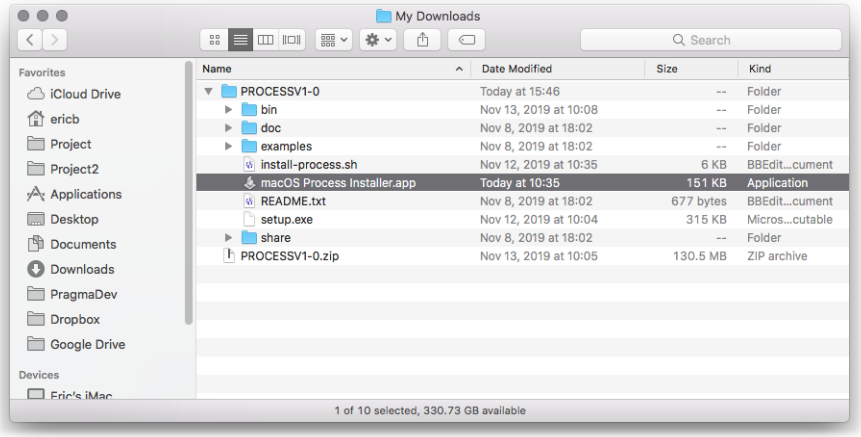
  Please note the window title is the name of the generated gif file for the graphic.
- Force release of selected license

As PLM does not implement any heartbeat mechanism to test the connection to each client, it might happen a license stays locked because the client did not release it. For that matter it is possible to force the release of a license in the license manager interface. Select a license to release and click on the “Force release of selected license” button.

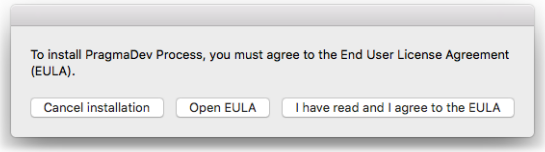
4 Mac installation

4.1 PragmaDev Process

Download PragmaDev Process and unzip it.

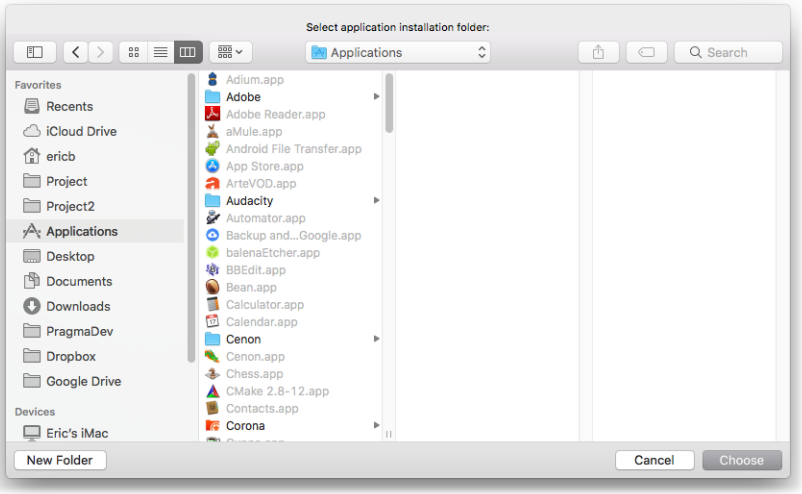


Launch the macOS Process Installer application. You might get a warning that the installer is an application downloaded from the internet and that it wants to control the Finder. Acknowledge both to make sure the installer runs correctly. The End User License Agreement window will then pop up.

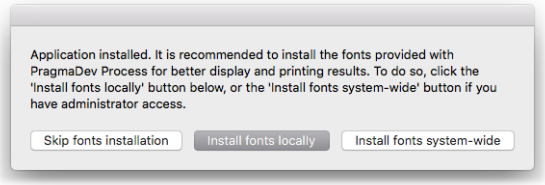


To view the End User License Agreement, click on the "Open EULA" button. When you've read it and if you agree to it, click the "I have read and I agree to the EULA" button to proceed.

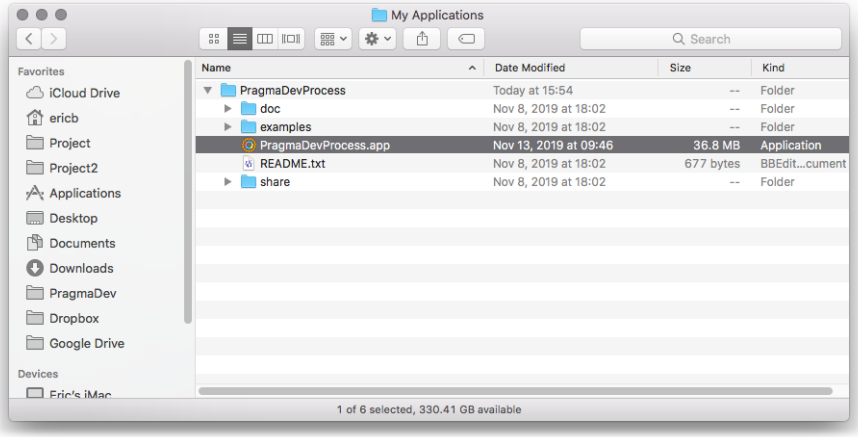
The installer then asks for a destination folder. The default is /Applications, but you can choose whatever you like:



The models and diagrams in PragmaDev Process are displayed better with the fonts provided with the application, so we advise you to install these fonts. They can be installed only for your user or system-wide, if you have the permissions:



If you have a license server running, you can now start PragmaDev Process.

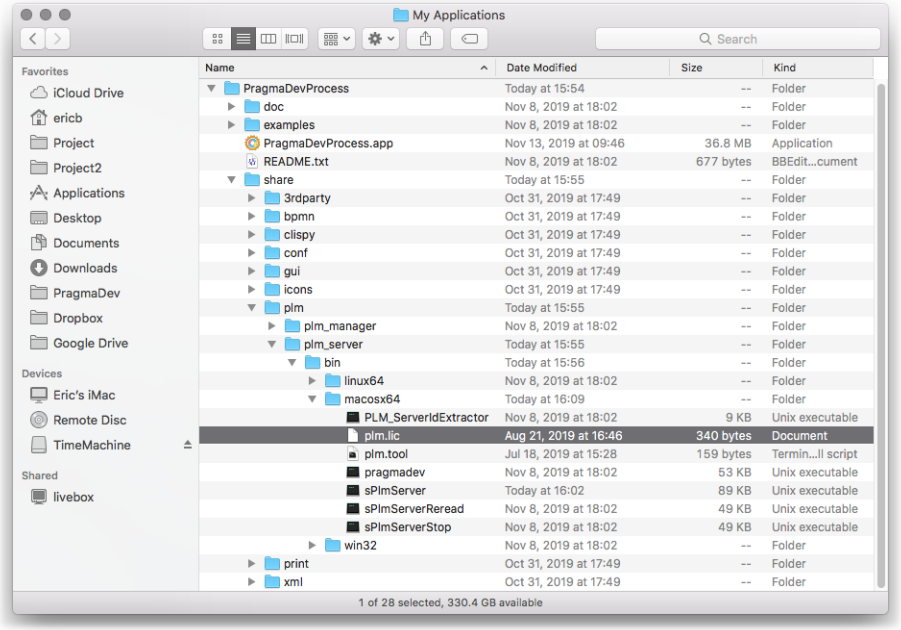


4.2 PLM

4.2.1 PLM Server

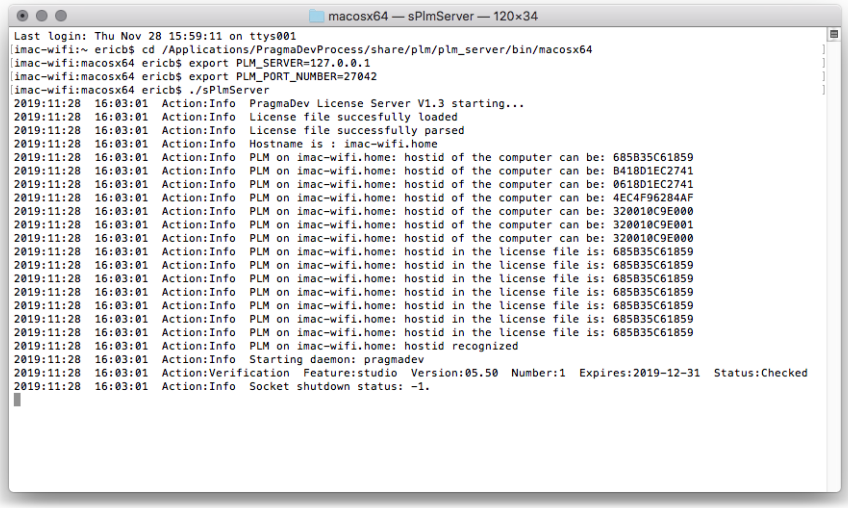
4.2.1.1 Manual startup

What follows describes how to start the PLM server manually. The license file must be named `plm.lic` and must be saved in the PLM directory (`<installation folder>/PragmaDevProcess/share/plm_server/bin/macosx64`).



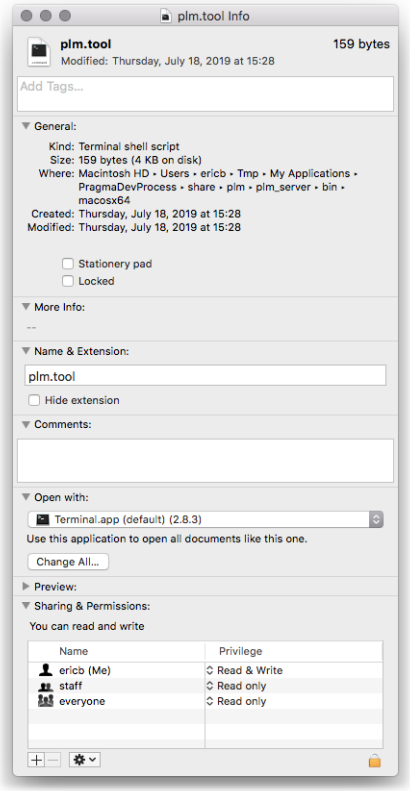
Open a terminal (in Applications/Utilities) and type the following commands:

```
cd <installation folder>/PragmaDevProcess/share/plm_server/bin/macosx64
export PLM_SERVER=127.0.0.1
export PLM_PORT_NUMBER=27042
./sPlmServer
```

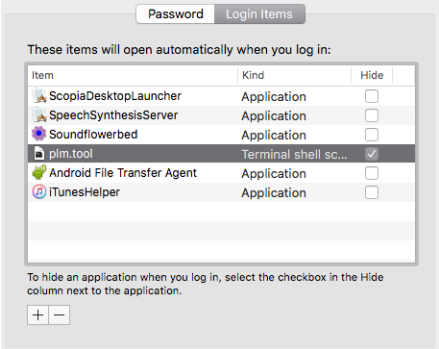


4.2.1.2 Automatic startup

Make sure the tool plm.tool will be executed with the terminal application.

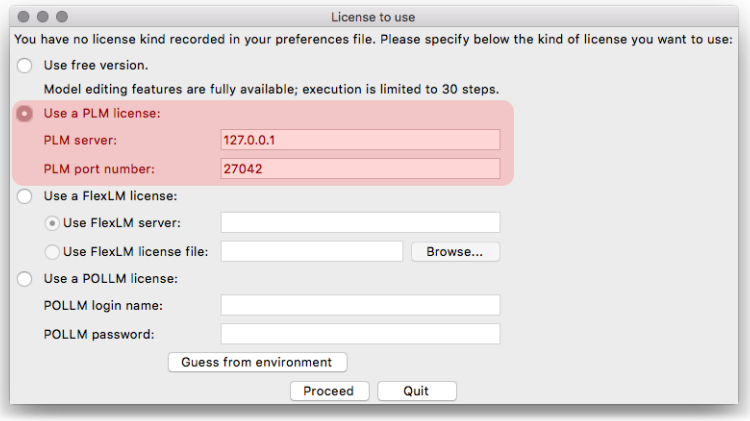
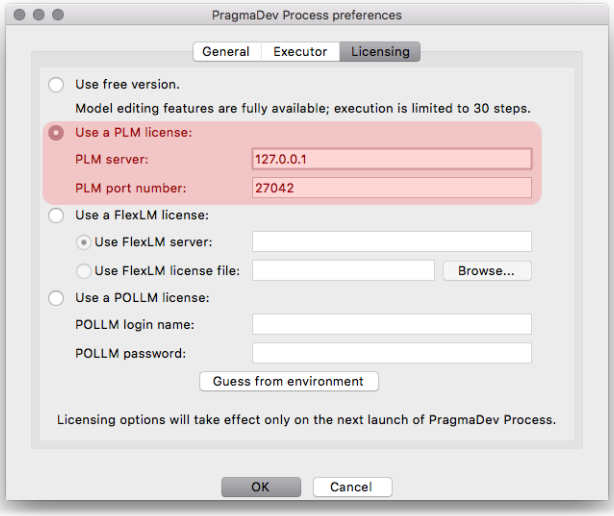


Open the System Preferences, then select the "Users & Groups" category, then the "Login items" tab. Add plm.tool to the items that will open automatically when you log in:



4.2.2 PLM Client

The PLM client can be configured the first time PragmaDev Process is started:



This can be changed later via the menu “Process / Preferences...” in the tab “Licensing”: