

User's Guide

PMOD Installation on Linux Systems

Version 3.5



PMOD Technologies

Installation Overview

PMOD supports two licensing schemes: stand-alone and network licenses.

Licensing, Stand-alone License

The PMOD software stand-alone licensing mechanism consists of two components:

- 1) a **USB protection key** (WIBU-Box/RU, WIBU-SYSTEMS AG, <http://www.wibu.com>), and
- 2) a license file **pstarter.lcs** (in sub-directory *properties/system/lcs* of the PMOD installation).

During PMOD startup the license information encoded in the USB key is read and compared to that in the license file. Only if the two informations match, startup proceeds. Next is a check whether the PMOD version purchased allows running the currently installed version. If all checks are successful, the PMOD ToolBox appears showing the purchased modules, and processing can start. Note that the USB key must remain in place while running PMOD.

Licensing, Network License

The PMOD network licensing scheme consists of a PMOD license server which manages a pool of purchased licenses, and an arbitrary number of PMOD clients which can check out unused licenses from the server. As soon as the PMOD program on a client is closed, the license is returned to the managed server pool. If the PMOD client crashes for some reason, the license is re-collected to the pool after about 15 minutes. On the other hand, if the license server is stopped, the clients show a warning message to the user and allow to continue work for a few minutes. Then, the clients will be stopped, unless the server has been started again.

On the license server PMOD is installed in the same way as for a stand-alone license with the USB key, but the license file turns it into a license server.

On the clients PMOD is also installed in the standard way, *except that*

- ▶ installation of the drivers for the USB protection key is not required;
- ▶ no license file is required.

Note the following:

- ▶ The license server PMOD installation is only intended for server purposes and not for data processing.
- ▶ The license server must be running and the USB key must be connected at all times.
- ▶ The license server and the clients must run the same PMOD version.
- ▶ It is not required that the license server and the clients have the same operating system.

Java Runtime Environment (JRE)

The entire PMOD software has been programmed in Java and therefore requires an appropriate Java Runtime Environment (JRE) to be executed. During PMOD installation on

Linux and Windows systems, an appropriately configured JRE is extracted into the *java* sub-directory of the PMOD installation. This dedicated JRE will then be used for running PMOD. By this controlled environment, PMOD will remain unaffected from changes due to automatic upgrade procedures on Windows and Linux. Only on MacOSX systems, the built-in JRE will be used.

Installation Steps

The installation of the PMOD software consists of the following steps which should be performed in the proposed sequence. They are explained in detail in the system-specific installation sections.

- 1) Extraction of the PMOD program files, the JRE, and the example data to the *Pmod3.5* directory in a user-defined directory.
This installation step is required for: **Stand-alone Installation, License Server, Network Clients.**
- 2) Installation of the USB protection key drivers for reading the information from the WIBU-Box/RU plugged into the USB port. *Please do not connect the PMOD USB protection key before this installation has been completed.*
This installation step is required for: **Stand-alone Installation, License Server.**
- 3) Installation of the PMOD license file *pstarter.lcs*. The license file can be downloaded from the **Support** area of the PMOD *website* <http://www.pmod.com/technologies/support/enter-support.php> after the personalized login (please refer to the delivery note of your PMOD package for login information).
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Linux Installation

The installation for all types of PMOD systems starts with the software extraction from the installation DVD. No other installation is required for PMOD network clients. For PMOD standalone systems and PMOD license server systems, the USB protection key drivers must then be installed and the dedicated license file copied to the *properties/system/lcs* folder.

Some parts of the PMOD installation may require root privileges. If your account does not have these rights, please ask your IT support to perform the following installation steps.

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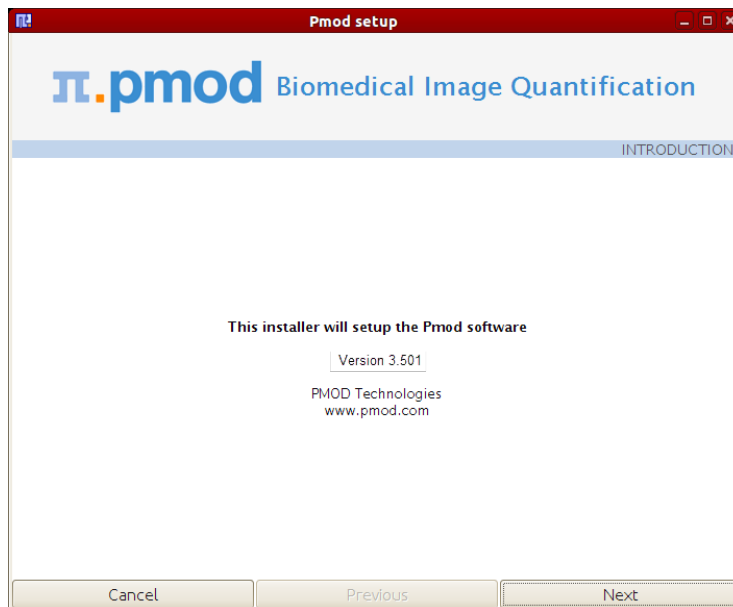
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PMOD Software Extraction

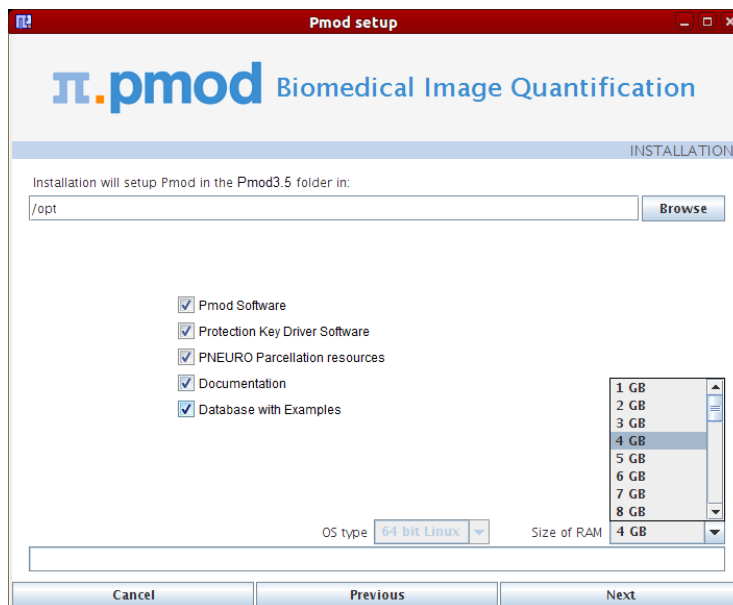
The following software extraction procedure must be performed for standalone PMOD installations, for PMOD servers, and also for all PMOD network clients.

Please begin by inserting the PMOD installation DVD. Then start the installer by executing **RunSetup_32** or **RunSetup_64** in the *Setup/Linux* directory on the DVD by double-clicking, depending on your operating system. New systems are typically 64 Bit, so it is recommended to try **RunSetup_64** first.

The following installation screen appears



Please use **Next** to proceed and accept the license agreement in the appearing dialog window. After activating **Next** the window for configuring the installation appears.



Please perform the following configurations:

Installation Path

Use the **Browse** button to select the parent directory for the installation for which the installing user has writing permissions. There, the installer will create a new directory **Pmod3.5** for the program files and the data. Please make sure that 450MB of free space is available.

Packages

It is recommended to install all four packages, the **Software**, the **Protection Key Driver Software**, the **Documentation**, and the **Example Database**. The **Example Database** requires about 120MB, but will be a great help for getting acquainted with the programs because they provide examples for the the different types of analysis. Furthermore, you will already have a database for storing your data.

Properties of Operating System and RAM

Current operating systems (OS) support the 64-Bit capability of new hardware. The main advantage of using a 64-Bit OS is the extended address space for the applications, in this case PMOD. Consequently, the data size is virtually unlimited for a 64-Bit OS (only limited by hardware RAM), while it is limited to <2GB for a 32-Bit system. As there is a clear trend towards rapidly increasing image data sizes, we strongly advise against using 32-Bit systems for PMOD.

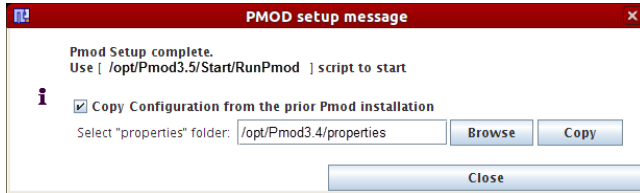
If the operating system of your target computer is 32-Bit, then please set the **OS type** selection to **32-Bit**. Correspondingly, only **Size of RAM** of **1GB** or **2GB** can be selected, preferably **2GB**.

If the operating system of your target computer is 64-Bit, then please set the **OS type** selection to **64-Bit**. In this case, **Size of RAM** can be set to any size. However, if the specified size exceeds the physical RAM, the system will start swapping after RAM space is exhausted and will become very slow. Therefore it is recommended setting **Size of RAM** < physical RAM.

Installation of the PMOD Environment

The installation is started by the **Install** button. The Pmod3.5 directory is created wherein all PMOD-related files are extracted. If the installing user has no write permission in the parent directory, a dialog window appears which reports an installation problem. In this case please change the writing permissions of the installation as root user, or try the installation again using a different installation directory.

At the end of the installation a dialog window is shown. It indicates the command script for starting Pmod3.5, and allows importing the configurations from a prior version. To this end, select the **properties** folder of your prior installation with the **Browse** button as illustrated below, and activate **Copy Configurations**. This import will also copy the license file, so that Pmod3.5 should immediately run with the familiar environment if your license is valid with the Pmod3.5 version.



PMOD Stand-alone License Installation

Install USB Key Drivers

All the files required for the driver installation have been extracted during the installation of the PMOD software and stored in the PMOD *hksetup* sub-directory. For Linux, it includes four installation files, the 32-Bit and 64-Bit installers for RedHat/Fedora as well as Ubuntu/Debian systems. The driver installation should be performed as *root* user.

On Ubuntu/Debian Linux systems double-click **WkRt-Lin32_6.0.501_i386.deb** (32-Bit) or **WkRt-Lin64_6.0.501_amd64.deb** (64-Bit) depending on the architecture of your host system, and then install the package.

Similarly, on RedHat/Fedora Linux systems use **WkRt-Lin32-6.0.501_i386.rpm** (32-Bit) or **WkRt-Lin64-6.0.501_amd64.rpm** (64-Bit). If the installation per double-clicking does not work open a terminal and enter the command

```
cd /opt/Pmod3.5/hksetup/Linux
rpm -i WkRt-Lin64-6.0.501_amd64.rpm
(or rpm -i WkRt-Lin32-6.0.501_i386.rpm)
```

If a message *usbutils conflicts with WkRt-Lin-5.20.500-1* occurs on the console, please cancel the installation of *WkRt-Lin-5.20.500-1.i386.rpm* and enter the command:

```
rpm -e --nodeps usbutils
```

to uninstall conflicting USB support.

If messages occur in the console window indicating a conflict with an older version of the driver please uninstall that prior version (eg. *WkRt-Lin-5.10.501-1.i386*) by entering the command:

```
rpm -e WkRt-Lin-5.10.501-1.i386
```

After these cleaning procedures try the installation again.

Note: If you experience problems during driver installation, you are recommended downloading the most recent drivers for the WIBU-KEY (Runtime Kit) from http://wibu.com/download_user.php (http://wibu.com/download_user.php) and try the installation again. Also, in some cases, a reboot may be required after driver installation.

License File

The delivery note you have received with the PMOD CD contains account information for logging into the support area of www.pmod.com (<http://www.pmod.com/technologies/support/enter-support.php>). There you will find a license report, and a button for downloading the license file for your purchased configuration. Please download *pstarter.lcs* and copy it to the directory *Pmod3.5/properties/system/lcs*.

Important Note: Please do not change *pstarter.lcs* in any way - a modified license file will not be accepted. Do not open *pstarter.lcs* in any program, do not rename it, and if you transfer it per FTP, use binary transfer.

Start PMOD

PMOD can now be started with command script **RunPmod** in *Pmod3.5/Start*. Example:

```
!/bin/sh
cd /opt/Pmod3.5
.\java\jre\bin\java -version
.\java\jre\bin\java -Xmx8000M -jar pmod.jar
```

Notes:

The script has been tailored to the installation directory. Therefore, if the Pmod3.5 directory is moved to a different location, the path needs to be adjusted.

The **-Xmx8000M** option specifies the maximum heap memory (8000 MB) that PMOD can allocate. To process large data sets this number should be increased. However, please note that currently there is an operating-system dependent *limitation on 32-Bit operating systems*: only a maximum of 1800M can be allocated, even if the physical RAM size is larger. Increasing -Xmx beyond 1800M might result in an error *Could not reserve enough space for object heap*. Caution: The P3D tool may crash, when the reserved space approaches the physical RAM size.

Change Permission Settings of Directories for writing

To allow other users than root the full usage of PMOD it is important to open some PMOD directories for writing:

```
chmod -R ugo+w /opt/Pmod3.5/properties
chmod -R ugo+w /opt/Pmod3.5/data/
```

There may be other directories you have to open for writing later on, if several users are working with the same PMOD installation.

PMOD Network License Installation

PMOD License Server Installation

PMOD Software Installation

The computer for the PMOD license server doesn't require a high performance, but needs to be running continually. Therefore, a robust, vintage machine is well suited as a PMOD license server. Preferably, it is also dedicated to serving the PMOD license.

To install the PMOD license server first perform the steps described in the *Stand-alone PMOD Installation* (on page 9) including copying of the license file and plugging the USB key in.

Multiple Licenses Management

A license server can manage multiple licenses simultaneously. In order to use this feature please rename the different license files (pstarter.lcs) by appending the license numbers (pstarter860.lcs, pstarter912.lcs, ...) and copy them into the *Pmod3.5/properties/system/lcs* folder.

Starting the License Server

The PMOD license server can then be started by executing the **RunLcsSvr** script in *Pmod3.5/Start* containing the following lines

```
!/bin/sh
cd /opt/Pmod3.5
.\java\jre\bin\java -version
.\java\jre\bin\java -Xmx2G -jar pmtsvr.jar 5000 -ls -d
```

The meaning of the command arguments is:

5000: IP port over which the license server communicates
-ls: license server only, no data sharing
-d: verbose output

Note: The script has been tailored to the installation directory. Therefore, if the *Pmod3.5* directory is moved to a different location, the path needs to be adjusted.

Log Output

The command window will show startup information and log the checking out/in events as illustrated below. In this example, two clients are started, and then the one of them is stopped again.

```
MD03845:/opt # Pmod3.5/Start/RunLcsSvr
***
***
  Started on license [912]
***
License Server [Version 3.501 A (c) 1996 - 2011 by PMOD
```

```
Technologies]
Verbose: true, Secure: false, Compressed: false
***
Port: 5000
Started on: PMOD-ASUS/192.168.55.109
License Server: [ ON ] STANDALONE, Number of Server Licenses: 3
Memory Assigned: 1160 MB
--> License Server started [Tue Oct 25 15:38:19 CEST 2011] : on port
5000
[20111025 15:39:27.890] LCS: ADDED CLIENT [192.168.55.102-
192.168.55.102].
Active LCS clients:
1) 192.168.55.102-192.168.55.102
Number of free licenses: 2

2011.10.25 - 15:39:28 [5000] -> 192.168.55.102 -> GET TS Version ->
3.501

[20111025 15:39:41.156] LCS: ADDED CLIENT [192.168.55.102-
192.168.55.102].
Active LCS clients:
1) 192.168.55.102-192.168.55.102
2) 192.168.55.102-192.168.55.102
Number of free licenses: 1

2011.10.25 - 15:39:41 [5000] -> 192.168.55.102 -> GET TS Version ->
3.501
[20111025 15:39:54.234] LCS Command: REMOVED CLIENT [192.168.55.102-
192.168.55.102]. Active clients:
1) 192.168.55.102-192.168.55.102
Number of free licenses: 2
```

Emergency Restart

In the case of connection or license management problems the following procedure is recommended for restoring clean license handling:

- 1) Stop the license server.
- 2) Delete the contents of the *Pmod3.5/properties/system/lcs/lct/* directory.
- 3) Start the license server again.

If this procedure is completed within 5 minutes, no shutdown of running PMOD clients is required.

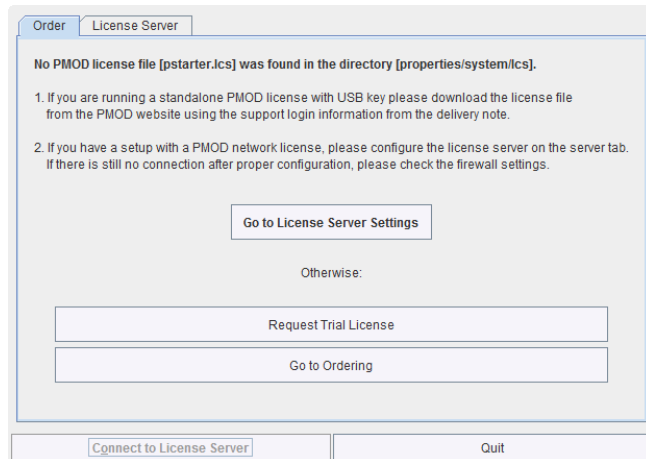
PMOD Network Clients Installation and Configuration

PMOD Software Installation

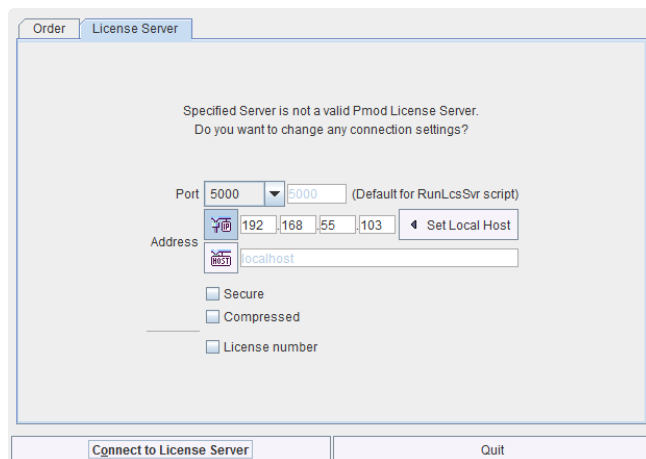
For a PMOD client only the software extraction of the Stand-Alone PMOD installation is required. *The license file should not be copied.*

Configuration of the License Server

The PMOD client can be started by the command script **RunPmod** in the *Pmod3.5/Start* directory. As no license file is found, the following dialog window is shown.

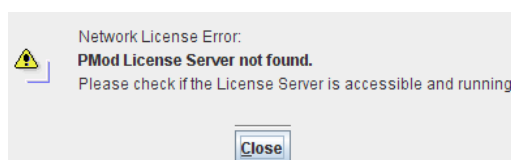


Please select the **Go to License Server Settings** button to open the License server panel illustrated below.



Please configure the same **Port** that you have configured for the license server (or transaction server), and specify the server **Address** either by entering its IP address, or by entering its host name. If the process employed for license serving uses compression or encryption, please check the appropriate boxes. If the license server manages several licenses at the same time, enable the **License number** box and enter the number of the license to which you want to connect. Then activate **Yes**.

If the connection succeeds, the dialog window disappears and PMOD starts up. Otherwise the dialog



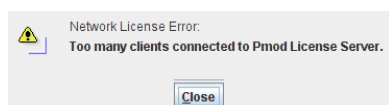
is shown. In this case, please check the configuration of the license server and try again.

Starting and Stopping a PMOD Client

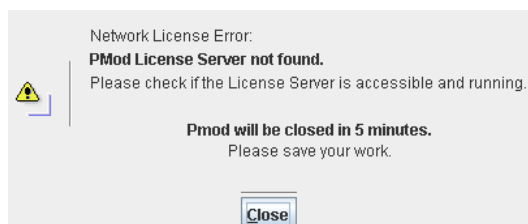
After the license server has been properly configured, PMOD can be started in exactly the same way as with a stand-alone installation. However, for stopping PMOD the main **Quit** button of the ToolBox should always be used. This will initiate a proper shutdown procedure which returns the license to the license server. Otherwise, when simply killing the client, it will take about 15 minutes until the license server diagnoses loss of connection and reclaims the lost license.

Connection Problems

If at client startup no more licenses are available from the license server because all are in use, the **License Server** connection dialog window is shown again to give the user a chance for connecting to a different license server. In case the connection is repeated with the same server following message is shown.



If a connection problem with the license server occurs while working, the **License Server** connection dialog window is shown. If it is not possible to re-establish the connection (for instance by restarting the license server) the following warning is displayed.



and after five more minutes the PMOD client is finally stopped.

Combination of License and Database Server

Please note that the license server process is based on the transaction server mechanism used for publishing a database. Therefore, if the user is already running a transaction server process on the server system (RunDbSvr, see Setting up a Transaction Server), it is *not* necessary to start a dedicated process (RunLcsSvr) just for the license management. The clients can use the same port for requesting a license as for requesting data from the transaction server.

In this context the transaction server option

`-noLS`: database server only

is relevant. This option should be used when running multiple transaction servers. In this case, only one of the transaction servers should be started without `-noLS`, namely the one used for license serving.

Troubleshooting

Error reporting

Internal errors typically leave messages of the form

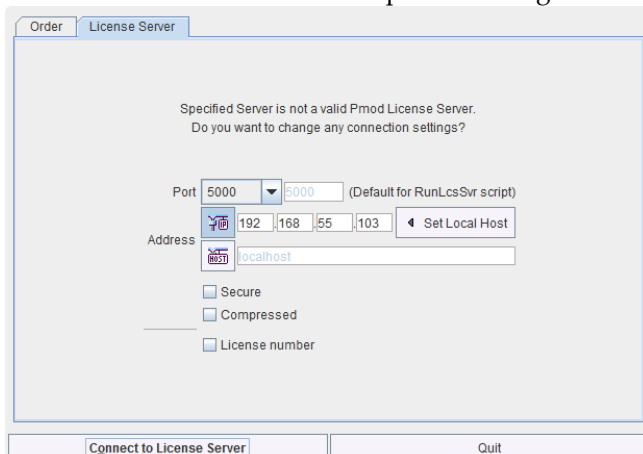
```
java.lang.NullPointerException
at
pmclass.applications.pmgateway.PMgatewayDefaults.getConversionSettings(PMgatewayDefaults.java:143)
at
pmclass.applications.pmgateway.PMgatewayFrame.convert(PMgatewayFrame.java:854)
at
pmclass.applications.pmgateway.PMgatewayFrame.run(PMgatewayFrame.java:911)
at java.lang.Thread.run(Thread.java:484)
in the command window or the log file.
```

To allow PMOD Technologies tracking the problem please report the error using the in-built reporting mechanism as described in the problem reporting section. If this is not possible due to a firewall problem please log into the support section on the www.pmod.com website and fill the error message together with a description into the problem report form.

License Errors

Some of the most likely license errors are:

- ▶▶ If the license file has not been copied to the right directory, you will see a message



Please copy *pstarter.lcs* to *Pmod3.5/properties/system/lcs*

- ▶▶ If the license file has been modified somehow, you will see a message *License Error. Invalid license file (2)*. Please try to extract *pstarter.lcs* again from your e-mail without any modifications.
- ▶▶ If the USB key cannot be read because it is not connected or because the driver installation is not up to date, you will see an error message *Hardware license key not accessible* with additional details. Please make sure that the USB key is connected and the installation was done as described. The installation may have to be repeated after an operating system upgrade.
- ▶▶ In order to be able to run PMOD with the USB key, the JNI must be found during startup. To this end the environment variable `LD_LIBRARY_PATH` must contain the path */usr/lib*. The most appropriate location to define it would be in a global definition file, eg */etc/csh.cshrc*. If not already defined so, add



Problem Reporting

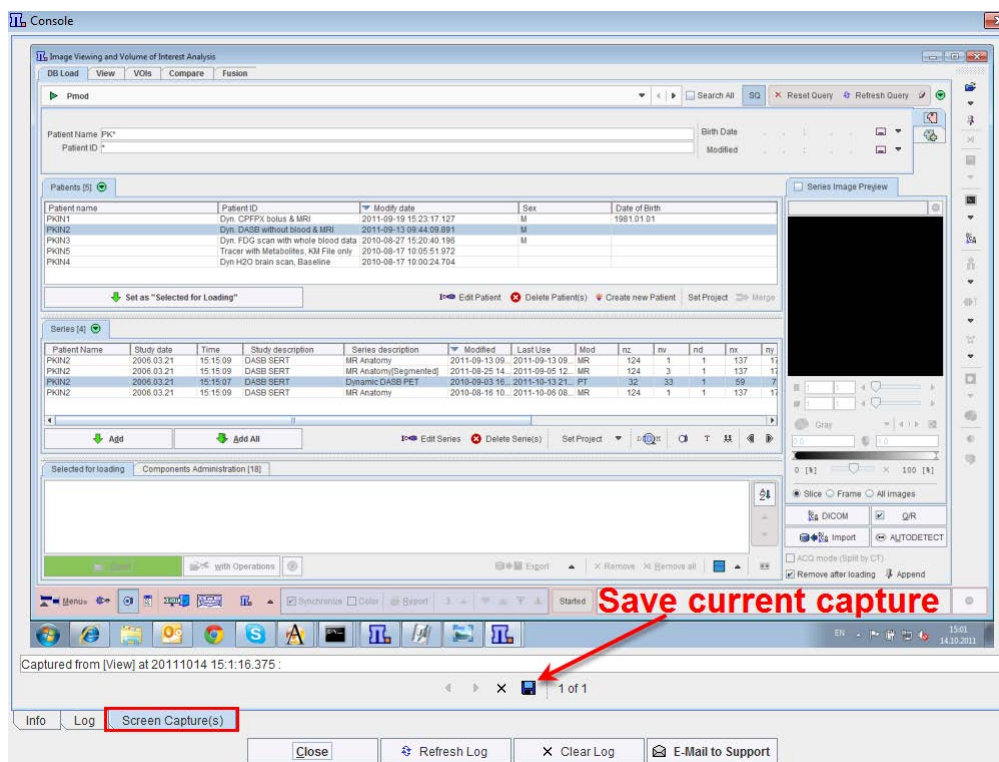
```
setenv LD_LIBRARY_PATH /usr/lib
```

PMOD includes a functionality to directly send a problem report to the support staff of PMOD Technologies. This report can include the log output, screen captures and a problem description entered by the user.

Every PMOD tool contains in the lower left bottom line the functions for creating the report.



The capture button  creates a capture of the entire screen (not only the PMOD window) and adds it to a buffer of up to 20 captures. The console button  opens the a **Console** dialog window illustrated below.



The captures can be inspected on the **Screen Capture(s)** pane with the left/right arrow buttons, and the current one saved in JPEG. The **Log** pane contains the log messages, if the terminal output has been configured to be saved in a file on the **On Start** tab of the **Users Configuration**. Its contents can be updated by the **Refresh Log** button. Once in a while it is recommended to use **Clear Log**, to an avoid excessive length of the log file. The **Info** contains some more general information.

To submit a problem description please activate the **E-mail to Support** button. It opens a dialog window,

Do you want to e-mail problem to the Pmod Support Team?

Module: Kinetic PXMod Cardiac View Fusion 3D Alzheimer Brain DB

Attach: Log Output Screen Capture(s)

Problem description:

Enter your text here

Your email:

wherein the user can select the affected **Module**, and confirm whether the **Log Output** and the **Screen Capture(s)** should be included. The problem description should be typed into the text field, and the user's email address into the **Your email** field. Note that multiple addresses can be specified, separated by the colon character (:). use the **Yes** button to submit the report, or **No** to cancel.

Note: Although the standard mailing port is used, corporate firewalls may prevent PMOD from submitting the e-mail. In this case a notification will be shown, and the user needs to report the problem either through his support login, or by standard e-mail.

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